THRASHER

COMPLEX PROJECTS
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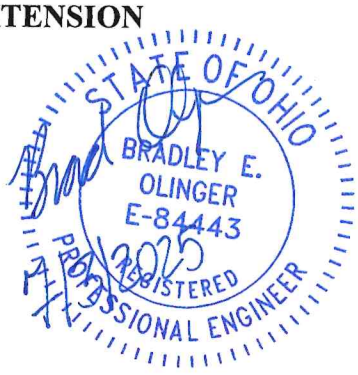
VILLAGE OF SCIO
HARRISON COUNTY, OHIO

HILLTOP ST. AND MAIN ST. SANITARY SEWER EXTENSION

ADDENDUM #1

JULY 3, 2025

THRASHER PROJECT #T20-11019



TO WHOM IT MAY CONCERN:

The following are clarifications and responses to questions posed by contractors for the above-referenced project.

A. SPECIFICATIONS

1. The following revised Specifications are included in this addendum (changes shown in red text):
   - 012000 Price and Payment
   - 036000 Grouting
   - 333111 Public Sanitary Sewerage Gravity Piping

B. QUESTIONS AND RESPONSES

1. QUESTION
Can KOSTER be added to the injection grout specs? KOSTER offers very high-quality products. Please advise.

RESPONSE
See the Specification section 036000 that is attached to this addendum. We have also included KOSTER's technical data sheet for information purposes only.

2. QUESTION
As indicated on pg. 4 of 15, section 5.02 - Existing Site Conditions - we are requesting a copy of reports and drawings pertinent to this section.

It is further noted in this section that the GBR/GDR (Geotechnical Report) is crossed out. If this means the information is unavailable, fine. If this information is available, please provide it as well.

RESPONSE
There are no Geotech reports or plans for this project.

If you have any questions or comments, please feel free to contact me by July 9 at jnordquist@thethrashergroup.com. Questions received less than seven days prior to the Bid Opening date may not be answered. As a reminder, bids will be received until 1:00 p.m. on Wednesday, July 16, 2025, at the Village of Scio located at 210 E Main St, Scio, OH 43988. Good luck to everyone and thank you for your interest in the project.

Sincerely,

THE THRASHER GROUP, INC.

Jim Nordquist, PE
Project Manager

SECTION 012000 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Cash allowances.

B. Schedule of Values.

C. Application for Payment.

D. Measurement and Payment

1.3 CASH ALLOWANCES (If provided in the Bid Form)

A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; delivery to Site and applicable taxes unless stated otherwise in Allowance Schedule.

B. Costs Not Included in Cash Allowances but Included in Contract Sum/Price: Product handling at Site including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing unless stated otherwise in Allowance Schedule.

C. Engineer Responsibilities:

1. Consult with Contractor for consideration and selection of products suppliers and installers.
2. Select products in consultation with Owner and transmit decision to Contractor.
3. Prepare Change Order.

D. Contractor Responsibilities:

1. Assist Engineer in selection of products, suppliers, and installers.
2. Obtain proposals from suppliers and installers and offer recommendations.
3. Upon notification of selection by Engineer, execute purchase agreement with designated supplier and installer.
4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.
5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

F. Allowance Schedule: If provided in and as per the Bid Form

G. Differences in cost between allowance(s) and actual cost(s) will be adjusted by Change Order.

1.4 SCHEDULE OF VALUES (As required for Lump Sum Project or Bid Item Breakdown on Unit Price Project)

A. Submit printed schedule on Progress Estimate schedule on EJCDC C-620.

B. Submit Schedule of Values within 20 days after date established in Notice to Proceed.

C. Format for Lump Sum Project: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section.

D. Revise schedule to list approved Change Orders with each Application for Payment.

1.5 APPLICATION FOR PAYMENT

A. Submit six (6) executed copies of each Application for Payment on EJCDC C-620 - Contractor's Application for Payment.

B. Submit six (6) copies of executed copies of Abnormal Weather Conditions forms regardless if any days are claimed or not and Affidavit of Payment.

C. Submit six (6) American Iron and Steel Qualifying and De Minimus Materials List (if required by the Contract Documents).

D. Payment Period: Submit at intervals stipulated in the Agreement.

1.6 MEASUREMENT AND PAYMENT

A. Take measurements and compute quantities. Engineer will verify measurements and quantities.

B. Unit Quantities: Quantities and measurements indicated on Bid Form are for Contract purposes only. Actual quantities provided shall determine payment.

C. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.

D. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.

E. Measurement of Quantities:

1. Weigh Scales: Inspected, tested, and certified by state in which work is being performed or state of origin of materials within past year.
2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
3. Metering Devices: Inspected, tested, and certified by state in which work is being performed or state of origin of materials within past year.
4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel, or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
5. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
6. Measurement by Area: Measured by square dimension using mean length and width or radius.
7. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
8. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

F. Payment

1. General Conditions, Supplemental General Conditions, Specification Section 011000 through 017839 Except for General Conditions - Mobilization/Demobilization, Section 015000 - Temporary Facilities and Controls and Section 015700 – Traffic Control.

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which it is required.
B. No additional compensation shall be made.

2. General Conditions – Mobilization/Demobilization

Bid Item 1 – Mobilization/Demobilization – Lump Sum

A. When a lump sum bid item for Mobilization/Demobilization is provided in the Bid Form, this work shall be paid for at the lump sum bid price for construction preparatory operations including, but not limited to, the movement of personnel and equipment to the project site and the establishment of field office(s), building(s), and/or other facilities, payment of all bonding and insurance costs incurred by the Contractor, and the installation of the project sign if a sign is required in the Supplemental General Conditions.

