



BOARD OF COUNTY COMMISSIONERS
WARREN COUNTY, OHIO

406 Justice Drive, Lebanon, Ohio 45036

www.co.warren.oh.us

commissioners@co.warren.oh.us

Telephone (513) 695-1250

Facsimile (513) 695-2054

TOM GROSSMANN
SHANNON JONES
DAVID G. YOUNG

ENTER INTO CONTRACT WITH STRUCTURED SOLUTIONS, LLC FOR THE SANITARY SEWER MANHOLE & SEWER MAIN REHABILITATION - PHASE 1- PROJECT

WHEREAS, pursuant to Resolution 21-0329 dated March 9, 2021 this Board approved a Notice of Intent to Award Bid for the Sanitary Sewer Manhole & Sewer Main Rehabilitation – Phase 1- Project to Structured Solutions, LLC, for a total bid price of \$106,320.50; and

WHEREAS, all documentation, including performance bonds, insurance certificates, etc., has been submitted by the contractor; and

NOW THEREFORE BE IT RESOLVED, to enter into contract with Structured Solutions, LLC, 828 S 400 E, Winchester, Indiana, for a total contract price of \$106,320.50; as attached hereto and made a part hereof.

Mrs. Jones moved for adoption of the foregoing resolution being seconded by Mr. Grossmann. Upon call of the roll, the following vote resulted:

Mr. Young – yea

Mr. Grossmann – yea

Mrs. Jones – yea

Resolution adopted this 6th day of April 2021.

BOARD OF COUNTY COMMISSIONERS

Tina Osborne, Clerk

lkl\

cc: c/a—Structured Solutions, LLC
Water/Sewer (file)
OMB Bid file



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***TOM GROSSMANN
SHANNON JONES
DAVID G. YOUNG***

APPROVE NOTICE OF INTENT TO AWARD BID TO STRUCTURED SOLUTIONS, LLC FOR SANITARY SEWER MANHOLE & SEWER MAIN REHABILITATION - PHASE 1-PROJECT

WHEREAS, bids were closed at 11:00 a.m., on February 18, 2021, and the bids received were opened and read aloud for the Sanitary Sewer Manhole & Sewer Main Rehabilitation - Phase 1-Project, and the results are on file in the Commissioners' Office; and

WHEREAS, upon review of such bids by Chris Wojnicz, Deputy Sanitary Engineer, Structured Solutions, LLC has been determined to be the lowest and best bidder; and

NOW THEREFORE BE IT RESOLVED, upon recommendation of the Warren County Sanitary Engineer, that it is the intent of this Board to award the contract to Structured Solutions, LLC for a total bid price of \$106,320.50; and

BE IT FURTHER RESOLVED, that the President of the Board is hereby authorized to execute a "Notice of Intent to Award."

Mr. Grossmann moved for adoption of the foregoing resolution being seconded by Mrs. Jones. Upon call of the roll, the following vote resulted:

Mr. Young – yea

Mrs. Jones – yea

Mr. Grossmann – yea

Resolution adopted this 9th day of March 2021.

BOARD OF COUNTY COMMISSIONERS

Tina Osborne, Clerk

LL\

cc: Water/Sewer (file)
OMB Bid file



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TOM GROSSMANN

SHANNON JONES

DAVID G. YOUNG

BID OPENING

February 18, 2021

BID OPENING – Sanitary Sewer Manhole & Sewer Main Rehabilitation – Phase 1 - Project

Bids were closed at 11:00 a.m. a.m. this 18th day of February and the following bids were received, opened and read aloud for the Sanitary Sewer Manhole & Sewer Main Rehabilitation – Phase 1 - Project for the Warren County Water and Sewer Department:

Structured Solutions Winchester, IN	\$106,320.50
Municipal & Contractor Sealing Products, Inc. Cincinnati, OH	\$118,760.00

Chris Wojnicz, Warren County Deputy Sanitary Engineer will review bids for a recommendation at a later date.

cc: Bid File

OMB

W/S (file)

PLAN HOLDERS LIST

Sanitary Sewer Manhole & Sewer Main Rehabilitation Project

Individuals or companies can be added to the plan holders list by contacting Kiana Hawk at kiana.hawk@co.warren.oh.us

Name	Company	Phone Number	E-mail Address
Gary Mock	Advanced Rehabilitation Technology	419.636.2684	gary@artcoatingtech.com

**WARREN COUNTY
WATER & SEWER DEPARTMENT**

**CHRIS G. BRAUSCH, P.E.
COUNTY SANITARY ENGINEER**

February 12, 2021

ADDENDUM #1

**SEWER MANHOLE AND SEWER MAIN REHABILITATION –
PHASE 1**

5 PAGES

This Addendum No. 1 is issued to make certain revisions, additions, and clarifications to the original Contract Documents and shall be incorporated into the original documents. This Addendum takes precedence over any and all information previously issued. No other revisions to the Contract Documents are to be inferred.

CLARIFICATIONS

1. MH #1 receives flow from Ashwood Lift Station located at 9942 Tall Oaks Ct., Loveland, OH 45140. Ashwood Lift Station has 2 ~ 275 GPM submersible pumps which alternate starts. The forcemain is 6". The wet well will accommodate approximately 20 minutes of storage, Contractor to verify. Ashwood Lift Station drawings attached.
2. MH #1 Picture included. 6" Forcemain to be redirected into downstream trough.

BID TAB

1. New Bid Tab attached. Added Item 13 – Redirect 6" Forcemain in MH #1.

THIS ADDENDUM MUST BE SIGNED AND ATTACHED TO YOUR BID.

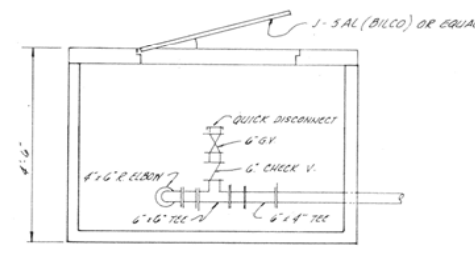
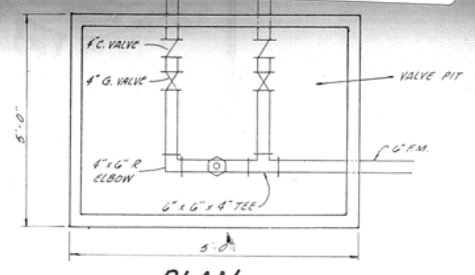
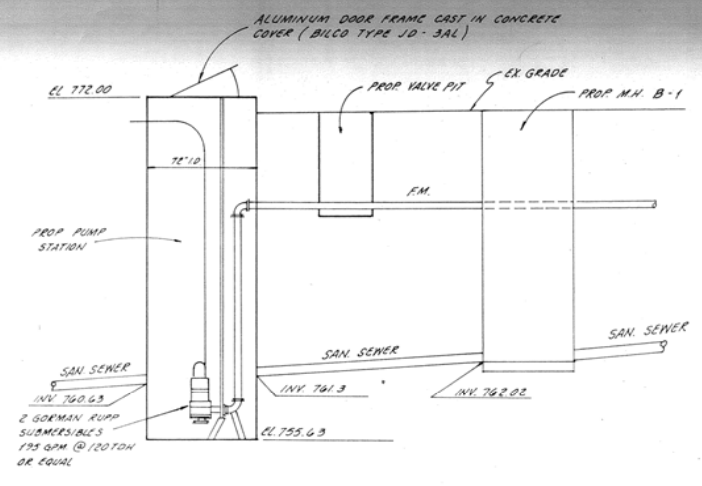
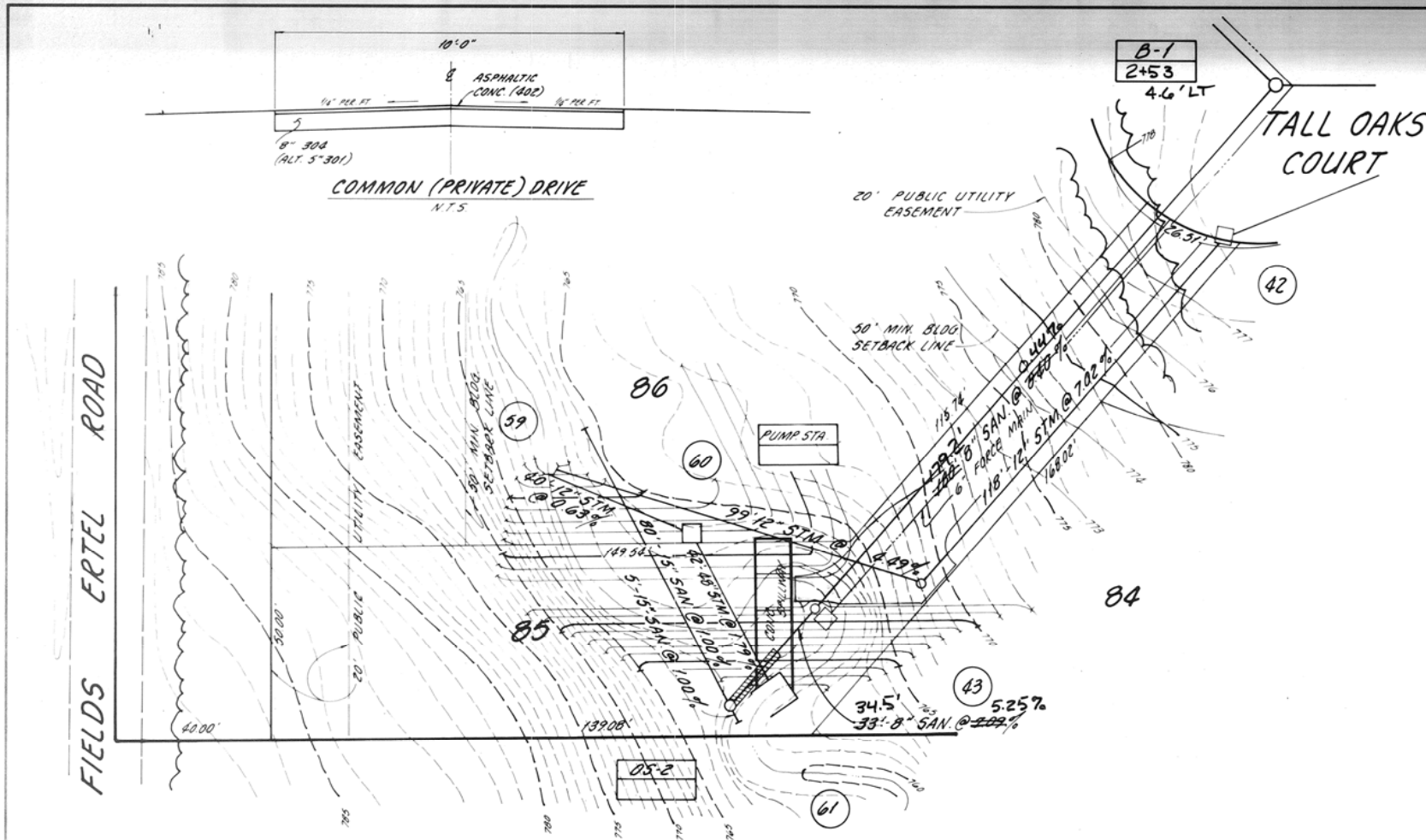
Acknowledged by:

Date

MH#1



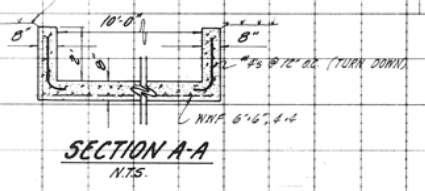
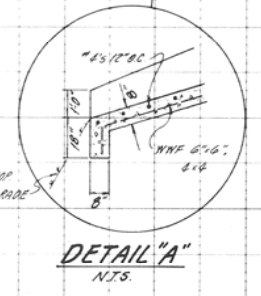
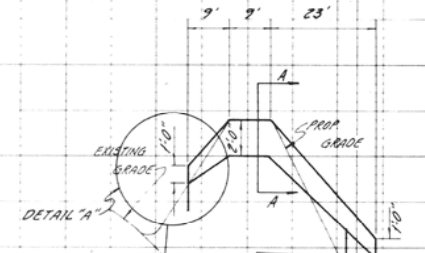
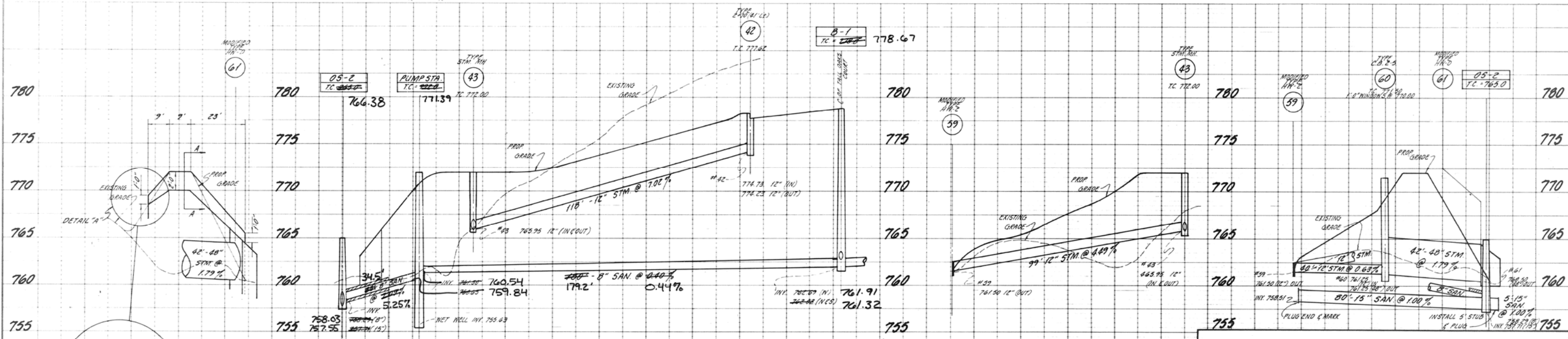
P. O. BOX 530 ■ 406 JUSTICE DR. ■ LEBANON, OH 45036
513-695-1377 ■ 513-925-1377 ■ 937-425-1377 ■ FAX 513-695-2995



SCHEMATIC
N.T.S.

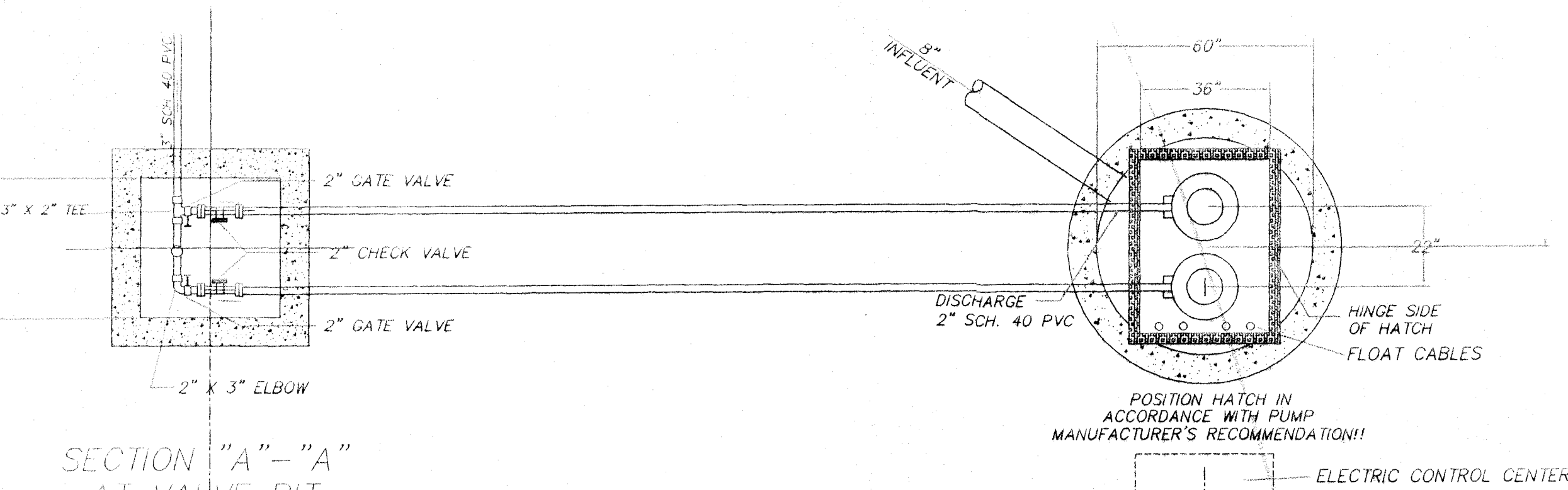
ELEVATION
N.T.S.

NOTE:
SEE APPROVED SHOP DWGS FOR
INSTALLATION.



DETAILS	
AS-BUILT 2-19-92	
PREPARED BY HENDERSON AND BODWELL CONSULTING ENGINEERS 3530 IRWIN SIMPSON RD. MASON, OHIO 513-398-1728 / 421-0359 PLAINVIEW, NEW YORK 516-935-8870	SITUATED IN SECTION 14, TOWN 4, RANGE 2 DEERFIELD TOWNSHIP WARREN COUNTY, OHIO DWG No. CND-4 37B SHT. 18 OF 20
DWN. BY: JRS CKD. BY: PAD SCALE: VERT. 1" = 5' HORIZ. 1" = 20' REF: 6-4-90	DATE: 5-25-90 SHEET 9 of 9 CND-4

CONTRACTOR TO VERIFY PUMP,
GUIDE BAR & DOOR DIMENSION.
LOCATION IN ACCORDANCE WITH PUMP
MFR'S RECOMMENDATIONS.



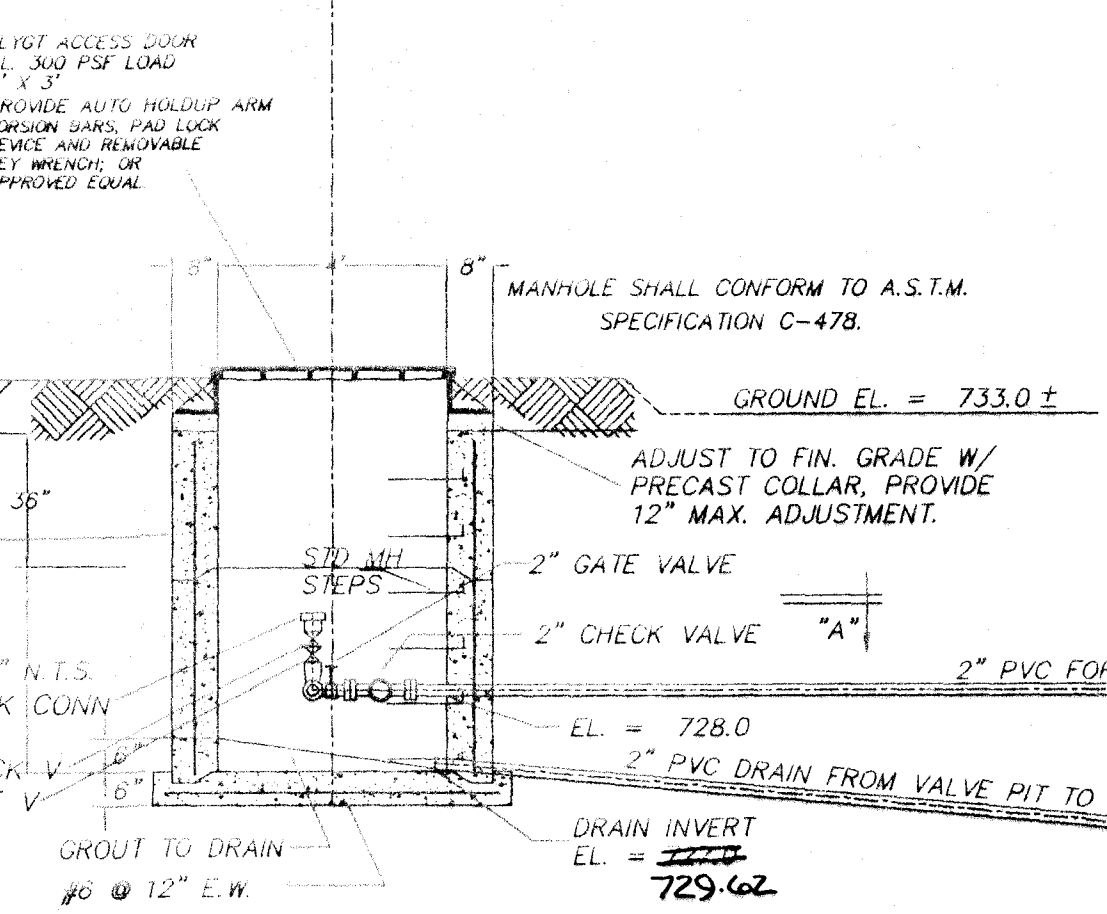
POSITION HATCH IN
ACCORDANCE WITH PUMP
MANUFACTURER'S RECOMMENDATION!!

PLAN
GRINDER PUMP
LIFT STATION

NOTE: WARREN COUNTY TO LOCATE IN FIELD

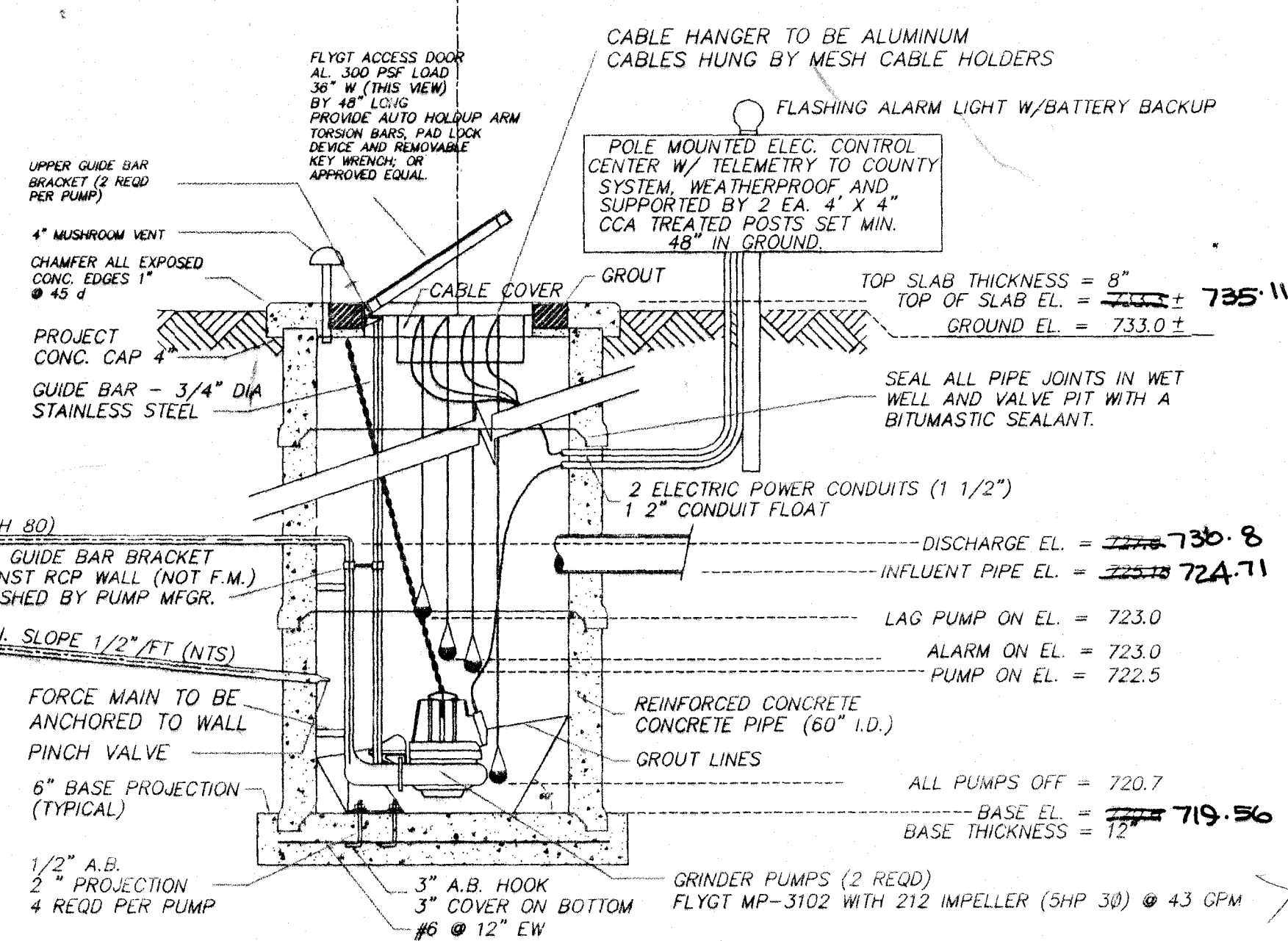
NOTE: STATION & VALVE PIT MUST BE INSTALLED ON UNDISTURBED EARTH.

IMPORTANT NOTE
DO NOT SCALE THESE PLANS AND SECTIONS



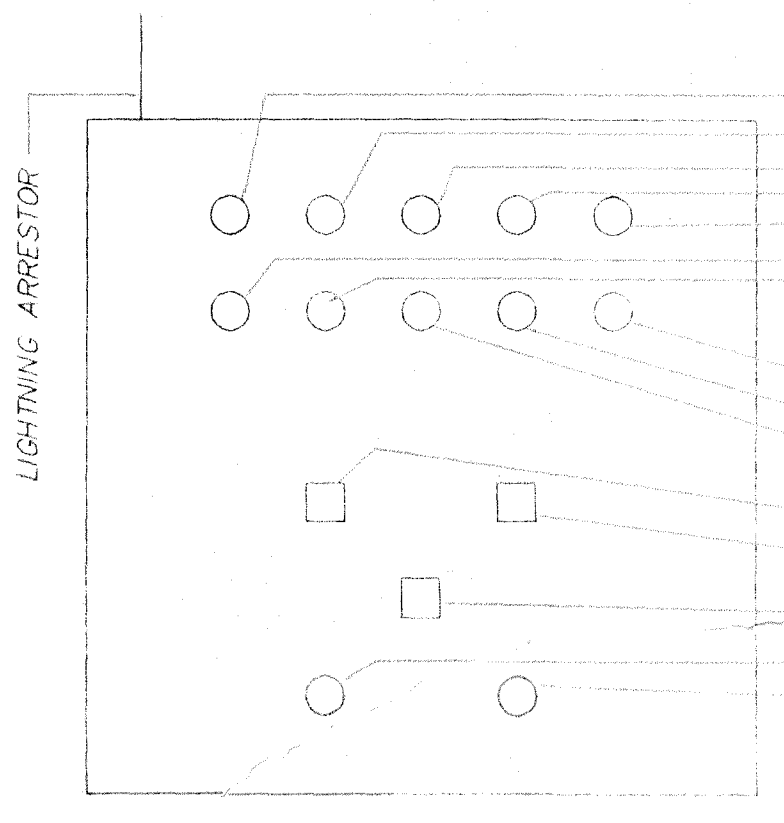
SECTION THRU VALVE PIT

NO SCALE



SECTION THRU GRINDER PUMP STATION

SHOP DRAWING AND MFG CATALOG CUTS REQD ON ALL EQUIP. & MTL SHOWN



NOTE: CONTROL PANEL TO BE MOUNTED ON 2"
CONTROL PANEL LAYOUT

AS-BUILT 11-21-96

PREPARED BY
HENDERSON & BODWELL
CONSULTING ENGINEERS
3530 IRWIN-SIMPSON RD.
MASON, OHIO 45040
513-398-1728
PLAINVIEW, NEW YORK
516-935-8870

PROPOSED BID					
No.	Description	Units	Quantity	Unit Cost	Cost
1	Temporary Sediment and Erosion Control	LS	1		
2	Maintenance of Traffic	LS	1		
3	Sewer Cleaning	LF	715		
4	CCTV Video Inspection	LF	715		
5	Bypass Pumping, Complete	LS	1		
6	8" Cured-in-Place Pipe, Thickness per ASTM F1216, Including Reinstatement of Laterals	LF	715		
7	Cementitious Grouting, as Directed by County	CF	5		
8	Chemical Grouting, as Directed by County	Gal.	10		
9	Urethane / Epoxy Composite Manhole Rehabilitation	Ver. Ft.	43		
10	Mortar / Epoxy Composite Manhole Rehabilitation	Ver. Ft.	65		
11	Reinforced Epoxy Structural Manhole Rehabilitation	Ver. Ft.	38		
12	Chimney Seal (Flex Seal Product or Equal)	EA	12		
13	Redirect 6" FM in MH #1	LS	1		
TOTAL BID PRICE					

TOTAL BID PRICE (In Words)

NOTE:

1. Quantities are based upon construction plans for Sanitary Sewer Manhole and Sewer Main Rehabilitation - Phase 1 and prepared by the Warren County Water and Sewer Department.

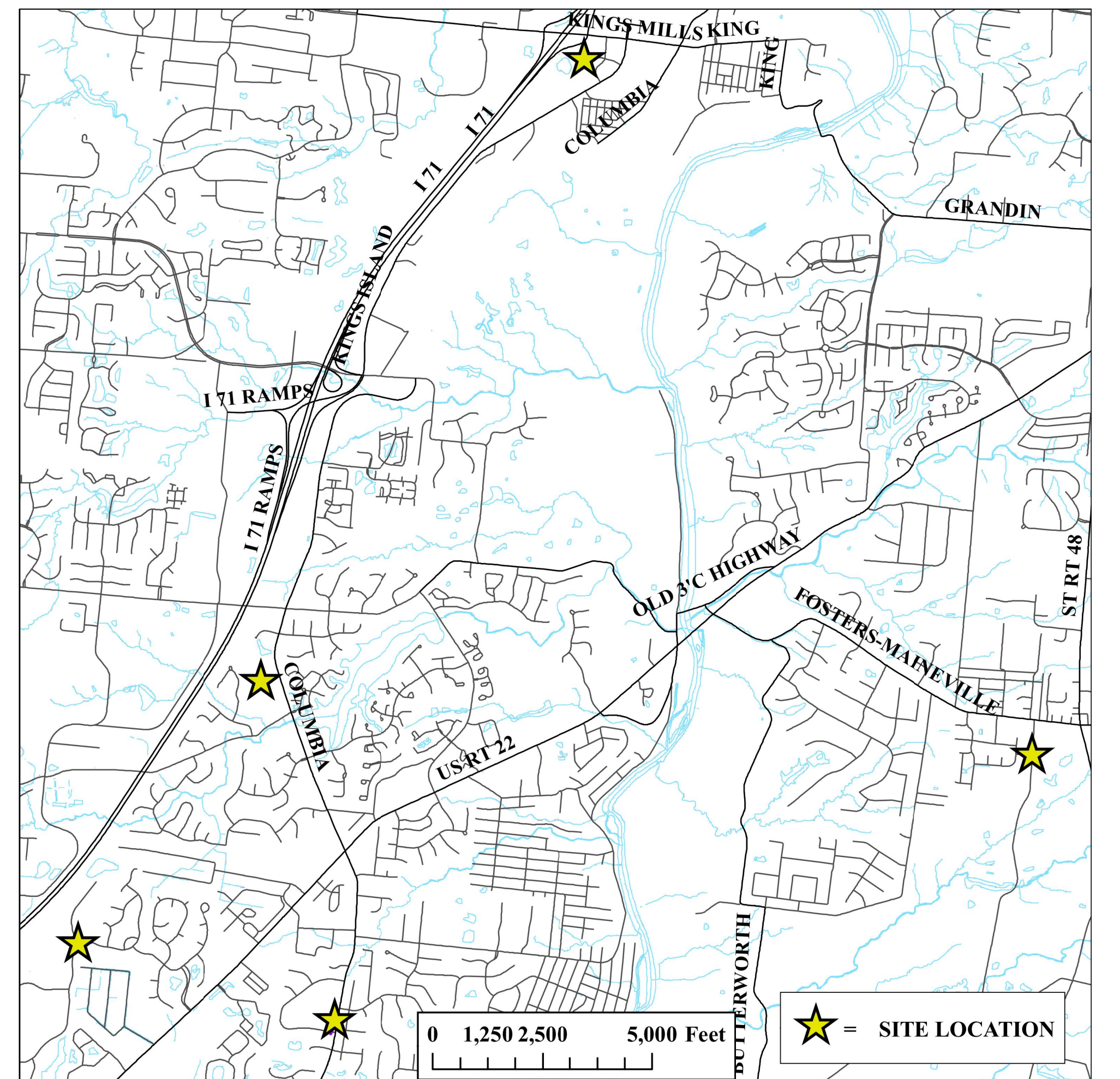
WARREN COUNTY WATER AND SEWER DEPARTMENT



SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION - PHASE I

WARREN COUNTY, OHIO DEERFIELD AND HAMILTON TOWNSHIPS

- 1 TITLE SHEET
- 2 NOTES
- 3 DETAILS - MANHOLE REHAB
- 4 MANHOLE REHAB TABLE
- 5 PLAN VIEW - ASHWOOD & MAINVILLE
- 6 PLAN VIEW - WATER'S EDGE & WATERSTONE
- 7 PLAN VIEW - OUTBACK



PROJECT: SANITARY SEWER REHAB DATE: JANUARY 13, 2021 DRAWN BY: K. GILBERT REVIEWED BY: C. WOJNICZ	SEAL	NO.	REVISION/ISSUE	DATE

SANITARY SEWER MANHOLE
AND SEWER MAIN
REHABILITATION - PHASE I

TITLE SHEET

WARREN COUNTY
WATER & SEWER DEPARTMENT
406 JUSTICE DRIVE
LEBANON, OH 45036



PAGE
1
SCALE:
AS NOTED

GENERAL NOTES

SPECIFICATIONS:

Any modification to the specifications or changes to the work as shown on the drawings must have prior written approval by the Project Owner. Approval of this plan is contingent upon all easements and rights-of-entry required for construction of the improvements work being secured by the County. The County will not be responsible for means, methods, procedures, techniques, or sequences of construction that are not specified herein. The Contractor shall furnish all labor, materials, tools, equipment, services, and related accessories for a complete project as described in the plans and specifications. The price for items of work or materials shown on the plans or provided for in the specifications or special provisions for which no separate unit price or method of payment are given shall be distributed among the various bid items. Submission of a bid shall be considered evidence that the bidder is satisfied with the plans and conditions as shown. No additional compensation will be paid to the Contractor for compliance with the plans, specifications, or special provisions.

SAFETY REQUIREMENTS:

The Contractor and any and all Subcontractors shall be solely responsible for complying with all federal, state, and local safety requirements, together with exercising precautions at all times for the protection of persons (including employees) and property. It is also solely the responsibility of the Contractor and Subcontractor to initiate, maintain, and supervise all safety requirements, precautions, and programs in connection with the work.

CONFINED SPACE ENTRY:

The Contractor shall be solely responsible for following OSHA requirements for "Confined Space Entry" (CSE), Title #29 of the Federal Regulations Code, Part 1910.145, while performing work inside and manhole or other confined space requiring a permit. Copy of the CSE permits shall be given to the County upon project completion.

PERMITS:

The Contractor shall secure and pay for all permits and government fees, licenses, and inspections necessary for the proper execution and completion of the improvements shown on the plans.

NOTIFICATION:

The Contractor shall be responsible for Property Owner notifications which shall include three (3) separate notices. The initial notification will provide general project information and will be distributed shortly after the Notice to Proceed has been issued. The second notification shall alert property owners to any utility disruptions and to minimize water usage. The second notice shall be distributed two (2) working days prior to commencement of work. The third resident notification shall inform Property Owners that work on their portion of their sewer is complete and they may resume normal water usage. The third notice shall be distributed immediately upon completion of work. Please refer to SS-07 "Cured in Place Pipe" for further details. All costs for notifications shall be included in the bid price for the various cured-in-place pipe. No additional payment will be made.

INSPECTION:

Warren County will provide all construction inspection for this project. No work shall be commenced until arrangements have been made with the County for inspection services and a pre-construction meeting has taken place.

UTILITIES:

The Contractor shall notify the Ohio Utilities Protection Services (OUPS) at (1-800-362-2764) at least 48 HOURS, and no more than 10 DAYS PRIOR to excavating, with such time periods not including weekends or holidays. Contractors shall similarly contact all utility owners who are not subscribers to OUPS. The Contractor is responsible for the investigation, location, support, protection, and restoration of all existing utilities and appurtenances whether shown on the plans or not. The Contractor shall proceed with the work and protect all underground utilities in a manner at least as cautious and protective of safety and underground utilities as those methods identified in Section 3781.25 through 3781.30 of the Ohio Revised Code.

All private utility relocation (gas, electric, phone, etc.) will be the responsibility of the utility owners. The Contractor is responsible for coordinating the relocation and/or protection of any utilities as required by the plan with the owner of the affected utility.

RIGHTS-OF-WAY:

In addition to the direct requirements of the Contract Specifications, the Contractor shall observe and conform to the specific requirements of Right-of-ways, including easements, court entries, right-of-entry, or action filed in court in accordance with the code of the applicable governing agency. The cost of the operations necessary to fulfill such requirements shall be included in the bid price for the various items of the contract unless special provision is made in the contract specifications for such cost under specific items of the contract.

WORK LIMITS:

The Contractor is responsible for containing all performed work and all equipment, materials, vehicles, etc. used to complete the work within the right-of-way of the streets, roadways, and permanent easements.

STORAGE OF EQUIPMENT AND MATERIALS:

No materials, including pipe, shall be stored within twenty (20) feet of any intersecting street or driveway. During non-working hours, storage of equipment shall comply with these same requirements. Compliance with these requirements shall not in any way relieve the Contractor of his legal responsibilities or liabilities for the safety of the public. The Contractor shall indicate his intent with regard to storage of material at the pre-construction meeting.

CIPP material for Sanitary Lining shall be stored in accordance with manufacturers specifications in order to minimize exposure to sunlight and maintain the temperature of the product to within manufacturer's recommendation to avoid premature curing. No material shall be stored in the open or in contact with the ground.

CONVENIENCE FACILITIES:

The Contractor shall furnish and maintain sanitary convenience facilities for the workmen and inspectors for the duration of the work. Cost shall not be included in the price bid for various items.

PRE-CONSTRUCTION MEETING:

No work shall start prior to a pre-construction meeting. The County will notify the Contractor to arrange a time and date for this meeting. The County shall authorize a start date.

NON-RUBBER Tired VEHICLES:

No non-rubber tired vehicles shall be moved on public streets.

