



ADDENDUM NO. 2

PROJECT: ARPA Sanitary Sewer Rehabilitation

ADDENDUM NO.: 2

ADDENDUM DATE: June 13, 2024

OWNER: Harriman Utility Board
200 N. Roane Street
P.O. Box 434
Harriman, TN 37748

ENGINEER: Cannon & Cannon, Inc. (CCI)
10025 Investment Drive, Suite 120
Knoxville, TN 37932



ALL BIDS SHALL CONFORM TO THIS ADDENDUM:

This addendum forms a part of the Contract referenced above. The following items covering changes in the bidding requirements shall apply to and become a part of the requirements thereof.

Receipt of this Addendum shall be acknowledged by inserting its number and date in the space on the Bid Form. Failure to do so may result in disqualification of the Bidder.

This Addendum consists of three (3) pages and the following attachments.

- Minutes from Mandatory Pre-Bid Meeting (4 pages)
- Sign-in Sheet from Mandatory Pre-Bid Meeting (1 page)
- Revised Section 00 41 43 Bid Form (15 pages)
- Revised Section 01 22 00 Measurement and Payment (7 pages)
- Revised Section 33 01 30.81 Manhole Rehabilitation (8 pages)
- Revised Section 33 01 30.23 Pipe Bursting (10 pages)
- Revised Sheet D2.01

ITEM NO. 1 CLARIFICATIONS

Q1. Is polyurea lining of manholes allowed on this project?

A1. The owner will allow polyurea lining of manholes in place of cementitious lining. The specification will be updated by this Addendum.

Q2. The project specifications call out for DR 11 HDPE to be used during Pipe Bursting. Will the owner consider a different thickness?

A2. The owner will allow DR 17 HDPE to be used during Pipe Bursting. The specification will be updated by this Addendum.



Q3. The drawings call out for CCTV inspections on lines not being replaced. Would you consider adding a LF pay item for CCTV?

A3. A pay item for CCTV inspections will be added to the Bid Form.

Q4. What are the allowed pay widths for asphalt paving?

A4. Sheet D2.01 has been updated to include allowed pay widths for asphalt paving.

Q5. There are several line sections called out to be pipe burst that are shallow depths. Since we are up sizing the lines from a 6 to 8" who will pay for the road repairs if the line is to upheave due to the upsizing and shallow depths of the existing line?

A5. Contractors shall be responsible for repairing road as an incidental cost to the pipe bursting if the lines are to upheave and damage the asphalt pavement.

Q6. How are we to determine what the asphalt quantity will be? Every contractor will come up with a different amount, and therefore every deduct will be different. Is it possible for you to determine what each deductive quantity will be from the Base Bid, so all contractors will be bidding the same?

A6. Section 00 41 43 Bid Form has been updated to include specific quantities for each deductive alternate.

Q7. On deductive Alt # 5: Line C Sta 23+02 to Sta 33+47 MH WH-69. (For clarification Is this MH 69 to MH WH-64?) On sheets SA1.04 & SA1.05 are these the lines that are part of the Deductive Alt # 5?

A7. Deductive Alternate #5 includes work on Sheets SA1.04 and SA1.05. Line 'C' Sta. 21+44 (MH WH-64A) to Line 'C' Sta. 33+47 (MH WH-69). This deductive alternate includes 1,203 LF of 8" PB and associated MH replacement.

Q8. On deductive Alt # 3: The station numbers don't line up with the MH destinations. Can you clarify which line is the correct line that you want to deduct from the bid?

A8. Deductive Alternate #3 includes work on Line 'C', from Sta. 6+42 (MH WH-56) to Sta. 14+15 (MH WH-60). It also includes work on Line 'F', from Sta. 0+00 (MH WH-60) to Sta. 3+86 (MH WH-95).