In no case shall the lump sum bid price for Mobilization/Demobilization exceed five percent (5%) of the total bid.

Partial payment not exceeding three percent (3%) of the awarded total contract bid price shall be made as part of the first application for payment after mobilization is completed. The balance of this lump sum bid price shall be paid for as part of the first application for payment after final completion.

No deduction shall be made, nor shall any increase be made, in the lump sum bid price for Mobilization regardless of any decreases or increases in the final total contract price or for any other cause.

B. When a bid item for Mobilization/Demobilization is not provided in the Bid Form, this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which mobilization/demobilization is required.

No additional compensation shall be made.

3. Section 015000 – Temporary Facilities and Controls

Incidental

A. When a lump sum bid item for Field Office and Sheds is provided in the Bid Form, this work shall be paid for on a prorated basis over the contract length to final completion based on the lump sum bid price.
B. When a per month bid item for Field Office and Sheds is provided in the Bid Form, this work shall be paid for at the per month bid price.
C. When a lump sum bid item for Field Office and Sheds is not provided in the Bid Form and a lump sum bid item for Mobilization/Demobilization is provided in the Bid Form, this work shall be included in the lump sum bid price for Mobilization/Demobilization.
D. When neither a lump sum bid item for Field Office and Sheds is provided in the Bid Form nor a lump sum bid item for Mobilization is provided in the Bid Form, the cost for Field Office and Sheds shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which the Field Office and Sheds are required. No additional compensation shall be made.

4. Section 015700 – Traffic Control

Bid Item 2 – Maintain Traffic – Lump Sum

A. When a Lump Sum bid item for Traffic Control is provided in Bid Form, this work shall be paid for at the lump sum bid price or unit bid price.
B. When a bid item for Traffic Control is not provided in the Bid Form, this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which Traffic Control is required.
C. No additional compensation shall be made.

5. Section 024010 – Video Recording

Incidental

A. When a lump sum bid item for Pre-Construction Video Recording is provided in the Bid Form, this work shall be paid for at the lump sum bid price for all location(s) directly and/or indirectly affected by the project.
B. When a bid item for Pre-Construction Video Recording is not provided in the Bid Form, this work will be completed by others and will not be part of the Contractor's work.

6. Section 033000 – Cast-in-Place Concrete

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which cast-in-place concrete is required.
B. No additional compensation shall be made.

7. Section 033050 – Crystalline Concrete Waterproofing

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which waterproofing is required.
B. No additional compensation shall be made.

8. Section 036000 – Grouting

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which grouting is required.
B. No additional compensation shall be made.

9. Section 310513 – Soils for Earthwork

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which soils for earthwork is required.
B. No additional compensation shall be made.

10. Section 310516 – Aggregates for Earthwork

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which soils for earthwork is required.
B. No additional compensation shall be made.

11. Section 311100 – Clearing, Grubbing, and Restoration

Clearing, Grubbing, and Restoration of Disturbed Area - Incidental

A. The cost for this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which clearing and/or grubbing are required.
B. No additional compensation shall be made.

C. All trees and vegetation within temporary construction easement limits shall be cleared (and grubbed if so specified) unless the property owner indicates in writing that certain trees are to remain and that the property owner will assume all responsibilities for removal of the trees in the future. Any such letter from the property owner shall be submitted to the Engineer for the record.

12. Section 312316 – Excavation

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which excavation is required. No additional compensation shall be made.
B. Unless otherwise provided, all excavation shall be unclassified regardless of the material encountered. No additional compensation shall be made for rock or any soft or otherwise unsuitable material. No additional compensation shall be made for dewatering and/or sheet piling.

13. Section 312316.13 – Trenching

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which trenching is required. No additional compensation shall be made.
B. Unless otherwise provided, all excavation shall be unclassified regardless of the material encountered. No additional compensation shall be made for rock or any soft or otherwise unsuitable material. No additional compensation shall be made for dewatering and/or sheet piling.

14. Section 312319 – Dewatering

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which dewatering is required.
B. No additional compensation shall be made.

15. Section 312500 – Erosion and Sedimentation Controls

Incidental

A. The cost for Erosion and Sediment Controls is to be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which Erosion and Sediment Controls are required.

All operation and maintenance costs as well as recordkeeping and reporting costs shall be included.

B. No additional compensation shall be made.

16. <u>Section 321216 – Concrete Resurfacing, Crushed Stone Resurfacing, and Asphalt Paving</u>

Bid Item 11 – Pavement Planing (2") – Square Yard
Bid Item 12 – Non-Tracking Tack Coat – Gallon
Bid Item 13 – Asphalt Concrete Surface Course 2" – Cubic Yard
Bid Item 14 – Concrete Base 6" – Square Yard
Bid Item 15 – Class QC2 Concrete with QA/QC Sidewalk 4" – Cubic Yard
Bid Item 16 – Aggregate Base, Sidewalk – Cubic Yard

A. Trench repairs, street, roadway, and driveway asphalt driveway repairs, bituminous concrete curb, and crushed stone repairs as required in the Drawings and/or Specifications shall be paid for at the linear foot unit bid price(s) for the type of repair and/or curb specified measured along the centerline of the utility pipe.