SIGNS, MAILBOXES, FENCES, ETC.:

The Contractor shall be responsible for restoring all signs, mailboxes, fences, guardrail, shrubs, property, drainage structures, or other physical features disturbed or damaged during construction whether shown on the plans or not to their original location and condition and to the satisfaction of the property owner. Cost to be included in the price of bid for various items.

CONSTRUCTION DEBRIS:

The Contractor shall be responsible for the immediate cleanup of any debris, mud, or dirt tracked or spilled on public streets or private drives whether inside or outside the project area. The Contractor is responsible for the cost of any services contracted and/or completed by Warren County in the clean up of any tracking or spillage anytime during project construction. The Engineer may require the Contractor to perform weekly street cleaning if excessive amounts of dirt and mud are left along the street. This may include removal by sweeping, power cleaning, or manual methods. The cost of this work shall be included in the various contract items, unless otherwise specified.

CLEAN UP:

All debris, rubble, unusable materials, and items not salvaged by the Owner shall become the property of the Contractor and shall be removed from the site by the Contractor and disposed of properly.

DEPTH OF EXISTING SEWER:

The inverts shown for the existing sewers to be lined are based on record plan information and field investigation of manholes. Elevations are shown to give an indication as to the approximate depth of the work and any inaccuracies will not materially affect the work or price. No additional payment shall be made.

MANHOLE INVERTS:

When the cured-in-place pipe lining is complete, it is the Owner's intention to have a smooth flow channel from pipe to pipe through the manhole, with no discontinuity in grade. This may be accomplished by lining through the manhole and cutting out the top of the liner or terminating the pipe liner at the manhole wall and building up the base and channel of the manhole as required, matching the invert of the pipe liner. Base and channel work shall be in accordance with Supplemental Specification SS-12. The Contractor must correct manholes with flow line discontinuities prior to acceptance.

PROTRUDING TAPS:

All protruding lateral taps, whether shown on these plans or not, shall be removed flush with the wall of the main line sewer prior to installation of the CIPP liner. Care shall be taken to ensure that the lateral sewer is not damaged beyond the connection point to the main. Payment for trimming protruding taps shall be made under the Item SS-07, "Cured-in-Place Pipe".

SEWER CLEANING:

Heavy objects such as calcium deposits, roots, debris, stone, rock, construction materials, manhole covers, etc, found in the sewer shall be removed as part of the cleaning process with no separate payment. Sewer cleaning shall be performed in accordance with Supplemental Specification SS-02.

MAINTENANCE OF SANITARY SERVICE:

The contractor shall maintain existing sanitary sewers in service during all work on the project using bypass pumping or other method which does not result in sanitary sewer flows being discharged to the ground, streets, sidewalks, etc. If bypass pumping is performed, the Contractor will be required to monitor with personnel and ensure power is available during all times that pumping is required. Bypass pumps shall be sized to accommodate all flows and shall not overwhelm downstream sewers, i.e. no water-in-basement complaints either upstream or downstream of the bypass pumping location. Contractor shall be responsible to respond and make repairs and cleanup for all water-in-basement complaints caused by the bypass pumping. Refer to Supplemental Specification SS-05 Bypass Pumping. All costs associated with maintaining sanitary service during construction shall be included in the price bid for item SS-05 "Bypass Pumping, Complete". During the period of installation and curing of the CIPP liner and manhole rehabilitation, the Contractor shall comply with the requirements of Supplemental Specifications SS-07. In addition, the contractor shall either provide continuous service to the affected businesses, or shall schedule work at a time such that the businesses will be closed and not affected by sewer shut off. The Contractor shall be responsible for coordination with the businesses and residents. Cost of complying with this item to be included in the price bid for Item SS-05 "Bypass Pumping, Complete".

LINER THICKNESS:

The liner thickness shown on the plans is the minimum thickness that shall be installed. Prior to lining the Contractor shall submit liner thickness calculations based on ASTM-1216 Methodology to the Owner for review and approval in accordance with Supplemental Specification SS-07. The approved liner thickness

shall govern the work, subject to the minimum thickness requirement.

CEMENTITIOUS GROUTING:

All manholes receiving repairs shall be physically inspected prior to the commencement of the repair to detect void spaces behind the manhole wall. Any voids detected shall be filled with grout. All areas where a significant thickness of mineral deposit (1" or more) has been removed from the manhole wall shall also be pressure grouted. Quantities of grout shall be limited as described in the Supplemental Specification SS-10. Cost of grouting work if approved by Warren County shall be covered under Contingency Item SS-10 Cementitious Grouting.

RESIDUAL GROUT:

Contractor shall not allow residual grout in the grouting hoses to be blown out onto the manhole floor, channel, or bench. All residual grout shall be removed and disposed of.

COUNTY WATER:

The Contractor can obtain water from local Warren County hydrants at no cost.

PROCESS WASTEWATER:

Process wastewater generated from operations shall be cooled to a maximum temperature of 100° F and then discharged to the County's sanitary sewer system or contained and disposed of offsite. Under no circumstances shall the process wastewater be discharged into the County stormwater system or stream, which would be a violation of Ohio Revised Code 6111 and as such, subject to "SEVERE PENALTIES" that would be incurred by the Contractor.

EROSION & SEDIMENTATION CONTROL:

Sediment and erosion control shall be provided per the requirements of Warren County and the Standards and Specifications of the "Rainwater and Land Development" manual of the ODNR. All land disturbing activities shall be subject to inspection and site investigation by Warren County and/or Ohio EPA. Sediment and erosion control measures shall be installed per NPDES permit regulations, and/or as directed by the County Engineer, and are to be maintained until such time that they are no longer required by the permit and/or County. Failure to comply with these regulations shall be subject to legal enforcement action.

Primary sediment and erosion control practices are mandated by regulations to be in place prior to the beginning of the construction activity. The Contractor shall provide sediment and erosion control at all points where storm water runoff leaves the project including waterways, overland sheet flow, and before stormwater runoff enters the storm sewers. All cost for sediment and erosion control, including maintenance and cleaning, shall be included in various bid items.

MAINTAINING TRAFFIC:

The Contractor shall provide all facilities and personnel required for maintaining local traffic and detouring through traffic during construction in accordance with CSMC Item 614 and Plans.

CLEAN WATER CONNECTIONS PROHIBITED:

Roof drains, foundations drains, and other clean water connections to the sanitary sewer are prohibited.

CONDITION OF EXISTING SANITARY SEWER:

The Contractor is advised that the existing sewers may be in a compromised condition. Collapse of the sewer may be possible prior to or during the lining process. The Contractor shall repair any damage or collapse prior to the lining operation. Cost for any repairs required by a changed condition from the bid tapes to the pre-existing tapes will be considered for additional compensation under the price bid for Contingency Item SS-04, Open Cut Point Repair as directed by the Engineer. If repairs are required by the Contractor due to Contractor's means and methods, these repairs will not be measured for payment and are considered incidental to the Contract.

MANHOLE REHABILITATION:

Sanitary manholes shall be rehabilitated in accordance with Supplemental Specification SS-13, SS-14, & SS-15. Rehabilitation may include cementitious lining, base, and channel rehabilitation, and installation of new frame and cover, etc. for each manhole rehabilitated. Manhole rehabilitation will take place after the cured-in-place lining operations are complete. Cost of surface preparation, rehabilitating bench and channel, flow maintenance, step removal and replacement, water plug, and patching mortar shall be included in the unit price bids of SS-12, SS-13, SS-14 & SS-15. A table of manhole rehabilitation components is included on Sheet 5 of this plan set. The Contractor shall perform all the recommended rehabilitation components provided on the tables as part of the base bid for this project.

WORK HOURS:

Work hours permitted 8:00am to 5:00pm unless otherwise adjusted by Owner.

PUMP STATION OPERATION:

The Contractor shall be in contact with Jason Sorrell, Sewer Maintenance Superintendent (Cell # 513-260-7768), during any periods that sanitary sewer flow is being bypassed or periods when flow through the sewer and manholes is obstructed, to coordinate construction operations with the pump station operations.

CONSTRUCTION LIMITS:

Construction limits shall be within the existing public utility easement.

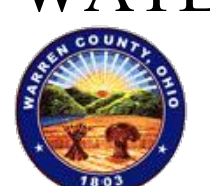

RESTORATION AND CLEANUP:

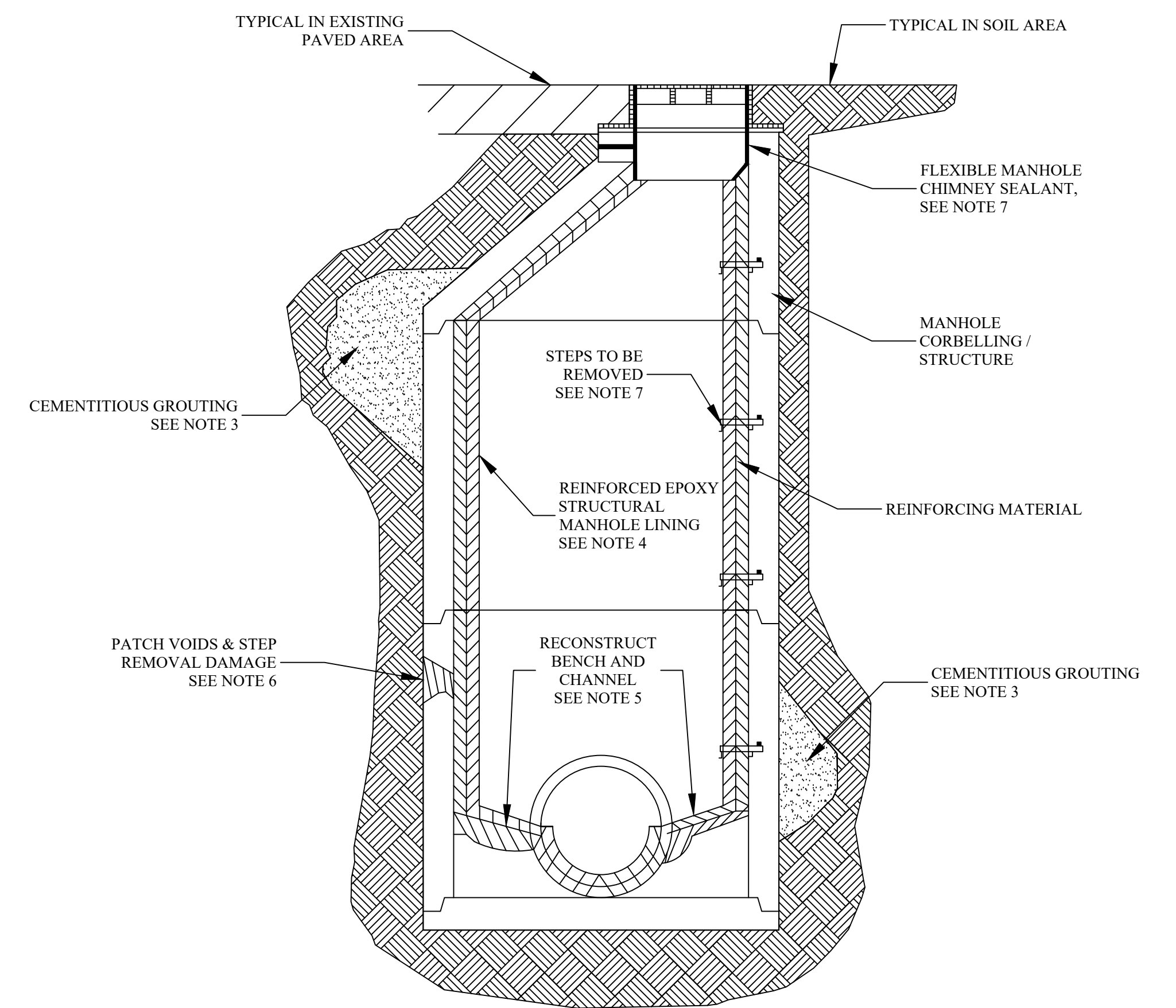
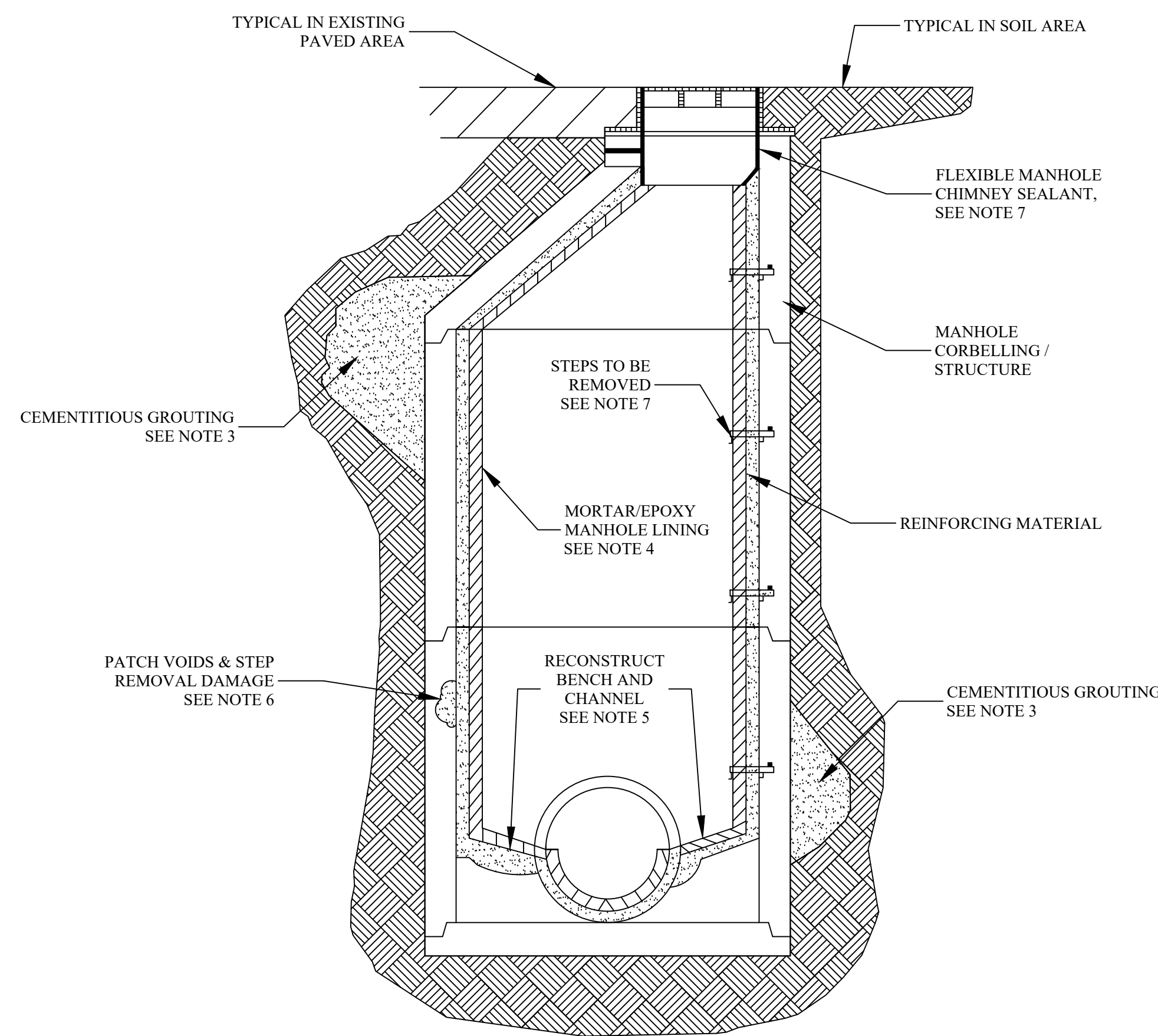
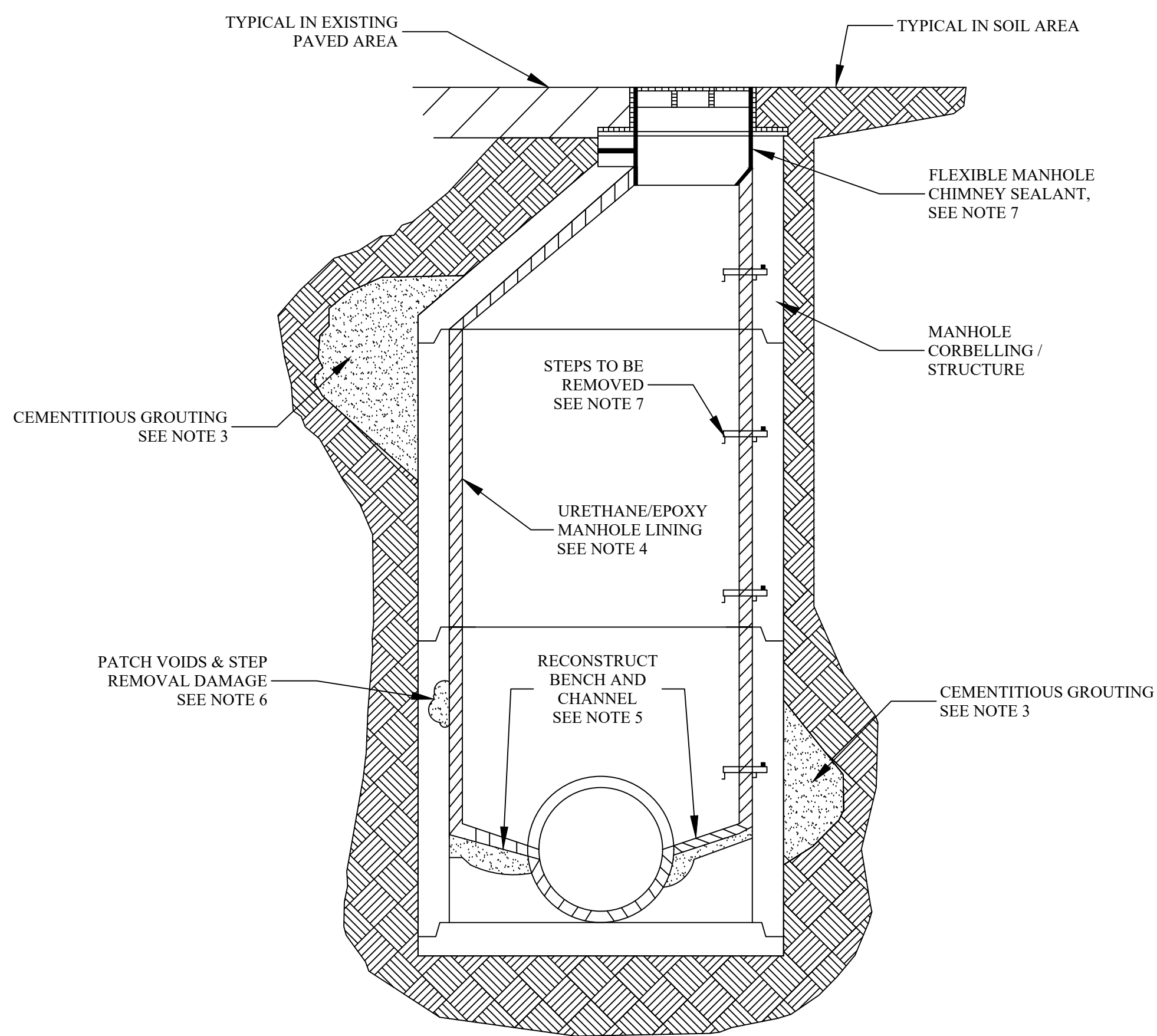
It is the intent of the County to keep inconvenience to the property Owners to an absolute minimum. All work prescribed and described in these Specifications is situated in improved areas. All work is to continue on a uniform basis and on schedule, particularly the restoration and clean up of disturbed areas after construction.

Areas disturbed during construction shall be seeded and mulched within 48 hours of the sewer installation and immediate re-grading. A commercial fertilizer (12-12-12) shall be applied at a rate of 20 lbs. per 1000 s.f.

ESTIMATE OF QUANTITIES

NO.	QUANTITY	UNITS	DESCRIPTION
1	1	LS	Temporary Sediment and Erosion Control
2	1	LS	Maintenance of Traffic
3	715	LF	Sewer Cleaning
4	715	LF	CCTV Video Inspection
5	1	LS	Bypass Pumping, Complete
6	715	LF	8" Cured-in-Place Pipe, Thickness per ASTM F1216, including Reinstatement of Laterals
7	5	CF	Cementitious Grouting, as Directed by County
8	10	Gal.	Chemical Grouting, as Directed by County
9	43	Ver. Ft	Urethane/Epoxy Composite Manhole Rehabilitation
10	65	Ver. Ft	Mortar/Epoxy Manhole Rehabilitation
11	38	Ver. Ft.	Reinforced Epoxy Structural Manhole Rehabilitation
12	12	EA	Chimney Seal (Flex Seal Product or Equal)

PROJECT: SANITARY SEWER REHAB DATE: JANUARY 13, 2021 DRAWN BY: K. GILBERT REVIEWED BY: C. WOJNICZ	SEAL	NO. REVISION/ISSUE	DATE	SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION - PHASE I	NOTES & QUANTITIES	WARREN COUNTY WATER & SEWER DEPARTMENT 406 JUSTICE DRIVE LEBANON, OH 45036  	PAGE 2 SCALE: AS NOTED



NOTES:

1. SUPPLEMENTAL SPECIFICATIONS CALLED OUT WITHIN THIS PLAN ARE TO BE PROVIDED IN THE CONTRACT DOCUMENTS FOR THIS PROJECT.
2. THE CONTRACTOR SHALL PLACE A DEVICE IN THE MANHOLE TO CATCH ANY DEBRIS WHICH MAY FALL INTO THE MANHOLE DURING PERFORMANCE OF WORK. ALL MATERIALS RESULTING FROM THE CLEANING AND/OR REPAIR OF THE MANHOLE SHALL BE REMOVED AND PROPERLY DISPOSED OF.
3. MANHOLE SHALL BE VISUALLY INSPECTED FOR LEAKS AND/OR VOIDS. MANHOLE WALL SHALL BE SOUNDED WITH A HAMMER AND ALL VOIDS SHALL BE FILLED AS PER SUPPLEMENTAL SPECIFICATION SS-10 AND PAID UNDER CONTINGENCY ITEM SS-10. CEMENTITIOUS GROUTING, AS DIRECTED BY THE COUNTY.
4. MANHOLE WALLS TO BE CLEANED, PATCHED, AND LINED PER SUPPLEMENTAL SPECIFICATION SS-13 AND PAID UNDER ITEM SS-13, URETHANE/EPOXY MANHOLE REHABILITATION.
5. THE CONTRACTOR SHALL REHABILITATE THE BENCH AND CHANNEL PER SUPPLEMENTAL SPECIFICATION SS-13 AND PAID UNDER ITEM SS-13, URETHANE/EPOXY MANHOLE REHABILITATION.
6. THE CONTRACTOR SHALL PATCH VOIDS AND MANHOLE STEP REMOVAL DAMAGE SMOOTH AND FLUSH WITH THE FACE OF THE MANHOLE WALL PER SUPPLEMENTAL SPECIFICATION SS-13 AND PAID UNDER ITEM SS-13, URETHANE/EPOXY MANHOLE REHABILITATION.
7. ALL MANHOLE STEPS SHALL BE REMOVED AND PAID UNDER ITEM SS-13, URETHANE/EPOXY MANHOLE REHABILITATION.
8. FLEXIBLE CHIMNEY SEALANT SHALL BE MANUFACTURED BY CRETEX, NPC, OR APPROVED EQUAL AND INSTALLED AT ALL MANHOLES PER SUPPLEMENTAL SPECIFICATIONS SS-24. COST SHALL BE PAID PER MANHOLE UNDER ITEM SS-24, FLEXIBLE MANHOLE CHIMNEY SEAL.

**URETHANE/EPOXY
MANHOLE REHABILITATION DETAIL (SS-13)**

(NOT TO SCALE)

NOTES:

1. SUPPLEMENTAL SPECIFICATIONS CALLED OUT WITHIN THIS PLAN ARE TO BE PROVIDED IN THE CONTRACT DOCUMENTS FOR THIS PROJECT.
2. THE CONTRACTOR SHALL PLACE A DEVICE IN THE MANHOLE TO CATCH ANY DEBRIS WHICH MAY FALL INTO THE MANHOLE DURING PERFORMANCE OF WORK. ALL MATERIALS RESULTING FROM THE CLEANING AND/OR REPAIR OF THE MANHOLE SHALL BE REMOVED AND PROPERLY DISPOSED OF.
3. MANHOLE SHALL BE VISUALLY INSPECTED FOR LEAKS AND/OR VOIDS. MANHOLE WALL SHALL BE SOUNDED WITH A HAMMER AND ALL VOIDS SHALL BE FILLED AS PER SUPPLEMENTAL SPECIFICATION SS-10 AND PAID UNDER CONTINGENCY ITEM SS-10. CEMENTITIOUS GROUTING, AS DIRECTED BY THE COUNTY.
4. MANHOLE WALLS TO BE CLEANED, PATCHED, AND LINED PER SUPPLEMENTAL SPECIFICATION SS-14 AND PAID UNDER ITEM SS-14, MORTAR/EPOXY MANHOLE REHABILITATION.
5. THE CONTRACTOR SHALL REHABILITATE THE BENCH AND CHANNEL PER SUPPLEMENTAL SPECIFICATION SS-14 AND PAID UNDER ITEM SS-14, MORTAR/EPOXY MANHOLE REHABILITATION.
6. THE CONTRACTOR SHALL PATCH VOIDS AND MANHOLE STEP REMOVAL DAMAGE SMOOTH AND FLUSH WITH THE FACE OF THE MANHOLE WALL PER SUPPLEMENTAL SPECIFICATION SS-14 AND PAID UNDER ITEM SS-14, MORTAR/EPOXY MANHOLE REHABILITATION.
7. ALL MANHOLE STEPS SHALL BE REMOVED AND PAID UNDER ITEM SS-14, MORTAR/EPOXY MANHOLE REHABILITATION.
8. FLEXIBLE CHIMNEY SEALANT SHALL BE MANUFACTURED BY CRETEX, NPC, OR APPROVED EQUAL AND INSTALLED AT ALL MANHOLES PER SUPPLEMENTAL SPECIFICATIONS SS-24. COST SHALL BE PAID PER MANHOLE UNDER ITEM SS-24, FLEXIBLE MANHOLE CHIMNEY SEAL.

**MORTAR/EPOXY COMPOSITE
MANHOLE REHABILITATION DETAIL (SS-14)**

(NOT TO SCALE)

NOTES:

1. SUPPLEMENTAL SPECIFICATIONS CALLED OUT WITHIN THIS PLAN ARE TO BE PROVIDED IN THE CONTRACT DOCUMENTS FOR THIS PROJECT.
2. THE CONTRACTOR SHALL PLACE A DEVICE IN THE MANHOLE TO CATCH ANY DEBRIS WHICH MAY FALL INTO THE MANHOLE DURING PERFORMANCE OF WORK. ALL MATERIALS RESULTING FROM THE CLEANING AND/OR REPAIR OF THE MANHOLE SHALL BE REMOVED AND PROPERLY DISPOSED OF.
3. MANHOLE SHALL BE VISUALLY INSPECTED FOR LEAKS AND/OR VOIDS. MANHOLE WALL SHALL BE SOUNDED WITH A HAMMER AND ALL VOIDS SHALL BE FILLED AS PER SUPPLEMENTAL SPECIFICATION SS-10 AND PAID UNDER CONTINGENCY ITEM SS-10. CEMENTITIOUS GROUTING, AS DIRECTED BY THE COUNTY.
4. MANHOLE WALLS TO BE CLEANED, PATCHED, AND LINED PER SUPPLEMENTAL SPECIFICATION SS-15 AND PAID UNDER ITEM SS-15, REINFORCED EPOXY STRUCTURAL MANHOLE REHABILITATION.
5. THE CONTRACTOR SHALL REHABILITATE THE BENCH AND CHANNEL PER SUPPLEMENTAL SPECIFICATION SS-15 AND PAID UNDER ITEM SS-15, REINFORCED EPOXY STRUCTURAL MANHOLE REHABILITATION.
6. THE CONTRACTOR SHALL PATCH VOIDS AND MANHOLE STEP REMOVAL DAMAGE SMOOTH AND FLUSH WITH THE FACE OF THE MANHOLE WALL PER SUPPLEMENTAL SPECIFICATION SS-15 AND PAID UNDER ITEM SS-15, REINFORCED EPOXY STRUCTURAL MANHOLE REHABILITATION.
7. ALL MANHOLE STEPS SHALL BE REMOVED AND PAID UNDER ITEM SS-15, REINFORCED EPOXY STRUCTURAL MANHOLE REHABILITATION.
8. FLEXIBLE CHIMNEY SEALANT SHALL BE MANUFACTURED BY CRETEX, NPC, OR APPROVED EQUAL AND INSTALLED AT ALL MANHOLES PER SUPPLEMENTAL SPECIFICATIONS SS-24. COST SHALL BE PAID PER MANHOLE UNDER ITEM SS-24, FLEXIBLE MANHOLE CHIMNEY SEAL.

**REINFORCED EPOXY STRUCTURAL
MANHOLE REHABILITATION DETAIL (SS-15)**

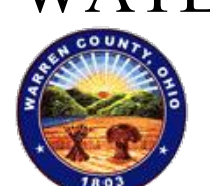

(NOT TO SCALE)

PROJECT: SANITARY SEWER REHAB DATE: JANUARY 13, 2021 DRAWN BY: K. GILBERT REVIEWED BY: C. WOJNICZ	SEAL	NO. REVISION/ISSUE	DATE

SANITARY SEWER MANHOLE
AND SEWER MAIN
REHABILITATION - PHASE I

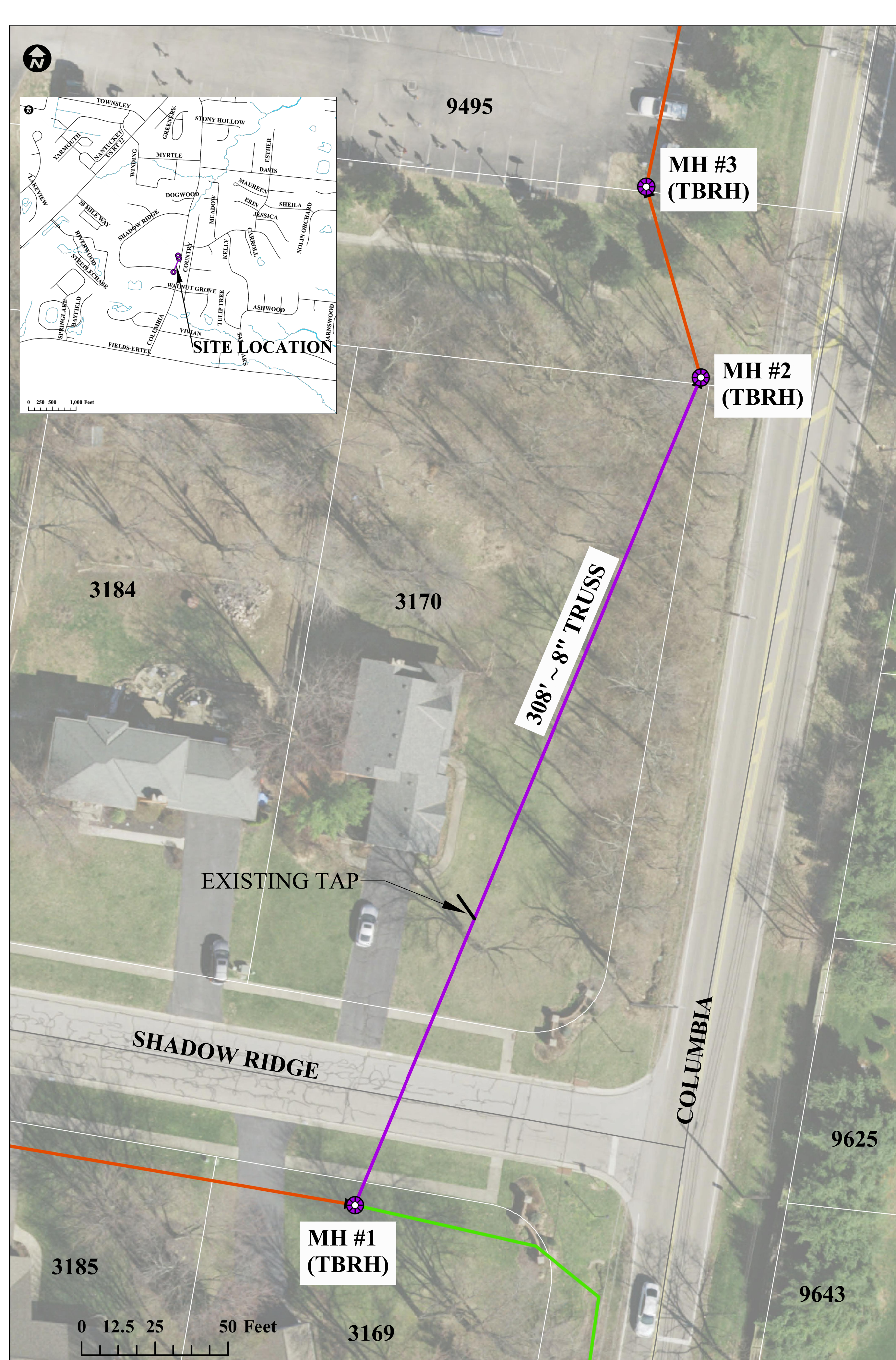
MANHOLE REHABILITATION DETAILS

WARREN COUNTY
 WATER & SEWER DEPARTMENT
 406 JUSTICE DRIVE
 LEBANON, OH 45036

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3
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MANHOLE	EXISTING SURFACE	TYPE OF MANHOLE	ESTIMATED DEPTH (FEET)	REHABILITATE BENCH & CHANNEL	REMOVE STEPS	REPLACE LID & CASTING	MANHOLE REHAB DETAIL	APPROXIMATE GPD (AVERAGE)
MH #1	GRASS	PRE-CAST	6.69	YES	YES	YES	SS-15	63,668
MH #2	GRASS	PRE-CAST	14.64	YES	YES	YES	SS-14	63,737
MH #3	GRASS	PRE-CAST	17.49	YES	YES	YES	SS-13	63,737
MH #4	PAVEMENT	PRE-CAST	9.27	YES	YES	YES	SS-14	9,901
MH #5	PAVEMENT	PRE-CAST	14.57	YES	YES	YES	SS-14	11,301
MH #6	GRASS	PRE-CAST	9.15	YES	YES	YES	SS-15	159,676
MH #7	GRASS	PRE-CAST	10.74	YES	YES	YES	SS-13	166,095
MH #8	PAVEMENT	PRE-CAST	13.93	YES	YES	YES	SS-13	166,503
MH #9	GRASS	PRE-CAST	13.21	YES	YES	YES	SS-14	166,503
MH #10	GRASS	PRE-CAST	11.15	YES	YES	YES	SS-15	167,705
MH #11	GRASS	PRE-CAST	11.10	YES	YES	YES	SS-15	65,226
MH #12	GRASS	PRE-CAST	12.58	YES	YES	YES	SS-14	65,226

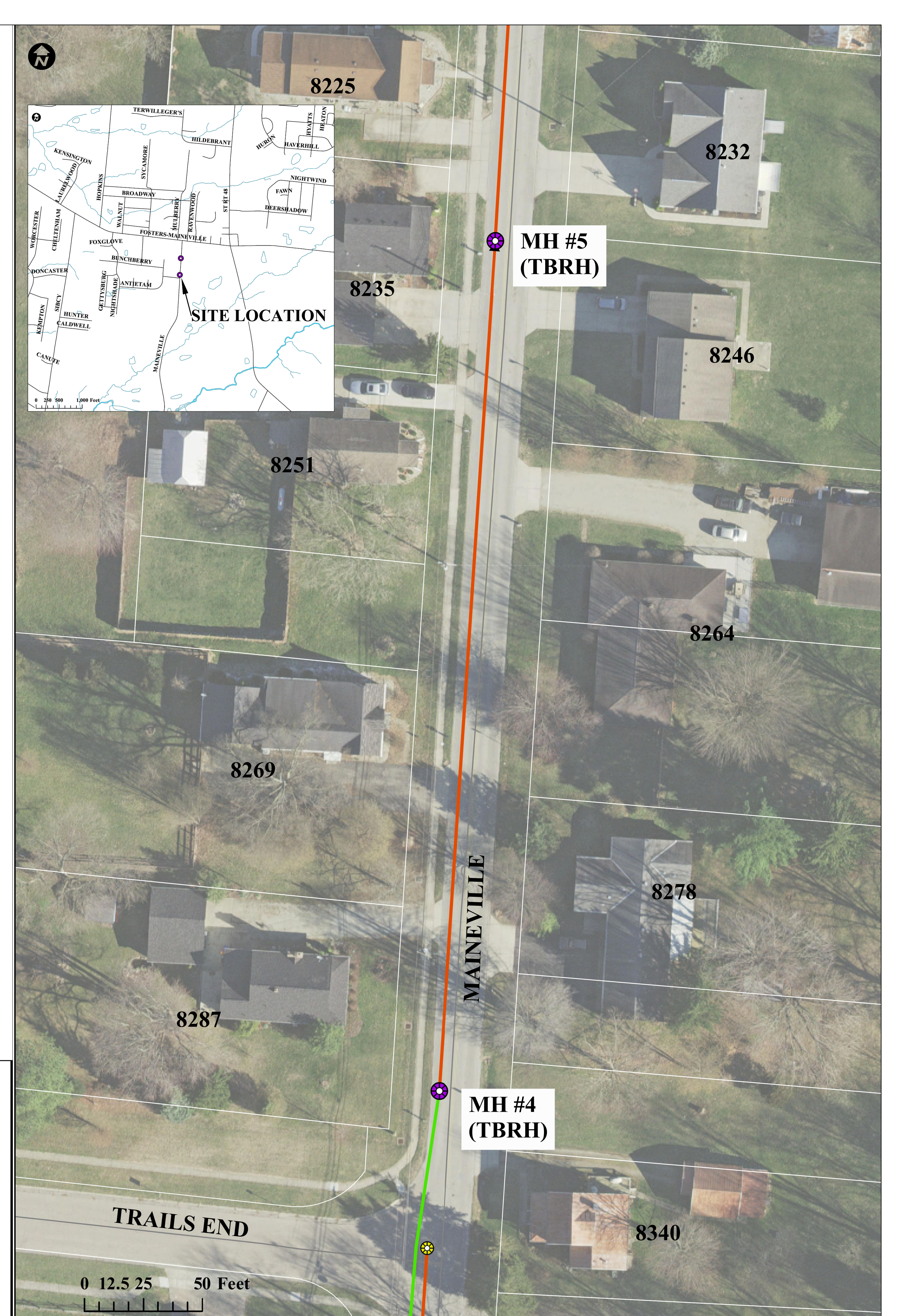


NOTES:

1. MANHOLES LABELED "TBRH" (TO BE REHABILITATED) SHALL BE REHABILITATED PER THE STANDARD MANHOLE REHABILITATION DETAILS ON SHEET 3. REHABILITATE MANHOLES AS NOTED ON THE MANHOLE REHABILITATION TABLE ON SHEET 4 OR AS REQUIRED IN WRITING BY WARREN COUNTY. PLEASE SEE TECHNICAL SPECIFICATIONS FOR FURTHER DETAILS.
2. OSHA CLEARANCE REQUIREMENTS TO BE MAINTAINED DURING CONSTRUCTION BETWEEN EQUIPMENT AN OVERHEAD LINES.
3. ALL HEAVY EQUIPMENT IS TO REMAIN BETWEEN MH #2 AND MH #3.

LEGEND

- MANHOLE TO BE LINED
- MAIN TO BE LINED
- SEWER MANHOLE
- GRAVITY SEWER
- FORCE MAIN



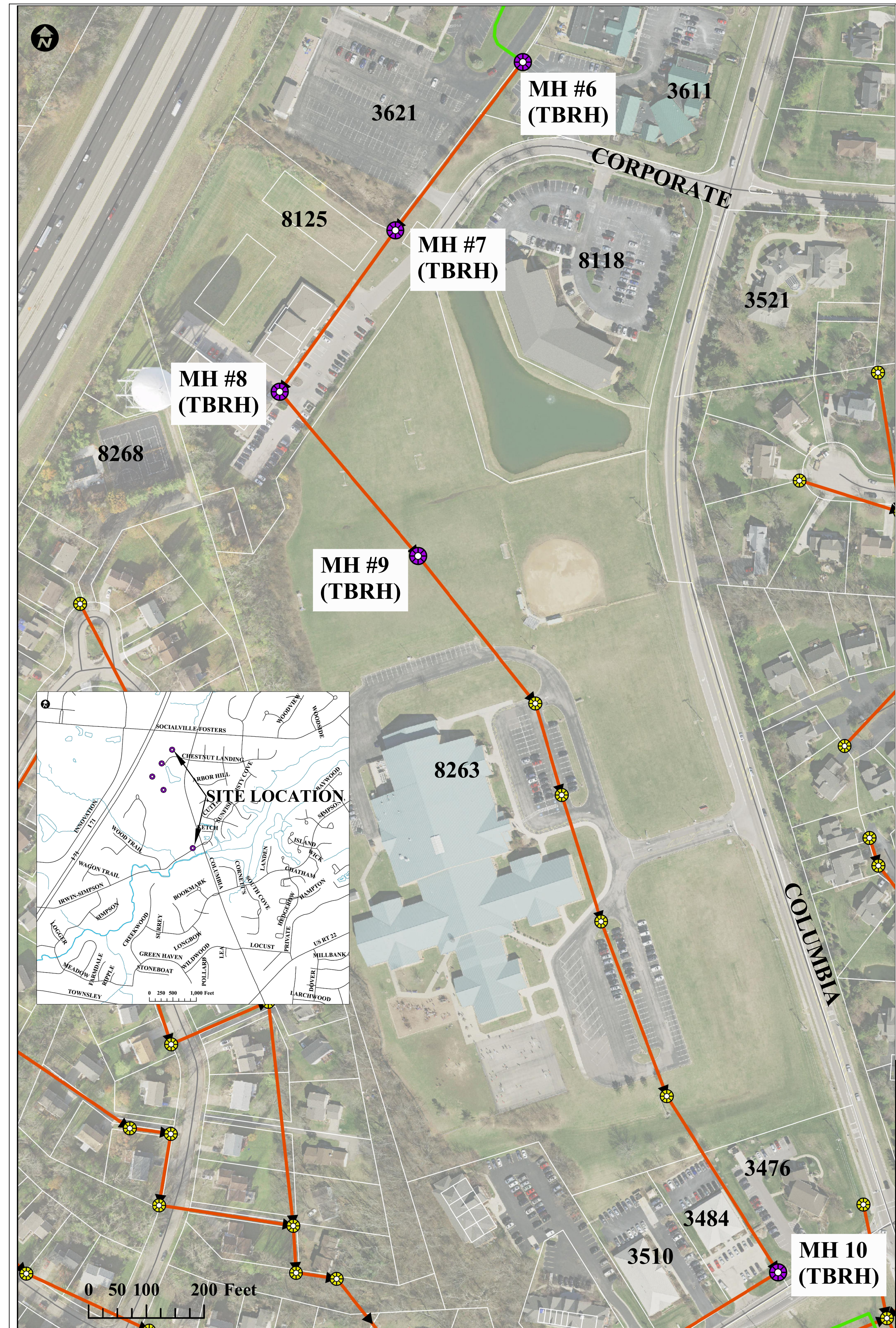
PROJECT: SANITARY SEWER REHAB	SEAL	NO. REVISION/ISSUE	DATE
DATE: JANUARY 13, 2021			
DRAWN BY: K. GILBERT			
REVIEWED BY: C. WOJNICZ			

SANITARY SEWER MANHOLE
AND SEWER MAIN
REHABILITATION - PHASE I

PLAN VIEW -
ASHWOOD & MAINEVILLE

WARREN COUNTY
WATER & SEWER DEPARTMENT
406 JUSTICE DRIVE
LEBANON, OH 45036

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AS NOTED

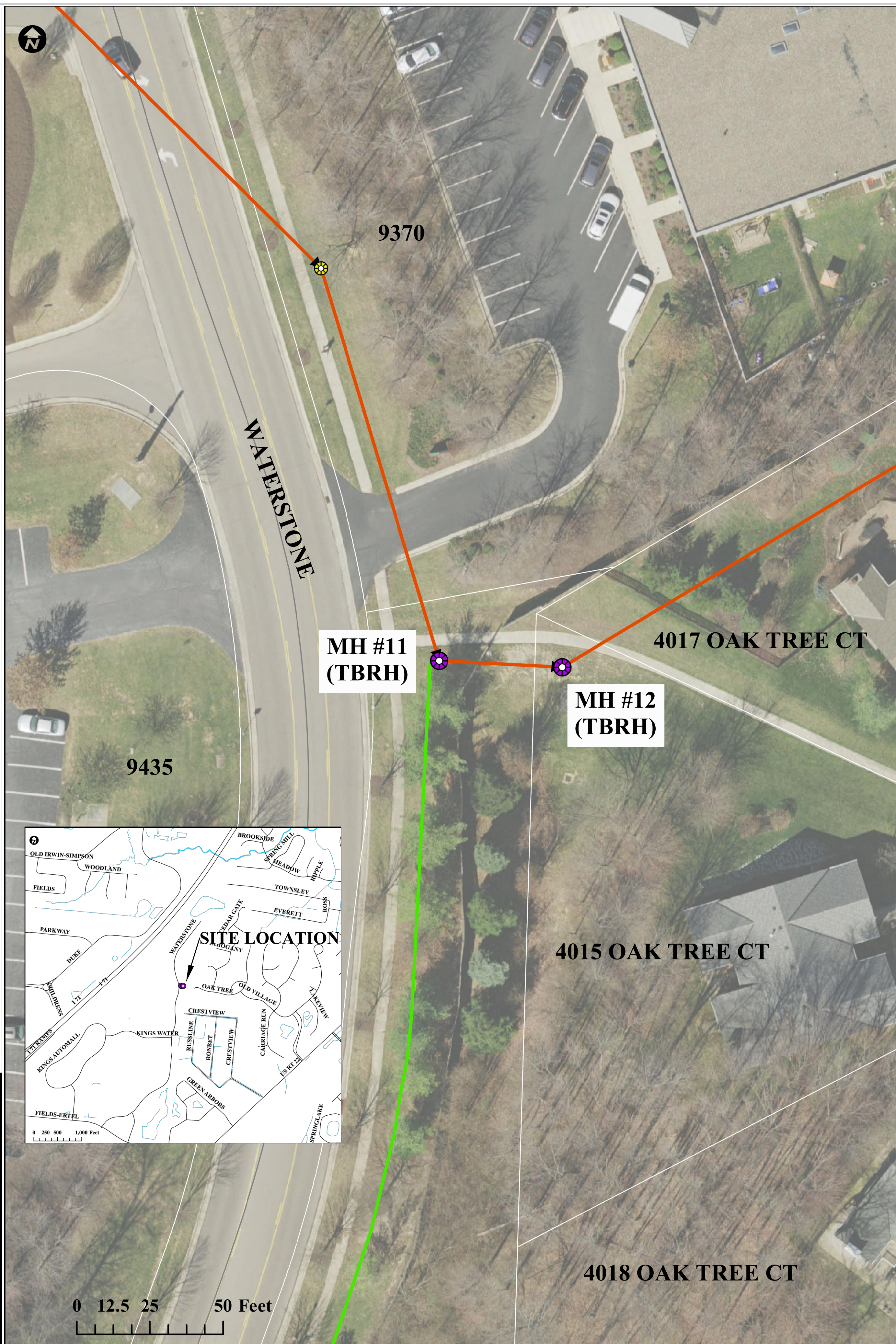


NOTES:

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2. OSHA CLEARANCE REQUIREMENTS TO BE MAINTAINED DURING CONSTRUCTION BETWEEN EQUIPMENT AN OVERHEAD LINES.

LEGEND

- MANHOLE TO BE LINED
- MAIN TO BE LINED
- SEWER MANHOLE
- GRAVITY SEWER
- FORCE MAIN



PROJECT: SANITARY SEWER REHAB
 DATE: JANUARY 13, 2021
 DRAWN BY: K. GILBERT
 REVIEWED BY: C. WOJNICZ

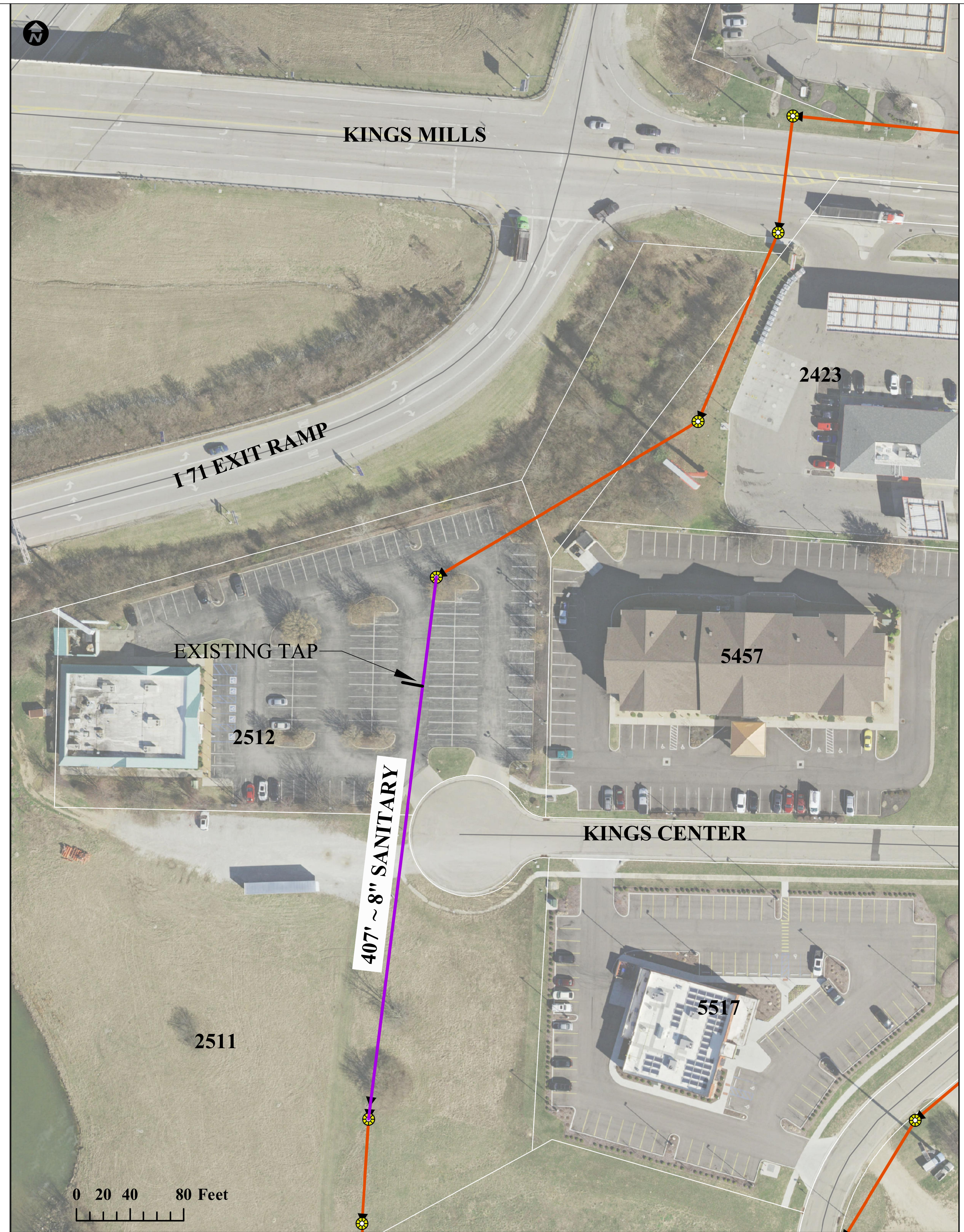
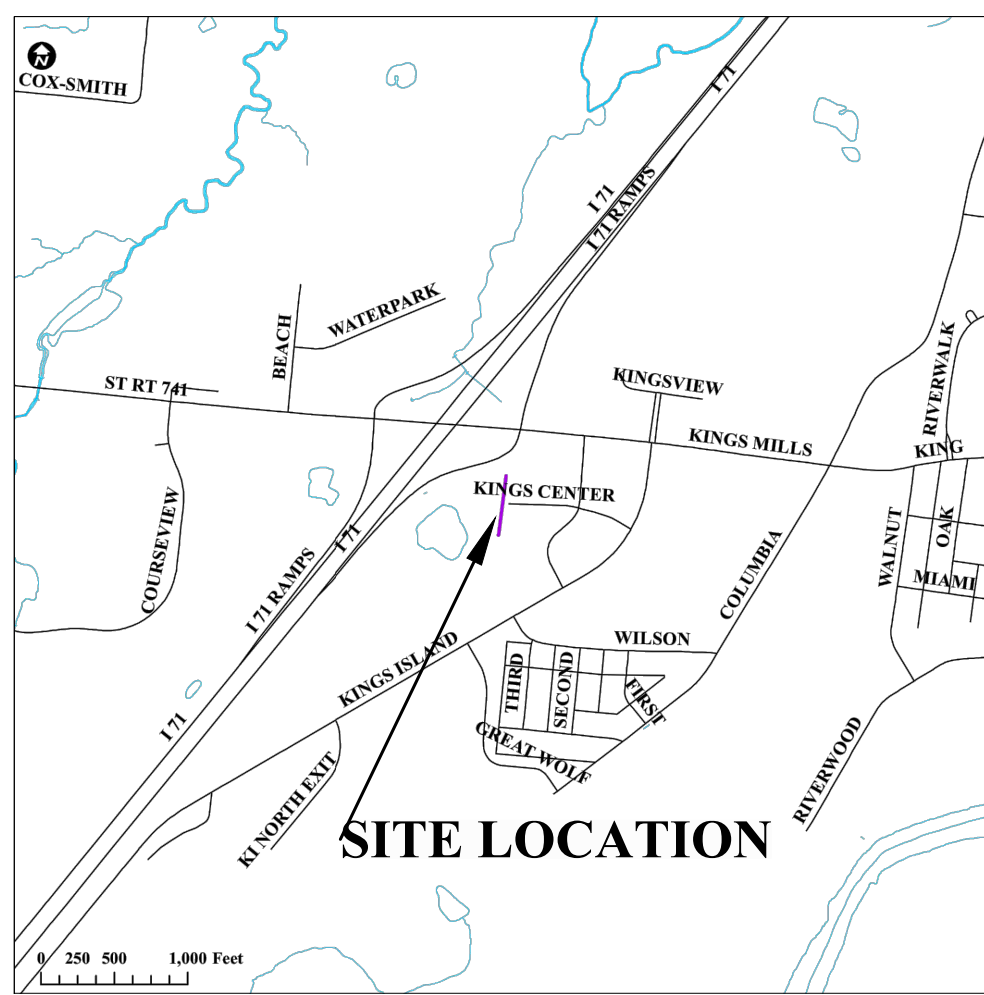
SEAL	NO. REVISION/ISSUE	DATE

SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION - PHASE I

PLAN VIEW - WATER'S EDGE & WATERSTONE

WARREN COUNTY WATER & SEWER DEPARTMENT
 406 JUSTICE DRIVE
 LEBANON, OH 45036

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 SCALE: AS NOTED



NOTES:

1. MANHOLES LABELED "TBRH" (TO BE REHABILITATED) SHALL BE REHABILITATED PER THE STANDARD MANHOLE REHABILITATION DETAILS ON SHEET 3. REHABILITATE MANHOLES AS NOTED ON THE MANHOLE REHABILITATION TABLE ON SHEET 4 OR AS REQUIRED IN WRITING BY WARREN COUNTY. PLEASE SEE TECHNICAL SPECIFICATIONS FOR FURTHER DETAILS.
2. OSHA CLEARANCE REQUIREMENTS TO BE MAINTAINED DURING CONSTRUCTION BETWEEN EQUIPMENT AN OVERHEAD LINES.

LEGEND

- MANHOLE TO BE LINED
- MAIN TO BE LINED
- SEWER MANHOLE
- GRAVITY SEWER
- FORCE MAIN

PROJECT:
SANITARY SEWER REHAB
DATE:
JANUARY 13, 2021
DRAWN BY:
K. GILBERT
REVIEWED BY:
C. WOJNICZ

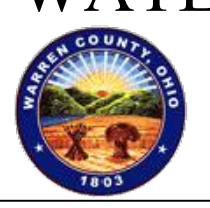
SEAL

NO.	REVISION/ISSUE	DATE

SANITARY SEWER MANHOLE
AND SEWER MAIN
REHABILITATION - PHASE I

PLAN VIEW -
OUTBACK

WARREN COUNTY
WATER & SEWER DEPARTMENT
406 JUSTICE DRIVE
LEBANON, OH 45036



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SCALE:
AS NOTED

CONTRACT DOCUMENTS

**SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION – PHASE 1
PROJECT**

WARREN COUNTY WATER & SEWER
DEPARTMENT

WARREN COUNTY BOARD OF COMMISSIONERS
406 JUSTICE DRIVE
LEBANON, OHIO 45036
(513) 695-1250

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SECTION 00 10 10
INVITATION TO BIDDERS

Separate sealed bids for the Sanitary Sewer Manhole and Sewer Main Rehabilitation – Phase 1 Project will be received by the Warren County Board of Commissioners at the Office of the Warren County Commissioners, 406 Justice Drive, Lebanon, Ohio 45036, until 11:00 AM February 18, 2021 and then at said time publicly opened and read aloud.

Bid documents including terms, general conditions, supplemental conditions and specifications are available online at the Warren County's Website at <https://www.co.warren.oh.us/Commissioners/Bids/Default.aspx> Questions regarding the technical specifications should be directed to Chris Wojnicz at the Warren County Water and Sewer Department, (513) 695-1646. Contact the Warren County Commissioners Office at (513) 695-1250 should you need assistance in accessing the bidding information on the County web site.

The project generally consists of installing Cured-in-Place Pipe rehabilitation of 715 feet of 8-inch diameter Cured-in-Place sanitary main and rehabilitation of 12 manholes. The estimated contract value is \$135,000.

A bid guaranty, as required by Ohio Revised Code, Section 153.54, shall accompany each proposal submitted, as follows:

1. A Certified check, cashier's check, or letter of credit equal to ten (10) percent of the bid. A letter of credit may only be revocable by the Owner. Upon entering into a contract with the Owner, the contractor must file a performance bond for the amount of the contract, and the bid guaranty will then be returned to the successful and unsuccessful bidders upon contract execution.

OR

2. A form of bid guaranty bond (attached) for the full amount of the bid. Such bond is retained for the successful bidder, but returned to unsuccessful bidders after the contract is executed.

Warren County reserves the right to reject any or all bids submitted, to waive any irregularities in bids, and enter into a contract with the Bidder who in Warren County's consideration offered the lowest and best bid. By order of the Board of County Commissioner, County of Warren, State of Ohio.

Tina Osborne, Clerk

**SECTION 00 10 20
BID PROPOSAL**

The undersigned declares that the only persons or parties in this Bid are as stated; that the Bid is made without any collusion with other persons, firms, or corporations; that all the Contract Documents as prepared have been carefully examined; that the undersigned is fully informed in regard to all conditions pertaining to the Work and the place where it is to be done, and from them the undersigned makes this Bid. The undersigned do hereby propose to furnish all labor, materials, tools, equipment, etc., necessary to complete the work for the Sanitary Sewer Manhole and Sewer Main Rehabilitation – Phase 1 Project and that the bid includes all costs including, permit fees, taxes, insurance, overhead, and profit. All material and equipment must comply with the specifications and contract drawings that comprise the Contract Documents.

The premiums for all Bonds required shall be paid by the Contractor and shall be included in the Contract Price. The undersigned Bidder further agrees that the Bid Security accompanying this Bid shall become the property of the County if the Bidder fails to execute the Agreement.

If any addenda are published on Warren County’s website at <https://www.co.warren.oh.us/Commissioners/Bids/Default.aspx>, pursuant to SECTION 00 20 00, Paragraph 7, the undersigned acknowledges receipt of the following Addenda:

No. _____, dated _____, 2021

No. _____, dated _____, 2021

No. _____, dated _____, 2021

Bids shall include all costs incurred for the Work including materials, equipment, supplies, labor, permit fees, taxes, insurance, miscellaneous costs, overhead, and profit. All Material must comply with the specifications shown on the contract drawings.

The written/typed Total Bid price is for the convenience of the Owner in comparing bids. Any discrepancy between the actual sum of the line item totals and the written/typed total bid price shall be resolved in favor of the actual sum of the correct individual line item.

The undersigned hereby certifies under the penalty of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person or entity. The bid proposals shall remain in full force and effect for ninety (90) days after the date of opening bids. The full name and address of all persons and parties interested in the foregoing bids as principals are as follows:

Individual, Partnership, or Corporation

Signature of Corporate Officer, President, or Owner

Date

Notice of acceptance should be mail or delivered to the following:

COMPANY NAME: _____

CHIEF EXECUTIVE OFFICER: _____

ADDRESS: _____

PHONE NUMBER: _____

FAX NUMBER: _____

PROJECT CONTACT PERSON: _____

PHONE NUMBER: _____

E-MAIL ADDRESS: _____

FEDERAL ID #: _____

WEBSITE ADDRESS: _____

NOTE: The firm, corporate or individual name of the bidder must be signed in ink in the space provided for the signatures on the proposed blanks. In the case of a corporation, the title of the officer signing must be stated and such officer must be thereunto duly authorized and the seal of said corporation duly affixed. In the case of a partnership, the signature of at least one of the partners must follow the firm name, using the term "member of the firm." In the case of an individual, use the terms "doing business as", or "sole owner."

**SECTION 00 10 30
BID FORM**

PROPOSED BID					
No.	Description	Units	Quantity	Unit Cost	Cost
1	Temporary Sediment and Erosion Control	LS	1		
2	Maintenance of Traffic	LS	1		
3	Sewer Cleaning	LF	715		
4	CCTV Video Inspection	LF	715		
5	Bypass Pumping, Complete	LS	1		
6	8" Cured-in-Place Pipe, Thickness per ASTM F1216, Including Reinstatement of Laterals	LF	715		
7	Cementitious Grouting, as Directed by County	CF	5		
8	Chemical Grouting, as Directed by County	Gal.	10		
9	Urethane / Epoxy Composite Manhole Rehabilitation	Ver. Ft.	43		
10	Mortar / Epoxy Composite Manhole Rehabilitation	Ver. Ft.	65		
11	Reinforced Epoxy Structural Manhole Rehabilitation	Ver. Ft.	38		
12	Chimney Seal (Flex Seal Product or Equal)	EA	12		
TOTAL BID PRICE					

TOTAL BID PRICE (In Words)

NOTE:

1. Quantities are based upon construction plans for Sanitary Sewer Manhole and Sewer Main Rehabilitation - Phase 1 and prepared by the Warren County Water and Sewer Department.

**SECTION 00 10 50
EXCEPTION SHEET**

Exceptions: Exceptions to any bid specification must be clearly stated on this sheet. This sheet must be submitted with each bid. If there are no exceptions, please indicate "none" below.

- 1) _____

- 2) _____

- 3) _____

- 4) _____

- 5) _____

- 6) _____

SECTION 00 20 00
GENERAL INSTRUCTIONS TO BIDDERS

1. **Receipt and Opening of Bids:** The Warren County Board of Commissioners (herein referred to as "Owner"), invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the Office of the Warren County Board of Commissioners until 11:00 AM, Thursday February 18 , 2021 and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to Warren County Board of Commissioners at 406 Justice Drive, Lebanon, Ohio 45036, and shall be clearly marked as follows:

BID OPENING
SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION PROJECT – PHASE
1
11:00 AM FEBRUARY 18, 2021

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered.

2. **Description of Project:** The project generally consists of installing Cured-in-Place Pipe rehabilitation of 715 feet of 8-inch diameter Cured-in-Place sanitary main and rehabilitation of 12 manholes. The estimated contract value is \$135,000.

3. **Construction Cost:** The Engineer's opinion of probable construction cost for the base bid work is \$135,000.

4. **Project Funding/Financing:** The contract shall be financed only through the Owner's reserved funds and does not receive financing through any State of Ohio or Federal funding.

5. **Time of Completion and Liquidated Damages:** The Bidder hereby agrees that the Contract Time shall commence on the date stipulated in the Notice to Proceed which will be issued by the Owner within 14 days of contract execution and to complete the work in accordance with the terms as stated in the Contract, and in accordance with the following schedule milestones:

Substantial completion: 120 days from Notice to Proceed.

Final completion: Site restoration work completed, and Contract Closeout shall be within 150 days from Notice to Proceed.

Any delays in substantial completion of the work that are within the control of the Contractor, their Subcontractor, or Supplier shall be subject to liquidated damages in the sum of \$200.00 for each consecutive calendar day that the project extends beyond the substantial completion deadline. See the General Conditions and Supplemental Conditions for the definition and requirements of substantial completion.

6. **Bid Documents:** Bid documents, including terms, general conditions, supplemental

conditions, drawings, addenda, and other information are available online, free of charge, at the Warren County's Website at <https://www.co.warren.oh.us/Commissioners/Bids/Default.aspx>. No planholder list will be maintained by the Owner. All Addenda will be posted on the website and shall not be mailed to bidders.

7. **Addenda and Interpretations:** No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally. Every request for such interpretation must be in writing to Chris Wojnicz at christopher.wojnicz@co.warren.oh.us. To be given consideration all questions must be received by 4:00 pm on Friday, February 18, 2021. All such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be posted on the Warren County Commissioners website <https://www.co.warren.oh.us/Commissioners/Bids/Default.aspx>, no later than three days prior to the date fixed for the opening of bids. Failure of any bidder to monitor the website and download any such addendum or interpretations shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the contract documents. Bidders shall be responsible for checking the website prior to submitting their bids.

8. **Required Forms:** Each bid must be submitted on the forms contained in the Contract Documents herein. All blank spaces for bid prices must be completed, in ink or typewritten, in both words and figures, and the foregoing certifications must be fully completed and executed when submitted. Each Bidder shall complete and submit the following forms with his/her bid:

Section 00 10 20	BID PROPOSAL
Section 00 10 30	BID FORM
Section 00 10 40	BID EQUIPMENT AND COMPONENTS
Section 00 10 50	EXCEPTION SHEET
Section 00 30 10	NONCOLLUSION AFFIDAVIT – FORM 1
Section 00 30 20	NONCOLLUSION AFFIDAVIT – FORM 2
Section 00 30 30	AFFIDAVIT OF NON-DELINQUENCY OF REAL AND/OR PERSONAL PROPERTY TAX
Section 00 30 40	FINDINGS FOR RECOVERY AFFIDAVIT
Section 00 30 50	EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS, BID CONDITIONS, NON-DISCRIMINATION, AND EQUAL EMPLOYMENT OPPORTUNITY AFFIDAVIT
Section 00 40 10	BID GUARANTY AND CONTRACT BOND
Section 00 50 10	EXPERIENCE STATEMENT

9. **Modification or Withdraw of Bid:** Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a bid must be executed) and delivered to the place where bids are to be submitted at any time prior to the opening of bids.

After opening, a Bidder may withdraw their bid from consideration if the price bid was substantially lower than the other bids, provided the bid was submitted in good faith and the reason for the price being substantially lower was a clerical mistake as opposed to a judgment mistake and was actually due to an unintentional omission of a substantial quantity of work,

labor or material made directly in the compilation of the bid. Request to withdraw such bid must be made in writing and filed with the Owner within two business days after the opening of bids and prior to the acceptance thereof.

10. **Method of Award:** The Owner may reject all bids or may award the contract on the base bid or on the base bid combined with additions or deductible alternates, to the lowest and best bidder, as produces a net amount which is within the available funds.

To determine lowest and best bidder, the price of the bid will be given equal weight against the totality of the following factors: 1.) the bidder's information provided in the Section 00 50 10 Experience Statement which shall be used to judge responsibility, experience, skill, financial standing, feedback from references or prior clients—which may include Owner; 2.) the Section 00 10 30 Exception Sheet; 3.) availability.

If the total price received from the lowest and best bidder exceeds the amount of funds available to finance the contract, the Owner may:

- a. Reject all bids;
- b. Augment the funds available in an amount sufficient to enable award to the lowest and best bidder or bidders;
- c. Reduce the scope of work by eliminating certain items of work to produce a total bid which is within available funds;
- d. Reduce the scope of work by reducing the quantity of certain items of work to produce a total bid which is within available funds;
- e. Reduce the scope of work by a combination of adjustments as outlined in "c" and "d" above to produce a total bid which is within available funds.
- f. The Owner may reject all bids or may award the contract on the base bid or on the base bid combined with additions or deductible alternates as produces a net amount which is within the available funds.

The Owner may consider informal and may reject any bid not prepared and submitted in accordance with the provisions hereof. The Owner reserves the right to reject all bids, to waive any informalities or irregularities in the bids received, and to accept any bid which is deemed lowest and best.

11. **Qualification of Bidder:** The Owner may make such investigations as he/she deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein; conditional bids will not be accepted.

12. **Conditions of Work:** Each bidder must inform him/herself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his/her obligation to furnish all material and labor necessary to carry out the provisions of his/her contract. Insofar as possible the contractor, in carrying out the work, must employ such methods or means or will not cause any interruption of or interference with the work of any other contractor. No plea of ignorance of conditions that exist or that may hereafter exist, or of conditions or difficulties that may be encountered in the execution of the work as the result of failure to make such examination and investigation, will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill in every respect, all the requirements of the Contract, nor will the same be accepted as a basis for any claim whatsoever for extra compensation or for an extension of time.

13. **Obligation of Bidder:** Each bidder shall, and is hereby directed to inspect the entire site of the proposed work and judge for him/herself as to all the circumstances affecting the cost and progress of the work and shall assume all patent and latent risks in connection therewith. At the time of the opening of bids each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his/her bid.

14. **Non-Collusion Affidavit:** The successful bidder will be required to submit non-collusion affidavit on the forms included in these Bid/Contract documents (SECTION 00 30 10 and 00 30 20). These affidavit shall be dated and executed as part of this bid.

15. **Real and/or Personal Property Tax Affidavit:** All bidders must complete the Real and/or Personal property tax affidavit (Section 00 30 30) and submit with your bid. This section should be fully completed whether or not you as a vendor/contractor own property in Warren County, Ohio.

16. **EEO Compliance:** Equal Employment Opportunity (EEO) compliance requirements and affidavit are contained in SECTION 00 30 50. Owner contracts that receive state or federal funding including, but not limited to, grants, loans, and debt forgiveness shall not be executed unless the Contractor possesses a current Certificate of Compliance issued by the State EEO Coordinator.

Every contract for or on behalf of the County for the construction, alteration, or repair of any public building or public work shall include an affidavit certifying the contractor complies with EEO requirements specified in Ohio Revised Code Section 153.59.

17. **Bid Security:**

A bid guaranty, as required by Ohio Revised Code, Section 153.54, shall accompany each proposal submitted, as follows:

1. A Certified check, cashier's check, or letter of credit equal to ten (10) percent of the bid. A letter of credit may only be revocable by the Owner. Upon entering into a contract with the Owner, the contractor must file a performance bond for the amount of

the contract, and the bid guaranty will then be returned to the successful and unsuccessful bidders upon contract execution.

OR

2. A form of bid guaranty and contract bond (attached) for the full amount of the bid. Such bond is retained for the successful bidder, but returned to unsuccessful bidders after the contract is executed.

Such cash, checks or bid bonds will be returned to bidders after the Owner has awarded the bid and has executed the contract, or, if no award has been made within 60 days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he/she has not been notified of the acceptance of his/her bid.

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

18. **Liquidated Damages for Failure to Enter into Contract:** The successful bidder, upon his/her failure or refusal to execute and deliver the contract and bonds required within 10 working days after he/she has received the documents, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the bid security.

19. **Security for Faithful Performance:** Simultaneously with his/her delivery of the executed contract, the Contractor shall furnish a performance (surety) bond as security for faithful performance of this contract and for the payment of all persons performing labor on the project under the contract and furnishing materials in connection with the contract. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner. Please note that upon execution of the Contract if a Bid Guaranty/Contract Bond was submitted with your original bid a Performance Bond will not be required.

20. **Required Insurance:** In accordance with the specifications and the Supplemental Conditions, the Contractor, without restricting the obligations and liabilities assumed under the Contract Documents, shall at his own cost and expense purchase and maintaining in force until final acceptance of his work, the forms of insurance coverage as described in Section 00 80 10 Supplemental Conditions 1.2, C. Article 5 – Bonds and Insurance

Certificates from the insurance carrier stating the limits of liability and expiration date shall be filed with the Owner before operations are begun. Such certificates shall not merely name the types of policy provided, but shall specifically refer to this Contract and shall name the Board of Warren County Commissioners as additionally insured.

All policies as hereinafter required shall be so written that the Owner will be notified of cancellation or restrictive amendment at least sixty days prior to the effective date of such cancellation or amendment.

If any part of the work is sublet, insurance of the same types and limits as required shall be provided by or on behalf of the Subcontractors to cover that part of the work they have contracted to perform including Property Damage Liability Special Hazards coverage if so required by this contract.

21. **Additional Obligations Upon Contact Award:** Upon award of the bid but prior to execution of the final agreement and notice to proceed, the Contractor shall submit all of the following documents, completed as required:

- 1) Contract
- 2) Performance Bond
- 3) Certificates of Insurance

22. **Wage Rates:** In the event that the rate of wages paid for any trade or occupant in the locality where such work is being performed are under current collective agreements or understandings between bona fide organizations of labor and employer, then the wages to be paid shall be not less than such agreed wage rates, nor less than the minimum rates compiled by the Federal Labor Standard Act. Copies of these prevailing wage rates have been included in these specifications. Every Contractor and Subcontractor who is subject to Ohio Revised Code, Chapter 4115 shall, as soon as he begins performance under his contract with the Owner, supply the Prevailing Wage Coordinator for the Owner a schedule of the dates on which he is required to pay wages to employees. He shall also deliver to the Prevailing Wage Coordinator within three weeks after each pay date, a certified copy of his payroll which shall exhibit for each employee paid any wages, name, current address, social security number, number of hours worked each day of the pay period and the total for each week, hourly rate of pay, job classification, fringe payments, and deductions from wages. The certification of each payroll shall be executed by the Contractor, Subcontractor, or duly appointed agent thereof and shall recite that the payroll is correct and complete and that the wage rate shown is not less than those required by the contract.

In case the Owner orders the Contractor to perform extra or additional work which may make it necessary for the Contractor or any Subcontractor under this contract to employ a person not herein specified, the Contractor will include in the contract change order for such extra or additional work, a minimum wage rate for such trade or occupation, and insofar as such extra or additional work is concerned, there shall be paid to each employee engaged in work of such trade or occupation, not less than the wage so included. Insofar as possible, local labor shall be employed on this work.

23. **Laws and Regulations:** The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

24. **Foreign Corporation and Contractors:** "Foreign Corporation" means a corporation incorporated under the laws of another state. No contract shall be entered into with a foreign corporation until the Secretary of State has certified that such corporation is authorized to do business in Ohio: and until, if the bidder so awarded the Contract is a person or partnership, it has filed with the Secretary of State a Power of Attorney designating the Secretary of State as its agent for the purpose of accepting service of summons in any action brought under Ohio Revised Code, Section 153.05 or under Sections 4123.01 to 4123.94, inclusive.

25. **Safety Standards and Accident Prevention:** With respect to all work performed under

this contract, the Contractor shall:

- a. Comply with the safety standards provisions of applicable laws, building and construction codes and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of title 29 of the code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, N. 75, Saturday, April 17, 1971.
- b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
- c. Maintain at his/her office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or doctor's care of persons (including employees) who may be injured at the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

26. **Permits:** Contractor shall keep a copy of all permits at the project site throughout the duration of the work. The permits required for the work, the permit holder, and the entity paying for the permit is outlined below. All obtained permits acquired to date are included in SECTION 00 70 20.

Permit	Agency	Permit Holder	Entity Paying for Permit
Right of Way Permit	Warren County Engineer's Office	Owner	Owner

27. **Subcontracts:** Contractor shall provide upon request of the Owner a list of all subcontractors intended to be used in performance of the work. In the event the Owner does not object, Contractor may have such work performed by a subcontractor. Contractor shall bind every subcontractor to, and every subcontractor must agree to be bound by the terms of the Agreement, as far as applicable to the subcontractor's work particularly pertaining to Prevailing Wages and EEO requirements. Nothing contained in the Agreement shall create any contractual relationship between any subcontractor and Owner, nor create any obligations on the part of the Owner to pay or see to the payment of any sums to any subcontractor.