1. The designation of (Y") and (X) in the Bid Item is provided in the Bid Form.
2. Width shall not be considered.
3. The cost shall include all work required in the Drawings and/or Specifications.
4. The cost for temporary stone to maintain disturbed areas until repairs are made shall be included in the unit bid price(s) for the repair(s). No additional compensation shall be made.
5. The cost for neatly saw cutting pavement prior to excavation shall be included in these Bid Items.

B. Improved and unimproved areas disturbed by the Contractor in areas where utility pipe is not installed shall be repaired by the Contractor at his expense at no additional cost to the Owner. No additional compensation shall be made.

C. When a square yard bid item for Milling and Overlay of Bituminous Concrete is provided in the Bid Form, the cost for milling and overlay of bituminous concrete pavement of Type (X) shall be paid for at the square yard unit bid price(s) for the depth (Y") of milling and overlay specified and/or shown in the Drawings.

1. The designation of (Y") and (X) in the Bid Item is provided in the Bid Form.
2. The cost for milling and overlay shall include pavement markings to match the existing pavement markings that are milled and bituminous concrete wedge curb where disbursed.

D. When a cubic yard bid item for Overlay of Bituminous Concrete is provided in the Bid Form, the cost for overlay of bituminous concrete pavement of Type (X) shall be paid for at the cubic yard unit bid price(s) for the depth (Y") of overlay specified and/or shown in the Drawings.

1. The designation of (Y") and (X) in the Bid Item is provided in the Bid Form.
2. The cost for overlay shall include pavement markings to match the existing pavement markings that are milled.

3. The cost for overlay shall include milling required to construct the heel-in as required in the Drawings and/or Specifications.

E. Pavement, graveled areas, curb, and/or sidewalk and vegetated areas disturbed by the Contractor in areas where utility pipe is not installed shall be replaced by the Contractor at his expense at no additional cost to the Owner. No additional compensation will be made.

17. Section 321217 – Stone Surfacing Material

Incidental

A. The cost for this work shall be paid for at the linear foot unit bid price(s) for the type of repair specified measured along the centerline of the street or driveways, width shall no be considered.
B. The cost for this Work shall be paid for by the linear foot unit bid price(s) for the type of repair specified for shoulder stone along state roads or streets, width shall not be considered.
C. The cost of this work shall be paid for by the ton unit bid price(s) for parking areas.
D. The cost for temporary stone to maintain disturbed areas until repairs are made shall be included in the unit bid price(s) for the repair(s). No additional compensation shall be made.

18. Section 321313 – Concrete Paving

Incidental

A. The cost for this work will be paid for by the lump sum price or unit bid price for the street or area requiring work.

19. Section 321723 – Pavement Markings

Incidental

A. The cost of this work shall be in the lump sum bid price(s) or unit bid price(s) for the paving improvement.
B. No additional compensation shall be made.

20. Section 329119 - Landscaping

Bid Item 4 – Seeding, MISC.: Topsoil, Seeding, and Mulching – Lump Sum

A. The cost of this work shall be paid for at the lump sum bid price(s) and/or unit bid price(s) as provided in the Bid Form for reclamation or restoration of pipelines.

21. Section 330130.13 – Sewer and Manhole Testing

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which testing is required.
B. No additional compensation shall be made.

22. Section 330513 – Manholes and Structures

Bid Item 9 – Manhole No 3 - Inside Diameter, Base, Cone Top, Frame, and Cover – Per Each
Bid Item 10 – Clean and Demolish Septic System – Per Each

A. The cost of this work shall be paid for at the lump sum bid price(s) and/or unit bid price(s) as provided in the Bid Form.
B. Payment shall be as follows:
   1. Manhole base, cone top, frame, and cover of specified inside diameter and up to six-foot (6') depth measured from invert out elevation to top of cover shall be paid at the unit bid price per each.
   2. Manhole riser piping of specified inside diameter required for additional depth over six feet (6') shall be paid for at the unit bid price per vertical foot. Measurements shall be rounded up to the nearest 1/10th foot.
   3. Reconnection of all existing sanitary sewer(s) to a replacement manhole shall be included in the unit bid price per each replacement manhole. No additional compensation shall be made.
   4. The cost for concrete structure(s), manhole(s), and/or wet well(s) for pump station(s) and/or valve vault(s) shall be included in the lump sum bid price(s) and/or unit bid price(s) for which they are required. No additional compensation shall be made.

23. Section 330513.01 – Manhole Frames and Covers

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for the bid item(s) for which manhole frame and covers are required.
B. No additional compensation shall be made.

24. Section 330526 – Utility Identification

Incidental

A. The cost of this work shall be included in the lump sum bid price(s) and/or unit bid price(s) for which utility identification is required.
B. No additional compensation shall be made.