28. **Subletting of Contract:** The Contractor shall not sublet, sell, transfer or assign any portion of the contract without written consent of the Owner or his designated agent. When such consent is given, the Contractor will be permitted to sublet a portion thereof, but shall perform with his own organization, work amounting to no less than fifty percent of the total contract cost, except that any time designated in the contract before computing the amount of work required to

be performed by the Contractor with his own organization, no subcontract, or transfer of contract, shall in any way release the Contractor of his liability under the contract and bonds.

29. CONFIDENTIAL DOCUMENTS & INFORMATION: Do not submit confidential documents or documents of any type that contain trade secrets. All materials submitted become public records once opened and may be copied upon request to anybody including competitive bidders.

END OF SECTION

**SECTION 00 30 10
NONCOLLUSION AFFIDAVIT – FORM 1**

State of _____

BID Identification _____

CONTRACTOR _____, being first duly sworn, deposes and says that he is _____ (sole owner, a partner, president, secretary, etc.) of _____, the party making the foregoing BID; that such BID is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such BID is genuine and not collusive or sham; that said BIDDER has not directly or indirectly colluded, conspired, connived or agreed with any BIDDER or any one else to put in a sham BID, or that any one shall refrain from Bidding; that said BIDDER has not in any manner, directly or indirectly, sought by agreement, communication or conference with any one to fix the BID price of said BIDDER or of any other BIDDER, or to fix any overhead, profit, or cost element of such BID price, or of that of any other BIDDER, or to secure any advantage against the OWNER awarding the contract or anyone interested in the proposed contract; that all statement contained in such BID are true; and, further, that said BIDDER has not, directly or indirectly, submitted his BID price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith, to any corporation, partnership, company, association, organization, BID depository, or to any member or agent thereof, or to any other individual except to such person or persons who have a partnership or other financial interest with said BIDDER in his general business.

Signed:

Subscribed and sworn to before

me this ___ day of _____, 2021.

Seal of Notary

**SECTION 00 30 20
NONCOLLUSION AFFIDAVIT – FORM 2**

STATE OF _____
COUNTY OF _____

I, _____, holding the title and position of _____ at the firm _____, affirm that I am authorized to speak on behalf of the company, board directors and owners in setting the price on the contract, bid or proposal. I understand that any misstatements in the following information will be treated as fraudulent concealment of true facts on the submission of the contract, bid or proposal.

I hereby swear and depose that the following statements are true and factual to the best of my knowledge:

The contract, bid or proposal is genuine and not made on the behalf of any other person, company or client, INCLUDING ANY MEMBER OF THE WARREN COUNTY BOARD OF COMMISSIONERS.

The price of the contract, bid or proposal was determined independent of outside consultation and was not influenced by other companies, clients or contractors, INCLUDING ANY MEMBER OF THE WARREN COUNTY BOARD OF COMMISSIONERS.

No companies, clients or contractors, INCLUDING ANY MEMBER OF THE WARREN COUNTY BOARD OF COMMISSIONERS have been solicited to propose a fake contract, bid or proposal for comparative purposes.

No companies, clients or contractors, INCLUDING ANY MEMBER OF THE WARREN COUNTY BOARD OF COMMISSIONERS have been solicited to refrain from bidding or to submit any form of noncompetitive bidding.

Relative to sealed bids, the price of the bid or proposal has not been disclosed to any client, company or contractor, INCLUDING ANY MEMBER OF THE WARREN COUNTY BOARD OF COMMISSIONERS, and will not be disclosed until the formal bid/proposal opening date.

AFFIANT

Subscribed and sworn to before me this _____ day of _____ 2021.

(Notary Public),

_____ County.

My commission expires _____ 20__

SECTION 00 30 30
AFFIDAVIT OF NON-DELINQUENCY OF REAL AND/OR
PERSONAL PROPERTY TAX

THIS SECTION SHOULD BE FULLY COMPLETED WHETHER OR NOT YOU AS A VENDOR/CONTRACTOR OWN PROPERTY IN WARREN COUNTY, OHIO. MAKING A FALSE STATEMENT ON THIS AFFIDAVIT MAY BE PUNISHABLE BY A FINE AND/OR IMPRISONMENT.

STATE OF _____)

SS:

COUNTY OF _____)

_____ being duly cautioned and sworn, states as follows:

1. That he/she is _____ of
(Title)

(Name of Contracting Party)

2. That _____ is not presently charged with any
(Name of Contracting Party)
delinquent Real and/or Personal property taxes on the general tax list of Real and/or Personal property of Warren County.

-OR-

1. That _____ is charged with delinquent Real and/or
(Name of Contracting Party)
Personal property tax on the general tax list of Real and/or Personal property of Warren County. The amount of delinquent Real and/or Personal property tax due and unpaid including any due and unpaid penalty and interest is:

\$ _____

Further, affiant states not.

Affiant

Sworn to and subscribed in my presence this ____ day of _____ 2021.

Notary Public

This instrument was prepared by _____.

Note to Fiscal Office: If any Real and/or Personal property taxes are delinquent, you must send a copy of this statement to the County Treasurer within 30 days of the date it is submitted.

**SECTION 00 30 40
FINDINGS FOR RECOVERY AFFIDAVIT**

STATE OF _____

COUNTY OF _____, SS:

_____, upon being duly cautioned and sworn, hereby states the following based on personal knowledge:

- 1) That he/she is _____ (title), of _____ (name of bidder) and authorized to execute this affidavit; and,
- 2) That _____ (name of bidder) is not a person or entity against whom a finding for recovery has been issued by the Auditor of State, which finding for recovery is unresolved as defined in Ohio Revised Code [General Provisions] Section 9.24 (B); and,
- 3) That _____ (name of bidder) does not appear in the database of unresolved findings of recovery maintained by the Auditor of State pursuant to Ohio Revised Code [General Provisions] Section 9.24 (D).

Affiant

Sworn to and subscribed in my presence this _____ day of _____, 2021.

Notary Public

My Commission expires: _____

SECTION 00 30 50

EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS, BID CONDITIONS, NON-DISCRIMINATION, AND EQUAL EMPLOYMENT OPPORTUNITY AFFIDAVIT

Bidders shall submit a copy of a valid Certificate of Compliance issued by the State EEO Coordinator for Owner projects that receive state or federal funding. The source of financing and funding for this project is specified in SECTION 00 20 00 – INSTRUCTIONS TO BIDDERS. Bidders may contact the State of Ohio, Department of Administrative Services, Equal Opportunity Division for information on how to apply online for a certification using the Ohio Business Gateway.

Every contract for or on behalf of the County for the construction, alteration, or repair of any public building or public work shall include an affidavit certifying the contractor complies with EEO requirements specified in Ohio Revised Code Section 153.59. In addition to the affidavit, all bidders agree to the following State of Ohio standard conditions of contract for construction:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, age, disability, Vietnam era Veteran status, ancestry or sex. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, national origin, age, disability, Vietnam era Veteran status, ancestry or sex. Such action shall include, but is not limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor will in all solicitations or advertisements for employees placed by or on behalf of the prime contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, age, disability, Vietnam era Veteran status, ancestry or sex..
3. The contractor agrees to fully cooperate with the County, the State Equal Employment Opportunity Coordinator and with any other official or agency, or the State or Federal government which seeks to eliminate unlawful employment discrimination, and with all other State and Federal efforts to assure equal employment practices under its contract and the contractor shall comply promptly with all requests and directions from the County, the State Equal Opportunity Coordinator and any of the State of Ohio officials and agencies in this regard, both before and during construction.
4. Full cooperation as expressed in clause (3), above, shall include, but not be limited to, being a witness and permitting employees to be witnesses and complainants in any proceedings involving questions of unlawful employment practices, furnishing all information requested by the County and the State Equal Employment Opportunity Coordinator, and permitting access to its books, records, and accounts by the County and the State Equal Employment

Opportunity Coordinator for purposes of investigation to ascertain compliance with applicable rules, regulations and orders.

5. In the event of the contractor's noncompliance with the nondiscrimination clauses of its contract or with any of the said rules, regulations, or orders, its contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further County construction contracts.

In the event that is contract is terminated for a material breach of EEO requirements, the contractor shall become liable for any and all damages which shall accrue to the County as a result of said breach.

6. The contractor will require the inclusion of language reflecting these same six covenants within every subcontract or purchase order it executes in the performance of its contract unless exempted by rules, regulations or orders of the State Equal Employment Opportunity Coordinator so that these provisions will be binding upon each subcontractor or vendor. The contractor will take such as the County may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in any litigation with a subcontractor, vendor or other party as a result of such direction by the County, the contractor may be requested to protect the interests of the County.

The bidder hereby adopts the foregoing covenants?

_____ Yes _____ No

PLEASE NOTE: The bidder's failure to adopt the Bidder's EEO Covenants, will cause the bidder's proposal to be rejected as being non-responsive.

CERTIFICATE OF COMPLIANCE NON-DISCRIMINATION AND EQUAL EMPLOYMENT
OPPORTUNITY AFFIDAVIT (CONTRACTOR)

STATE OF _____)

SS:

COUNTY OF _____)

_____ being first duly sworn, deposes and

says that he/she is _____ of _____

the party who made the foregoing proposal; that such party as bidder does not and shall not discriminate against any employee or applicant for employment because of race, color, religion, national origin, age, disability, Vietnam era Veteran status, ancestry or sex. If awarded the bid and contract under this proposal, said party shall take affirmative action to insure that applicants are employed and that employees are treated, during employment, without regard to their race, color, religion, national origin, age, disability, Vietnam era Veteran status, ancestry or sex.. If successful as the lowest and best bidder under the foregoing proposal, this party shall post non-discrimination notices in conspicuous places available to employees and applicants for employment setting forth the provisions of this affidavit.

Furthermore, said party agrees to abide by the assurances found in Section 153.54 of the Ohio Revised Code in the Contract Provisions with the Owner if selected as the successful bidder by the Owner.

Signature

Affiant

Company/Corporation

Address

City/State/Zip Code

Sworn to and subscribed before me this _____ day of _____, 2021.

(seal)

Notary

CERTIFICATE OF COMPLIANCE NON-DISCRIMINATION AND EQUAL EMPLOYMENT
OPPORTUNITY AFFIDAVIT (SUB CONTRACTOR)

STATE OF _____)

SS:

COUNTY OF _____)

_____ being first duly sworn, deposes and

says that he _____ of _____

the party who made the foregoing proposal; that such party as bidder does not and shall not discriminate against any employee or applicant for employment because of race, color, religion, national origin, age, disability, Vietnam era Veteran status, ancestry or sex. If awarded the bid and contract under this proposal, said party shall take affirmative action to insure that applicants are employed and that employees are treated, during employment, without regard to their race, color, religion, national origin, age, disability, Vietnam era Veteran status, ancestry or sex. If successful as the lowest and best bidder under the foregoing proposal, this party shall post non-discrimination notices in conspicuous places available to employees and applicants for employment setting forth the provisions of this affidavit.

Furthermore, said party agrees to abide by the assurances found in Section 153.54 of the Ohio Revised Code in the Contract Provisions with the Owner if selected as the successful bidder by the Owner.

Signature

Affiant

Company/Corporation

Address

City/State/Zip Code

Sworn to and subscribed before me this _____ day of _____, 2021.

(seal)

Notary

SECTION 00 40 00
BONDING REQUIREMENTS

Bid guaranty, as required by Ohio Revised Code, Section 153.54, shall accompany each proposal submitted, as follows, either:

1. A Certified check, cashier's check, or letter of credit equal to ten (10) percent of the bid. A letter of credit may only be revocable by the Owner.

OR

2. A form of bid guaranty and contract bond (attached) for the full amount of the bid. Such bond is retained for the successful bidder, but returned to unsuccessful bidders after the contract is executed.

Performance bond is required upon entering into a contract with the Owner for 100 percent of the contract price when the bid guaranty is a certified check, cashier's check, or letter of credit equal to ten percent. Otherwise the bid guaranty and contract bond shall secure the performance of the contract with a penal sum of 100% of the bid. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

**SECTION 00 40 10
BID GUARANTY AND CONTRACT BOND**

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

(Insert full name or legal title of Contractor and Address)

as Principal and

(Insert full name or legal title of Surety)

as Surety, are hereby held and firmly bound unto the Warren County Board of Commissioners hereinafter called the Oblige, in the penal sum of the dollar amount of the bid submitted by the Principal to the Oblige on _____ to undertake the project known as:

SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION PROJECT – PHASE 1

The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Oblige, incorporating any additive or deductive alternate proposals made by the Principal on the date referred to above to the Oblige, which are accepted by the Oblige, In no case shall the penal sum exceed the amount of _____ DOLLARS, \$ _____. If this item is left blank, the penal sum will be the full amount of the Principal's bid, including alternates. Alternatively, if completed, the amount stated must not be less than the full amount of the bid, including alternates in dollars and cents. A percentage is not acceptable.

For the payment of the penal sum well and truly to be made we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named Principal has submitted a bid on the above referred to project;

NOW, THEREFORE, if the Oblige accepts the bid of the Principal and the Principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the Principal pays to the Oblige the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid and such larger amount for which the Oblige may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the Oblige does not award the contract to the next lowest bidder and resubmits the project for bidding, the Principal will pay the Oblige the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising, and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect.

If the Obligee accepts the bid of the Principal and within TEN days after the awarding of the contract, enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein; and

IF THE SAID PRINCIPAL SHALL well and faithfully perform each and every condition of such contract; and indemnify the Obligee against all damage suffered by failure to perform such contract according to the provisions thereof and in accordance with the plans, details, specifications, and bills of material therefore; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract: we agreeing and assenting that this undertaking shall be for benefit of any materialman or laborer having a just claim, as well as for the Obligee herein; THEN THIS OBLIGATION SHALL be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

THE SAID surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of said contract or in or to the plans and specifications therefor shall in any wise affect the obligations of said surety on its bond, and it does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

SIGNED AND SEALED this _____ day of _____ 2021.

PRINCIPAL

SURETY

By: _____

By: _____
Attorney-in-fact

Title: _____

Surety Agent's Name and Address:

**SECTION 00 40 20
PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called
(Corporation, Partnership or Individual)

Principal, and _____
(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

WARREN COUNTY OHIO, BOARD OF COMMISSIONERS
406 Justice Drive
Lebanon, OH 45036

hereinafter called OWNER, in the penal sum of _____ Dollars, \$(_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 2021, a copy of which is hereto attached and made a part hereof for the construction of:

SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION PROJECT – PHASE 1

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the guaranty period(s), and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition of the terms of the contract or the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in

any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in counterparts, each one of which shall be deemed an original, this the _____ day of _____ 2021.

ATTEST: _____
(Principal)

(SEAL) By _____

ATTEST: _____

(SEAL) (Surety)

IMPORTANT: Pursuant to Ohio Revised Code §122.87(A) defines surety company as, “. . . a company that is authorized by the department of insurance to issue bonds as a surety”.

**SECTION 0050 10
EXPERIENCE STATEMENT**

The Bidder is required to state in detail in the space provided below, what work they have completed of a character similar to that included in the proposed contract, to give references and such other detailed information as will enable the Owner to judge their responsibility, experience, skill and financial standing. Completion of this statement is required and must be submitted with the Bid in order to qualify for consideration for award of contract.

SUBMITTED FOR:

SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION PROJECT – PHASE 1

SUBMITTED BY:

Name: _____

(Print or Type Name of Bidder)
(A Corporation/A Partnership/An Individual)
[Bidder to strike out inapplicable terms.]

Address: _____

The undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter.

(Note: Attach Separate Sheets as Required)

1.0 How many years has your organization been in business as a construction contractor?

2.0 How many years has your organization been in business under its present name?

3.0 Has any construction contracts to which you have been a party been terminated by the owner; have you ever terminated work on a construction project prior to its completion for any reason; has any surety which issued a performance bond on your behalf ever completed the work in its own name or financed such completion on your behalf; has any surety expended any monies in connection with a contract for which they furnished a bond on your behalf? If the answer to any portion of this question is "yes", please furnish details of all such occurrences including name, address, phone number, and contact person of owner, engineer, and surety, and name and date of project.

No _____ Yes _____, If yes, attach details described above.

10.0 List the states in which your organization is legally qualified to do business.

11.0 List name, address and telephone number of an individual who represents each of the following and whom OWNER may contact for a financial reference:

11.1 A surety:

Name _____

Contact _____

Address _____

_____ Phone No. _____

Financial Reference _____

11.2 A bank:

Name _____

Contact _____

Address _____

_____ Phone No. _____

Financial Reference _____

11.3 A major material supplier:

Name _____

Contact _____

Address _____

Phone No. _____

Financial Reference _____

12.0 Dated at _____ this ___ day of _____, 2021.

(Print or Type Name of Bidder)

By: _____

(Seal, if corporation)

------(Affidavit for Individual)-----

_____, being duly sworn, deposes and says that all of the foregoing qualification information is true, complete, and accurate.

------(Affidavit for Partnership)-----

_____, being duly sworn, deposes and says that he/she is a member of the partnership of _____ and that all of the foregoing qualification information is true, complete, and accurate.

------(Affidavit for Corporation)-----

_____, being duly sworn, deposes and says that he/she is _____ of _____, and that all of the (Full name of Corporation)

foregoing qualification information is true, complete, and accurate.

------(Affidavit for Joint Venture)-----

_____ and _____, being duly sworn, deposes and says that they are members of _____ (Full Name of Joint Venture)

, and that all of the foregoing qualification information is true, complete, and accurate.

------(Acknowledgment) -----

_____, being duly sworn, deposes and says that he/she is

of _____; that he/she is duly authorized to make the foregoing

(Name of Bidder)

affidavit and that he/she makes it on behalf of () himself/herself; () said partnership; ()
said corporation.

Sworn to before me this _____ day of _____, 2021, in the County
of _____, State of _____.

(Notary Public)

My commission expires _____

(Seal)

**SECTION 00 60 10
CONTRACT**

THIS AGREEMENT, made this _____ day of _____, 2021, with the Warren County Board of Commissioners, 406 Justice Drive, Lebanon, Ohio, hereinafter called "Owner" and **CONTRACTOR NAME AND ADDRESS HERE** doing businesses as (an individual, partner, a corporation) hereinafter called "Contractor."

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the Owner, the Contractor hereby agrees with the Owner to commence and complete the construction described as follows:

SANITARY SEWER MANHOLE AND SEWER MAIN REHABILITATION PROJECT – PHASE 1

hereinafter called the project, for the sum of **\$AMOUNT AND WRITE IT OUT HERE**, and all work in connection therewith, under the terms as stated in the General Conditions and Supplemental Conditions of the Contract; and as his (its or their) own proper cost and expense furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in Contract Documents. "Contract Documents" means and includes the following:

- Addendum
- Division 00 – Contract Requirements
- Division 01 to 48 – Technical Specifications
- General Conditions
- Supplemental Conditions
- Any and All Bid Documents
- Construction Drawings

CONTRACTOR hereby agrees to commence work under this contract on or before a date to be specified in a Written "Notice to Proceed" of the OWNER and shall complete all work within the following requirements:

Substantial completion: 120 days from Notice to Proceed.

Final completion: Site restoration work completed, and Contract Closeout shall be within 150 days from Notice to Proceed.

Any delays in substantial completion of the work that are within the control of the Contractor, their Subcontractor, or Supplier shall be subject to liquidated damages in the sum of \$200.00 for each consecutive calendar day that the project extends beyond the substantial completion deadline.

This Agreement may be terminated by either party upon written notice in the event of substantial failure by the other party to perform in accordance with the terms of this Agreement. The nonperforming party shall have fifteen calendar days from the date of the termination notice to cure or to submit a plan for cure acceptable to the other party.

OWNER may terminate or suspend performance of this Agreement for OWNER'S convenience upon written notice to the CONTRACTOR. CONTRACTOR shall terminate or suspend performance of the services/work on a schedule acceptable to the OWNER.

The CONTRACTOR will indemnify and save the OWNER, their officers and employees, harmless from loss, expenses, costs, reasonable attorneys fees, litigation expenses, suits at law or in equity, causes of action, actions, damages, and obligations arising from (a) negligent, reckless or willful and wanton acts, errors or omissions by CONTRACTOR, its agents, employees, licensees, consultants, or subconsultants; (b) the failure of the CONTRACTOR, its agents, employees, licensees, consultants or subconsultants to observe the applicable standard of care in providing services pursuant to this agreement; (c) the intentional misconduct of the CONTRACTOR, its agents, employees, licensees, consultants, or subconsultants that result in injury to persons or damage to property. for which the OWNER may be held legally liable.

The CONTRACTOR does hereby agree to indemnify and hold the OWNER harmless for any and all sums for which the OWNER may be required to pay or for which the OWNER may be held responsible for failure of the CONTRACTOR or any subcontractors to pay the prevailing wage upon this project.

The OWNER agrees to pay the CONTRACTOR in the manner and at such times as set forth in the General Conditions and as amended in the Supplemental Conditions and in such amounts as required by the Contract Documents.

This Contract shall be construed under the laws of the State of Ohio, and the parties hereby stipulate to the venue for any and all claims, disputes, interpretations, litigation of any kind arising out of this Contract being exclusively in the Warren County, Ohio Court of Common Pleas (unless both parties mutually agree in writing to alternate dispute resolution), as well as waiving any right to bring or remove such matters in or to any other state or federal court.

This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

Contractor shall bind every subcontractor to, and every subcontractor must agree to be bound by the terms of, this Agreement, as far as applicable to the subcontractor's work particularly pertaining to Prevailing Wages and EEO requirements. Nothing contained in this Agreement shall create any contractual relationship between any subcontractor and Owner, nor create any obligations on the part of the Owner to pay or see to the payment of any sums to any subcontractor.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in two counterparts, each of which shall be deemed an original on the date first above written.

WARREN COUNTY BOARD OF COMMISSIONERS
(Owner)

David G. Young, President

ATTEST:

Tom Grossmann, Vice President

Name

Shannon Jones

(Seal)

ATTEST:

CONTRACTOR NAME HERE
(Contractor)

By: _____
Name

Title

Approved as to Form:

Assistant Prosecutor

SECTION 00 70 10
WAGE RATE DETERMINATION

Prevailing wage rates for the State of Ohio apply to this project. Contractors and Subcontractor(s) shall conform to the State of Ohio Department of Labor requirements, guidelines, and laws. Included in this section is a list of the Ohio Prevailing Wage Rates available at the time of publication. It is the responsibility of the Contractor and Subcontractor(s) to verify the wage rates prior to bidding and throughout the project. A complete list of Ohio Prevailing Wage Rates is available at the Ohio Wage and Hour website or from the Ohio Department of Commerce Wage and Hour Bureau.

SECTION 00 70 20
PERMITS

Contractor shall keep a copy of all permits at the project site throughout the duration of the work.

SECTION 00 70 30
STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

The Warren County Water and Sewer Department has adopted the Standard General Conditions of the Construction Contract prepared by the Engineers Joint Contract Documents Committee and issued and published jointly by the American Consulting Engineers Council, the National Society of Professional Engineers, and the American Society of Civil Engineers. This document, contained herein, shall be made part of the Contract and shall be used during the performance of the work, except as modified by the following SECTION 00 80 10 Supplemental Conditions

SECTION 00 80 10
SUPPLEMENTAL CONDITIONS

PART 1 GENERAL

1.1 GENERAL

- A. These Supplementary Conditions shall modify and supplement the Standard General Conditions of the Construction Contract (Section 00 70 30, EJCDC C-700), and shall govern whenever they conflict. All provisions which are not so amended or supplemented remain in full force and effect.

1.2 MODIFICATIONS TO ARTICLES OF THE GENERAL CONDITIONS

A. ARTICLE 1 – DEFINITIONS

1. Paragraph 1.01.A.19 is supplemented with the following: Where the term “Engineer” is used in the Specification for the approval of materials or work, it shall be understood to mean Warren County Water & Sewer. Contractor acknowledges that Engineer is a full-time employee appointed by Owner, and Engineer is not an independent third party, rather is a department of the governmental entity of Owner (Warren County Board of Commissioners) a political subdivision of Ohio.
2. Paragraph 1.01.A.29 is supplemented with the following: Whenever the term “Owner” is used in the Contract Documents, it shall refer to Warren County Board of Commissioners on behalf of Warren County Water & Sewer, or its authorized representative.

B. ARTICLE 2 – PRELIMINARY MATTERS

1. Paragraph 2.03 – Commencement of Contract Time: Notice to Proceed is amended as follows: Delete the last sentence.

C. ARTICLE 4 – AVAILABILITY OF LANDS; SURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

1. Paragraph 4.06(G) shall be deleted.

D. ARTICLE 5 – BONDS AND INSURANCE

1. Paragraph 5.01.A – Amend the second sentence to read: “ ...These bonds shall remain in effect not less than one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents”

2. Paragraph 5.01.D – Add the following paragraph:

“D. If the Contractor provided a certified or cashier’s check or letter of credit as Bid Security, he shall furnish a Performance Bond in an amount at least equal to 100% of the Contract Price as security for the faithful performance of this agreement.”

3. Paragraph 5.04.C – Add the following new paragraph immediately after 5.04.B:

“C. The Contractor shall, at his own expense, purchase and maintain the following minimum coverage:

1. Workers Compensation, for claims for bodily injury, sickness, disease or death as follows:
 - a. Coverage A Statutory Benefits as described by the applicable law.
 - b. Coverage B Employer’s Liability
 - i. \$500,000 Bodily Injury by Accident – each employee
 - ii. \$500,000 Bodily Injury by disease – each employee
 - iii. \$500,000 Bodily Injury by disease – policy limit

The Contractor shall provide a copy of a certificate of premium payment from the Industrial Commission and Bureau of Workers Compensation, State of Ohio, for the period of time specified during which construction commences and copies of renewal certificates for subsequent periods, so long as the project continues.

2. Comprehensive General Liability Coverage for Bodily Injury and Property Damage – occurrence form.

General Aggregate	\$2,000,000	Each occurrence, combined single limit for Bodily Injury and Property Damager
Products – Completed Operations	\$1,000,000	Each occurrence
Aggregate	\$2,000,000	
Personal and Advertising Liability per Occurrence	\$1,000,000	Combined Single Limit for Bodily Injury and Property Damager

Coverage shall be extended to include the following:

- a. Per project and per location aggregate.
- b. Premises and operations coverage.
- c. Coverage for liability and independent contractors.
- d. Products and completed operations.

- e. Coverage for explosion, collapse and underground hazards.
- f. Stop-Gap Liability: All monopolistic states - \$1,000,000.
- g. Owner as additional insureds.
- h. Waiver of Subrogation against Owner
- i. 60-Day Notice of Cancellation or material change.

3. Comprehensive Automobile Liability Insurance – Occurrence Form

Any Automobile	\$1,000,000	Bodily Injury and Property Damage, Combined Single Limit
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Borrowed, Non-Owned	\$1,000,000	Bodily Injury and Hired Automobile Property Damage, Combined Single Limit
---------------------	-------------	--

Coverage shall be extended to include:

- a. Contractual liability for assumed liability.
- b. Owner as additional insureds.
- c. Waiver of Subrogation against Owner
- d. 60 Day Notice of Cancellation or material change.
- e. Motor Carrier Act Endorsement MCS-90
- f. Extra Wide/Extra Heavy Hauling Permit Endorsement

4. Any Umbrella Liability or Excess Liability Policy over primary comprehensive General and Automobile Liability shall be carried in a minimum amount of:

\$5,000,000 Each Occurrence

\$5,000,000 Aggregate

The Umbrella or Excess Policy shall be following the form of:

- a. Any Additional Insured under primary policy.
- b. Per project and per location aggregates.
- c. Explosion, Collapse, or Underground Hazards
- d. Stop-Gap Liability
- e. Waiver of Subrogation against Owner.
- f. Watercraft (when employed to perform the work).
- g. Aircraft (when employed to perform the work).
- h. 60-Day Notice of Cancellation or material change.

4. Paragraph 5.06 – *Property Insurance* – shall be DELETED in its entirety.

D. ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

1. Paragraph 6.01.A – After the first sentence add: “Contractor’s Work shall be performed according to the standards of care normally exercised by construction organizations within Ohio that are engaged in performing comparable services devoting such attention thereto and applying such skills as may be necessary to perform the work in accordance with the Contract Documents.”
2. Paragraph 6.02.C – Add a new paragraph as follows:
 - “C. If the Contractor does not perform the work in accordance with the Contractor’s construction schedule and the project construction schedule, and it becomes apparent that the work may not be completed within the contract times, the Contractor shall, at no additional cost to the Owner, as necessary to improve the Contractor’s progress: (a) increase the number of employees in such crafts as will regain lost scheduled progress; and (b) increase the number of working hours per shift, shifts per work day, working days per week, the amount of equipment, or any combination of the foregoing measures to regain lost scheduled progress. Contractor shall furnish such employees, materials, facilities, and equipment, and shall work such hours, including extra shifts, overtime operations, and Sundays and holidays, as may be necessary to insure the prosecution and completion of the work in accordance with the Contractor’s construction schedule and the project construction schedule.”
3. Paragraph 6.02.D – Add a new paragraph as follows:
 - “D. Contractor shall at all times maintain good discipline and order at the site. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. If the Owner deems any employee of the Contractor or a subcontractor unsatisfactory, the Contractor must transfer or require its subcontractor to transfer such employee from the project immediately.”
4. Paragraph 6.05(E) - shall be deleted.
5. Paragraph 6.08 – Replace this Paragraph with the following:
 - “A. Permit requirements are specified in Section 0020 00 – INSTRUCTIONS TO BIDDERS, and 00 70 20 – PERMITS.
6. Paragraph 6.10 – Taxes, is amended as follows:
 - “A. OWNER, being a public body, is exempt from taxes on material incorporated into the work. CONTRACTOR, therefore, is not required to pay such materials taxes. The OWNER will provide the tax

exemption forms. These forms are to contain all necessary information required by the State. CONTRACTOR shall be responsible for payment of any applicable commercial activity tax.

- B. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated to the Work.
- C. Contractor is specifically required to abide by all local tax requirements, if any, including income tax requirements to withhold at source. Contractor acknowledges that the Contract work may take place in various cities and taxing districts, and further acknowledges different tax burdens may be imposed by each. Contractor shall indemnify, defend, and hold Owner harmless for any federal, state, or local tax liabilities incurred as a result of Contractor performing the Work."

- 6. Paragraphs 6.13 and 6.14 – Safety and Protection, are supplemented with the following: "All construction work under this Agreement is subject to Chapter XVII of Title 29, Code of Federal Regulations (CFR) Part 1926 (formerly Chapter XVII of Title 29, Part 1518) titled, "Safety and Health Regulations for Construction" and subsequent amendments."

E. ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

- 1. Paragraph 9.01 – Add the following sentence: The parties acknowledge and agree that ENGINEER is a full time employee of OWNER and is not an independent third party, however, ENGINEER shall perform any duties under this agreement in good faith and adhere to a standard of professional care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality.

F. ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

- 1. Paragraph 10.03.A.4 – Add the following paragraph:
 - "4. In no event is the Contractor entitled to reserve any rights or take other similar action with respect to a change order if the effect or intent of such reservation or action would be to accommodate a further adjustment in the contract times, contract price, or both, after the Contractor executes the change order. By executing a change order, the Contractor irrevocably certifies that the elements of the change order described are completely satisfied and waives all rights to seek further adjustment of the contract times, contract price, or both, at a later date with respect to the associated change in the work."

E. ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

1. Paragraph 11.01(A)(3) – Amend the Second Sentence as follows: DELETE the phrase “If required by Owner”. Add Sentence OWNER requires CONTRACTOR to competitively bid work from subcontractors.

2. Paragraph 11.01(D) Add the following Sentence: This agreement shall be subject to open book pricing, CONTRACTOR shall make any all bids, invoices, receipts, any and all documentation for expenses and costs available for inspection by OWNER immediately upon request.

Paragraph 11.01.B.1 – Add project manager and project executive to the list of excluded compensation and payroll costs.

E. ARTICLE 12 – CHANGE OF CONTRACT PRICE, CHANGE OF CONTRACT TIMES

1. Paragraph 12.01.C.2.e – Add the following to the end of paragraph 12.01.C.2.e: “Any change that results in a net decrease in cost shall include the appropriate overhead and profit added thereto calculated as set forth in ARTICLE 12 of the General Conditions.”

2. Paragraph 12.01.D – Insert new paragraph as follows: “D. In no event shall Contractor be entitled to any increase in the Contract Price on account of any adverse weather.”

3. Paragraph 12.02.B – Replace Paragraph 12.02.B with the following:

“B. If the Contractor wishes to make a claim for an increase in contract times, prompt written notice as provided herein shall be given. The Contractor’s claim shall include an estimate of cost and of probable effect of delay on progress of the work, a detailed schedule which indentifies the critical portions of the work impacted by the delaying event and the dates of such impact, and a statement from Contractor that the increase requested is the entire increase in the contract time associated with the claim. The failure to provide such information and statement within the time period established in Paragraph 10.05.B shall constitute an irrevocable waiver of the claim. In the case of a continuing delay occurring on consecutive days, only one claim is necessary, provided, however, that within ten (10) days of the cessation of the cause of the continuing delay, the Contractor shall notify the Owner in writing that the cause of the delay has ceased. The failure to give notice of the cessation of the cause of the continuing delay shall constitute an irrevocable waiver of any claim based upon the continuing delay.”

4. Add the following paragraph as Paragraph 12.02.C:

“In addition to the requirements of Paragraph 12.02.B, if adverse weather conditions are the basis for a claim for additional time, the contractor shall support such claim with data acceptable to the Owner and Engineer that substantiates that weather conditions were significantly abnormal for the period

of time and could not have reasonably been anticipated and that weather conditions had an adverse effect on a critical element of the scheduled construction. Notwithstanding any other provisions of the Contract Documents to the contrary, the project times will not be adjusted on account of the impact of an normal adverse weather or any of the work or on account of the impact of any abnormal adverse weather on non-critical elements of the work. The support for the evaluation of all adverse-weather claims resulting in lost work days shall be based upon criteria as provided for in the State of Ohio Department of Transportation (ODOT) Construction and Material Specifications dated January 1, 2013. ODOT Specification 108.06.C lists the number of days that the Contractor may expect to be lost due to weather as follows:

Month	Number of Days Lost Due to Weather
January	8
February	8
March	7
April	6
May	5
June	5
July	4
August	4
September	5
October	6
November	6
December	6

5. Paragraph 12.03.F – Add new paragraph as follows:

“F. Any proposed time extensions for delays requested because of abnormal weather conditions shall be subject to Paragraph 12.02.C.”

6. Paragraph 12.03.G. – Add new paragraph as follows:

“G. Delays beyond the substantial completion date attributable to and within the control of the Contractor, their Subcontractor, or Supplier shall be subject to liquidated damages in the amounts specified in SECTION 00 60 10 – CONTRACT.”

F. ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

1. Paragraph 15.01.A. – Delete the sentence that states: “Contractor shall be

granted an adjustment in the Contract Price or an extension of the Contract Times, or both directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

REPLACE the above sentence with the following: Contractor shall be granted an extension of the Contract Times directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

2. Paragraph 15.03.A(3) – shall be DELETED in its entirety.

G. ARTICLE 14 – PAYMENT TO CONTRACTOR AND COMPLETION

1. Add new Paragraph 14.02.A.4 as follows:

“4. In accordance with ORC Section 153.12 partial payments to the Contractor for labor performed under either a unit or lump sum price contract shall be made at the rate of ninety-two per cent of the estimates prepared by the Contractor and approved by the Engineer. All labor performed after the job is fifty percent completed shall be paid for at the rate of one hundred per cent of the estimates submitted by the Contractor and approved by the Engineer. A Contract shall be considered 50 percent complete when the Contractor has been paid an amount equal to 50 percent of the total cost of the labor of the Contract and 50 percent of the total cost of the material of the Contract.

All materials furnished and delivered but not actually included in the construction and approved by the Owner, after the work under this contract is 50 percent complete, shall be paid for at the rate of 92 percent of the invoiced value of the materials. The balance of such estimates shall be paid when the material is incorporated into and becomes a part of the building construction.

When the major portion of the project is substantially completed and occupied, or in use, or otherwise accepted, and there exists no other reason to withhold retainage, the retained percentages held in connection with such portion shall be released and paid to the contractor, withholding only that amount necessary to assure completion.

All retained payments shall be deposited into an escrow account at the 1st National Bank, 1160 E. Main Street, Lebanon Ohio (513) 932-3221, Contact: Gail Haines. The Contractor may waive their right to deposit the payments in an escrow account by written request to the Owner. Retained payments not deposited into an escrow account will be held by the Owner for future payment to the Contractor.”

2. Amend Paragraph 14.02.C to read: “Thirty days after presentation”

G. ARTICLE 16 – DISPUTE RESOLUTION

1. Delete Paragraphs 16.01.A, 16.01.B, and 16.01.C and replace with the

following:

“1. This Contract shall be construed under the laws of the State of Ohio, and the parties hereby stipulate to the venue for any and all claims, disputes, interpretations, litigation of any kind arising out of this Contract being exclusively in the Warren County, Ohio Court of Common Pleas (unless both parties mutually agree in writing to alternate dispute resolution), as well as waiving any right to bring or remove such matters in or to any other state or federal court.”

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL

1.1 LOCATION OF WORK

- A. The work for this Contract is located in Warren County, Ohio and consists of Cured-in-Place Pipe rehabilitation of two segments of 8-inch diameter sanitary sewers (approximately 715 feet) and rehabilitation of eleven manholes in Deerfield and Hamilton Townships.
- B. Specific location of the Project is as indicated in the “Location Map” on Project Cover Sheet.
- C. Access to the site can be gained by contacting the Warren County Water & Sewer Department, Project Manager, Chris Wojnicz at (513) 695-1646.

1.2 GENERAL

- A. The installing CONTRACTOR shall obtain necessary building and related permits and pay necessary application fees at no additional cost to OWNER. Obtain any and all permits in a timely fashion to facilitate the construction schedule.
- B. The CONTRACTOR shall furnish all labor, materials, equipment, tools, services and incidentals to complete all work required by these Specifications and as shown on the Drawings.
- C. The CONTRACTOR shall perform the work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, cleanup, replacements and restoration required as a result of construction of the work.
- D. All materials, equipment skills, tools and labor which is reasonably and properly inferable and necessary for the proper completion of the work in a substantial manner and in compliance with the requirements stated or implied by these Specifications or Drawings shall be furnished and installed by the CONTRACTOR without additional compensation, whether specifically indicated in the Contract Documents or not.
- E. The CONTRACTOR shall comply with all municipal, county, state, federal, and other codes, which are applicable to the proposed construction work.

1.3 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required for construction of Warren County lift Station Receiving Manhole Rehabilitation – Phase I in its entirety as shown on the Drawings and specified herein.
- B. General Construction work includes all work shown on the contract drawings and

specifications, including, but is not limited to, the following:

1. Site work including earthwork, dewatering, piping, paving, and restoration.

1.4 WORK SEQUENCE

- A. CONTRACTOR to perform work with coordination of the representatives of the respective municipalities regarding road access. All roads are to remain open at all times.

1.5 WORK HOURS

- A. Work shall be limited to the hours of 8 AM – 5 PM.

1.6 CONTRACTOR'S USE OF PREMISES

- A. CONTRACTOR shall limit the use of the premises for his/her Work and for storage to allow for:
 1. Work by other CONTRACTORS.
 2. OWNER occupancy.
- B. Coordinate use of premises with OWNER.
- C. CONTRACTOR shall assume full responsibility for security of all his/her and his/her SUBCONTRACTORS' materials and equipment stored on the site.
- D. If directed by the ENGINEER, move any stored items, which interfere with operations of OWNER or other CONTRACTORS.
- E. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

1.7 PLANS AND SPECIFICATIONS

- A. The General Condition Section (No. 00 70 00) contains General Requirements which govern the work. The Technical Specifications consist of three parts: General, Products, and Execution. Products and Execution modify and supplement these by detailed requirements of the work and shall always govern whenever there appears to be a conflict.

1.8 WORK BY OWNER

- A. OWNER will perform the following activities in connection with the Work:
 1. Operation of all existing valves, gates, pumps, equipment, and appurtenances that will affect OWNER's operation, unless specified otherwise.

1.9 EASEMENTS AND RIGHT-OF-WAY

- A. Easements and rights-of-way will be provided by OWNER. Confine construction operations within OWNER'S property, public rights-of-way, and easements obtained by OWNER, and the limits shown. Use care in placing construction tools, equipment, excavated materials, and products to be incorporated into the Work to avoid damage to property and interference with traffic. Do not enter private property outside the construction limits without permission from the owner of the property.
- B. On Private Property:
 - 1. General limits of easements are shown on Drawings.
- C. Within Highway and Railroad Right-of-Way: Permits will be obtained by OWNER, other work permits to be obtained by CONTRACTOR. All work performed and all operations of CONTRACTOR and SUBCONTRACTORS within the limits of railroad and highway rights-of-ways shall conform to requirements of railroad or highway authority owner and applicable work permits, or authority having jurisdiction over right-of-way.

1.10 NOTICES TO OWNERS AND AUTHORITIES OF PROPERTIES ADJACENT TO OR SIGNIFICANTLY IMPACTED BY THE WORK

- A. Notify owners of adjacent property and utilities when prosecution of the Work may affect their property, facilities, or use of property.
- B. When it is necessary to temporarily obstruct access to property, or when utility service connection will be interrupted, provide notices sufficiently in advance to enable affected persons to provide their needs. Conform notices to applicable local ordinance and, whether delivered orally or in writing, include appropriate information concerning the interruption and instructions on how to limit inconvenience caused thereby.
- C. Utilities and other concerned agencies shall be notified at least 48 hours prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.

END OF SECTION

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SECTION 01 26 57
CHANGE ORDER PROCEDURES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Promptly implement change order procedures.
 - 1. Provide full written data required to evaluate changes.
 - 2. Maintain detailed records of work done on a time-and-material/force account basis.
 - 3. Provide full documentation to ENGINEER on request.
- B. Designate in writing the member of CONTRACTOR's organization:
 - 1. Who is authorized to accept changes in the Work.
 - 2. Who is responsible for informing others in the CONTRACTOR's employ of the authorization of changes in the Work.
- C. OWNER will designate in writing the person who is authorized to execute Change Orders.

1.2 RELATED REQUIREMENTS

- A. Standard General Conditions of the Construction Contract are included in Section 00 70 00.
 - 1. Methods of determining cost of credit to OWNER resulting from changes in Work made on a time and material basis.
 - 2. CONTRACTOR's claims for additional costs.
- B. Applications for Payment are included in Section 01 29 76.
- C. Schedule of Values are included in Section 01 29 73.

1.3 DEFINITIONS

- A. Change Order: See Contract for Construction.
- B. Construction Change Authorization: A written order to the CONTRACTOR, signed by OWNER and ENGINEER, which amends the Contract Documents as described and authorized CONTRACTOR to proceed with a change which affects the Contract Sum or the Contract Time, for inclusion in a subsequent Change Order.
- C. Field Order: A written order to the CONTRACTOR, signed by the ENGINEER and the CONTRACTOR, which is issued to interpret/clarify the Contract Documents, order minor changes in the work and/or memorialize trade-off agreements. The work described by a Field Order is to be accomplished without change to the Contract Sum, Contract Time, and/or claims for other costs.

1.4 PRELIMINARY PROCEDURES

- A. OWNER or ENGINEER may initiate changes by submitting a Request for Proposal (RFP) to CONTRACTOR. Request will include:
 - 1. Detailed description of the Change, Products and location of the change in the project.
 - 2. Supplementary or revised Drawings and Specifications.
 - 3. The projected time span for making the change and a specific statement as to whether overtime work is, or is not, authorized.
 - 4. A specific period of time during which the requested price will be considered valid.
 - 5. Such request is for information only and is not an instruction to execute the changes, nor to stop work in progress.
- B. CONTRACTOR may initiate changes by submitting a written notice to ENGINEER, containing:
 - 1. Description of the proposed changes.
 - 2. Statement of the reason for making the changes.
 - 3. Statement of the effect on the Contract Sum and the Contract Time.
 - 4. Statement of the effect on the work of separate CONTRACTORS.
 - 5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.5 WORK DIRECTIVE CHANGE AUTHORIZATION

- A. In lieu of a Request for Proposal (RFP), ENGINEER may issue a work directive authorization for CONTRACTOR to proceed with a change for subsequent inclusion in a Change Order.
- B. Authorization will describe changes in the work, both additions and deletions, with attachments of revised Contract Documents to define details of the change and will designate the method of determining any change in the Contract Sum and any change in Contract Time.
- C. OWNER and ENGINEER will sign and date the Work Directive Change Authorization as authorization for the CONTRACTOR to proceed with the changes.
- D. CONTRACTOR may sign and date the Construction Change Authorization to indicate agreement with the terms therein.

1.6 DOCUMENTATION OF PROPOSALS AND CLAIMS

- A. Support each quotation for a lump-sum proposal and for each unit price which has not previously been established, with sufficient substantiating data to allow ENGINEER to evaluate the quotation.

- B. On request, provide additional data to support time and cost computations
 - 1. Labor required.
 - 2. Equipment required.
 - 3. Products required.
 - a. Recommended source of purchase and unit cost.
 - b. Quantities required.
 - 4. Taxes, insurance and bonds.
 - 5. Credit for work deleted from Contract, similarly documented.
 - 6. Overhead and profit.
 - 7. Justification for any change in Contract Time.
- C. Support each claim for additional costs and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal, plus additional information.
 - 1. Name of the OWNER's authorized agent who ordered the work and date of the order.
 - 2. Dates and times work was performed and by whom.
 - 3. Time record, summary of hours worked and hourly rates paid.
 - 4. Receipts and invoices for:
 - a. Equipment used, listing dates and times of use.
 - b. Products used, listing of quantities.
 - c. Subcontracts.

1.7 PREPARATION OF CHANGE ORDERS AND FIELD ORDERS

- A. ENGINEER will prepare each Change Order and Field Order.
- B. Change Order will describe changes in the work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.
- C. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.
- D. Field Order will describe interpretations or clarifications of Contract Documents, order minor changes in the work, and/or memorialize trade-off agreements.
- E. Field Order work will be accomplished without change in the Contract Sum, Contract Time, and/or claims for other costs.

1.8 LUMP-SUM/FIXED PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1. ENGINEER's Proposal Request and CONTRACTOR's responsive Proposal as mutually agreed between OWNER and CONTRACTOR.
 - 2. CONTRACTOR's Proposal for a change, as recommended by ENGINEER.
- B. OWNER and ENGINEER will sign and date the Change Order as authorization for the CONTRACTOR to proceed with the changes.
- C. CONTRACTOR will sign and date the Change Order to indicate agreement with the terms therein.

1.9 UNIT PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1. ENGINEER's definition of the scope of the required changes.
 - 2. CONTRACTOR's Proposal for a change, as recommended by ENGINEER.
 - 3. Survey of completed work.
- B. The amounts of the unit prices to be:
 - 1. Those stated in the Agreement.
 - 2. Those mutually agreed upon between OWNER and CONTRACTOR
- C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:
 - 1. OWNER and ENGINEER will sign and date the Change Order as authorization for CONTRACTOR to proceed with the changes.
 - 2. CONTRACTOR will sign and date the Change Order to indicate agreement with the terms therein.
- D. When quantities of the items cannot be determined prior to start of the work:
 - 1. ENGINEER or OWNER will issue a construction change authorization directing CONTRACTOR to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
 - 2. At completion of the change, ENGINEER will determine the cost of such work based on the unit prices and quantities used.
 - a. CONTRACTOR shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
 - 3. ENGINEER will sign and date the Change Order to establish the change in Contract

Sum and in Contract Time.

4. OWNER and CONTRACTOR will sign and date the Change Order to indicate their agreement with the terms therein.

1.10 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/WORK DIRECTIVE CHANGE AUTHORIZATION

- A. ENGINEER and OWNER will issue a Work Directive Change Authorization directing CONTRACTOR to proceed with the changes.
- B. At completion of the change, submit itemized accounting and supporting data as provided in the Article "Documentation of Proposals and Claims" of this Section.
- C. ENGINEER will determine the allowable cost of such work, as provided in General Conditions and Supplementary Conditions.
- D. ENGINEER will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.
- E. OWNER and CONTRACTOR will sign and date the Change Order to indicate their agreement therewith.

1.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS

- A. Periodically revise Schedule of Values and Request for Payment forms to record each change as a separate item of work, and to record the adjusted Contract Sum.
- B. Periodically revise the Construction Schedule to reflect each change in Contract Time.
 1. Revise subschedules to show changes for other items of work affected by the changes.
- C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 – PRODCTUS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

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Contract Number: _____

Change Order Number: _____

Original Contract Price \$ _____

Net Increase/Decrease in Contract

Price (this change order) \$ _____

Total Adjusted Contract Price \$ _____

(including this change order)

This change order increases/decreases the time to complete the work by _____
Calendar days.

The extended completion date is _____.

This change order checked by _____.

(Chief) Resident Engineer Date

This change order is requested by _____.

This change order is recommended by:

Consultant Engineer P.E. # Date

The undersigned agree to the terms of the change order.

Contractor Date

Owner Date

Approval as to appropriation:

Certification Officer Date

Name of City/District etc. _____

Contract Number _____

Contract Title _____ Change Order Number _____

OWNER's Name: _____

OWNER's Address: _____

CONTRACTOR's Name: _____

CONTRACTOR's Address: _____

Description of Change

Reason for Change

FIELD ORDER

PROJECT:

FIELD ORDER NO:

DATE:

CONTRACT:

OWNER:

OWNER PROJECT NO.

TO:

CONTRACT DATE:

This Field Order is issued to interpret/clarify the Contract Documents, order minor changes in the work and/or memorialize trade off agreements. Both parties hereby agree that the work described by this Field Order is to be accomplished without change in Contract Sum, Contract Time, and/or claims for other costs.

DESCRIPTION: (Here insert a written description of the interpretation, change or agreement.)

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SECTION 01 29 76

PROGRESS PAYMENT PROCEDURES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Submit Applications for Payment to the ENGINEER in accordance with the schedule established by Conditions of the Contract and Agreement between OWNER and CONTRACTOR.
- B. The accepted Schedule of Values shall be used as the basis for the CONTRACTOR's Application for Payment.

1.2 RELATED WORK

- A. Agreement between OWNER and CONTRACTOR is included in Section 00 40 00.
- B. Standard General Conditions of the Construction Contract are included in Section 00 70 00.
- C. Contract Closeout is included in Section 01 77 00.

1.3 SUBMITTALS

- A. Submit to the OWNER with itemized data typed on 8-1/2-in by 11-in or 8-1/2-in by 14-in white paper continuation sheets.
- B. Provide itemized data on continuation sheet.
 - 1. Format, schedules, line items and values: Those of the Schedule of Values accepted by the ENGINEER.

1.4 PEREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Application Form
 - 1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
 - 2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
 - 3. Execute certification with signature of a responsible officer of Contract firm.
- B. Continuation Sheets
 - 1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.

2. Fill in the dollar value in each column for each scheduled line item when work has been performed or products stored.
 - a. Round off values to nearest dollar, or as specified for Schedule of Values.
3. List each Change Order executed prior to date of submission, at the end of the continuation sheets.
 - a. List by Change Order Number and description, as for an original component item of work.
4. To receive approval for payment on component material stored on site, submit copies of the original paid invoices with the application for payment.

1.5 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. When the OWNER or the ENGINEER requires substantiating data, submit suitable information, with a cover letter identifying.
 1. Project.
 2. Application number and date.
 3. Detailed list of enclosures.
 4. For stored products:
 - a. Item number and identification as shown on application.
 - b. Description of specific material.
- B. Submit one copy of data and cover letter for each copy of application.
- C. As a prerequisite for payment, submit a "Surety Acknowledgement of Payment Request" letter showing amount of progress payment which the CONTRACTOR is requesting.
- D. Maintain an updated set of drawings to be used as record drawings in accordance with Section 01 77 00. As a prerequisite for monthly progress payments, exhibit the updated record drawings for review by the OWNER and ENGINEER.

1.6 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in Application form as specified for progress payments.
- B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.
- C. Submit all Project Record Documents in accordance with Section 01 77 00.

1.7 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment to the ENGINEER at the times stipulated in the Agreement.

B. Number: Five copies of each Application.

C. When the ENGINEER finds Application properly completed and correct, he/she will transmit certificate for payment to OWNER, with copy to CONTRACTOR.

PART 2 – PRODCTUS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

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SECTION 01 31 19

PRECONSTRUCTION MEETINGS

PART 1 – GENERAL

1.1 DESCRIPTON

- A. A pre-construction meeting will be held for the Project. CONTRACTOR shall attend the conference prepared to discuss all items on the agenda. The representatives present for each party shall be authorized to act on their behalf.
- B. Purpose of the meeting is to designate responsible personnel, establish working relationships, and establish administrative provisions for the Project. Matters requiring coordination will be discussed and procedures for handling such matters will be established.
- C. Date, Time and Location: Meeting will be held after execution of the Contract and before Work starts at the Site. ENGINEER/OWNER will determine the date, time, and location of the meeting and advise the interested and involved parties.
- D. ENGINEER/OWNER will distribute an agenda, preside at the meeting, and prepare and distribute meeting minutes to all meeting participants and others as requested.
- E. CONTRACTOR shall provide data required and contribute appropriate items for discussion. Unless previously submitted to ENGINEER, CONTRACTOR shall bring to the meeting a draft of each of the following:
 - 1. Progress Schedule.
 - 2. List of required Shop Drawings and submittals
 - 3. Schedule of Values.
 - 4. CONTRACTOR'S Site-specific health and safety plan.
 - 5. List of emergency contact information.

1.2 REQUIRED ATTENDANCE

- A. Meeting shall be attended by CONTRACTOR'S project manager, Site superintendent, and major Subcontractors and major equipment Suppliers, as CONTRACTOR deems appropriate.
- B. Other attendees will be representatives of:
 - 1. OWNER.
 - 2. ENGINEER
 - 3. Governmental agencies having control or responsibility, if available.
 - 4. Utility companies.
 - 5. Others as requested by OWNER, CONTRACTOR, or ENGINEER.

1.3 AGENDA

- A. Agenda: A complete agenda will be furnished to CONTRACTOR prior to the conference. However, CONTRACTOR shall be prepared to discuss the following:
1. Designation of responsible personnel.
 2. Communications and correspondence.
 3. Coordination with other contractors.
 4. Emergency contact information.
 5. Review of scope of Work.
 6. Review of Contract Times, Milestones, and completion dates.
 7. Subcontractors.
 8. Progress Schedule.
 9. Schedule of Values.
 10. Project coordination and coordination with OWNER'S operations.
 11. Progress meetings.
 12. Submittals and Shop Drawings: processing and schedule of submittals.
 13. Substitutions.
 14. OWNER'S tax-exempt status.
 15. Payments, retainage, payrolls, and Substantial Completion.
 16. Processing of Field Orders and Change Order.
 17. Use of premises, security, housekeeping, safety, CONTRACTOR'S Responsibility for safety and first aid procedures, Site access.
 18. Field offices, trailers, and temporary facilities.
 19. Storage of materials.
 20. Construction photographs.
 21. Record drawings.
 22. Clarifications.
 23. Requirements for copies of Contract Documents and availability.
 24. CONTRACTOR correction period.
 25. Layouts and surveys.
 26. Hours of Work and overtime.
 27. Restoration.
 28. Permits.
 29. Insurance in force.
 30. Financing.

31. Disposal of demolition materials.
32. Next meeting.
33. General discussion and questions.
34. Site visit if required.

PART 2 – PRODCUTUS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

- A. This Section specifies the general methods and requirements of submissions applicable to Shop Drawings, Product Data, Samples, Mock Ups, Construction Photographs, and Construction or Submittal Schedules. Additional general submission requirements are contained in Paragraphs 6.24 and 6.25 of the General Conditions. Detailed submittal requirements are specified in the technical Sections.
- B. All submittals shall be clearly identified by reference to Section Number, Paragraph, Drawing Number or Detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data.

1.2 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

- A. Shop Drawings
 - 1. CONTRACTOR shall submit one complete submittal by section. A complete submittal shall include all items listed under the Shop Drawing heading for each section.
 - 2. The General Contractor shall be responsible for the coordination of all submittals for all contracts. This shall include a submittal schedule of Shop Drawings as required, as well as receiving and forwarding submittals from other contractors and the ENGINEER. The General Construction Contractor shall not be responsible for stamping submittals “Approved” from other contractors (unless a Combined Bid has been accepted by the OWNER).
 - 3. Shop drawings as specified in individual Sections include custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports, including performance curves and certifications, as applicable to the work.
 - 4. All shop drawings submitted by Prime Contractors and respective subcontractors shall be sent directly to the General Contractor for checking. The Prime Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
 - 5. Check all shop drawings regarding measurements, size of members, materials and details to make sure that they conform to the intent of the Drawings and related Sections. Return shop drawings found to be inaccurate or otherwise in error to the subcontractors for correction before submission thereof.
 - 6. All details on shop drawings shall show clearly the relation of the various parts to

the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted.

7. Submittals for equipment specified under Division 33 shall include a listing of all installations where identical or similar equipment has been installed and been in operation for a period of at least one year.
8. All Shop Drawings shall be in English.

B. Product Data

1. Product data as specified in individual Sections include, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

C. Samples

1. Samples specified in individual Sections include, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the ENGINEER or OWNER for independent inspection and testing, as applicable to the work.

1.3 CONTRACTOR'S RESPONSIBILITIES

- A. Review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:
 1. Field measurements
 2. Field construction criteria
 3. Catalog numbers and similar data
 4. Conformance with related Sections
- B. Each shop drawing, sample and product data submitted by the CONTRACTOR shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the CONTRACTOR: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Shop drawings and product

data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Resident Project Representative a copy of each transmittal sheet for shop drawings, product data and samples at the time of submittal to the ENGINEER. Shop Drawings that are not stamped will not be reviewed.

C. The CONTRACTOR shall utilize a 10-character submittal identification numbering system in the following manner:

1. The first character shall be a D, S, P, M, or R, which represents Shop/Working Drawing and other Product Data (D), Sample (S), Preliminary Submittal (P), Operating/ Maintenance Manual (M), or Request for Information (R).
2. The next five digits shall be the applicable Section Number.
3. The next three digits shall be the numbers 001 to 999 to sequentially number each initial separate item or drawing submitted under each specific Section Number.
4. The last character shall be a letter, A to Z, indicating the submission, or resubmission of the same Drawing, i.e., "A=1st submission, B=2nd submission, C=3rd submission, etc. A typical submittal number would be as follows:

D 03300 008 B

D	=	Shop Drawing
03300	=	Section for Concrete
008	=	The eighth initial submittal under this section
B	=	The second submission (first resubmission) of that

- D. Notify the ENGINEER in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.
- E. The review and approval of shop drawings, samples or product data by the ENGINEER shall not relieve the CONTRACTOR from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the CONTRACTOR and the ENGINEER will have no responsibility therefore.
- F. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the CONTRACTOR's risk. The OWNER will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.
- G. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.
- H. CONTRACTOR to use green ink for all submittals.

1.4 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work or in the work of any other CONTRACTOR.
- B. Each submittal, appropriately coded, will be returned within 30 working days following receipt of submittal by the ENGINEER.
- C. Number of submittals required:
 - 1. Shop Drawings: The number of copies for distribution is the minimum required for coordination of specific items of the Work. Additional shop drawings are required for coordination between prime contractors for certain items of the Work. A minimum of six copies for distribution as follows:
 - a. ENGINEER – one
 - b. Resident Project Representative – one
 - c. OWNER – one
 - d. Prime Contractor – three
 - e. Other Prime Contractors - as required.
 - 2. Product Data: Six copies for same distribution as shop drawings.
 - 3. Samples: Submit the number stated in the respective Sections.
- D. Submittals shall contain:
 - 1. The date of submission and the dates of any previous submissions.
 - 2. The Project title and number.
 - 3. CONTRACTOR identification.
 - 4. The names of:
 - a. CONTRACTOR
 - b. Supplier
 - c. Manufacturer
 - 5. Identification of the product, with the section number, page and paragraph(s).
 - 6. Field dimensions, clearly identified as such.
 - 7. Relation to adjacent or critical features of the work or materials.
 - 8. Applicable standards, such as ASTM or Federal Standards numbers.
 - 9. Identification of deviations from Contract Documents.
 - 10. Identification of revisions on resubmittals.
 - 11. An 8-in by 4-in blank space suitably sized to fit both the CONTRACTOR and ENGINEER stamps.

1.5 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

- A. The review of shop drawings, data and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:
1. as permitting any departure from the Contract requirements;
 2. as relieving the CONTRACTOR of responsibility for any errors, including details, dimensions, and materials;
 3. as approving departures from details furnished by the ENGINEER, except as otherwise provided herein.
- B. The CONTRACTOR remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner. CONTRACTOR shall provide additional copies of shop drawings for distribution to related prime contractors.
- C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which ENGINEER finds to be in the interest of the OWNER and to be so minor as not to involve a change in Contract Price or Contract Time, the ENGINEER may return the reviewed drawings without noting an exception.
- D. Submittals will be returned to the CONTRACTOR under one of the following codes.
1. Code 1 - "APPROVED" is assigned when there are no notations or comments on the submittal. When returned under this code the CONTRACTOR may release the equipment and/or material for manufacture.
 2. Code 2 - "APPROVED WITH CHANGES NOTED". This code is assigned when a confirmation of the notations and comments IS NOT required by the CONTRACTOR. The CONTRACTOR may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
 3. Code 3 - "REVISE AND RESUBMIT". This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the ENGINEER within 15 calendar days of the date of the ENGINEER's transmittal requiring the resubmittal.
 4. Code 4 - "REJECTED" is assigned when the submittal does not meet the intent of the Contract Documents. The CONTRACTOR must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.
- E. Resubmittals will be handled in the same manner as first submittals. On resubmittals

the CONTRACTOR shall direct specific attention, in writing on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the ENGINEER, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the CONTRACTOR. The CONTRACTOR shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the ENGINEER.

F. Partial submittals may not be reviewed. The ENGINEER will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the CONTRACTOR and will be considered "Not Approved" until resubmitted. The ENGINEER may at his option provide a list or mark the submittal directing the CONTRACTOR to the areas that are incomplete.

G. Repetitive Review

1. Shop drawings and other submittals will be reviewed no more than twice at the OWNER's expense. All subsequent reviews will be performed at times convenient to the ENGINEER and at the CONTRACTOR's expense, based on the ENGINEER's then prevailing rates. The CONTRACTOR shall reimburse the OWNER for all such fees invoiced to the OWNER by the ENGINEER. Submittals are required until approved.

2. Any need for more than one resubmission, or any other delay in obtaining ENGINEER's review of submittals, will not entitle CONTRACTOR to extension of the Contract Time.

H. If the CONTRACTOR considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the CONTRACTOR shall give written notice thereof to the ENGINEER at least 7 working days prior to release for manufacture.

I. When the shop drawings have been completed to the satisfaction of the ENGINEER, the CONTRACTOR shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the ENGINEER.

1.6 DISTRIBUTION

A. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the ENGINEER. Number of copies shall be as directed by the ENGINEER but shall not exceed seven unless otherwise approved for specific items of work.

1.7 MOCK UPS

A. Mock Up units as specified in individual Sections include, but are not necessarily limited to, complete units of the standard of acceptance for that type of work to be used on the project. Remove at the completion of the work or when directed.

1.8 CONSTRUCTION SCHEDULE

- A. In lieu of the progress schedules specified in Article 2.06, 2.09 and 14.01 of the General Conditions, the General CONTRACTOR shall, within 10 days after the Effective Date of the Agreement, provide and submit to the ENGINEER for approval, the Schedule he plans to maintain in order to successfully construct the work within the time allotted. This Schedule shall include a Critical Path Network and a Computer generated print-out. The Schedule shall account for all Contracts in addition to the work of the General CONTRACTOR. In addition to all reasonably important construction activities, the Schedule shall provide for the proper sequence of construction considering the various crafts, purchasing time, submittal approval, material delivery, equipment fabrication, and similar time consuming factors.
- B. The Schedule shall include as a minimum, the earliest starting and finish dates, latest starting and finish dates, and the total float for each task or item. The General CONTRACTOR shall update (monitor) and rerun the Schedule at least monthly and shall submit to the ENGINEER both the Network and Computer print-out at the same time the pay estimate is prepared. The Schedule shall contain all of the items of the Periodic Estimate and Pay Schedule.
- C. Following receipt and preliminary approval by the ENGINEER of the General CONTRACTOR's CPM Schedule, copies will be sent to the other CONTRACTORs for their comments. A preconstruction conference will then be held between the OWNER, ENGINEER and all involved CONTRACTORs to review and, if necessary, revise the Schedule to afford all CONTRACTORs ample time to perform their work in the proper sequence of construction operations. In case of disputes between CONTRACTORs over allotted time for various items of work, the ENGINEER shall decide and his decision shall be final and binding on all. The ENGINEER shall give final approval to the CPM Schedule before any construction is begun.
- D. The monthly Schedule update (monitoring) shall include the following items:
 - 1. Network
 - a. Identify activities that are completed or in process by contrasting heavy lines. Each activity worked on should be proportional to the percentage of progress achieved to date.
 - b. Identify restraints imposed by material deliveries, precedent activity durations or schedule adjustments on the monthly update of the Network.
 - 2. Computer Print-out
 - a. Show the percentage progress status of each activity. The percentage progress status will be used to support each CONTRACTOR's periodic pay estimate.
 - b. Show actual start and completion dates.

- c. Flag all activities started and in progress.
- E. Supplemental to the Critical Path Schedule, each CONTRACTOR shall provide a detailed work schedule, projected at least a month in advance. The implementation of the work schedule and the coordination required will constitute the basic agenda of the coordination and planning meetings.

1.9 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

- A. If specifically required in other related Sections, submit a P.E. Certification for each item required, in the form attached to this Section, completely filled in and stamped.

1.10 GENERAL PROCEDURES FOR SUBMITTALS

- A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the CONTRACTOR's failure to transmit submittals sufficiently in advance of the Work.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a professional engineer registered in the State of Ohio and that he/she has been employed by

_____ to design

(Name of Contractor)

(Insert P.E. Responsibilities)

in accordance with Section _____ for the

Warren County Lift Station Receiving Manhole Rehabilitation – Phase I

The undersigned further certifies that he/she has performed the design of the: _____, that said

design is in conformance with all applicable local, state and federal codes, rules, and regulations, and that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to Greene County or OWNER's representative with seven days following written request therefor by the OWNER.

P.E. Name

Contractor's Name

Signature

Signature

Address

Title

Address

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SECTION 01 55 00

VEHICULAR ACCESS AND PARKING

PART 1 – GENERAL

1.1 GENERAL

- A. All Streets and bike trails shall be kept open for the passage of traffic during the construction period.
 - 1. CONTRACTOR shall obtain all permits required by State or local authorities.
- B. CONTRACTOR shall maintain access for emergency vehicles at all times.
- C. CONTRACTOR shall be responsible to contact all local authorities and utilities at least two (2) weeks prior to commencement of work. Local authorities include but are not limited to police, fire, gas, electric, telephone, TV cable, water, sewer, traffic and street department. CONTRACTOR shall be responsible to keep all above informed of Work schedule, actual progress, etc.
- D. CONTRACTOR shall give reasonable notice to owners or tenants of private property and commercial or industrial facilities who may be affected by CONTRACTOR'S operations.
- E. CONTRACTOR shall take all means necessary to prevent accidents. CONTRACTOR shall provide signs, signals, barricades, flares, lights, and all other equipment, service, and personnel required to regulate and protect all traffic, and warn of hazards. All such work shall conform to requirements of the Warren County Engineer's Office, Ohio Department of Natural Resources or authority having jurisdiction and be provided in accordance with ODOT Manual of Uniform Traffic Control Devices, Construction and Maintenance Operations. Remove temporary equipment and facilities when no longer required, restore grounds to original, or to specified conditions. Traffic Control plan to be reviewed and approved by Warren County Water & Sewer Department.
- F. CONTRACTOR shall maintain work hours of 8:00AM-5:00PM.
- G. CONTRACTOR shall provide dust control in accordance with Section 01 57 00.

1.2 TRAFFIC SIGNALS AND SIGNS

- A. Provide and operate traffic control and directional signals required to direct and maintain orderly flow of traffic in all areas under CONTRACTOR'S control or affected by CONTRACTOR'S operations.
- B. Provide traffic control and directional signs, mounted on barricades or standard posts:
 - 1. At each change of direction of a trail and at each crossroad.
 - 2. At detours and hazardous areas.

3. At parking areas.
4. As required by approved permit or authority having jurisdiction.

1.3 FLAGMEN

- A. Provide qualified and suitably equipped flagmen, including STOP/SLOW paddles, when construction operations encroach on traffic lanes or prevent adequate sight distance, as required for regulation of traffic and in accordance with the requirements of the authority having jurisdiction.

1.4 FLARES AND LIGHTS

- A. Provide flares and lights during periods of low visibility:
 1. To clearly delineate traffic lanes, to guide traffic and to warn of hazardous areas.
 2. For use by flagmen in directing traffic.
- B. Provide illumination of critical traffic and parking areas.

1.5 PARKING CONTROL

- A. Control all construction related vehicular parking within the limits of Work to preclude interference with public traffic or parking, access by emergency vehicles, OWNER'S operations, or construction operations. Provide temporary parking facilities for the public as may be required because of construction or operations.
- B. Monitor parking of all construction and private vehicles:
 1. Maintain free vehicular access to and through parking areas.
 2. Prohibit parking on or adjacent to access roads or in non-designated areas.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 57 00

TEMPORARY CONTROLS

PART 1 – GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

- A. CONTRACTOR shall provide and maintain methods, equipment, and temporary construction, as required to provide controls over environmental conditions at the construction site and adjacent areas. Remove physical evidence of temporary facilities at completion of the Work.
- B. CONTRACTOR shall obtain all City, County and State permits required for the construction of all Work, including Hazardous Material Management, Earth Moving/Dust Control and Stormwater Pollution Prevention Permits.

1.2 NOISE CONTROL

- A. CONTRACTOR'S vehicles and equipment shall be such as to minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA standards and in no case will noise levels be permitted which interfere with the Work of the OWNER or others.

1.3 DUST CONTROL

- A. CONTRACTOR shall be responsible for controlling objectionable dust caused by CONTRACTOR'S operation of vehicles and equipment, clearing or for any reason whatever. CONTRACTOR shall apply water or use other methods subject to the ENGINEER'S approval, which will keep dust in the air to a minimum.

1.4 PEST AND RODENT CONTROL

- A. Provide rodent and pest control as required to prevent infestation of construction or storage areas.
 - 1. Employ methods and use materials that will not adversely affect conditions at the Site or on adjoining properties.

1.5 WATER CONTROL

- A. Provide methods to control surface water and water from excavations and structures to prevent damage to the Work, the Site, or adjoining properties.
 - 1. Control fill, grading and ditching to direct water away from excavations, pits, tunnels and other construction areas and to direct drainage to proper runoff courses so as to prevent any erosion, damage or nuisance.
- B. Provide, operate and maintain equipment and facilities of adequate size to control surface water.

- C. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the Site or to adjoining areas and in conformance with all environmental requirements.

1.6 POLLUTION CONTROL

- A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.
- B. Provide equipment and personnel, perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids.
 - 1. Excavate and dispose of any contaminated earth offsite, and replace with suitable compacted fill and topsoil.
- C. Take special measures to prevent harmful substances from entering public waters.
 - 1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
- D. Provide systems for control of atmospheric pollutants.
 - 1. Prevent toxic concentrations of chemicals.
 - 2. Prevent harmful dispersal of pollutants into the atmosphere.
- E. All CONTRACTOR'S equipment used during construction shall conform to all current federal, state and local laws and regulations.

1.7 EROSION CONTROL

- A. Plan and execute construction and earth work by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
 - 1. Hold the areas of bare soil exposed at one time to a minimum.
 - 2. Provide temporary control measures such as berms, dikes and drains.
- B. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.
- C. Periodically inspect earthwork to detect any evidence of the start of erosion; apply corrective measures as required to control erosion.
- D. Coordinate erosion control requirements with the requirements of Article 1.05, above.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Closeout procedures.
 - 2. Final cleaning.
 - 3. Adjusting.
 - 4. Project record documents.
 - 5. Spare parts and maintenance materials.

1.2 RELATED WORK

- A. Warranties and Bonds are included in Section 01 78 00.

1.3 RECORD DOCUMENTS

- A. Maintain on site, one set of the following documents; actual revisions to the work shall be recorded in these documents:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Store Record Documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and Modifications.
- E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances,

referenced to permanent surface improvements.

2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
3. Field changes of dimension and detail.
4. Details not on original Contract Drawings.

F. Submit documents to ENGINEER with Application for Final Payment.

1.4 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, work has been inspected and that work is complete in accordance with Contract Documents and ready for ENGINEER's inspection.
- B. Provide submittals to ENGINEER that are required by governing or other authorities.
- C. Submit Application for Final Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.

1.5 FINAL CLEANING

- A. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
 1. Remove labels that are not permanent labels.
 2. The installing Prime Contractor shall clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 3. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Leave concrete floors broom clean.
 4. The installing Prime Contractor shall wipe surface of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean light fixtures.
 5. Clean the site of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

1.6 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 78 00

WARRANTIES AND BONDS

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

1.2 RELATED WORK

- A. Refer to Conditions of Contract for the general requirements relating to warranties and bonds.
- B. General closeout requirements are included in Section 01 77 00 Closeout Procedures.
- C. Specific requirements for warranties for the work and products and installations that are specified to be warranted are included in the individual Sections of Division 2 through 33.

1.3 SUBMITTALS

- A. Submit written warranties to the OWNER prior to the date fixed by the ENGINEER for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the work, or a designated portion of the work, submit written warranties upon request of the OWNER.
- B. When a designated portion of the work is completed and occupied or used by the OWNER, by separate agreement with the CONTRACTOR during the construction period, submit properly executed warranties to the OWNER within 15 days of completion of that designated portion of the Work.
- C. When a special warranty is required to be executed by the CONTRACTOR, or the CONTRACTOR and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the ENGINEER for approval prior to final execution.
- D. Refer to individual Sections of Divisions 2 through 33 for specific content requirements, and particular requirements for submittal of special warranties.
- E. At Final Completion compile two copies of each required warranty and bond properly executed by the CONTRACTOR, or by the CONTRACTOR, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- F. Bond warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered

loose-leaf binders, thickness as necessary to accommodate contents and sized to receive 8-1/2-in by 11-in paper.

- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the Section in which specified and the name of the product or work item.
- H. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address and telephone number of the installer, supplier and manufacturer.
- I. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the project title or name and the name, address and telephone number of the CONTRACTOR.
- J. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.4 WARRANTY REQUIREMENT

- A. Related Damages and Losses: When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work
- B. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents. The CONTRACTOR is responsible for the cost of replacing or rebuilding defective work regardless of whether the OWNER has benefited from use of the work through a portion of its anticipated useful service life.
- D. OWNER's Recourse: Written warranties made to the OWNER are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the OWNER can enforce such other duties, obligations, rights, or remedies.
- E. Rejection of Warranties: The OWNER reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the contract Documents.
- F. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the CONTRACTOR of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers and subcontractors required to

countersign special warranties with the CONTRACTOR.

- G. Separate Prime Contracts: Each Prime CONTRACTOR is responsible for warranties related to its own Contract.

1.5 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the OWNER.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the OWNER.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

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SANITARY SEWER SPECIFICATION SS-01

GENERAL REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. General. The Plans, general provisions of the Contract, and The Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition) apply to this section.

1.2 DESCRIPTION OF WORK

- A. Description. Warren County is proceeding with a Cured-in-Place Pipe rehabilitation of two segments of 8-inch diameter sanitary sewers (approximately 715 feet) and rehabilitation of eleven manholes in Deerfield and Hamilton Townships in Warren County. The work for the Cured-in-Place Pipe rehabilitation is described in Supplemental Specification SS-07 included with this project. The work for the Manhole Rehabilitation is described in Supplemental Specification SS-13, SS-14, and SS-15 included with this project.

1.3 QUALITY ASSURANCE

- A. Codes and Standards. Perform all work in compliance with current applicable requirements of governing agencies having jurisdiction.
- B. Testing Requirements. The CONTRACTOR shall provide samples for testing to the ENGINEER upon request. Testing laboratory services for the various items of the Contract and the requirements of the Supplemental Specifications included as part of this project shall be performed in accordance with the various requirements included in the project.

1.4 SUBMITTALS

- A. **General.** Furnish samples, manufacturer's product data, test reports, and material certifications as required for materials and mix design when required. In addition, submittals shall be made in accordance with individual supplemental specifications.