25. Section 333111 – Public Sanitary Sewerage Gravity Piping

Bid Item 5 – 8" SDR-35 Gravity Sewer Pipe – Horizontal Linear Foot
Bid Item 6 – 6"x8" Sanitary Sewer Wye – Per Each
Bid Item 7 – 6" SDR-35 Sanitary Sewer Service Laterals – Horizontal Linear Foot
Bid Item 8 – 6" SDR-35 Cleanout and Connect to Existing Sewer System – Per Each

A. The cost for Gravity Sanitary Sewer Main Lines shall be paid for by the unit bid price(s) by the horizontal linear foot for the type, size and depth of the pipe.
B. The cost for Sanitary Sewer Service Laterals shall be paid for by the measured horizontal linear foot type and size of pipe, including pipe and fittings in place and accepted. Depth is not compensated.
C. Measurement for Gravity Sanitary Sewer Main Line under this item shall be the horizontal measured length of pipe and fittings in place and accepted. Depth measurement shall be made perpendicular to the pipe and measured from the original ground to top of pipe.
D. The unit price(s) shall include all required labor, materials, equipment, testing and all other cost associated with a complete installation including excavation, bedding, backfill, materials, fitting, pipe joints, pipe, tools, supplies, marking tape and testing.
E. The unit price(s) shall include all required labor, materials, and equipment for the post-construction CCTV inspections of all pipe sections between each manhole.
F. Cost for associated items with Sanitary Sewer Gravity Clean Outs shall be paid for by the unit bid price(s) for each complete installed per details on contract drawings.
G. Cost shall include if not covered by another bid item repair such as flower beds, walls, shrubs, trees, fencing or other incidentals.
H. Restoration of disturbed area, concrete resurfacing, crushed stone resurfacing and asphalt paving shall be paid for under other Bid Item(s) specified elsewhere.

26. Bid Item 3 – Construction Layout Stakes and Surveying – Lump Sum

A. The cost for this work shall be paid for at a lump sum bid price.
B. No additional compensation shall be made.

General Specifications

A. The contract Specifications references provided attempt to outline the Contract Bid Item payment methodology for work to be performed. In the event of variation between the Bid Form and the preceding specification section measure and payment descriptions, the Contractor shall contact the Engineer before making any assumptions and proceeding with the Bid Item work or part thereof in question.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 012000

SECTION 036000 - GROUTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Portland cement grout.
2. Non-shrink cementitious grout.
3. Curing.

B. Related Sections

1. Section 033000 - Cast-In-Place Concrete.
2. Section 330513 - Manholes and Structures.
3. Section 013300 - Submittal Procedures.

1.3 REFERENCES

A. American Concrete Institute

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 318 - Building Code Requirements for Structural Concrete.

B. American Society of Testing and Materials

1. ASTM C33 - Standard Specification for Concrete Aggregates.
2. ASTM C40 - Test Method for Organic Impurities in Fine Aggregates for Concrete.
3. ASTM C150 - Standard Specification for Portland Cement.
4. ASTM C191 - Test Method for Time of Setting of Hydraulic Cement by Vicat Needle.
5. ASTM C307 - Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings.
6. ASTM C494 - Chemical Admixtures for Concrete.
7. ASTM C531 - Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
8. ASTM C579 - Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, monolithic Surfacings and Polymer Concretes.
9. ASTM C827 - Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.

C. U.S. Army Corps of Engineers Concrete Research Division (CRD)

1. CRD C621 - Non-Shrink Grout.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit product data on grout.

C. Manufacturer's Installation Instructions: Submit manufacturer's instructions for mixing, handling, surface preparation, placing epoxy type and non-shrink type grouts.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with the Ohio Department of Transportation Construction and Material Specifications (CMS).

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver grout in manufacturer's unopened containers with proper labels intact.

B. Store grout in a dry shelter, protected from moisture.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not perform grouting if temperatures exceed the manufacturer's requirements.

B. Maintain minimum temperature per the manufacturer's requirements before, during, and after grouting, until grout has set.

PART 2 - PRODUCTS

2.1 PORTLAND CEMENT GROUT MATERIALS

A. Portland Cement: ASTM C150, Type I and II.

B. Water

1. Potable; containing no impurities, suspended particles, algae or dissolved natural salts in quantities capable of causing:

a. Corrosion of steel.
b. Volume change increasing shrinkage cracking.
c. Efflorescence.

d. Excess air entraining.

2. Water for washing aggregate, for mixing and for curing shall be free from oil and deleterious amounts of acids, alkalies, and organic materials; shall not contain more than 1000 mg/1 of chlorides as Cl, nor more than 1300 mg/1 of sulfates as SO_4; and shall not contain an amount of impurities that may cause a change of more than 25 percent in the setting time of the cement nor a reduction of more than 5 percent in the compressive strength of the grout at fourteen (14) days when compared with the result obtained with distilled water. Additionally, water used for curing shall not contain an amount of impurities sufficient to discolor the grout.

C. Fine Aggregate

1. Washed natural sand.
2. Gradation in accordance with ASTM C33 and represented by smooth granulometric curve within required limits.
3. Free from injurious amounts of organic impurities as determined by ASTM C40.

D. Mix

1. Portland cement, sand and water. Do not use ferrous aggregate or staining ingredients in grout mixes.
2. Admixtures shall be compatible with the grout. Calcium chloride or admixtures containing calcium chloride are not acceptable. Admixtures shall be used in accordance with the manufacturer's recommendations and shall be added separately to the grout mix.
3. If required, Water Reducing Retarder shall be ASTM C494 Type D and shall be Master Builders Pozzolith 300-R, Sika Corporation Plastiment, or equal.

2.2 NON-SHRINK CEMENTITIOUS GROUT

A. Furnish materials in accordance with ODOT CMS.

B. Manufacturers:

1. Sika Corporation
2. L&M Construction Chemicals
3. Euclid Chemical Company
4. ThoRoc Concrete Restoration Solutions

C. Description: Pre-mixed ready for use formulation requiring only addition of water; non-shrink, non-corrosive, non-metallic, non-gas forming, no chlorides.