1.5 PROJECT CONDITIONS

A. Safety

- 1. General. Safety requirements shall be in accordance with the Provisions of the Occupational Safety and Health Act (OSHA) of 1970, U.S. Department of Labor, and the Ohio Department of Transportation construction and Material Specifications (ODOT CMS). Open excavations, open manholes, or similar hazards shall not be left unattended, Excavations shall be secured at night and all equipment and supplies moved to a secured area.

2. Confined Spaces. The CONTRACTOR shall follow OSHA requirements for “confined space entry” Title 29 of the Code of Federal Regulations, Part 1910.146 while performing work inside any manhole, sewer, or other permit required confined space. At least 10 working days prior to the start of work, the CONTRACTOR shall submit a Site Safety Plan which describes the CONTRACTOR’s permit required confined space program for review by the County. This program shall include a written entry permitting system, designated rescue service, entry and retrieval procedures and equipment, atmospheric testing procedures, employee training certifications for working in permit spaces, and provisions for meeting any other regulatory requirement relating to the entry of confined spaces. CONTRACTOR is hereby notified that it will also provide confined space entry and retrieval personnel and equipment for certified confined space entry personnel of the County and County’s representatives during project construction. The County and County’s representatives will provide its personnel with personal protective devices including a full body harness. CONTRACTOR will provide these services for two County representatives throughout all times that the CONTRACTOR is working within confined spaces. Compliance shall be included in the unit price bid for the various items of the Contract.

B. Subsurface Investigations. Subsurface investigations were not completed for this project. Prior to any subsurface investigations or on-site examination of the project, all Bidders shall obtain approval for Warren County.

C. Water. Water shall be potable. The CONTRACTOR must coordinate with Warren County Water and Sewer Department for access to a fire hydrant for a water supply prior to drawing water on the site. Hydrant shall be designated by the Warren County Water and Sewer Department. All equipment, fittings, and valves shall be provided by the CONTRACTOR. All equipment shall be in accordance with local and state standards. Backflow prevention shall be in accordance with Warren County standards.

1.6 DELIVERY, STORAGE, AND HANDLING

A. General. Delivery, storage, and handling of materials shall be in accordance with manufacturer’s recommendations and all applicable codes, standards, and specifications.

1.7 SPECIAL WARRANTY

Not Used

PART 2-PRODUCTS

Not Used

PART 3-EXECUTION

3.1 MAINTENANCE OF TRAFFIC

The CONTRACTOR shall comply with the maintenance of traffic requirements as outlined in the general notes of the construction plans and all special considerations required by Warren County or the Ohio Department of Natural Resources.

All traffic control devices, including lights, signs, and barricades, shall be constructed, erected and maintained in accordance with the "Ohio Manual of Inform Traffic Control Devices" Part 06, Temporary Traffic Control.

The cost of all lights, signs, barricades, Police Patrolmen and Flagmen necessary to maintain the aforementioned conditions shall be included in the lump price bid Item 614, Maintaining Traffic, Complete.

3.2 FLOW MAINTANCE AND BYPASS PUMPING

The CONTRACTOR shall bypass sewage, as required, around the sections of the sewer that are to be reconstructed or rehabilitated. Refer to Supplemental Specification SS-05, Bypass Pumping, for additional requirements for performing this task. All costs associated with maintaining sanitary service during construction shall be included in the bid price for Item SS-05 "Bypass Pumping, Complete". No additional payments will be made.

3.3 ACTIVE SEWER LATERALS.

It is the intent of this contract to reconnect or reestablish all lateral sewers. The location of all lateral sewers are indicated on the CCTV recordings and shown on the Plans. If the CONTRACTOR discovers any undocumented laterals they will be brought immediately to the attention of Warren County before rehabilitation prior to the installation of CIPP Linear.

END OF SECTION

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SANITARY SEWER SPECIFICATION SS-02

SEWER CLEANING

PART 1 – GENERAL

1.2 RELATED DOCUMENTS

- A. **General.** The Plans, general provisions of the Contract, and The Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition), apply to this section.

1.3 DESCRIPTION OF WORK

- A. **Description.** The CONTRACTOR shall provide all labor, materials, and Equipment necessary to clean the sewer mains and manholes a specified herein or as designated by the ENGINEER.

1.4 QUALITY ASSURANCE

- A. **Codes.** Perform all work in accordance with the most recent federal, state, and local codes.
- B. **Standards.** All work shall meet or exceed the requirements of the National Association of Sewer Service Companies (NASSCO) Recommended Specifications for Sewer Collection System Rehabilitation (latest edition, except as otherwise specified herein).
- C. **Contractor's Qualifications.** The sewer cleaning CONTRACTOR shall be a firm having a minimum of 5 years continuous successful experience in sewer cleaning similar to that required for this Project.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.1 COORDINATION

- A. All sewers to be cleaned, televised, and/or rehabilitated shall first be cleaned by the Contactor.

3.2 GENERAL

- A. The sewer shall be cleaned of manhole covers, balls, bricks, concrete, sand, dirt, roots, grease, oils and nay other solid or semisolid material using hydraulic, high velocity hydraulic, mechanical sewer cleaning equipment, or physical means without damage to the existing sewer. Selection of the equipment used shall be based on the condition of the sewer at the time the work commences.

- B. During sewer cleaning operation, precautions shall be taken to protect the sewer from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically propelled cleaning tools or any tools which retard the flow of water in the sewer are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to property. CONTRACTOR shall be responsible for restoration or repair of any facility, public or private, which is damaged by CONTRACTOR actions.

3.3 CLEANING PROCESSES

- A. Man-Entry. Confined Spaces. The CONTRACTOR shall follow OSHA requirements for “confined space entry,” Title 29 of the Code of Federal Regulations, Part 1910.146 while performing work inside any manhole, sewer, or other permit required confined space. At least 10 working days prior to the start of work, the CONTRACTOR shall submit a Site Safety Plan which described the CONTRACTOR’s permit required confined space program for review by the County. This program shall include a written entry permitting system, designated rescue service, entry and retrieval procedures and equipment, atmospheric tested procedures, employee training certifications for working in permit spaces, and provisions for meeting any other regulatory requirements relating to the entry of confined spaces. CONTRACTOR is hereby notified that it will also provide confined space entry and retrieval personnel and equipment, for certified confined space entry personnel of the County and County’s representatives during project construction. The County and County’s representatives will provide its personnel with personal protective devices including a full body harness. CONTRACTOR will provide these services for two County representatives throughout all times that the CONTRACTOR is working within confined spaces. Compliance shall be included in the unit price bid for the various items of the contract.
- B. Hydraulic. Hydraulic cleaning equipment shall be of a movable dam type and constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The moveable dam shall be equal in diameter to the sewer being cleaned, and shall provide a flexible scraper around the outer periphery to ensure removal of foreign material.
- C. High Velocity Hydraulic. High velocity hydraulic sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a minimum of 600 feet of $\frac{3}{4}$ inch inside diameter high pressure hose with a selection of two or more high velocity nozzles. The nozzles shall have a minimum capacity of 30 gallons per minute (gpm) at a working pressure of 1,000 to 1,500 pounds per square inch (psi). The nozzles shall be capable of producing a scouting action from 15 degrees to 45 degrees in all site sewers. Equipment shall also include a high velocity gun for washing and scouring manhole walls and floor. The gun capacity shall be capable of producing flows from a fine spray to a long distance solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel. All controls shall be located so that the equipment can be operated above ground.
- D. Mechanical. Bucket machines shall be operated in pairs with sufficient power to perform the work in an efficient manner. Each machine shall be powered by a minimum 16 horsepower (hp) engine. Each machine shall be equipped with a two speed transmission

and shall be able to pull at a rate of 175 feet per minute (fpm) in high speed. Machines shall be belt operated or have an overload device. Machines with direct drive will not be allowed. The power rodding machine shall be either a sectional or continuous positive rod drive and produce a minimum 2,000 pound rod pull. To ensure safe operation, the machine shall have a fully-enclosed body and an automatic safety throw-out clutch or relief valve.

3.4 ROOT REMOVAL

- A. All roots shall be removed from the interior of the sewer by the following processes:
 - 1. Mechanical. Root removal may include the use of mechanical devices, such as rodding machines, expanding root cutters and porcupines, and hydraulic cleaning equipment.

3.5 MATERIAL REMOVAL AND DISPOSAL

- A. All material resulting from the cleaning operation shall be removed at the downstream manhole of the sewer section being cleaned. Passing material from sewer section to sewer section will not be permitted. All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of in accordance with Federal, State, and local regulations. All materials shall become the property of the CONTRACTOR and removed from the site at the end of each workday. The CONTRACTOR will not be allowed to accumulate material on the site of work.
- B. Waste material cleaned from the sewer can be delivered to the Lower Little Miami Wastewater Treatment Plant by the CONTRACTOR for disposal at no charge.

3.6 MEASUREMENT AND PAYMENT

- A. Pre CIPP installation cleaning. The cost of sewer cleaning associated with CIPP installation shall be on a per linear foot basis.

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
3	L.F.	Sewer Cleaning

END OF SECTION

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SANITARY SEWER SPECIFICATION SS-03

CCTV RECORDING AND INSPECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General.** The Plans, general provisions of the Contract, and The Ohio Department of Transportation Construction and material Specifications (CMS) (current edition), apply to this section.

1.2 DESCRIPTION OF WORK

- A. Scope of Work.** The CONTRACTOR shall provide all labor, materials, and equipment necessary to digitally record and inspect the sewer in accordance with the plans and as specified within, and/or as designated by the ENGINEER. Digital recording and inspection shall be performed before and after sewer rehabilitation and as part of the 12 month warranty inspection. Digital recording performed prior to sewer rehabilitation shall be reviewed and approved by the ENGINEER before rehabilitation work begins. Digital recording performed after rehabilitation shall be completed within three months, but no sooner than 30 days after completion of the rehabilitation, to document the installed condition of the sewer. Digital recording for the 12 month warranty inspection shall be performed as directed by the County. The Digital recording shall be performed in the same direction for all inspections. Digital recording work must be reviewed and approved by the ENGINEER for the completed project to be accepted by the County.

1.3 QUALITY ASSURANCE

- A. Standards.** All work shall meet or exceed the requirements of the National Association of Sewer Service Companies (NASSCO) Recommended Specifications for Sewer Collection System Rehabilitation (latest edition), except as otherwise specified herein.
- B. Contractor's Qualifications.** The sewer inspection CONTRACTOR shall be a firm having a minimum of 3 years continuous successful experience in the inspection of sewers similar to that required for this project.

1.4 SUBMITTALS

- A. Inspection Forms.** Inspection forms shall be kept by the CONTRACTOR showing the location, in relation to adjacent manholes of: each infiltration point, laterals, services, joints, voids, unusual conditions, roots, deposit, scale, corrosion, changes of pipe (material, size, shape, slope), and other discernible features. Each inspection form submitted shall contain header information and an inspection details section. A separate inspection form shall be provided for each complete sewer length between manholes, unless directed otherwise by the ENGINEER. The inspection forms will be put into a final report. Two copies of the final report shall be submitted to the ENGINEER.

- B. Digital Recordings. The CONTRACTOR shall furnish the OWNER with two digital recordings of all internal inspections. Additionally, the CONTRACTOR shall furnish Warren County with one digital recording of all internal inspections at the end of the project. Acceptable media for the recordings are digital video disc (DVD).

All digital recordings shall be identified by project number, location, date of inspection, upstream and downstream MH number of the sewer contained on the disk, project names, and CONTRACTOR's name in a manner acceptable to the ENGINEER. All media shall be premium grade and previously unrecorded. All digital recordings shall have a continuous on-screen display indicating sewer section identification and distance from the entering manhole, as well as on screen display identifying laterals and any pipe defects which shall be coordinated with the inspection forms. The digital recording shall be organized so that line sections are in order from upstream to downstream unless approved otherwise by the ENGINEER.

A voice narrative of observations made during the television inspection shall be recorded on the audio portion of the recording. Voice descriptions shall be made at points of pipe failure or weakness, infiltration service connections, and at points where unusual conditions occur. Voice narrative must be audible in the recording. If the recording is rejected due to an inaudible narrative, the inspection recordings will be edited and a narrative shall be dubbed in.

1.5 JOB CONDITIONS

- A. Coordination. The CONTRACTOR performing digital recording and inspection will be required to coordinate his work with other trades.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. The television camera shall be specifically designed and constructed for sewer inspection with a capacity for radial viewing (360°) to allow proper inspection of service lateral connections. The radial view camera must be sled state color and have remote control of the rotational lens. The camera shall be capable of viewing the complete circumference of the pipe. Cameras incorporating mirrors for viewing sides or using exposed rotating heads are not acceptable. The camera lens shall be an auto-iris type with remote controlled manual override. The camera light head shall include a high-intensity side viewing lighting system to allow illumination of internal sections of lateral sewer connections. Lighting for the camera shall illuminate the entire periphery of the sewer for a distance of 15 feet ahead of the camera. The camera shall have a minimum resolution of 600 lines and shall be operable in 100% humidity conditions. Picture quality and definition shall be to the satisfaction of the ENGINEER. Communications shall be provided for controlling the winches, pumping unit, and monitor control.

PART 3 - EXECUTION

3.1 TELEVISION INSPECTION

A. General

1. Digital Recording shall be performed after sewer cleaning for all sewers, then after installation of the CIPP liner, and again 12 months after CIPP liner installation in all lined sections as part of the 12 month guarantee. Refer to Supplemental Specification SS-07, Cured-in-Place Pipe for detail on these submittals. In addition, any sections of pipe being replaced shall be televised within three mounts, but not sooner than 30 days, to document the installed condition of the sewer.
2. The entire length of sewer to be rehabilitated shall be televised for a visual and audio record of the sewer.
3. The entire sewer perimeter shall be visible during sewer Digital Recording and inspection.

B. Digital Recording

1. The digital recording shall include both audio and digital information that accurately reproduces the original picture and sound of the digital inspection. The digital portion of the digital recording shall be free of electrical interference and shall produce a clear and stable image.

C. Televising

1. The inspection will be done one sewer section at a time and the section being inspected will be isolated from the remainder of the sewer system.
2. The camera shall be moved through the sewer with the direction of flow at a uniform slow rate. In no case will the digital camera record while moving at a speed greater than 30 feet per minute. In the event that access to some manholes is restricted, permission may be granted to TV inspect against the flow. In all cases the pre-TV and final TV recordings must be performed in the same direction.
3. Measurement for location of laterals, defects, and other features shall be at the ground level by means of a metering device. Measurement will be accurate to one tenth (0.1) per 100 feet of inspected pipe. The importance of accurate distance measurements is emphasized. Marking on the cable or the like which would require interpolation for depth of manhole, will not be allowed. Accuracy of the distance meter shall be checked by use of a kevlar tape. A measuring target or sealing packer in front of the television camera shall be used as the measurement reference point, and the meter reading shall show the location of the measurement reference point.
4. When sewer conditions prevent forward movement of the camera, the CONTRACTOR shall withdraw the camera and televise the line from the opposite direction. In all cases the pre-TV and final TV recordings must be performed in the same direction.
5. The CONTRACTOR shall record the measurement of each sanitary lateral to the center of the connection to the main sewer. The CONTRACTOR, in the post-lining CCTV inspection video, shall provide a full 360 degree view for video coverage of the lateral

connection to the sewer to ensure proper and complete reinstatement of the lateral to the sewer.

6. Throughout the duration of the project, should the ENGINEER discover inaccuracies in the recordings or if the specifications and/or requirements of the project are not met, the CONTRACTOR shall re-video those segments at no additional cost to the Project.

3.2 MEASUREMENT AND PAYMENT

- A. Pre-lining – Payment of CCTV Recording and Inspection of pre-lining conditions and complete cured-in-place liner design calculations shall be paid for under the various Item No. 7, Cured in Place Pipe Items. No separate payment shall be made.
- B. Post-Lining – Payment of CCTV Recording and Inspection of post-lining work and for the 12 month guarantee shall be paid for under the various Item No. 7, Cured-in-Place Pipe Items. No separate payment shall be made.
- C. Required by Plan – Payment for CCTV Recording and Inspection as required by the plan set will be paid for per the unit price bid for Item No. 5 CCTV video Inspection.

<u>ITEM</u>	<u>UNIT</u>	<u>DISCRIPTION</u>
4	L.F.	CCTV Video Inspection

END OF SECTION

SANITARY SEWER SPECIFICATION SS-05

BYPASS PUMPING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. General. The Plans, general provisions of the Contract, and The Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition), apply to this section.

1.2 DESCRIPTION OF WORK

- A. Scope of Work. When applicable, the CONTRACTOR shall provide all labor, materials and equipment necessary to install a leak free, temporary bypass of sanitary flows around:
 - 1. The sections of pipe that are to be rehabilitated.
 - 2. Any portion of the host pipe that will require repair that will impact sewer flow.
 - 3. Manholes that require manhole base and/or channel modification.

1.3 SUBMITTALS

- A. At the preconstruction meeting, the CONTRACTOR shall provide, for approval by Warren County, a plan describing the methods of bypassing the sanitary flow that will include but not be limited to:
 - 1. A recommended sequence of operations.
 - 2. Drawings and/or legible sketches showing locations of the bypass sewer and construction procedures for crossing streets, excavations, for benching along with support methods. Locations of manholes from which sewage is to be pumped, locations of receiving manholes, and new manholes shall also be shown.
 - 3. A list of all required permit information, applications, fees, ect., to obtain access to the streets when required by the bypass method selected by the CONTRACTOR.
 - 4. A contingency plan to prevent damage during high flows.
 - 5. Method of handing traffic where streets are to be crossed and/or excavated.
- B. At the preconstruction meeting, the CONTRACTOR shall submit a copy of all property owner/resident notifications to Warren County for approval prior to distribution of the notification.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Pumps, Generators, and Equipment

1. The CONTRACTOR shall provide pumps of adequate capacity and size to handle the peak flow and any necessary dewatering and shall not overwhelm the downstream sewer (i.e. no water in basement complaints either upstream or downstream of the bypass pumping locations). The CONTRACTOR shall be responsible for responding to, repairing, and cleaning up for all water in basement complaints caused by the bypass pumping.
2. The CONTRACTOR shall be required to monitor and ensure that power is provided to all bypass pumping equipment during the entire time of bypass pumping operations.

B. Pipe for Temporary Bypass Pumping

1. The CONTRACTOR shall use pipe for the temporary bypass pumping that is leak free and of adequate capacity and size to handle the peak flow and any necessary dewatering. Use of butt fused HDPE or Bauer fittings are the required pipe material.

PART 3 – EXECUTION

3.1 BYPASS PUMPING

- A. The CONTRACTOR shall provide a bypass pumping plan to Warren County at the preconstruction conference. Any bypass system shall be established prior to sewer videotaping and inspection; and as necessary to maintain sanitary service and storm drainage during rehabilitation. The CONTRACTOR shall be responsible to provide adequate capacity in the bypass system. Warren County will not be responsible for any damages due to high flows.
- B. The CONTRACTOR shall be required to remain onsite at all times bypass pumping is in operation to ensure that all equipment is functioning properly.
- C. The bypass shall be made by plugging an existing upstream manhole, if necessary, and pumping the sewage into a downstream manhole approved by Warren County. The pump and the temporary bypass sewer shall be of adequate capacity and size to handle the peak flow and any necessary dewatering. The bypass sewer shall be buried where crossing private access drives or public streets that are opened to traffic and shall either have temporary pavement or be securely plated (if approved by Warren County) or the bypass sewer may be laid over ground with proper plates, ramps and/or coverings to allow vehicular travel over the pipe without damage to the pipe or interruption of the pumping within the established traffic control or easement if outside roadway. Check valves shall be placed ahead of all pumping connections.
- D. The CONTRACTOR may suggest alternate methods of bypassing the sewage but, in any event, the method used shall be approved by Warren County.

E. Under no circumstances will the dumping of raw sewage on private property, streets, waterways and roads be allowed, nor will surcharging of the sewers be allowed due to insufficient pumping.

3.2 PROPERTY OWNER AND/OR RESIDENT NOTIFICATION

- A. The CONTRACTOR shall provide 48-hour prior written notification to Warren County, all property owners, and residents that may be affected by the diversion of flow in the sewer, explaining work that is to take place and its time frame. The notification shall include the approximate time when sewage cannot be received during sewer work as well as when the sewer will be available again for receiving sewage. All commercial establishments shall be provided with temporary sewer service. The means and methods shall be coordinated with the managers and the affected residents.
- B. A door hanger reminder shall be placed 24 hours prior to restricting the sanitary service.

3.3 MEASUREMENT AND PAYMENT

- A. Payments for this item shall be paid at the price bid for lump sum of bypass pumping and shall include the cost of all labor, materials and equipment necessary for completion of the project.
- B. Bypass pumping for the sewer shall include all costs necessary for the completion of the rehabilitation of the sewer.
- C. Bypass pumping for the sewer shall include all costs necessary for the completion of the rehabilitation of the sewer and all additional costs of any additional options chosen by the CONTRACTOR such as an additional manhole, the placement of additional sanitary sewer pipe, construction of a sump, dividing wall, force main extension, or pumping into tanks.

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
5	Lump Sum	Bypass Pumping, Complete

END OF SECTION

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SANITARY SEWER SPECIFICATION SS-07

CURDED-IN-PLACE PIPE

PART 1 – GENERAL

1.1 RELATATED DOCUEMENTS

- A. **General.** The Plans, general provisions of the contract, and The Ohio Department of Transportation Construction and Material Specifications (CMS) (Current Edition) apply to this section.

1.2 DESCRIPTION OF WORK

- A. **Scope of Work.** Furnish and install the cured-in-place resin impregnated flexible tube pipe liner in accordance with the plans and as specified herein. When installed, cured, and complete, the liner shall extend from on manhole to the downstream point of connection in a continuous tight-fitting, watertight, pipe-within-a-pipe manner with a uniformly smooth interior providing hydraulic flow equal to or greater than the existing sewer in original condition.

1.3 QUALITY ASSURANCE

- A. **Standards.** All work an materials used shall be in compliance with the following standards that are made part of this specification:
1. American Society for Testing and Materials (ASTM) (latest edition):
 - a. ASTM D-543, Practices for Evaluating the Resistance of Plastics to Chemical Reagents.
 - b. ASTM D-638, Test Method for Tensile Properties of Plastics.
 - c. ASTM D-790, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - d. ASTM D-5813, “Standard Specification for Cured-in-Place thermosetting Resin Pipe”
 - e. ASTM F-1216, Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin Impregnated Tube.
 - f. ASTM F-1743, Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place thermosetting resin Pipe (CIPP) (if given approval on a case-by-case basis).
 2. National Association of Sewer Service Companies (NASSCO).
- B. **Contractor’s Qualifications.** Installation of the sewer pipe lining system shall be performed by an experienced Contractor fully licensed and approved by the lining process manufacturer. The contractor shall have a minimum of five (5) years of experience in such work and shall have satisfactorily completed ten (10) similar regional projects for at least three (3) different utilities or agencies. If the Contractor anticipates utilizing steam curing, three (3) of these ten (10) regional projects must be a steam cured application.

1.4 SUBMITTALS

The following submittal (A) shall be made with the Bid:

- A. **Contractor's Qualifications.** Submit copy of manufacturer's licensee certificate. Submit list of ten (10) similar regional jobs within the past three (3) years as well. Provide project information such as length of project, pipe diameter, and date complete. Project cost, OWNER contact information, and installation/curing method. In addition, three (3) of the ten (10) regional jobs must indicate the successful use of steam curing if this method is to be utilized by the Contractor.

The following submittals (B-J) shall be made at the pre-construction meeting:

- B. **Product Date.** Furnish manufacturer's general product date.
- C. **Material Certifications.** Written certifications is required from the manufacturer that all liner and resin used in the work are manufactured and tested in accordance with the ASTM Standards specified herein, and are being used or installed in conformance with the manufacture's recommendations.
- D. **Resident Notifications.** The CONTRACTOR shall submit a copy of the resident notifications as described in Section 3.2.A.
- E. **Storage and Delivery Procedures.** The CONTRACTOR shall provide the resin and liner manufacturer's recommended storage and delivery procedures. This shall include storage and delivery temperatures, maximum time from wet-out to installation, and other pertinent information.
- F. **Material Safety Data Sheets.** The CONTRACTOR shall submit Material Safety Data Sheets (MSDS) for each component of the CIPP system.
- G. **Test Results.** Prior to the use of any materials, the CONTRACTOR shall furnish, at its expense, the results of testing of the proposed materials by an independent laboratory in conformance with these specifications. All submitted test data shall have been performed on field installed samples within the last twelve (12) months. Any material not meeting the requirements of these specifications shall be completely removed from the project. Material acceptable to the Engineer shall be substituted for rejected items at the Contactor's expense. The CONTRACTOR shall submit the following:
1. Testing by an independent laboratory to verify that the products to be used meet all minimum strength standards as set forth in ASTM F-1216, Table 1.
 2. Testing by an independent laboratory to verify that the products used meet the Creep Factor specified within. The submittal shall include the long-term Flexural and Tensile Modulus of Elasticity measured in accordance with SSTM D2290.
 3. Testing by an independent laboratory to verify that any product to be used on the project meets the minimum chemical resistance requirements as established in ASTM F-1216, Table 2, where the testing is in accordance with Appendix X2 of ASTM F1216.

Installation Procedures. The CONTRACTOR shall submit the CIPP liner manufacture's detailed installation procedures for the installation method(s) to be utilized on this project.

- H. **Curing Cycle and Cooling Rate.** The CONTRACTOR shall submit the resin manufacture's recommended curing cycle as well as the recommended cooling rate. The CONTRACTOR shall submit inversion pressure (desired and maximum), curing pressure (desired and maximum) and times (part of the curing cycle) for air inversion/steam curing.
- I. **Wet-Out Report.** The CONTRACTOR shall submit a report of the wet-out process identifying each liner by manhole to manhole structure numbers and shall contain the wet-out length, diameter, liner thickness, wet-out date, wet-out manager, type of resin, and resin and catalyst volumes or weights with supporting calculations for each liner.

The following submittals (K-L) shall be made a minimum of ten (10) working days prior to lining:

- K. **Pre-rehabilitation video recordings and logs.** The CONTRACTOR shall submit two (2) copies of the pre-rehabilitation video recordings and logs to the Engineer that document existing conditions after the CONTRACTOR has cleaned the sewer line. Also submitted shall be thickness calculations for the lining according to the most recent findings. See Supplemental Specification SS-03 for requirements.
- L. **Bypass Pumping Plan.** The CONTRACTOR shall submit a bypass pumping plan for each manhole to manhole section to be lined for approval by the Engineer. See Supplemental Specification Section SS-05 for additional details on this submittal.

The following submittals (M-N) shall be within one week after lining:

- M. **Cure Logs.** The CONTRACTOR shall submit a copy of the cure logs for each manhole to manhole installation. The cure logs shall contain records of the curing cycle and the cooling cycle. Each cure log shall clearly indicate the project name, project number, and the manhole section that was lined.
- N. **Post-rehabilitation video recordings and logs.** The CONTRACTOR shall submit two (2) copies of the final television inspection that show the rehabilitated sewer along with reinstated service connections. See Supplemental Specification SS-03 for requirements.

1.5 JOB CONDITIONS

A. Environmental Requirements

1. CONTRACTOR may be required to monitor styrene odors as necessary in business and residences to ensure that concentration levels are under recommended limits.
2. CONTRACTOR shall use caution when working in project sewers. During rain events, project sewers may reach capacity and/or head up.

- B. **Safety.** All work completed in conformance with all applicable safety standards in particular OSHA Standard 29CFR 1910.146. Permit Required Confined Space Entry. See Supplemental Specification Section SS-01, General Requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. CIPP material shall be delivered to the job site in a covered refrigerated truck to minimize exposure to sunlight and to maintain temperature of the product within manufacturer's recommendations to avoid premature curing.
2. Delivery of material shall be coordinated with other trades to avoid delays.
3. Pipe preparations and field inspections shall be completed prior to delivery of liner to site.

B. Storage of Materials

1. Material shall be stored in the delivery truck in order to minimize exposure to sunlight and to maintain the temperature of the product to within manufacturer's recommendation to avoid premature curing.
2. No material shall be stored in the open or in contact with the ground.
3. **Temperature logs of liner from time of wet-out to installation shall be given to the County representative on site at the time of installation.** These logs shall contain the calculated volume of resin required and the actual volume of resin provided. The County representative shall verify that the volume resin provided is 5 to 10 percent greater than the calculated volume of resin required per ASRM F-1216, 7.2

C. Handling

1. Handle all products with care. Only sound, undamaged products shall be accepted.

1.7 GUARANTEE

- A. When any work is accepted by the County there shall be a guarantee period extending for one year from the date of acceptance of the work. At any time during the guarantee period, the County may notify the CONTRACTOR and his Surety that certain repairs are necessary, including, but not limited to, any damage or active infiltration or inflow. Within 10 days after being so notified, the CONTRACTOR shall make such repairs as are declared necessary to restore the work to a good serviceable condition. In the event that the CONTRACTOR fails to comply with the order to repair as provided, said repairs may be made by the County and it is hereby agreed by the CONTRACTOR that reimbursement shall be made by the County for 2.5 times said expense so incurred within ten days following the receipt of a statement rendered to the CONTRACTOR by the County for said expense. Specifications for the work performed under this Contract shall govern in the making of repairs under this section. The CONTRACTOR shall perform and provide CCTV recording of the rehabilitated sewers as part of the 12 month warranty as directed by the County.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Only products and materials approved by Warren County may be used for this project.

- B. **Products.** The product shall meet requirements within these specifications.
- C. **Design Parameters and Mechanical Properties.** The following values are to be used to verify that the liner thickness equals or exceeds that shown in the plans and, where indicated by an ASTM standard, shall serve as the minimum acceptable strength requirements for the final cured liner.

Flexural Strength (ASTM-D-790)	4,500 psi
Short-term Flexural Modulus of Elasticity (ASTM D-790)	250,000 psi
Creep Factor	50%
Factor of Safety	2
Ovality	5%
Soil Modulus	1000

The design thickness shall be per ASTM F1216. Each tube shall be designed to withstand internal and/or external pressures as dictated by site and pipe conditions as well as the installation process used by the CONTRACTOR.

The CIPP liner thickness has been calculated to withstand the soil loading as the deepest point (the maximum difference between the surface evaluation and the pipe evaluation) between manholes. Unless noted otherwise on the Contract Drawings or job-specific data is available, assume the water table to be four (4) feet below the **average** surface evaluation. For **partially deteriorated** liner design, the water depth shall be taken from the pipe invert. For **fully deteriorated** liner design, the water depth shall be taken from the top of the pipe.

- D. **Fabric Tube.** The flexible fabric tube shall consist of one or more layers of flexible needed felt or an equivalent woven and/or non-woven material capable of carrying resin, withstanding installation pressures and curing temperatures, and compatible with the resin system used. The tube shall be sized to accommodate the forces of installation, host pipe configuration, and any other pertinent factors to assure a tight fitting final product with a smooth finish.
- E. **Resin System.** The resin system shall be a polyester, epoxy, or vinyl ester resin and catalyst system compatible with the insertion process. The resin system shall not contain filler or additive, except those required for viscosity control, fire retardant, modulus enhancement, chemical resistance, or life extension. The following additives may not interfere with the visual inspection of the cured-in-place liner pipe or its required properties: thixotropic agents added for viscosity control, the opaqueness of the plastic coating, and resins that may contain pigments, dyes, or colors. Resin selected shall be reflected in the CIPP liner thickness calculations.

The tube shall be vacuum impregnated with resin (wet-out) under controlled conditions. The volume of resin used shall be sufficient to fill all voids in the tube material at nominal thickness and diameter and an allowance for migration of resin into the cracks and joints in the host pipe. A roller system shall be used to uniformly distribute the resin throughout the tube.

PET or recycled resins will not be permitted.

- F. **Inverting/Curing Medium.** The inverting/curing medium shall be heated potable water or steam. In no instance will sewage be used to invert or cure liners or calibration tubes. If a

private water source is proposed for use, a written agreement shall be obtained from the owner of the private water source and a copy of said agreement given to the County.

2.2 EQUIPMENT.

- A. All equipment required for the installation and curing of the resin impregnated flexible fabric tube, including cables, sleeves, rollers, compressors, generators, pumps, valves, gauges, water heaters and accessories required for complete installation shall be in the accordance with the manufacturer's recommendations.

PART 3- EXECUTION

3.1 EXAMINATION

- A. General. Examine areas and conditions within the sewer system in which materials and products are to be installed.
- B. Material. All sewer pipe liner materials shall be carefully inspected for defects prior to installation. The liner shall be homogeneous throughout, uniform in color, free of tears, holes, foreign materials, blisters, or other deleterious faults. Any material found during the progress of the work to have flaws or defects shall be rejected. All defective materials furnished by the CONTRACTOR shall be promptly removed by the CONTRACTOR from the project site.
- C. Responsibility. The CONTRACTOR shall be responsible for all material furnished and shall replace at its own expense all such materials found defective in manufacture or damaged in handling after delivery by the manufacturer. This shall include the furnishing of all material and labor required for the replacement of installed material discovered defective prior to the final acceptance of the work.

3.2 PREPARATION

- A. **Notification.** The CONTRACTOR shall be responsible for notification which shall include three (3) separate notices. The initial notification shall contain general information about the project and the cure-in-place pipe process using graphics as necessary to illustrate the procedure. Other information to be included shall be project number, project name, description of work to be performed, time frames for the work, and precautions o take during the course of the project (keeping water in the trap, keeping toilet lids down, etc.) A caution statement shall be included with the initial and second notifications and shall read as follows: "CAUTION- A very small part of the population may be susceptible to adverse reactions from the odor that may accompany the sewer rehabilitation work. If a person should start to experience dizziness or nausea, remove the person from the area and get them to a well ventilated area or to the outside. Please call the Contractor at the contact numbers below on the notification for help or assistance" The CONTRACTOR shall list the superintendent on the job along with its mobile telephone number as a primary contact. Secondary contact information shall be submitted **at the pre-construction meeting** for approval by the Engineer. Upon approval, the CONTRACTOR shall immediately distribute this information to all properties affected by the work.

The second notification shall alert residents and business owners of any utility disruptions and to advise minimal water usage. This notification shall provide the beginning date and time of the disruptions, the length of the disruption, and the ending date and time of the disruption. The second notification shall be distributed by the CONTRACTOR two (2) working days prior to commencement of the work.

The third notification shall inform property owners and residents that work on their portion of the sewer is complete and they may resume normal water usage. The CONTRACTOR shall distribute this notice immediately upon completion of the work.

- B. **Cleansing.** All sewers to be lined shall be cleaned as required prior to lining with CIPP. The term “cleansing” shall mean the removal of all sand, dirt, roots, grease, and all other solids or semisolid materials from the interior face of the sewer lines. Refer to specific recommendations Supplemental Specification Sections SS-01, General Requirements, and SS-02, Sewer Cleansing.
- C. **Sewer Digital Recording and Inspection.** The CONTRACTOR shall televise the sewer to provide a detailed record of existing conditions and lateral connections as described in Supplemental Specification Section SS-03. Two (2) copies of the pre-rehabilitation inspection shall be submitted to the Engineer. The CONTRACTOR shall be responsible for having a copy of the pre-rehabilitation inspections in the field as well. Immediately prior to CIPP liner insertion, the camera shall traverse the sewer to inspect for debris which may have entered the sewer line after the existing condition recording. **Warren County must sign off on this reconnaissance inspection for the CIPP lining work to proceed.**
- D. **Laterals.** Lateral sewer pipes protruding into the main sewer shall be trimmed flush with the inside of the main sewer wall prior to lining. Trimming must be done in a neat, workmanlike manner, causing no damage to the lateral pipe beyond the inside face of the main sewer. Point repairs shall be made as needed around laterals to ensure a smooth, watertight opening following lining of the main and reestablishment of the lateral. Payment for trimming of the protruding taps and all other necessary work to meet project requirements shall be included in the unit price bid for the CIPP.
- E. **Bypassing Sewage.** The CONTRACTOR shall bypass the sewage around the sections of the sewer that are to be lined as required. The bypass shall be made in accordance with Supplemental Specification Sections SS-01, General Requirements, and SS-05, Bypass Pumping.
- F. **Line Obstruction.** It shall be the responsibility of the CONTRACTOR to clear the sewer of obstructions, solids, protruding services, or collapsed pipes that will prevent the proper installation of the liner.

If the pre-rehabilitation video recording and inspection reveals an obstruction that cannot be removed by trenchless means from within the sewer, the CONTRACTOR shall notify the County. The CONTRACTOR shall complete the repair work at the rates on the contract within a reasonable amount of time not to exceed 15 days. The CONTRACTOR shall re-televise the sewer. Re-televising the sewer shall be performed and paid for in accordance with the Supplemental Specification SS-03, CCTV Recording and Inspection.

If the pre-rehabilitation video recording and inspection reveals a sag in the sewer that has a vertical displacement greater than one-half pipe diameter, the CONTRACTOR shall notify the County. The CONTRACTOR shall complete the repair work at the rates of the contract within a reasonable amount of time not to exceed 15 days. The CONTRACTOR shall then re-televiser the sewer. Re-televising the sewer shall be performed and paid for in accordance with Supplemental Specification SS-03, CCTV Recording and Inspection.

In addition, any equipment that is lost, broken, wedged, or struck in the line section shall be removed by the CONTRACTOR at the CONTRACTOR's expense.

- G. **Protective Measures.** To prevent burnt grass, the CONTRACTOR shall provide protective measure, (E.g. felt, blocks of wood) to create a barrier between boiler hoses and the grass for each installation.

For steam curing, the CONTRACTOR shall take appropriate measures to ensure that non-water residuals/byproducts of steam curing do not enter nearby steams, storm sewers, etc. CONTRACTOR shall also provide barriers to prevent steam from burning grass.

3.3 INSTALLATION PROCEDURE

- A. **General.** Installation shall be by inversion (ASTM F-1216). Pulled-in-place installation (ASTM F-1743) may be allowed on case-by-case basis, if approved by the Engineer. The CONTRACTOR shall deliver the liner to the site and provide all equipment required to insert the liner into the sewer and cure it in place. The CONTRACTOR shall designate the locations where the tube will be vacuum impregnated prior to installation. The CONTRACTOR shall allow the OWNER to inspect the materials and the "wet-out" procedure upon request. All procedures to prepare the liner for installation will be in strict compliance with the manufacturer's recommendation. Any material not properly prepared shall be rejected and replaced with acceptable materials at the CONTRACTOR's expense. CONTRACTOR shall not proceed with work until satisfactory conditions are present in the sewer.
- B. **Installation.** A scaffold, elevated platform, or other means of providing required pressure shall be provided at the access point. The resin-impregnated tube shall be pulled and/or inverted into the host pipe by methods approved by the manufacturer and proven through previous successful installations. The Insertion method used shall not cause abrasion or scuffing of the tube. Hydrostatic or air pressure shall be used to inflate the tube, molding it against the walls of the host pipe. Tube installation pressures shall be limited so as not to stretch the tube longitudinally by more than five (5) percent of the original length.
- C. **Curing.**
1. **Using Circulated Heated Water:** After the installation is complete, the CONTRACTOR shall supply a suitable heat source, water recirculation equipment, and a curing medium as approved by the Engineer. The equipment shall be capable of uniformly raising the water temperature to a level required to effectively cure the resin.
 2. **Using Steam:** After the installation is complete, the CONTRACTOR shall supply suitable heat steam-generation equipment as approved by the Engineer. The equipment shall be capable of delivering steam throughout the section to uniformly raising the temperature within the pipe to a level required to effectively cure the resin.

3. **General.** The equipment shall be muffled to reduce excess noise during the curing process.

The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing water supply. Another such gauge shall be placed between the tube and the host pipe in the downstream manhole at or near the bottom to determine the temperatures during cure. Water temperature in the pipe during the cure period shall be as recommended by the resin manufacturer.

Initial cure shall be deemed complete when the exposed portions of the tube appear to be hard and sound and the temperature sensor indicates the recommended temperature of the manufacturer. The cure period shall be of a duration recommended by the resin manufacturer and may require continuous recirculation of the water to maintain temperature.

D. **Cool Down.**

1. **After Heated Water Cure.** The CONTRACTOR shall cool the hardened pipe to a temperature below 100 degrees Fahrenheit before relieving the hydrostatic head. Cool-down shall be accomplished by introducing cool water into the inversion standpipe to replace water being drained from a small hole made in the downstream end. Rate of cooling shall not exceed resin manufacturers recommendations. Water shall be cooled to 50 degree Celsius (122 Degree F) prior to being released into the sewer.
2. **After Steam Cure.** The CONTRACTOR shall cool the hardened pipe to a temperature below 113 degrees Fahrenheit before relieving the internal pressure within the section. Cool-Down may be accomplished by introducing cool water into the section to replace the mixture of air and steam being drained from a small hole made in the downstream end. Rate of cooling shall not exceed resin manufacturer's recommendations. Water shall be cooled to 50 degrees Celsius (122 Degree F) prior to being released into the sewer.

- E. **Finish.** The new pipe shall be cut off in the manhole at a suitable location. Excavation will not be allowed at cleanouts unless approved by the Engineer. The finished product shall be continuous over the length of the pipe reconstructed and be free from dry spots, delamination, lifts, and debris under the liner. If any unsatisfactory condition is present in the lined pipe, the County reserves the right to require a suitable repair.

- F. **Invert through Manholes.** The invert shall be continuous and smooth through all manholes. If a liner is installed through a manhole, the bottom portion of the liner shall remain and the bench of the manhole shall be grouted with a resin mixture compatible with the CIPP and shaped as necessary to support the liner. If the liner terminates on either side of the manhole, the invert shall be built up to remove any flow restrictions and to form a continuous invert through the manhole. The cost of this work shall be included in the unit price bid for CIPP.

- G. **Sealing Pipe in Manholes.** Form a tight seal between the CIPP and the manhole wall at the pipe penetration. Do not leave any annular gaps. Seal any annular space greater than ½-inch with manhole wall repair material. Finish off the seal and seal any annular spaces less than 1-2-inch with chemical grouting per SS-11 placed around the pipe opening from inside the manhole in a band at least 4-inches wide.

H. **Service Connections.** There are known service laterals in the pipe section being lined as part of this project. The exact location and number of service connections shall be verified during the initial television inspection. It shall be the CONTRACTOR's responsibility to accurately field locate all existing active service connections. If any lateral connections are discovered during the pre-lining CCTV the CONTRACTOR shall notify Warren County when the pre-lining CCTV videos are submitted as described above.

The CONTRACTOR shall reconnect all active service connections to the liner pipe as indicated in Supplemental Specifications SS-01. Reinstatement of the active laterals on the cured liner shall begin immediately after curing operations are complete and continue uninterrupted until all active laterals have been reopened.

The CONTRACTOR shall be responsible for restoring/correcting all missed or faulty reconnections within 12 hours of being notified by the County. The CONTRACTOR shall be responsible for any damage caused to property owners for not reinstating the services soon enough or for not giving notice to the owners.

All existing active service connections shall be reinstated by a remote controlled cutting device directed internally by a television camera or by internal manual cutting. They shall be made by experienced operators so that no blind attempts or holes are made in the liner pipe. Location shall be verified carefully to match earlier tapes for accurate locations especially where dimples are not well defined or clearly ascertained. The Engineers reserve the right to require service connection by excavation at the CONTRACTOR's cost at any location, if the quality or workmanship for the cut is not satisfactory.

The cut shall be smooth and circular in nature as seen by a television inspection camera. Lateral cuts shall be brushed as necessary to ensure smooth openings. It shall be properly aligned, invert to invert, to the existing connection with no obstructions to the flow. Resin slugs shall be removed from the reinstated service connections. Any miscuts shall be repaired at no cost of the OWNER, and to the full satisfaction of the Engineer. All coupons cut from the liner for reopening of lateral connections shall be retrieved from the sewer, accounted for by the CONTRACTOR, and turned over to Warren County.

I. **Final Television Inspection.** The CONTRACTOR shall televise the rehabilitated sewer to provide a detailed record of finished conditions and lateral connections. Lateral connections shall be observed while the camera is stopped and viewing the connection squarely. The CONTRACTOR shall provide video of a full 360 degree sweep of each reinstated lateral to show the lateral connection in its entirety. When complete, the CONTRACTOR shall submit two (2) copies of the rehabilitated sewer inspection videos, along with the accompanying logs, which shall be printed clearly or typed as requested in Supplemental Specification Section SS-03.

3.4 RESTORATION

A. Where portions of the site, either inside or outside the contract limits, not designated for change or new work become damaged during the course of construction by the CONTRACTOR's operations, the CONTRACTOR shall repair or replace at no addition cost to the OWNER such damage to original or better condition in conformance with the Contract Documents. This shall include, but not be limited to, reseeding, replacing shrubbery in kind, replacing damaged fence, etc.

3.5 FIELD QUALITY CONTROL

- A. **General.** The rehabilitated pipe shall be continuous (without joints) over the entire length of an insertion run between two manholes. The liner shall be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes, and delamination. The liner surface shall be free of leaks, cracks, and crazing with a smooth finish. Some minor waviness that, in the Engineer's opinion, will not appreciably decrease the flow cross section or affect the flow characteristics shall be permissible.

Any defects in the product shall be repaired at the CONTRACTOR's expense in a manner mutually agreed upon by the OWNER and CONTRACTOR. The CONTRACTOR shall reinspect these repairs before the one (1) year guarantee period expires. During the one (1) year guarantee period, any defects that are discovered that will affect the integrity or strength of the product shall be repaired at the CONTRACTOR's expense in a manner mutually agreed upon by the OWNER and the CONTRACTOR. These repairs shall be granted a three (3) year extended guarantee period by the CONTRACTOR from the date of repair. The CONTRACTOR shall reinspect these repairs prior to the expiration of the three (3) year extended guarantee period.

- B. **Testing.** The following tests shall be performed for each length of CIPP length installed per ASTM F-1216 and/or F-1743 (when approved):

1. Short-term Flexural (Bending) Properties - The initial tangent flexural modulus of elasticity and flexural yield strength shall be measured in accordance with ASTM D790.

The CONTRACTOR is to provide test samples to the Engineer upon request in accordance with ASTM F-1216, Item 8.1. Note that this item requires two CIPP samples, one from each of the following two methods:

2. The sample should be cut from a section of cured CIPP at an intermediate manhole or at the termination point that has been inverted through a like diameter pipe which has been held in place by suitable heat sink, such as sandbags.
3. The sample should be fabricated from material taken from the tube and the resin/catalyst system used and cured in a clamped mold placed in the downtube when circulating heated water is used and in the silencer when steam is used as the curing medium.

The OWNER retains the right to test coupons retrieved from the sewer and turned over to the Engineer. If the CONTRACTOR performs independent tests for their purposes, additional sample shall be provided by the CONTRACTOR for that use.

- C. **Final installed Liner Thickness.** The final installed liner thickness shall not be less than the thickness specified in the Contract Documents or approved shop drawings. The final installed liner thickness shall not be more than 10% greater than the specified or approved thickness. The final installed liner thickness measurement shall be determined from pipe samples, coupons retrieved from the sewer, or as deemed necessary by the Engineer. It shall be the CONTRACTOR's responsibility to consider site conditions and their installation process to determine the liner thickness to install.

- D. **Non-Compliance.** In the event the flat plate samples do not meet the required thickness or Flexural Strength of 4,500 psi and Flexural Modulus of Elasticity of 250,000 psi as outlined in Section 2.2 C; actual installed samples must be taken. The installed samples shall be

taken as directed by the Engineer and in accordance with all applicable ASTM requirements. From these samples, the installed Thickness shall be determined by taking an average of at least 10 thickness measurements. Installed samples shall then be prepared for re-testing in accordance with Section 2.2 C of these specifications.

In the event that any liner installation does not meet specified strengths and/or thicknesses, the conformity of the work with the plans and specifications shall be in accordance with ODOT CMS Section 105.3.

3.6 MEASUREMENT AND PAYMENT

- A. **Liner.** This item of work shall include all necessary television observation, protruding lateral removal and repair, sewer cleaning, pipe preparations, liner resins, grouting, water, equipment, labor, testing, clean up, manhole reconstruction required by construction means and methods of CIPP installation, and all other expenses whether specifically mentioned or not to install the cured-in-place pipe. Payment will be made at the unit price bid lineal foot as measured from center of manhole to center of manhole along the horizontal centerline of the rehabilitated sewer, complete, tested, and ready for service.
- B. **Lateral Sewers Reestablished for CIPP.** This item of work shall include all necessary equipment, materials, and labor to reestablish lateral sewers in cured in place pipe.
- C. **Payment.** Payment will be made at the unit price bid per actual linear foot of CIPP lining installed for each size of pipe and each thickness of liner.

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
6	Lin. Ft	8" Cured in Place Pipe

END OF SECTION

SANITARY SEWER SPECIFICATION SS-10

CEMENTITIOUS GROUTING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. **General.** The plans, general provisions of the Contract, and the Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition), apply to this session.

1.2 DESCRIPTION OF WORK

- A. The CONTRACTOR shall provide all labor, materials, and equipment necessary to fill voids outside the walls of the sewer and manholes as specified within and as directed by the County.

1.3 QUALITY ASSURANCE

- A. **Codes.** Perform all work in compliance with the most recent federal, state, and local codes.
- B. **Standards.** All work shall be in compliance with the National Association of Sewer Service Companies (NASSCO).
- C. **Contractor's Qualifications.** The pressure grouting CONTRACTOR shall be a firm having a minimum of 3 years continuous successful experience in pressure grouting similar to that required for this Project.

1.4 SUBMITTALS

- A. At the preconstruction meeting, the CONTRACTOR shall furnish the grout manufacturer's product data, test reports, installation instructions, and materials certification.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Cement shall be stored in weather tight enclosures to protect against moisture and contamination.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Portland cement shall conform to OFOT CMS 701.01.
- B. Sand shall conform to ODOT CMS 703.03.
- C. Water shall be potable

2.2 EQUIPMENT

- A. The grout pump shall be of the positive displacement type and shall be capable of producing adequate pressure to penetrate the area and the depth required. The CONTRACTOR shall furnish gauges to monitor working pressure.

PART 3 – EXECUTION

3.1 COORDINATION

- A. Pressure grout injection shall be performed after inspections.

3.2 GENERAL

- A. The CONTRACTOR shall pressure grout voids between the outside wall of the sewer/manhole and the surrounding soil along the section of the sewer/manhole to be rehabilitated as specified by the ENGINEER. Grouting shall be performed in areas where voids are visible from inside the sewer/manhole, where there is evidence of the flow leaking through the bricks beneath and surrounding connections, where there is evidence of calcium buildup on the inside face of the brick sewer/manhole and at any other locations agreed upon by the CONTRACTOR and the ENGINEER (or his representative). Grouting operations shall be performed under low pressure conditions and the pavement above the grouting operations monitored to verify grout is not heaving the pavement or surfacing through the joints in the pavement.

3.3 BATCHING AND MIXING

- A. The grout mixture shall be proportioned generally in the ratio of 1 bag of Portland cement to 7.5 gallons (1 cubic foot) of water. This mix can be adjusted by varying the water-cement ratio as grouting proceeds to ensure adequate penetration behind the sewer/manhole wall, but at no time shall the water-cement ratio of the grout mixture exceed 0.80. All changes in grout mix designs must be approved by the ENGINEER prior to use. Grout yield shall be 1.48 cf/bag unless otherwise noted.

3.4 PLACEMENT

- A. **Preparatory Work.** The existing sewers/manholes may have missing or deteriorating mortar within the makeup of the walls. The CONTRACTOR may need to parge or chink these mortar joints prior to grouting to prevent the grout from seeping back into the pipe.
- B. **Grout Holes.** Grout holes shall be drilled through the sewer/manhole wall at select locations to best fill void areas. Hole shall be no larger than necessary to accommodate the injection nozzle of the pumping equipment. Care shall be taken not to damage the surrounding sewer or manhole. When pressure grouting is complete, the drilled hole shall be completely filled with a fast set non-shrink grout.
- C. **Quantity.** In order to control the quantity of material placed, pressure grouting shall be accomplished in multiple stages. Grout placed in each stage must not exceed 10 bags of cement per void detected. A 12 hour minimum time interval shall elapse between successive

stages. Voids shall be resounded and probed after each stage. Only those areas still indicating void spaces behind the sewer or manhole wall will be regouted.

- D. **Adjacent Facilities.** The CONTRACTOR shall take precautions to prevent grout from entering lateral sewers, duct banks, conduits, or other adjacent structures, and shall monitor working pressures to avoid damage or displacement of the sewer/manhole, adjacent structures, or the ground surface. The CONTRACTOR shall be responsible for the costs of replacement, repair, or cleanup of utilities of structures adversely affected by grouting procedures.
- E. **Grouting Pressure.** The machine used for grouting shall be capable of providing a pressure up to 75 pounds per square inch (psi) in excess of any external water pressure. The CONTRACTOR shall provide gauges to monitor the working pressures during grouting operations, with a gauge recommended at the injection site on the sewer or manhole wall. The pressure shall not exceed that which would distort the sewer or manhole wall, damage or fill adjacent utilities, lift or displace the overburden.
- F. **Pavement Upheaval.** The CONTRACTOR shall replace any pavement in like and kind that is upheaved by pressure grout injection.

3.5 CLEAN UP

- A. The CONTRACTOR is responsible for containing and removing all excess grout from the sewer and project area. In no case will the CONTRACTOR be allowed to flush excess grout from his equipment into the sewer or downstream to adjacent facilities.

3.6 MEASUREMENT AND PAYMENT

- A. **General.** This item of work shall include all grout, drilling, cleanup, and appurtenant work necessary to complete Cementations as indicated on the drawings and specified herein.
- B. **Payment.** A contingency quantity of 5 cubic feet of cementations grouting is included in base bid. The CONTRACTOR shall be paid for the actual amount of cementations grouting used in the rehabilitation of the manhole which may be more or less than the quantity provided on the plan. Payment for cementations grouting and all other necessary work to meet project requirements shall be included in the unit price bid for the Contingency Item Cementations Grouting, As Directed by the County.

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
7	CF	Cementitious Grouting, As Directed by the County

END OF SECTION

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Sanitary Sewer Specification SS-10

CHEMICAL GROUTING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. **General.** The plans, general provisions of the Contract, and the Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition), apply to this section.

1.2 DESCRIPTION OF WORK

- A. The CONTRACTOR shall provide all labor, materials, and equipment necessary to clean and prepare the affected area of the manholes, place the chemical grout and clean the area within the manhole of residual grout as specified herein or as designated by the ENGINEER. The CONTRACTOR shall provide a written report to the ENGINEER identifying the locations by the manhole number and where within the manhole the Chemical Grout will be needed. The use of Chemical Grout shall be used only as directed by the County.

1.3 SUBMITTALS

- A. At the preconstruction meeting, the CONTRACTOR shall furnish the chemical manufacturer's product data, test reports, installation instructions, and material certifications for approval by the County.

PART 2 – PRODUCTS

2.1 MATERIALS

Not used.

2.2 EQUIPMENT

- A. Urethane base gel chemical sealing material or other chemical sealing material approved by the ENGINEER. The material must be able to react in the presence of water and withstand continuous submergence without degradation. The resultant sealant formation must prevent the passage of water through the structure wall, it must be flexible, withstand freeze/thaw and wet/dry cycles without affecting the seal, it must not be biodegradable, and should be chemically stable and resistant to mild concentrations of acids, alkalis and organics normally found in wastewater and soil.

Urethane prepolymer (liquid)	Min, Solids Content 77%
Prepolymer viscosity	600-1200 centipoises at 70 F
Cure time	80 seconds at 40 F
	55 seconds at 60 F
	30 seconds at 80 F
Cure time with accelerators	10 seconds at 40-80 F

Recommended mix ration 1 part prepolymer to 8 parts water (11% prepolymer)

PART 3 – EXECUTION

3.1 COORDINATION

- A. Chemical Grouting shall be performed only as needed and approved by the ENGINEER.

3.2 PLACEMENT

- A. The CONTRACTOR shall supply the equipment needed for performing the pressurized chemical grout injection. Basic equipment consists of chemical pumps, chemical containers, hoses, valves, pressure gauges, and other appurtenances required to seal structure walls. The chemical injection pumps shall be equipped with pressure gauges that will monitor pressures during the injection of the chemical sealants and when necessary, pressure-regulated bypass valve shall be incorporated into the pumping system.
- B. At each point or points of leakage within the structure a hole shall be carefully drilled from within the structure and shall extend through the entire structure wall. Chemical sealant injection devices shall be placed into the previously drilled holes so that a seal will be obtained between the holes and the injection device. The chemical injection equipment shall then be connected and the specified chemical sealing materials pumped into the surrounding medium until material refusal is shown by the pressure gauges, a predetermined quantity of sealant has been injected or sealant is observed at an adjoining injection point. The above shall be repeated until all sources or infiltration into the structures has been sealed. Pumping operations shall be carefully monitored to prevent the occurrence of excessive pressure which could damage the structure. Upon completing, the injection devices shall be removed and the holes filled with fast set, non-shrinking mortar.

3.3 QUANTITY

- A. In order to control the quantity of material placed, pressure grouting shall be accomplished in two stages. Grout placed in the first stage must not exceed 10 gallons of liquid prepolymer per void detected. A 12 hour minimum time interval shall elapse between successive stages. Grout placed in the second stage shall not exceed 10 gallons of prepolymer per area. No additional pressure grouting will be performed beyond the second stage unless approved by the Owner's representative.

3.4 ADAJCENT FACILTIES

- A. The CONTRACTOR shall take precautions to prevent grout from entering lateral sewers, ductbanks, conduits, other adjacent structures, and shall monitor working pressure to avoid damage or displacement of the sewer, adjacent structures, or the ground surface. The CONTRACTOR shall be responsible for the cost of replacement, repair, or cleanup of utilities or structures adversely affected by grouting procedure.

3.5 MEASUREMENT AND PAYMENT

- A. A contingency quantity of 16 gallons of chemical grouting is included in the base bid. The CONTRACTOR shall be paid for the actual amount of chemical grouting used in the rehabilitations of the manhole which may be more or less than the quantity provided on the

plan. Payment for chemical grouting and all other necessary work to meet projects requirements shall be included in the unit price bid for the Contingency Item Chemical Grouting, As Directed by the County.

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
8	Gal	Chemical Grouting, As Directed by the County

END OF SECTION

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SANITARY SEWER SPECIFICATION SS-13
URETHANE/ EPOXY MANHOLE REHABILITATION

PART 1: GENERAL

1.1 RELATED DOCUMENTS

- A. **General.** The Plans, general provisions of the Contract, Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition), apply to this section.

1.2 DESCRIPTION

- A. This specification includes all work, materials, operation, and equipment necessary to rehabilitate manholes applying a urethane/ epoxy liner product to the walls, inverts, and benches of manholes resulting in a monolithic liner of a minimum 1/8 inch thickness or more, as determined by the manufacturer for the depth and water table in accordance with the plans, as specified within, or as designated by the Engineer. This item shall include all structural restoration; elimination of inflow and/or infiltration; manhole step removal; base and channel repair; excavation; removal and disposal of all excess materials; restoration; backfill; permanent and temporary and disposal of all excess materials; restoration; backfill; permanent and temporary pavement replacement; clearing and grubbing; resetting, replacing, and/or raising casting to grade; and dewatering required for manhole rehabilitation. This specification also includes the inspection of manhole structures and the submittal of the unspecified items on the manhole rehabilitation tables included in the plan set. Pre-rehabilitation, post-rehabilitation, and 12 month warranty photographs shall be provided for all manholes.

1.3 QUALITY ASURANCE

- A. Furnish materials of quality required by the American Society for the Testing and Materials (ASTM) standards or other approved standards and specifications.
- B. Provide guarantee against defective materials and workmanship in accordance with the requirements of these specifications.
- C. **Contractor's Qualifications.**
1. The manhole rehabilitation CONTRACTOR shall be a firm having a minimum of 3 years continuous successful experience in the rehabilitation of manholes similar to that required for this project.
 2. The manhole lining CONTRACTOR shall be certified by the lining material manufacturer to install their manhole liner if the material requires a certified applicator. The County reserves the right to require an on-site manufacturer's representative, knowledgeable in the use and application of the material, for a minimum of two (2) working hours for each supplied material. The material representative shall direct and instruct the CONTRACTOR and inspector on the proper application procedure.

1.4 RFERENCES

- A. Referenced ASTM Standards

- B. NASSCO Specifications
- C. Manufacturer's Specifications

1.5 SUBMITTALS

The following submittal (A) shall be made with the Bid:

- A. **Contractor Qualifications.** The CONTRACTOR shall submit a copy of the manufacture's licensee certificate. If the CONTRACTOR is not licensed by the manufacturer, then a manufacturer's representative will be on-site as explained in Section 1.3.E.2. CONTRACTOR shall also submit a list of ten (10) similar regional projects completed within the last three (3) years including information such as a number of manholes on a project, manhole construction type, date completed and project costs.

The following submittals (B-D) shall be made at the pre-construction meeting:

- B. **Material Certifications.** The CONTRACTOR shall furnish the manufacturer's product data, installation instructions, applicable referenced work standards (American Society for Testing and Materials [ASTM], American Concrete Institute, [ACI], etc.), approved laboratory test reports that verify strength requirements of this specification, and materials certification for each product used prior to material installation.
- C. **Material Safety Data Sheets.** The CONTRACTOR shall submit Material Safety data Sheets (MSDS) for all materials used for urethane/ epoxy manhole rehabilitation.
- D. **Application Methods and Equipment.** The CONTRACTOR shall submit a written description of the material application methods including the equipment that will be used.

The following submittal (E) shall be made two (2) days prior to manhole rehabilitation.

- E. **Pre-rehabilitation photographs.** The CONTRACTOR shall submit a minimum of two (2) pre-photographs to the County before performing manhole rehabilitation work. One photograph shall be taken from the ground surface looking into the manhole and one shall be taken from the bottom of the manhole, as close to the invert as possible, looking upwards. Additional photographs of other pertinent features shall be taken if necessary. Digital photos submitted on CD are the required media.

The following submittal (F) shall be made immediately after manhole rehabilitation:

- F. **Post-rehabilitation photographs.** The CONTRACTOR shall submit post-photographs to the County immediately following completion of the manhole rehabilitation. The same areas of the manhole will be photographed at the same angles as submitted in the pre-photographs. Digital photos submitted on CD are the required media.

1.6 PROJECT/SITE CONDITIONS

- A. **Environmental Requirements.** Do not work in the presence of excessive amounts of water. Refer to supplemental Specification SS-05, Bypassing Pumping.

- B. **Safety.** All works to be completed in conformance with all applicable safety standards in particular OSHA Standard 29CFR1910.146, Permit Required Confined Space Entry.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Urethane/ Epoxy materials shall be stored in weather tight, original packaging to protect against moisture and contamination in accordance with the manufacturer's recommendations.

1.8 SEQUENCING

- A. All required interruptions of flow through manholes, wet wells, pump stations or any other portion of the sanitary sewer system shall be coordinated with and approval received from the County Sanitary Engineer prior to the interruption.

1.9 GUARANTEE

- A. When any work is accepted by the County there shall be a guarantee period extending for 12 months from the date of acceptance of the work. At any time during the guarantee period, the County may notify the CONTRACTOR and his Surety that certain repairs are necessary. Within 10 days after being so notified, the CONTRACTOR shall make such repairs as are declared necessary to restore the worked to a good and serviceable condition. In the event the CONTRACTOR fails to comply with the order to repaired as provided, said repairs may be made by the County and it is hereby agreed by the CONTRACTOR the reimbursement shall be made to the County for 2.5 times said expense so incurred within ten days following the receipt of a statement rendered to the CONTRACTOR by the County for said expense. Specifications for the work performed under this Contract shall govern in the making of repairs under this section. The CONTRACTOR shall take and provide photographs of the rehabilitated manholes as part of the 12 month warranty as directed by the County. The 12 month photographs shall be identical in the nature to the pre – and post-rehabilitation photographs described in Section 1.5 E & F of this specification. A minimum of 2 photographs shall be submitted at the end of the 12 month guarantee period taken at the same angles as submitted in the pre- & post-rehabilitation photographs, including photographs of additional pertinent features.

PART 2: – PRODUCTS

2.1 MATERIALS

Materials shall meet the following standards, specifications, or minimum strength requirements:

- A. **Water Plug.** Rapid setting hand-mixed cementitious compound specifically formulated for use in stopping infiltration water.

Compressive Strength	2000 PSI @24 hrs.	ASTM C-109
Bond	80 PSI @24hrs.	ASTM C-321

- B. **Patching Mortar.** Rapid setting cementitious compound specifically formulated for use in filling voids and repairing inverts.

Compressive Strength	2000 PSI @24hrs.	ASTM C-109
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Bond

140 PSI @7 days

ASTM C-321

- C. **Urethane / Epoxy Manhole Liner.** A proprietary urethane / epoxy-based material specifically designed for manhole applications shall be SprayWall as manufactured by Sprayroq, Inc., or Warren Environmental System M-301 and S-301 as manufactured by Warren Environmental Inc., or Raven 405 as manufactured by Raven Lining Systems or Engineer approved equal. The product shall be corrosion resistant to the ingredients of the sanitary sewer environment and shall be designed to bond to wet (not running) surfaces. Liner mix shall be made with manufacture's recommendations. No material shall be used with or added to mixture without prior approval of the manufacture.
- D. **Grout.** Cementitious Grouting shall be installed and paid for per supplemental specifications SS-10 "Cementitious Grouting".
- E. **Brick.** Brick used in sanitary structures shall be clay or shale brick and conform to CMS 704.01
- F. **Mortar.** Mortar shall be in accordance with ODOT CMS 602-02.
- G. **Water.** Water shall be potable.

2.2 EQUIPMENT

- A. Equipment shall be as recommended by the manufacturer to ensure proper application and shall be clean and in good working order according to the recommendations for safe operation.

PART 3 – EXECUTION

3.1 GENERAL

- A. **Debris Dam.** The CONTRACTOR shall place a device in the manhole to catch any debris which may be displaced into the manhole during the performance for the work. **Work shall not proceed until this device is in place.**
- B. **Visual Documentation.** The CONTRACTOR shall provide photographs before and after rehabilitation. Refer to sections 1.5.E and 1.5.F of this specification for detailed information.
- C. **Cleaning.** Prior to any repair work inside the manhole, all interior wall and invert surfaces shall be cleaned using equipment capable of producing a minimum of 3500 pounds per square inch (psi) water to remove all foreign matter, loose mortar, grease, oil residues, and to etch the surfaces. If the initial water blast cannot be utilized due to structural conditions in the manhole or it does not remove all deposits, then a solution of muriatic acid (hydrochloric acid) at a ratio of one part acid to ten parts water shall be applied by spraying from above the manhole. After the acid solution is applied it shall be washed off completely and the manhole allowed to dry. The mixing, application, and removal of the acid solution shall be done in strict accordance with the manufacturer's specification and safety procedures. All waste materials resulting

from the cleaning operation shall be removed from the manhole being cleaned and properly disposed of by the CONTRACTOR.

3.2 REHABILITATION OF BRICK/PRECAST MANHOLE

- A. **Stopping Infiltration.** The manhole walls shall be visually examined and sounded and/or probed for detection of infiltration and identification of void areas outside of the manhole created by the infiltration. If any voids are detected, they shall be filled with cementitious grout and paid per Item SS-10 "Cementitious Grouting". Any infiltration into the manhole should be stopped using an approved water plug material. If infiltration through the manhole walls is heavy, up to four 5/8-inch diameter holes may be drilled around the base of the manhole to act as relief ports, allowing the water to seep into the manhole flow channel. Once the leaking walls have been sealed, the drilled relief holes shall be plugged with the specified water plug material. The cost of drilling these relief holes shall be included in the cost of the manhole rehabilitation items.
- B. **Patching.** Manhole walls shall be patched with an approved mortar in area where voids exist. (i.e. bricks missing in manhole walls, step removal damage, frames, pipes, and mortar joints). All loose or defective material shall be removed from the area to be patched, exposing a sound substrate. The patching mortar specified shall be applied to a dampened surface. The repairs shall be made smooth and flush with the face of the manhole wall. This work shall be performed in accordance with SS-10 "Cementitious Grouting". Price for patching mortar shall be included in the price bid for Item SS-13, no additional payment will be made.
- C. **Steps.** All steps shall be removed completely from those manholes receiving urethane / epoxy rehabilitation. Care must be taken to minimize damage to the manhole wall during removal of the steps.
- D. **Urethane/ Epoxy Manhole Lining.** The urethane / epoxy lining material shall offer a level of sulfide resistance compatible with the environment present in the existing sewer. Varying levels of protection are offered by manufacture's materials. The manhole wall surface shall be in a saturated, surface-dry condition immediately preceding application of the urethane / epoxy material, or in accordance with manufacturer's requirements.

The urethane/ epoxy lining may be applied with low pressure spray equipment or hand troweling methods (Requires approval of OWNER). If hand troweling is to be utilized, consult manufacturer for special requirements. The application of the liner shall provide a monolithic liner of a minimum 1/8 inch thickness applied to insure that all voids are filled and crevices are filled and smoothed. The liner shall be applied to the invert, bench, and wall and shall all be equal in thickness as determined by the after table and product manufacturer. The manhole invert and bench shall be smooth and slipped in the direction of flow. The manhole bench shall have a gradual slope to invert. The invert transition of the pipe shall be smooth and shall not impair the flow.

The CONTRACTOR shall cure in accordance with the manufacturer's instructions following the application of the final layer. No application shall be made when ambient temperatures are less than 40 degrees Fahrenheit or when freezing is expected within 24 hours. A minimum of 30 minutes cure time or more as required by the product manufacture shall be allowed before returning to active flow. No more than 24-hours shall elapse

between successive passes on each manhole. The second pass cannot be made until the first pass has achieved initial set.

3.3 REHABILITATION OF BENCH AND CHANNEL

- A. The bench and channel shall be prepared for rehabilitation as previously described for other portions of the manhole structure. The entire bench and channel area shall be reconstructed using the specified rapid strength patching mortar as specified in section 2.1.B. The preparation work shall include all demolition of deteriorated concrete and removal of all deleterious material from the surfaces to be reconstructed and the removal of sound concrete such that the repair mortar shall not be less than 1-inch in thickness at any point.
- B. If active infiltration is present in the bench and channel area of the manhole, dewatering exterior to the manhole with a WellPoint may be required in order to facilitate the reconstruction. The dewatering shall continue for 8 hours (or per the manufacturer's recommendations) following completion of the bench and channel repair work. Dewatering WellPoint, if anticipated, will be included in the price bid for Item SS-13 Urethane/ Epoxy Manhole Rehabilitation.
- C. Wastewater flow shall be maintained by methods which prevent contact with any of the repair work for 8 hours (or per the manufacturer's recommendations) following completion of the repair work.
- D. The work on the bench and channel shall also include the work necessary to obtain a watertight seal at all pipe connections and between the base and manhole walls. The flow line through the manhole shall be shaped to match the invert of the sewer liner to prevent any flow obstructions in the manhole.
- E. All work associated with bench and Channel Rehabilitation shall be for by item SS-13 "Urethane/Epoxy Manhole Rehabilitation".

3.4 CLEAN UP

- A. The CONTRACTOR shall be responsible for containing and removal of all rehabilitation material, rebound, and loose material caused by manhole rehabilitation.

3.5 FIELD QUALITY CONTROL

- A. **Visual Inspection.** Manhole sealing will be visually inspected for water tightness upon completion and at any time during warranty period. Any visible leaks or defects that appear shall be repaired to the OWNER's satisfaction by the CONTRACTOR at no additional cost. The visual inspection upon completion of lining shall be photographed by the CONTRACTOR. These photographs shall serve as the post-rehabilitation photographs.
- B. **Testing Requirements.**
 - 1. Manhole liner shall be tested with a wet gauge as directed by the County's representative to verify prescribed thickness. Any area found with less than the prescribed thickness shall immediately receive the additional material needed.

2. The CONTRACTOR shall provide two standard samples taken from each day's work with the date, location, and job recorded for each sample. The samples shall be sent to an established, local, and reputable commercial testing laboratory that has been approved by the OWNER to determine if lining materials meet the minimum requirements specified herein. The County reserves the right to require CONTRACTOR to take cores sample and to patch the cored location at no additional cost.
3. Each manhole shall be sounded by the CONTRACTOR at seven (7) days. Inspector must witness these soundings performed by the CONTRACTOR. Defects will be corrected by the CONTRACTOR to the satisfaction of the Engineer.

3.6 MEASUREMENT AND PAYMENT

- A. Payment for all manhole rehabilitation items described herein. (Excluding Cementations and Chemical Grouting of Voids behind the manhole wall) shall be included in the unit price bid per for the SS-13 Line item. Payment for all bench and channel rehabilitation items described in Section 3.3 shall be included in the unit price bid per SS-13 "Urethane/ Epoxy manhole Rehabilitation". Payment for all urethane/ epoxy lining items described in Section 3.2 shall be included in the unit price bid for item SS-13 "urethane/ Epoxy Manhole Rehabilitation".

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
9	Ver. Feet	Urethane/ Epoxy Manhole Rehabilitation

END OF SECTION

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SANITARY SEWER SPECIFICATION SS-14

MORTAR/EPOXY COMPOSITE MANHOLE REHABILITATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. **General.** The Plans, general provisions of the Contract, Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition), apply to this section.

1.2 DESCRIPTION

- A. This specification includes all work, materials, operation, and equipment necessary to rehabilitate manholes applying a mortar/ epoxy composite liner product to the walls, inverts, and benches of manholes resulting in a monolithic liner at the thickness as recommended by the manufacturer for the depth and water table in accordance with the plans, as specified within, or as designated by the ENGINEER. This item shall include all structural restoration; elimination of inflow and/or infiltration; manhole step removal; base and channel repair/ excavation. Removal and disposal of all excess materials; restoration; backfill permanent and temporary pavement replacement; clearing and grubbing; resetting, replacing, and/or raising casting to grade; and dewatering required for manhole rehabilitation. This specification also includes the inspection of manholes structures and the submittal of the unspecified items on the manhole rehabilitation tables include in the plan set. Pre-rehabilitation, post-rehabilitation, and 12 month warranty photographs shall be provided for all manholes.

1.3 QUALITY ASSURANCE

- A. Furnish materials of quality required by the American Society for Testing and Materials (ASTM) standards or other approved standards and specifications.
- B. Provide guarantee against defective materials and workmanship in accordance with the requirements of these specifications.
- C. The CONTRACTOR installing the finished protective liner will be certified trained applicator of the specified process.
- D. **Contractor's Qualifications.**
 - 1. The manhole rehabilitation CONTRACTOR shall be a firm having a minimum of 3 years continuous successful experience in the rehabilitation of manholes similar to that required for this Project.
 - 2. The manhole lining CONTRACTOR shall be certified by the lining material manufacturer to install their manhole liner if the material requires a certified applicator. The County reserves the right to require an on-site manufacturer's representative, knowledgeable in the use and application of the material, for a minimum of two (2) working hours for each supplied material. The material representative shall direct and instruct the CONTRACTOR and inspector on the proper application Procedure.

1.4 REFERENCES

- A. Referenced ASTM Standards
- B. NASSCO Specifications
- C. Manufacturer's Specification

1.5 SUBMITTALS

The following submittals (A) shall be made with the Bid:

- A. **Contractor Qualifications.** The CONTRACTOR shall submit a copy of the manufacture's licensee certificate. If the CONTRACTOR is not licensed by the manufacture, then a manufacturer's representative will be on-site as explained in Section 1.3.E.2. CONTRACTOR shall also submit a list of ten (10) similar regional projects completed within the last three (3) years including information such as number of manholes on project, manhole construction type, date completed, and a project cost.

The following submittals (B-D) shall be made at the pre-construction meeting:

- B. **Material Certifications.** The CONTRACTOR shall furnish the manufacture's product data, installation instructions, applicable referenced work standards (American Society for Testing and Materials [ASTM], American Concrete institute [ACI], etc.), approved laboratory test reports that verify strength requirements of this specifications, and materials certification for each product used prior to material installation.
- C. **Material Safety Data Sheet.** The CONTRACTOR shall submit Material Safety Data Sheets (MSDS) for all materials used for manhole rehabilitation.
- D. **Application Methods and Equipment.** The CONTRACTOR shall submit a written description of the material application methods including the equipment that will be used.

The following submittal (E) shall be made two (2) days prior to manhole rehabilitation.

- E. **Pre-rehabilitation photographs.** The CONTRACTOR shall submit a minimum of two (2) pre-photographs to the County before performing manhole rehabilitation work. One photograph shall be taken from the ground surface looking into the manhole and one shall be taken from the bottom of the manhole, as close to the invert as possible, looking upwards. Additional photographs of other pertinent features shall be taken if necessary. Digital photos submitted on CD are the required media.