D. Properties: Certified to maintain initial placement volume or expand after set and meet following minimum properties when tested according to CRD-C621, for Type D non-shrink grout:

1. Setting Time

a. Initial: Two (2) hours, approximately.
b. Final: Three (3) hours, approximately.

c. Comply with ASTM C191.

2. Maximum Expansion: 0.10 to 0.40 percent.
3. Compressive Strength

a. 1-Day: 4,000 psi.
b. 7-Day: 7,000 psi.
c. 28-Day: 10,000 to 10,800 psi.
d. Comply with CRD-C621.

2.3 INJECTION GROUT

A. Manufactures
1. Koster KB – Pur Gel

B. Description: The KB – Pur Gel is used for externally sealing areas by using a gel pump through the application of curtain injection, area injection, or at expansion joints.

C. Properties:
1. Mixable with Water
2. Material Viscosity of 600 – 800 cps
3. Application Viscosity of 200 - 300 cps
4. Application Temperature >32F
5. Elongation to comply with ASTM D-3574
6. Tensile Strength to comply with ASTM D-3574

2.4 CURING

A. Prevent rapid loss of water from grout during first forty-eight (48) hours by use of approved membrane curing compound or with use of wet burlap method.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify areas to receive grout.

3.2 PREPARATION

A. Remove defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces by brushing, hammering, chipping or other similar means until sound, clean concrete surface is achieved.

B. Rough concrete lightly, but not enough to interfere with placement of grout.

C. Remove foreign materials from metal surfaces in contact with grout.

D. Align, level, and maintain final positioning of components to be grouted.

E. Saturate concrete surfaces with clean water; remove excess water, leave none standing.

3.3 INSTALLATION - FORMWORK

A. Construct leak proof forms anchored and shored to withstand grout pressures.

B. Install formwork with clearances to permit proper placement of grout.

3.4 MIXING

A. Portland Cement Grout

1. Use proportions of two (2) parts sand and one (1) part cement, measured by volume.
2. Prepare grout with water to obtain consistency to permit placing and packing.
3. Mix water and grout in two (2) steps; pre-mix using approximately ⅔ of water; after partial mixing, add remaining water to bring mix to desired placement consistency and continue mixing 2 minutes to 3 minutes.
4. Mix only quantities of grout capable of being placed within thirty (30) minutes after mixing.
5. Do not add additional water after grout has been mixed.

B. Mix and prepare non-shrink cementitious grout in accordance with written manufacturer's instructions.

1. Capable of developing minimum compressive strength of 2400 psi in forty-eight (48) hours and 7000 psi in twenty-eight (28) days.

C. Mix grout components in proximity to Work area and transport mixture quickly and in manner not permitting segregation of materials.

3.5 PLACING GROUT

A. Place grout material quickly and continuously.

B. Do not use pneumatic-pressure or dry-packing methods.

C. Apply grout from one side only to avoid entrapping air.

D. Do not vibrate placed grout mixture, or permit placement when area is being vibrated by nearby equipment.

E. Thoroughly compact final installation and eliminate air pockets.

F. Do not remove leveling shims for at least forty-eight (48) hours after grout has been placed.

3.6 CURING

A. Immediately after placement, protect grout from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. After grout has attained its initial set, keep damp for minimum of three (3) days.

3.7 FIELD QUALITY CONTROL

A. Section 017000 - Execution and Closeout Requirements.

B. Tests of grout components may be performed to ensure conformance with specified requirements.

END OF SECTION 036000

KOSTER
Waterproofing Systems

KOSTER PUR Gel

Technical Data Sheet IN 285

Issued: 01-22-21

IN - Injection systems

NSF-approved polyurethane gel for area injections or sealing expansion joints

Features
KOSTER KB-Pur Gel is a solvent-free, water activated polyurethane gel that is NSF approved for use in drinking water environments. Depending on the amount of water added, a highly elastic, waterproof, foam hydro-gel is formed. The material is resistant to pressurized water after dilutions up to 1:10. KB-Pur Gel does not contain free isocyanates and is chemically stable after reacting. It does not contribute to corrosion and does not emit groundwater polluting substances.

Technical Data

Solubility	Mixable with water
Material viscosity	600 - 800 cps
Application viscosity	200 - 300 cps
Application temperature	> 32 °F
Elongation (ASTM D-3574)	> 80% (depending on mix ratio)
Tensile strength (ASTM D-3574)	> 200 psi (depending on mix ratio)
Working time	Approx 1-3 min

Fields of Application
KOSTER KB-Pur Gel is intended for external sealing of areas with ground contact, for area injection into highly porous, jointed, or cracked building materials, and for sealing cavities, pipe couplings, pipe penetrations, masonry joints, concrete, and soil.

Application
Installation of the material is carried out with a two-component pump, such as the KOSTER Gel Pump.

Curtain Injection:
Drill holes through the construction member to be sealed in a raster of max. 12 inches horizontally and vertically, every second row centrically offset. The diameter of the boreholes depends on the packers chosen. KOSTER Injection Lances or KOSTER Impact Packers 18 plus may be used as packers.

Area Injection:
Drill holes into the construction member to be sealed to a depth of 2/3 of the member's thickness in a raster of max. 12 inches horizontally and vertically, every second row centrically offset. The diameter of the boreholes depends on the packers chosen.

Expansion Joints:
Clean out and close existing joints using suitable means before injection. Along the crack, drill holes on alternating sides of the crack at a 45° angle to the surface at a max. distance of 19.5 inches from each other on each side. KOSTER Injection Lances or KOSTER Impact Packers 18 Plus may be used as packers.

Coverage
Dependent on application.
Area injections (at 1:13) - min. 0.4 lb KB-Pur Gel/sq ft
Curtain injections (at 1:10) - min. 0.6 lb KB-Pur Gel/sq ft

Cleaning
Clean tools immediately after use with KOSTER KB-Pur Cleaner.

Packaging

IN 285 002	0.6 gallon unit
IN 285 025	6 gallon unit
IN 285 210	50.43 gallon unit

Storage
In original sealed packages, it may be stored for 1 year.

Safety
Consult Safety Data Sheet. Wear protective gloves and goggles while handling and during installation. When carrying out injection work, protect the surrounding area from injection resin that may be discharged from the wall, packers, or boreholes. Do not stand directly behind packers during injection.

Limited Warranty
KOSTER warrants that its product shall be in accordance with the specifications published in the current revision of the products data sheet. KOSTER covenants that in the event any of its products fail to meet their published specifications, KOSTER shall replace those products proved to be defective. KOSTER shall not be responsible for any incidental or consequential damages due to the breach of its warranties. Notwithstanding the foregoing, KOSTER's sole liability hereunder shall not exceed the cost of the defective product originally purchased. EXCEPT AS SET FORTH ABOVE, KOSTER MAKES NO OTHER WARRANTIES EXPRESS OR IMPLIED AND MAKES NO WARRANTY AS TO THE MERCHANTABILITY OR FITNESS OF THE PRODUCT FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. The user must determine if the product is suited for the intended use and the user must bear the risks and liabilities associated with it.

Related products

KOSTER PUR Gel	Art.-Nr. IN 285
KOSTER Injection Gel G4	Art.-Nr. IN 290
KOSTER Injection Gel S4	Art.-Nr. IN 294
KOSTER KB-Pur Cleaner	Art.-Nr. IN 900 010
KOSTER Drive in aid for Impact Packer 18	Art.-Nr. IN 911 001

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KÖSTER
Waterproofing Systems

KOSTER Superpacker 10 mm x 85 mm CH	Art.-Nr. IN 912 001
KÖSTER Superpacker 13 mm x 85 mm CH	Art.-Nr. IN 914 001
KOSTER Superpacker 13 mm x 115 mm	Art.-Nr. IN 915 001
KOSTER Injection Lance	Art.-Nr. IN 924 001
KOSTER Gel Pump	Art.-Nr. IN 928 001
KOSTER Water Hose for Gel Pump	Art.-Nr. IN 928 002
KOSTER Gel Hose for Gel Pump	Art.-Nr. IN 928 003
KOSTER Manometer for Gel Pump	Art.-Nr. IN 928 004
KOSTER Mix head for Gel Pump	Art.-Nr. IN 928 005
KOSTER Injection Whip for Gel Pump	Art.-Nr. IN 928 006
KOSTER Slide Coupling for pan-head fitting	Art.-Nr. IN 928 007
KOSTER Acrylic Gel Pump	Art.-Nr. IN 930 001

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SECTION 333111 - PUBLIC SANITARY SEWERAGE GRAVITY PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Gravity sanitary sewerage piping.
2. Special installation gravity sewerage piping.
3. Connection to existing manholes.
4. Wye branches and tees.
5. Sanitary laterals.
6. Pile support systems.
7. Bedding and cover materials.

B. Related Requirements:

1. Section 310513 - Soils for Earthwork: Soils for backfill in trenches.
2. Section 310516 - Aggregates for Earthwork: Aggregate for backfill in trenches.
3. Section 312316 - Excavation: Product and execution requirements for excavation and backfill required by this Section.
4. Section 312316.13 - Trenching: Execution requirements for trenching required by this Section.
5. Section 330130.13 – Sewer and Manhole Testing.
6. Section 330513 – Manholes and Structures: Manholes for sanitary sewerage piping.

1.3 DEFINITIONS

A. ABS: Acrylonitrile butadiene styrene.

B. Bedding: Fill placed under, beside, and directly over pipe, prior to subsequent backfill operations.

C. EPDM: Ethylene-propylene-diene terpolymer.

1.4 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Water Works Association:

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings.
4. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
6. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.
7. AWWA C153 - Ductile-Iron Compact Fittings.

C. ASTM International:

1. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
2. ASTM A123/.
3. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe.
4. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
5. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
6. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
7. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
8. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).
9. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).
10. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
11. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
12. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
13. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
14. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
15. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
16. ASTM D2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
17. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.
18. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
19. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

20. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer catalog cuts and other information indicating proposed materials, accessories, details, and construction information.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Test and Evaluation Reports: Submit reports indicating field tests made and results obtained.

E. Manufacturer Instructions:

1. Indicate special procedures required to install specified products.
2. Submit detailed description of procedures for connecting new sewer to existing sewer line, directional drilling installation, and pipe jacking installation.