The following submittal (F) shall be made immediately after manhole rehabilitation:

- F. **Post-rehabilitation photographs.** The CONTRACTOR shall submit post-photographs to the County immediately following completion of the manhole rehabilitation. The same areas of the manhole will be photographed at the same angles as submitted in the pre-photographs. Digital photos submitted on CD are the required media.

1.6 PROJECT/SITE CONDITIONS

- A. **Environmental Requirements.** Do not work in the presence of excessive amounts of water. Refer to Supplemental Specification SS-05, bypass Pumping.
- B. **Safety.** All work to be completed in conformance with all applicable safety standards, in particular OSHA Standard 29CFR1910.146, Permit Required Confined Space Entry.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Cementitious materials shall be stored in weather tight, original packaging to protect against moisture and contamination.

1.8 SEQUENCING

- A. All required interruptions of flow through manholes, wet wells, pump stations or any other portion of the sanitary sewer system shall be coordinated with and approval received from the County Sanitary Engineer prior to the interruption.

1.9 GUARANTEE

- A. When any work is accepted by the County there shall be a guarantee period extended for 12 months from the date of acceptance of the work. At any time during the guarantee period, the County may notify the CONTRACTOR and his Surety that certain repairs are necessary. Within 10 days after being so notified, the CONTRACTOR shall make such repairs as are declared necessary to comply with the order to repair as provided, said repairs may be made by the County and is hereby agreed by the CONTRACTOR that reimbursement shall be made to the County for 2.5 times said expense so incurred within the ten days following the receipt of the statement rendered to the CONTRACTOR by the County for said expense. Specifications for the work performed under this Contract shall govern in the making of repairs under this section. The CONTRACTOR shall take and provide photographs of the rehabilitated manholes as part of the 12 month warranty as directed by the County. The 12 month photographs shall be identical in nature to the pre- and post- rehabilitation photographs described in Section 1.5.E & F of this specification. A minimum of 2 photographs shall be submitted at the end of the 12 months guarantee period taken at the same angles as submitted in the pre- & post- rehabilitation photographs, including photographs of additional pertinent features.

PART 2 – PRODUCTS

2.1 MATERIALS

Materials shall meet the following standards, specifications, or minimum strength requirements:

- A. **Water Plug.** Rapid setting hard-mixed cementitious compound specifically formulated for use in stopping infiltration water.

Compressive Strength	2000PSI@24 hrs.	ASTM C-109
Bond	80PSI@24 hrs.	ASTM C-321

- B. **Cementitious Mortar Liner.** High strength corrosion resistant mortar specifically formulated for use in filling voids and repairing inverts which can be sprayed or troweled uniformly onto a vertical surface without sagging or excessive rebound.

Compressive Strength	9000 PSI @ 28 Days	ASTM C-109
Bond	2000 PSI @ 28 Days	ASTM C- 882
Shrinkage	0% @ 28 days at 90% R.H	ASTM C-157
Tensile Strength	800 PSI @28 days.	ASTM C-190
Flexural Strength	350 PSI @ 24 hrs.	ASTM C-293

- C. **Epoxy Corrosion Battier.** Corrosion resistant high build epoxy coating designed to be applied over cementitious mortar in brick, concrete, or metal structures. Product shall be from the Parsonpoxy line of products or approval equal. Must be designed to provide abrasion resistance in manholes. May be applied by brush or spray on methods in accordance with manufacturer’s recommendations.

Compressive Strength	195000 PSI	ASTM D-695
Tensile Strength	8000 PSI	ASTM D-638
Flexural Strength	130000 PSI	ASTM D-790
Flexural Modulus (long term)	375000 PSI	ASTM D- 638
Hardness	88 Shore D	ASTM D-2240

- D. **Grout.** Cementitious Grouting shall be installed and paid for per supplemental specifications SS-10 “Cementitious Groting”.

- E. **Water.** Water shall be portable.

2.2 EQUIPMENT

- A. Equipment shall be as recommended by the manufacturer to ensure proper application and shall be clean and in good working order according to the recommendations for safe operation.

PART 3 – EXECUTION

3.1 GERNAL

- A. **Debris Dam.** The CONTRACTOR shall place a device in the manhole to catch any debris which may be displaced into the manhole during the performance of the work. **Work shall not proceed until this device is in place.**
- B. **Visual Documentation.** The CONTRACTOR shall provide photographs before and after rehabilitation. Refer to sections 1.5.E and 1.5.F of this specification for detailed information.
- C. **Cleaning.** Prior to any repair work inside the manhole, all interior wall and invert surfaces shall be cleaned using equipment capable of producing a minimum if 3500 pounds per square inch (psi) water to blast to remove all foreign matter, loose mortar, grease, oil residues, and to etch the surfaces. If the initial water blast cannot be utilized due to structural conditions in the manhole or it does not remove all deposits, then a solution of

muriatic acid (hydrochloric acid) at a ration one part acid to ten parts water shall be applied, it shall be washed of completely and the manhole allowed to dry. The mixing application and removal of the acid solution shall be done in strict accordance with the manufacturer's specifications and safety procedures. All waste materials resulting from the cleaning operation shall be removed from the manhole being cleaned and properly disposed of by the CONTRACTOR.

3.2 REHABILITATION OF BRICK/ PRECAST MANHOLE

- A. Stopping infiltration.** The manhole walls shall be visually examined and sounded and/or probed for detection of the infiltration and identification of void areas outside of the manhole created by the infiltration. If any voids are detected, they shall be filled with cementitious grout and paid per Item SS-10 "Cementitious Grouting". Any infiltration in the manhole should be stopped using an approved water plug material. If infiltration through the manhole walls is heavy, up to four 5/8-inch diameter holes may be drilled around the base of the manhole to act as relief ports, allowing the water to seep into the manhole flow channel. Once the leaking walks have been sealed, the drilled relief holes shall be plugged with the specified water plug material. The cost of drilling these relief holes shall be included in the cost of the manhole rehabilitation items.
- B. Cementitious Mortar Lining.** The cementitious mortar lining may be applied with low pressure spray equipment or hand toweling methods (requires approval of OWNER). If hand toweling is to be utilized, consult manufacturer for special requirements (eg. scrubbing a bondcoat slurry onto the surface). The cementitious material thickness application shall be a minimum of 1-inch from the inside face of the manhole wall. The CONTRACTOR shall cure in accordance with the manufacturer's instructions following the application of the final cementitious layer. The cementitious lining shall be applied in not more than two passes form bottom to top. No more than 6-hours shall elapse between successive passes on each manhole. The second pass cannot be made until the first pass has achieved initial set.
- C. Epoxy Corrosion Barrier.** The epoxy corrosion barrier shall offer a level of sulfide resistance compatible with the environment present in the existing sewer. Varying level of sulfide resistance compatible with the environment present in the existing sewer. Varying levels of protection are offered by manufacturer's materials. The manhole wall surface shall be in a saturated, surface-dry condition immediately preceding application of the epoxy material, or in accordance with manufacturer's requirements.

The epoxy corrosion barrier shall be applied following inspection of the cementitious mortar lining application, within 24-hours of the final mortar application. The epoxy corrosion barrier shall be applied per the manufacturers recommendations using either spray equipment or hand toweling methods (requires approval of OWNER). The application of the liner shall provide a monolithic liner of a minimum 80 mils thickness per coat applied to ensure that all voids are filled and crevices are filled and smoothed. The liner shall be applied to the invert, bench, and wall and shall all be equal in thickness as determined by the water table and product manufacturer. The manhole invert and bench shall be smooth and sloped in the direction of flow. The manhole bench shall have a gradual slope to the invert. The invert transition to the pipe shall be smooth and shall not impair the flow.

The CONTRACTOR shall sure in accordance with the manufacturer's instructions following the application of each layer. No application shall be made when ambient temperatures are less that 40 degrees Fahrenheit or when freezing is expected within 24 hours. A minimum of 30 minutes cure time or more as required by the product manufacturer shall be allowed before returning to active flow. No more than 24-hours shall elapse between successive passes on each manhole. The second pass cannot be made until the first pass has achieved initial set.

3.3 REHABILITATION BENCH AND CHANNEL

- A. The bench and channel shall be prepared for rehabilitation as previously described for other portions of the manhole structure. The entire bench and channel area shall be reconstructed using the mortar as specified in section 2.1.B. The preparation work shall include all demolition of deteriorated concrete and removal of all deleterious material from the surfaces to be reconstructed and the removal of sound concrete such that the repair mortar shall not be less than 1-inch in thickness at any point as shown in the attached manhole rehabilitation drawings.
- B. If active infiltration is present in the bench and channel area of the manhole, dewatering exterior to the manhole with a wellpoint may be required in order to facilitate the reconstruction. The dewatering shall continue for 8 hours (or per the manufactures recommendations) following completion of the bench and channel repair work. Dewatering wellpoint, if anticipated, will be included in the price bid for Item SS-14 Mortar/Epoxy Composite Manhole Rehabilitation.
- C. Wastewater flow shall be maintained by methods which prevent contact with any of the repair work for 8 hours (or per the manufactures recommendations) following completion of the repair work.
- D. The work on the bench and channel shall also include the work necessary to obtain a watertight seal at all pipe connections, drop inlet connections and between the base and manhole walls. The flow line through the manhole shall be shaped to match the invert of the sewer liner to prevent any flow obstructions in the manhole.
- E. All work associated with Bench and Channel Rehabilitation shall be performed as directed by the County and paid for by item SS-14 Mortar/Epoxy Composite Manhole Rehabilitation.

3.4 CLEAN UP

- A. The CONTRACTOR shall be responsible for containing and removal of all the rehabilitation material, rebound, and loose material caused by manhole rehabilitation.

3.5 FIELD QUALITY CONTROL

- A. **Visual Inspection.** Manhole sealing will be visually inspected for water tightness upon completion and at any time during warranty period. Any visible leaks or defects that appear shall be repaired to the OWNER's satisfaction by the CONTRACTOR at no additional cost.

The visual inspection upon completion of lining shall be photographed. These photographs shall serve as the post-rehabilitation photographs.

B. Testing Requirements.

1. Manhole liner shall be tested with a wet gauge as directed by the County’s representative to verify prescribed thickness. Any area found with less than the prescribed thickness shall immediately receive the additional material needed.
2. The CONTRACTOR shall provide two standard samples taken from each day’s work with the date, location and job recorded for each sample. The samples shall be sent to an established, local, and reputable commercial testing laboratory that has been approved by the OWNER to determine if lining materials meet the minimum requirements specified herein. The County reserves the right to require CONTRACTOR to take core samples and to patch the cored location at no additional cost.
3. Each manhole shall be sounded by the CONTRACTOR at seven (7) days. Inspector must witness these soundings performed by the CONTRACTOR. Defects will be corrected by the CONTRACTOR to the Satisfaction of the ENGINEER.

3.6 MEASUREMENT AND PAYMENT

- A.** Payment for all manhole rehabilitation item described herein (excluding Cementitious and Chemical Grouting of voids behind the manhole wall) shall be included in the unit price bid per for the SS-14 Line Item. Payment for all bench and channel rehabilitation items described in Section 3.3 shall be included in the unit price bid per Vertical Foot for the Item SS-14 Mortar/Epoxy Composite Manhole Rehabilitation. Payment for all cementitious lining items described in Section 3.2 shall be included in the unit price bid for Item SS-14 Mortar/Epoxy Composite Manhole Rehabilitation. Payment for all cementitious lining items described in Section 3.2 shall be included in the unit price bid for Item SS-14 Mortar/Epoxy Composite Manhole Rehabilitation.

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
10	Ver. Feet	Mortar/Epoxy Composite Manhole Rehabilitation

END OF SECTION

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SANITARY SEWER SPECIFICATION SS-15

REINFORCED EPOXY MANHOLE REHABILITATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. **General.** The plans, general provisions of the Contract, Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition), apply to this section.

1.2 DESCRIPTION

- A. This specification includes all work, material, operation, and equipment necessary to rehabilitate manholes applying a composite cured-in-place reinforced epoxy structural liner product to the walls, inverts, and benches of manholes resulting in a monolithic reinforced liner at a thickness as recommended by the manufacturer for the depth and water table in accordance with the plans, as specified within, or as designated by the ENGINEER, The reinforced epoxy structural liner project shall be Protective Liner System's PerpetuWall project or approved equal. This item shall include all structural restoration; elimination of inflow and/or infiltration; manhole step removal; base and channel repair; excavation; removal and disposal of all excess materials; restoration; backfill; permanent and temporary pavement replacement ; clearing and grubbing; resetting, replacing, and/or raising casting to grade; and dewatering required for manhole rehabilitation. Pre-rehabilitation, post-rehabilitation, and 12 month warranty photographs shall be provided for all manholes.

1.3 QUALITY ASSURANCE

- A. Furnish materials of quality required by the American Society for Testing and Materials (ASTM) standards or other approved standards and specifications.
- B. Provide guarantee against defective materials and workmanship in accordance with the requirements of these specifications.
- C. The CONTRACTOR installing the finished protective liner will be a certified trained applicator of the specified process.
- D. Contractor's Qualifications
 1. The manhole rehabilitation CONTRACTOR shall be a firm having a minimum of 3 years continuous successful experience in the rehabilitation of manholes similar to that required for this Project.
 2. The manhole lining CONTRACTOR shall be certified by the lining material manufacture to install their manhole liner if the material requires a certified applicator. The county reserves the right to require an onsite manufacturer's representative, knowledgeable in the use and application of the material, for a minimum of two (2) working hours for each supplied material. The material representative shall direct and instruct the CONTRACTOR and inspector on the proper application procedure.

1.4 REFERENCES

- A. Referenced ASTM Standards
- B. NASSCO Specifications
- C. Manufacturer's Specifications

1.5 SUBMITTALS

The following submittal (A) shall be mad with the Bid:

- A. **Contractor Qualifications.** The CONTRACTOR shall submit a copy of the manufacturer's licensee certificate. If the CONTRACTOR is not licensed by the manufacturer then a manufacturer's representative will be on-site as explained in section 1.3.D.2. CONTRACTOR shall also submit a list of ten (10) similar regional projects completed within the last three (3) years including information such as number of manholes on project, manhole construction type, date completed, and project cost.

The following submittals (B-D) shall be made at the pre-construction meeting:

- B. **Material Certifications.** The CONTRACTOR shall furnish the manufacturer's product data, installation instructions, applicable referenced work standards (American Society for Testing and Materials [ASTM], American Concrete Institute [ACI], etc.), approved laboratory test reports that verify strength requirements of this specification, and materials certification for each product used prior to material installation.
- C. **Material Safety Data Sheet.** The CONTRACTOR shall submit Material Safety Data Sheets (MSDS) for all materials used for manhole rehabilitation.
- D. **Application Methods and Equipment.** The CONTRACTOR shall submit a written description of the material application methods including the equipment that will be used.

The following submittal (E) shall be made two (2) days prior to manhole: rehabilitation.

- E. **Pre-Rehabilitation photographs.** The CONTRACTOR shall submit a minimum of two (2) Pre-photographs to the County before performing manhole rehabilitation work. One photograph shall be taken from the ground surface looking into the manhole and one shall be taken from the bottom of the manhole, as close to the invert as possible, looking upwards. Additional photographs of other pertinent features shall be taken if necessary. Digital photos submitted on CD are the required media.

The following submittal (F) shall be made immediately after manhole rehabilitation:

- F. **Post-rehabilitation photographs** The CONTRACTOR shall submit post-photographs to the County immediately following completion of the manhole rehabilitation. The same areas of the manhole will be photographed at the same angles as submitted the pre-photographs. Digital photos submitted on CD are the required media.

1.6 PROJECT SITE CONDITIONS

- A. **Environmental Requirements.** Do not work in the presence of excessive amounts of water. Refer to Supplemental Specifications SS-05, Bypass Pumping.
- B. **Safety.** All work to be completed in the conformance with all applicable safety standards, in particular OSHA Standard 29CFR1910.146, Permit Required Confined Space Entry.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Cementitious materials shall be stored in weather tight, original packaging to protect against moisture and contamination.

1.8 SEQUENCING

- A. All required interruptions of flow through manholes, wet wells, pump stations or any other portion of the sanitary sewer system shall be coordinated with and approval received from the County Sanitary Engineer prior to the interruption.

1.9 GUARANTEE

- A. When any work is accepted by the County there shall be a guarantee periods extending for 12 months from the date of acceptance of the work. At any time during the guarantee period the County may notify the CONTRACTOR and his surety the certain repairs are necessary. Within 10 days after being so notified, the CONTRACTOR shall make such repairs as are declared necessary to restore the work to a good a serviceable condition. In the vents that the CONTRACTOR fails to comply with the order to repair as provided, said repairs may be made by the County for 2.5 times said expense to incurred within ten days following the receipt of a statement rendered to the CONTRACTOR by the County for said expense. Specifications for the work performed under the Contract shall govern in the making of repairs under this section. The CONTRACTOR shall take and provide photographs of the rehabilitated manholes as part of the 12 month warranty as directed by the County. The 12 month photographs shall be identical in nature to the pre- and post- rehabilitation photographs described in Section 1.5.E & F of this specification. A minimum of 2 photographs shall be submitted in the pre- & post- rehabilitation photographs, including photographs of additional pertinent features. Product shall also be protected by a (minimum) 5-year manufacturer's warranty.

PART 2 – PRODUCTS

2.1 MATERIALS

Materials shall meet the following standards, specifications, or minimum strength requirements:

- A. **Water Plug.** Rapid setting hand-mixed cementitious compound specifically formulated for the use in stopping infiltration water.

Compressive Strength	2000 PSI @ 24 hrs.	ASTM C-109
Bond	80 PSI @24 hrs.	ASTM-C-321

- B. **Patching Mortar.** Rapid setting cementitious compound specifically formulated for use in filling voids and repairing inverts.

Compressive Strength	2000 PSI @24 hrs.	ASTM C-109
Bond	140 PSI @7 days	ASTM C-321
Shrinkage	0% @ 90% R.H	ASTM C-596

- C. **Reinforced Epoxy Structural Manhole Liner.** Corrosion resistant, semi-structural epoxy lining system consisting of an 11-oz. fiberglass bonded fabric of Type E glass with stitch bonded construction, modified epoxy resin of Bisphenol A epoxy resin cross-linked with a modified polyamide curing agent (100% solids, emitting no toxic odors), and mastic. The installed product will meet the following minimum physical properties:

Hardness	72 Shore D	ASTM D-2240
Tensile Strength	29,200 PSI	ASTM D-638
Compressive Strength	16,800 PSI	ASTM D-695
Flexural Strength	343,000 PSI	ASTM D-790
Ultimate Elongation	4.50%	ASTM D-638
Bond (Concrete)	Substrate Failure	ASTM D-4541
Flexural Modulus	1,590,000 PSI	ASTM D -790
Shear Strength	4,060 PSI	ASTM D-2344

- D. **Grout.** Cementitious Grouting shall be installed and paid for per supplemental specification SS-10 “Cementitious Grouting”
- E. **Water.** Water shall be potable.

2.2 EQUIPMENT

- A. Equipment shall be as recommended by the manufacturer to ensure proper application and shall be clean and in good working order according to the recommendations for safe operation.

PART 3 – EXECUTION

3.1 GENERAL

- A. **Debris Dam.** The CONTRACTOR shall place a device in the manhole to catch any debris which may be displaced into the manhole during the performance of the work. **Work shall not proceed until this device is in place.**
- B. **Visual Documentation.** The CONTRACTOR shall provide photographs before and after rehabilitation. Refer to sections 1.5E and 1.5F of this specification for detailed information.
- C. **Cleaning.** Prior to any repair work inside the manhole, all interior wall and invert surfaces shall be cleaned using equipment capable of producing a minimum of 3,500 pounds per square inch (psi) water to blast to remove all foreign matter, loose mortar, grease, oil residues, and to etch the surfaces. If the initial water blast cannot be utilized due to

structural conditions in the manhole or it does not remove all deposits, then a solution of muriatic acid (hydrochloric acid) at a ratio of one part acid to ten parts water shall be applied by spraying from above manhole. After the acid solution is applied, it shall be washed off completely and the manhole allowed to dry. The mixing application and removal of the acid solution shall be done in strict accordance with the manufacturer's specifications and safety procedures. All waste materials resulting from the cleaning operation shall be removed from the manhole being cleaned and properly disposed of by the CONTRACTOR.

3.2 REHABILITATION OF BRICK/PRECAST MANHOLE

- A. **Stopping Infiltration.** The manhole wall shall be visually examined and sounded and/or probed for detection of infiltration and identification of void areas outside of the manhole created by the infiltration. If any voids are detected, they shall be filled with cementitious grout and paid per Item SS-10 "Cementitious Grouting". Any infiltration into the manhole should be stopped using an approved water plug material. If infiltration through the manhole walls is heavy, up to four 5/8-inch diameter holes may be drilled around the base of the manhole to act as relief ports, allowing the water to seep into the manhole flow channel. Once the leaking walls have been sealed, the drilled relief holes shall be plugged with the specified water plug material. The cost of drilling these relief holes shall be included in the cost of the manhole rehabilitation items.
- B. **Reinforced Epoxy Structural Manhole Liner.** The epoxy corrosion barrier shall offer a level of sulfide resistance compatible with the environment present in the existing sewer. Varying levels of protection are offered by manufacture's materials. The manhole wall surface shall be in a saturated, surface-dry condition immediately preceding application of the material, or in accordance with a manufacture's requirement.

The epoxy corrosion barrier shall be applied following inspection of the Cementitious Mortar Lining application, within 24-hours of the grouting. The product shall be installed in accordance with the manufacturer's recommendations. The product shall be applied monolithically to the invert, bench, and wall of the structure) prepared in accordance with these specifications.) The manhole invert and bench shall be smoothed and sloped in the direction of flow. The manhole bench shall have a gradual slope to the invert. The invert transition to the pipe shall be smooth and shall not impair the flow. Mastic is first applied at thickness of 100 miles. Fiberglass Fabric shall then be cut into the required dimensions and pressed, using a putty knife, into the mastic to achieve full wetting of the fabric. With subsequent application of fabric the edges shall be overlapped. Epoxy is applied between the overlapped edges to assure a monolithic construction. The fabric shall be tip-coated with the mastic to ensure complete saturation and encapsulation of the fabric. The finished lining system shall have a minimum thickness of 125 mils, ensuring that all voids and crevices are filled and smoothed. The epoxy shall cure to within 5% of its strength before the structure is returned to service. Epoxy shall cure to full strength in no more than 5 days. All manufacture's recommendations for curing shall be followed, considering the temperature of the manhole environment.

3.3 REHABILITATION OF BENCH AND CHANNEL

- A. The bench and channel shall be prepared for rehabilitation as previously described for other portions of the manhole structure. The entire bench and channel area shall be reconstructed using the mortar as specified in section 2.1.B. The preparation work shall include all demolition of deteriorated concrete and removal of all deleterious material from the surfaces to be reconstructed and removal of sound concrete such that the repair mortar shall not be less than 1-inch in thickness at any point as shown in the attached manhole rehabilitation drawings.
- B. If active infiltration is present in the bench and channel area of the manhole, dewatering exterior to the manhole with a wellpoint may be required in order to facilitate the reconstruction. The dewatering shall continue for 8 hours (or per the manufactures recommendations) following completion of the bench and channel repair work. Dewatering wellpoint, if anticipated, will be included in the price bid for Item SS-15 Reinforced Epoxy Structural Manhole Rehabilitation.
- C. Wastewater flow shall be maintained by methods which prevent contact with any of the repair work for 8 hours (or per the manufactures recommendations) following completion of the repair work.
- D. The work on the bench and channel shall also include the work necessary to obtain a watertight seal at all pipe connections, drop inlet connections and between the base and manhole walls. The flowline through the manhole shall be shaped to match the invert of the sewer liner t prevent any flow obstructions in the manhole.
- E. All work associated with Bench and Channel Rehabilitation shall be performed as directed by the County and paid for by Item SS-15 Reinforced Epoxy Structural Manhole Rehabilitation.

3.4 CLEAN UP

- A. The CONTRACTOR shall be responsible for containing and removal of all the rehabilitation material, rebound, and loose material caused by manhole rehabilitation.

3.5 FIELD QUALITY CONTROL

- A. **Visual Inspection.** Manhole sealing will visually inspected for water tightness upon completion and at any time during warranty period. Any visible leaks or defects that appear shall be repaired to the OWNER's satisfaction by the CONTRACTOR at no additional cost. The visual inspection upon completion of lining shall be photographed. These photographs shall service as the post-rehabilitation photographs.
- B. **Testing Requirements**
 - 1. Manhole liner shall be tested with a wet gauge as directed by the County's representative to verify prescribed thickness. Any area found with less than the prescribed thickness shall immediately receive the additional material needed. Visual inspection shall be in accordance with ASTM F-1743 Section 8.6

2. The CONTRACTOR shall provide two standard samples taken from each day's work with the date, location, and job recorded for each sample. The samples shall be sent to an established, local, and reputable commercial testing laboratory that has been approved by the OWNER to determine if lining materials meet the minimum requirements specified in ASTM F1216 or ASTM F-1743, Section 8 (flexural properties, wall thickness). The County reserves the right to require CONTRACTOR to take core samples and to patch the cored location at no additional cost.
3. Each manhole shall be sounded by the CONTRACTOR at seven (7) days. Inspector must witness these soundings performed by the CONTRACTOR. Defects will be corrected by the CONTRACTOR to the satisfaction of the ENGINEER.

3.6 MEASUREMENT AND PAYMENT

- A. Payment for all manhole rehabilitation items described herein (excluding Cementitious and Chemical Grouting of voids behind the manhole wall) shall be included in the unit price bid per for the SS-15 Line Item. Payment for all bench and channel rehabilitation items described in Section 3.3 shall be included in the unit price bid per Vertical Foot for the Item SS-15 Reinforced Epoxy Structural Manhole Rehabilitation. Payment for all reinforced epoxy lining items described in Section 3.2 shall be included in the unit price bid for Item SS-15 Reinforced Epoxy Structural Manhole Rehabilitation.

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
11	Ver. Feet	Reinforced Epoxy Structural Manhole Rehabilitation

END OF SECTION

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SANITARY SEWER SPECIFICATION SS-24

FLEXIBLE MANHOLE CHIMNEY SEAL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. **General.** The Plans, general provisions of the Contract, and The Ohio Department of Transportation Construction and Material Specifications (CMS) (current edition), apply to this section

1.2 DESCRIPTION

- A. **Description.** This specification included all work, materials, and equipment require to seal the frame and chimney of the manholes to make them watertight in accordance with the plans, as specified within, or as designated by the ENGINEER. The purpose is to eliminate infiltration, restore structural integrity and provide corrosion protection by the application of a flexible sealant coating to the frame and chimney surface of brick/concrete structures including, but are not limited to, manholes, wet wells, lift stations and pump stations.

1.3 QUALITY ASSURANCE

- A. Furnish materials of quality required by the American Society for Testing and Materials (ASTM) standards or other approved standards and specifications.
- B. Provide guarantee against defective materials and workmanship in accordance with the requirements of these specifications.
- C. The CONTRACTOR installing the finished protective seal will be a verified trained applicator of the specified process.
- D. The manhole sealing CONTRACTOR shall be certified by the sealing material manufacturer to install their manhole sealant. The County reserves the right to require an on-site manufacturer's representative, knowledgeable in the use and application of the material. The material representative shall direct and instruct the CONTRACTOR and inspector on the proper application procedure.

1.4 REFERENCES

American Society for Testing and Materials (ASTM) Annual Book of Standards:

- A. ASTM-D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomer-Tension
- B. ASTM-D903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
- C. ASTM-D 1004 Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting

1.5 SUBMITTALS

The following submittals (A-F) shall be made with the Bid:

- A. **Contractor Qualifications.** The CONTRACTOR shall submit a copy of the manufacturer's license certificate.
- B. **Material Certification.** Technical data sheet on each product used, including ASTM test results indicating the product conforms to and is suitable for its intended use per these specifications.
- C. **Material Safety Data Sheets.** The CONTRACTOR shall submit Material Safety Data Sheets (MSDS) for all materials used for manhole sealant coating.
- D. **Manufacture's Certification.** The CONTRACTOR shall submit a Certification by the sealant coating manufacture that the equipment to be used for applying the product has been approved, and that the CONTRACTOR's applicator personnel have been trained and certified for the proper use of the equipment.
- E. **Application Methods and Equipment.** The CONTRACTOR shall submit a written description of the material application methods, including the equipment that will be used.
- F. **Design Details.** The CONTRACTOR shall submit design details for any additional ancillary systems and equipment to be used in site and surface preparation, application, and testing.

The following submittal (G) shall be made two (2) days prior to flexible manhole sealant coating

- G. Pre-coating photographs. The CONTRACTOR shall submit a minimum of two (2) pre-photographs to the County prior to application of the Flexible Chimney Seal. One photograph shall be taken from the ground surface looking into the manhole and one shall be taken from the bottom of the manhole, as close to the invert as possible, looking upwards. Additional photographs of other pertinent features shall be taken if necessary. Digital photos submitted on CD are the required media.

The following submittal (G) shall be made two (2) days prior to flexible manhole sealant coating

- H. Post-coating photographs. The CONTRACTOR shall submit post-photographs to the County immediately following completion of the application of the Flexible Chimney Seal. The same areas of the manhole will be photographed at the same angles as submitted in the pre-photographs. Digital photos submitted on CD are the required media.

1.6 CONDITIONS

- A. Safety: All work to be completed in conformance with all applicable safety standards, in particular OSHA Standard 29CFR1910.146, Permit Required Confined Space Entry.

1.7 SEQUENCING

- A. All required interruptions of flow through manholes, wet wells, pump stations or any other portion of the sanitary sewer system shall be coordinated with and approval received from the County Sanitary Engineer prior to the interruption.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Materials. Are to be kept dry, protected from weather and store under cover.
- B. Protective coating materials are to be stored between 50 deg F and 90 deg F. Do not store near flame, heat or strong oxidants.
- C. Protective coating materials are to handled according o their material safety data sheets.

1.9 GUARANTEE

- A. The Manufacture shall provide a three (3) year warranty as defined under the Certification of Preliminary Approval of Trenchless Technology Products.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Manhole wall shall be examined and rehabilitated through the application of the various manhole rehabilitation methods contained in the project specifications. This rehabilitation shall be completed on the entire manhole, including the top 8-inches of the manhole. This preparation will be completed and paid for under the specific items defined in SS-13, SS-14 and SS-15.

2.2 MATERIALS

- A. **Flexible Sealant Coating.** Subject to compliance with requirements, the CONTRACTOR shall provide the following at the specified locations per plan:

- 1. FlexSeal Utility Sealant® - Manufactured by Sealing System Inc.
- 2. Or approval equal.

- B. **Design Para meters and Mechanical Properties.** The following values are to be used where indicated by an ASTM standard and shall serve as the minimum acceptable strength requirements for all flexible sealant coating.

- 1. FlexSeal

- FlexSeal Primer

Tensile Strength (ASTM D412	3200psi
Tensile Elongation (ASTM-D412	400%
Adhesive Strength (ASTM-D903)	400ib/in
Tear Resistance (ASTM-D1004	200ib/in

FlexSeal Final Coat

Tensile Strength (ASTM-D412	1150 psi
Tensile Elongation (ASTM-D412	800%
Adhesive Strength (ASTM-D903)	175 ib/in
Tear Resistance (ASTM-D 1004	155ib/in

2.3 EQUIPMENT

- A. Equipment shall be as recommended by the manufacturer to ensure proper mixing and pumping of mortar and shall be clean and in good working order according to the recommendations for safe operation.

PART 3 – EXECUTION

3.1 GENERAL

- A. **Debris Dam.** The CONTRACTOR shall place a device in the manhole to catch any debris that may be displayed into the manhole during the performance of the work. Work shall not proceed until this device is in place.
- B. **Visual Documentation.** The CONTRACTOR shall provide photographs before and after rehabilitation. Refer to sections 1.4.G and 1.4.H of this specification for detailed information. The photographs are to be labeled and of good quality. Other methods may be acceptable as approved by the ENGINEER.

3.2 SURFACE PREPARATION

- A. **Surface Inspection.** Applicator shall inspect all surfaces specified to receive coating prior to surface preparation. Applicator shall notify OWNER of any noticeable disparity in the surfaces, which may interfere with the proper preparation, or application of the repair mortar and protective coating.
- B. **Surface Removal.** All concrete that is not sound or has been damaged by chemical exposure shall be removed to a sound concrete surface.
- C. **Contaminants.** All contaminants included all oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts or other contaminants shall be removed.
- D. **Surface Repair.** All surfaces shall be repaired as required by the coating system in the intended service condition.
- E. **Surfaces.** All surfaces to receive coating shall be cleaned and abraded to produce a sound concrete surface with adequate profile and porosity to provide a strong bond between the protective coating and the substrate. Generally, this can be achieved with high pressure water cleaning using equipment capable of 5,000 psi at 4 gpm. Mechanical methods such as high pressure water jetting (refer to NACE Standard No. 5/SSPC-SP 12), abrasive blasting, shotblasting, grinding, or scarifying may also be used. Detergent water cleaning and hot

water blasting may be necessary to remove oils and grease from the concrete. Whichever method(s) are used, they shall be performed in a manner that provides a uniform, sound, clean surface, that is not excessively damaged.

- F. **Wire brushing** of the surface to ensure a clean surface will be completed as required by the manufacturer.
- G. **Chlorine Solution.** A mild chlorine solution may be used to neutralize the surface to diminish microbiological bacteria growth prior to final rinse and coating.
- H. **Water Infiltration.** Active water infiltration shall be stopped by using a cementitious water plug or hydroactive grout, which is compatible with the specified repair mortar and is suitable for topcoating with the specified protective coating.
- I. **Surface Testing.** Prepared surfaces should be tested after cleaning but prior to application of the epoxy coating.
- J. **Surface Re-inspection.** All surfaces should be inspected by the Inspector during and after preparation and before the repair mortar is applied.

3.3 APPLICATION OF REPAIR MATERIALS

- A. **Exposed Structural Steel.** Areas where structural steel has been exposed or removed shall be repaired in accordance with the Project Engineer according to OWNER's requirements and manufacturer's recommendations.
- B. **Repair materials** shall meet the specifications in the appropriate manhole rehabilitations specification. The materials shall be trowel or spray applied utilizing proper equipment on to specified surfaces. The material thickness shall be specified by the County Engineer according to OWNER's requirements and manufacturer's recommendations.
- C. **Trowel Application.** If using approved cementitious repair materials, such shall be trowelled to provide a smooth surface with an average profile equivalent to coarse sandpaper to optimally receive the protective coating. No bugholes or honeycomb surfaces should remain after the final trowel procedure of the repair mortar.
- D. **Curing.** The repair materials shall be permitted to cure according to manufacturer's recommendations. Curing compounds should not be used unless approved by the protective coating manufacturer for compatibility with the specified protective coating.
- E. **Observation by Manufacturer's Representative.** Application procedure of the repair materials, if not performed by the coating certified applicator, should be observed by the protective coating manufacturer's representative or certified applicator to ensure proper finishing for suitability to receive the specified coating.
- F. **Surface Inspection and Cleaning.** After abrasive blast and active leak repair is performed all surfaces shall be inspected for remaining laitance prior to coating application. Any evidence of remaining contamination or laitance shall be removed by additional abrasive blast, shotblast, or to the approved method. Areas to be coated must be prepared after

receiving a cementitious repair mortar and prior to application of the epoxy coating, All surfaces should be inspected during and after preparation and before the protective coating is applied.

3.4 APPLICATION OF MANHOLE COATING

- A. **Application procedures** shall conform to the recommendations of the coating manufacture, including material handling, mixing, and environmental controls during application, safety, and application equipment.
- B. **Adhesive primer** shall then be applied (if required by manufacturer) by a Certified applicator of the coating manufacture. The primer shall be applied to the entire surface area that is to be coated with the flexible chimney sealant.
- C. **Flexible Sealant Coating** shall be applied by a Certified applicator at a minimum thickness of 220 mils to 250 mils by brush or trowel from a minimum of three (3) inches above the bottom of the manhole frame to three (3) inches below the pint where the circular chimney section beings its flare into a conical shape. The flexible sealant shall form a waterproof corrosion resistant seal for the ring-chimney section of the manhole.

3.5 TESTING AND INSPECTION

- A. **Thickness Gage.** During application a wet film thickness gage shall be used to ensure a monolithic coating and uniform thickness during application.
- B. **Final visual inspection** shall be made by the Inspector and manufacturer’s representative. Any deficiencies in the finished coating shall be marked and repaired according to the procedures set forth herein by Applicator.

3.6 CLEANING

- A. Trash and loose debris shall not be permitted to accumulate at the project site. All items shall be regularly removed and disposed of at an approved site in accordance with applicable regulatory agencies.

3.7 MEASUREMENT AND PAYMENT

- A. The work specified under this item shall be paid for at the unit bid price per each. Payment will include all material, labor, equipment and sealant system accessories for preparation and installation of this item. All grouting, patching, or other miscellaneous rehabilitation for structural preparation of the chimney of the manhole shall be paid under the specific items defined under SS-10 Cementitious Grouting and Manhole Rehabilitation Items.

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
12	Each	Chimney Seal (Flex-Seal Product or Equal)

END OF SECTION



**BOARD OF COUNTY COMMISSIONERS
WARREN COUNTY, OHIO**

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SHANNON JONES

DAVID G. YOUNG

ADVERTISEMENT FOR BIDS

Sealed bids will be received by the Clerk of the County Commissioners, Warren County, Ohio, 406 Justice Drive, Lebanon, Ohio 45036, until 11:00 AM, Thursday February 18, 2021, at the Office of the Warren County Commissioners, and then at said time bids will be opened and read aloud for the Sewer Manhole and Sewer Main Rehabilitation – Phase 1 Project.

Bid documents including terms, general conditions, supplemental conditions and specifications are available online at the Warren County's Website at <https://www.co.warren.oh.us/Commissioners/Bids/Default.aspx> Questions regarding the technical specifications should be directed to Chris Wojnicz at the Warren County Water and Sewer Department, (513) 695-1646. Contact the Warren County Commissioners Office at (513) 695-1250 should you need assistance in accessing the bidding information on the County web site.

The project generally consists of installing Cured-in-Place Pipe rehabilitation of 715 feet of 8-inch diameter Cured – in Place sanitary main and rehabilitation of 12 manholes. The estimated contract value is \$135,000.

The Board of Warren County Commissioners reserve the right to accept the lowest and best bid, to reject all bids, and to waive any irregularities in bids.

By order of the Board of County Commissioners, Warren County, Ohio.

Tina Osborne, Clerk