F. Source Quality-Control Submittals: Indicate results of shop tests and inspections.

G. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

H. Qualifications Statement:

1. Submit qualifications for manufacturer and installer.

1.6 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record invert elevations and actual locations of pipe runs, connections, manholes, and cleanouts.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

D. Submit all CCTV inspections for approval.

1.7 QUALITY ASSURANCE

A. Perform Work according to specified standards.

B. Maintain a copy of each standard affecting Work of this Section on Site.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three (3) years' documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum three (3) years' documented experience.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Storage:

1. Store materials according to manufacturer instructions.
2. Store valves in shipping containers with labeling in place.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Block individual and stockpiled pipe lengths to prevent moving.
3. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 GRAVITY SANITARY SEWERAGE PIPING

A. Ductile-Iron Pipe:

1. Comply with AWWA C151.
2. Special Thickness Class: 50 or 52.
3. End Connections: Flanged or mechanical joints.
4. Outside Coating:

a. Type: Asphaltic.
b. Minimum Uniform Thickness: 1 mil.
c. Comply with AWWA C151.

5. Lining:

a. Cement mortar lined.
b. Comply with AWWA C104.

6. Fittings:

a. Material: Ductile iron, minimum pressure class of 350 or greater.
b. Comply with AWWA C153.
c. Lining: Cement-mortar lined according to AWWA C104.
d. All underground fittings shall be domestic made only mechanical joint ductile iron unless otherwise noted.

7. Joints:

a. Rubber gasket joint devices.
b. Comply with AWWA C111.

B. Plastic Pipe:

1. Material: PVC.
2. Comply with ASTM D3034, SDR-35.
3. Inside Nominal Diameter: As shown on Drawings.
4. End Connections: Bell-and-spigot style, with rubber-ring-sealed gasket joint.
5. Fittings: PVC.
6. Joints:

a. Elastomeric gaskets.
b. Comply with ASTM F477.

2.2 SPECIAL INSTALLATION GRAVITY SEWERAGE PIPING

A. Ductile Iron Pressure Sewer Pipe:

1. Comply with AWWA C151 and AWWA C104.
2. Standard cement-mortar lining and outside coated.
3. Pressure Classes: Sizes 3 to 12 Inches: 350 psig.
4. Ductile Iron Fittings:

a. Comply with AWWA C110.
b. Pressure Rating: 350 psig.
c. Cement mortar lined and outside coated as for ductile-iron pipe.

5. Joints:

a. Comply with AWWA C111.
b. Type: Mechanical.

6. Rubber Gaskets, Lubricants, Glands, Bolts, and Nuts: Comply with AWWA C111.

B. PVC PIPE

1. PVC Pressure Sewer Pipe and Fittings, 12-Inch Nominal Size and Smaller:

a. Comply with AWWA C900.
b. Class 235.
c. Joints: Internally restrained.

C. HDPE PIPE

1. HDPE Pressure Sewer Pipe and Fittings:

a. Material: PE3408/PE4710
b. Comply with ASTM D3350, DR-9
c. Inside Nominal Diameter: As shown on Drawings and according to AWWA C906 and ASTM F714.
d. Fittings and End Connections: ASTM D3261 injected molded fittings with end suitable for butt fusion. Socket fusion, saddle fusion and electrofusion jointing techniques and flange joints may be used instead of butt fusion when approved by Engineer.
e. Joints: Butt fusion joints.

2.3 GRAVITY SANITARY SEWER CLEANOUTS

A. As per details on contract drawing.

B. Cleanouts for main line and service laterals where required.

2.4 MANHOLES

A. As specified in Section 330513 – Manholes and Structural and Section 330513.01 – Manhole Frames and Covers.

2.5 RESTRAINED COUPLINGS

A. Description:

1. Material: Ductile iron complying with ASTM A536.
2. Restrained joining System: EBAA Iron Series 3800, or approved equal, complying with AWWA C219, ANSI/AWWA C111/A21/11, and ASTM D2000.

2.6 FLEXIBLE COUPLINGS

A. Description:

1. Material: Resilient, chemical-resistant, elastomeric PVC.
2. Attachment: Two Series-300 stainless-steel clamps, screws, and housings.

2.7 FLEXIBLE PIPE BOOTS FOR MANHOLE PIPE ENTRANCES

A. Description:

1. Material: EPDM.
2. Comply with ASTM C923.
3. Attachment: Series-300 stainless-steel clamp and hardware.

2.8 MATERIALS

A. Bedding and Cover:

1. Bedding: Fill Type as specified in Section 310516 - Aggregates for Earthwork or as detailed on construction drawing.
2. Cover: Fill Type, as specified in Section 310516 - Aggregates for Earthwork.
3. Soil Backfill from Above Pipe to Finish Grade:

a. Soil Type, as specified in Section 310513 - Soils for Earthwork.
b. Subsoil with no rocks more than 6 inches in diameter, frozen earth, or foreign matter.

2.9 MIXES

A. Grout: As specified in Section 036000 - Grouting.

2.10 ACCESSORIES

A. Pile Support Brackets: Type 304 Stainless Steel.

2.11 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Provide shop inspection and testing of pipe.

C. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that trench cut is ready to receive Work of this Section.

C. Verify that excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Correct over-excavation as specified in Section 312316 – Excavation.

C. Remove large stones or other hard materials that could damage pipe or impede consistent backfilling or compaction.

D. Protect and support existing sewer lines, utilities, and appurtenances.

E. Utilities:

1. Maintain profiles of utilities.
2. Coordinate with other utilities to eliminate interference.
3. Notify Engineer if crossing conflicts occur.

3.3 INSTALLATION

A. Bedding:

1. Excavate pipe trench as specified in Section 312316.13 - Trenching.
2. Excavate to lines and grades as indicated on Drawings, or as required to accommodate installation of encasement.
3. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
4. Provide sheeting and shoring as specified in Section 312316.13 - Trenching.
5. Pile Support Systems:

    a. Install utilities on pile support systems as indicated on Drawings.
    b. Install piles 6 feet o.c., for utility support.

6. Placement:

    a. Place bedding material at trench bottom.
    b. Level materials in continuous layer not exceeding 6-inch compacted depth.
    c. Compact to 98 percent of maximum density.

B. Piping:

1. Install pipe, fittings, and accessories according to ASTM D2321, and seal joints watertight.
2. Lay pipe to slope gradients as indicated on Drawings.
3. Maximum Variation from Indicated Slope: 1/8 inch in 10 feet.
4. Begin at downstream end of system and progress upstream.
5. Assemble and handle pipe according to manufacturer’s instructions, except as shall be modified on Drawings or by Engineer.
6. Keep pipe and fittings clean until Work has been completed and accepted by Engineer.
7. Cap open ends during periods of Work stoppage.

8. Backfill and compact as specified in Section 312316 – Excavation.
9. Do not displace or damage pipe when compacting.
10. Connect pipe to existing sewer system as indicated on Drawings, or as directed by Engineer.

C. Manholes: As specified in Section 330513 – Manholes and Structures.

D. Connections to Existing Manholes:

1. Drilling:

a. Core drill existing manhole to clean opening.
b. Use of pneumatic hammers, chipping guns, sledgehammers are not permitted.

2. Install watertight neoprene gasket and seal with nonshrink concrete grout.
3. Prevent construction debris from entering existing sewer line when making connection.

E. Cleanouts

1. Concurrent with pipe laying operation install main line cleanouts and service line lateral cleanouts as required in location shown on contract drawing and per details on contract drawing.

F. Wye Branches and Tees:

1. Concurrent with pipe-laying operations, install wye branches and pipe tees at locations indicated on Drawings.
2. Use standard fittings of same material and joint type as sewer main.
3. Maintain minimum 5-foot separation distance between wye connection and manhole.
4. Use saddle wye or tee with stainless-steel clamps for taps into existing piping.
5. Mount saddles with solvent cement or gasket and secure with metal bands.
6. Lay out holes with template, and cut holes with mechanical cutter.

G. Sanitary Laterals:

1. Construct laterals from wye branch to terminal point indicated on Drawings.
2. Where depth of main pipeline warrants, construct riser-type laterals from wye branch.
3. Minimum Depth of Cover over Piping: 3 feet.
4. Minimum Separation Distance between Laterals: 5 feet.
5. Install watertight plug, braced to withstand pipeline test pressure thrust, at termination of lateral.

H. Backfilling:

1. Backfilling: As specified in Section 312316 – Excavation.
2. Maintain optimum moisture content of bedding material as required to attain specified compaction density.

I. Pipe Laying Along Streams:

1. Where the stream bank has been disturbed and is not to be protected with rock fill, a nylon blanket netting similar to netting or permanent turf reinforcement mat having a 100% UV-stabilization polypropylene fiber matrix stitched between two UV-stabilized nettings shall be installed from the bottom of the stream to the high water mark.
2. Mulch and netting shall be installed within twenty-four (24) hours of completion of the pipe installation on that section of the stream.
3. All grading should be limited to the minimum necessary to install the crossing.
4. Grading of the approaches shall be done by backblading or other similar methods so as to keep both spoil and equipment out of the stream.
5. Cofferdam or other approved diversionary technique in the construction drawings or specification should be used wherever possible to divert flow to one part of the stream while construction Work is being performed on another part.
6. All sediment laden water pumped from ditch lines and cofferdams should eb filtered and discharged to a stable area.
7. Equipment shall not enter a stream unnecessarily. Most Work can be done from the bank or inside the cofferdam area.
8. Spoil shall be stored and/or disposed of outside the limits of normal high water and in such a way that it will not re-enter the stream.
9. Green concrete is toxic to aquatic life and should be kept out of contact with the flowing stream for seventy-two (72) hours. Cofferdams must be sued if green concrete is to be placed in the streambed.
10. Surface water runoff should be diverted away from approaches.
11. Approaches shall be reshaped, fertilized, limed, seeded and mulched immediately upon completion of construction activities and/or otherwise adequately stabilized.
12. Material for backfilling ditch in the stream shall be able to withstand normal stream flows without excessive erosion
13. Where the Contractor intends to continuously cross the stream, creek, or river with equipment and vehicular traffic, the stream bed shall be protected as required by the Ohio EPA. The Contractor shall submit to the Engineer a plan for temporary stream crossing, which would be subject to Ohio EPA approval.

J. Post-Construction CCTV
1. Evaluate the pipes condition by running a camera from manhole to manhole to ensure proper installation.
2. Sewer sections should be inspected using remote CCTV.
3. All CCTV footage shall be submitted to Owner and Engineer via email or hard copy (USB).

3.4 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Maximum Variation from Indicated Slope: 1/8 inch in 10 feet.

3.5 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Request inspection by Engineer prior to and immediately after placing bedding.

C. Testing:

1. If tests indicate that Work does not meet specified requirements, remove Work, replace, and retest.
2. Pipe Testing: As specified in Section 330130.13 – Sewer and Manhole Testing.
3. Compaction Testing: As specified in Section 312316.13 – Trenching.

3.6 PROTECTION

A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

C. Cap open ends of piping during periods of Work stoppage.

3.7 ATTACHMENTS

A. See contract drawings.

END OF SECTION 333111

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