ITEM NO. 2 REPLACEMENTS

1. **DELETE Section 00 41 43 Bid Form** in its entirety and **REPLACE** with **revised Section 00 41 43** attached. In addition, the deleted pages are of an obsolete version and the following changes have been made:

- a. REVISE Deductive Alternate directives to be able to be removed in any order (rather than sequential order) at Owner's discretion.
- b. REVISE 100-series items and Pay Item 217 to include separate costs for each deductive alternate
- c. REVISE quantities throughout
- d. REVISE Units for Pay Item 216 from Lump Sum (LS) to Linear Foot (LF)
- e. ADD Pay Items 219, 300c and 300d.
- f. REVISE Pay Item 212 for Polyurea Lining instead of Cementitious



ADDENDUM NO. 2

2. **DELETE Section 01 22 00 Measurement and Payment** in its entirety and REPLACE with **revised Section 01 22 00** attached. In addition, the deleted pages are of an obsolete version and the following changes have been made:
 - a. REVISE 100-series item numbers
 - b. REVISE Pay Items 219, 300c and 300d.
 - c. REVISE description of Pay Item 210 to include restoration.
 - d. REVISE Units for Pay Item 216
 - e. REVISE Pay Item 212 for Polyurea Lining instead of Cementitious

3. **DELETE Section 33 01 30.81 Manhole Rehabilitation** in its entirety and REPLACE with **revised Section 33 01 30.81** attached. In addition, the deleted pages are of an obsolete version and the following changes have been made:
 - a. ADD 1.4.C to reflect the required warranties associated with Polyurea lining.
 - b. ADD 2.E to summarize Polyurea lining requirements
 - c. REMOVE 2.F and 2.G for cementitious and spray-applied epoxy coatings
 - d. ADD 3.2 to summarize execution procedures for polyurea lining
 - e. REMOVE 3.4 related to execution procedures for cementitious and spray-applied epoxy coatings.

4. **DELETE Section 33 01 30.23 Pipe Bursting** in its entirety and REPLACE with **revised Section 33 01 30.23** attached. In addition, the deleted pages are of an obsolete version and the following changes have been made:
 - a. REVISE 2.1.A.b to change the pressure rating from 200 psi to 125 psi and the DR from 11 to 17.

5. **DELETE Sheet D2.01 Paving Detail Sheet** in its entirety and REPLACE with **revised Sheet D2.01** attached. In addition, the deleted pages are of an obsolete version and the following changes have been made:
 - a. ADD note to paving details to specify pavement pay width.

END ADDENDUM NO. 2



PRE-BID MEETING MINUTES

PROJECT	ARPA Sanitary Sewer Rehabilitation (ARPA 2022-8536, WW-PDC-2)	CCI PROJ #	00923-0013
DATE	May 30, 2024	TIME	2:00 PM EST
LOCATION	Harriman Utility Board, 200 N Roane Street, Harriman, TN 37748		
PURPOSE	Mandatory Pre-Bid Meeting		

1. INTRODUCTION & SIGN IN

- Owner: Harriman Utility Board
 Candace Vannasdale, PE - General Manager
 Frankie Davis - Gas, Water, Sewer Manager
 Joshua Gillespie – Project Manager
- Engineer: CCI (Cannon & Cannon, Inc.)
 Will Littlejohn, PE, Engineer of Record
 Jessica Sands, Construction Administration

2. BIDDING REQUIREMENTS

- A. Pre-Bid Meeting – Mandatory
- B. Outside of Envelope (see SECTION 00 21 13)
- Project Title
 - Name and address of bidder
 - If sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.”
 - Addressed to:

Harriman Utility Board
ATTN: Joshua Gillespie
P.O. Box 434
Harriman, TN 37748
- C. Items to include with Bid Submission:
- Bid Form (Section 00 41 43):
 - Acknowledgement of any Addenda
 - All blank spaces for bid prices must be filled in, in ink or typewritten
 - Signed and dated
 - Corrections initialed
 - Drug Free Workplace Affidavit (Section 00415)
 - Non-Collusion Affidavit of Prime Bidder (Section 00420)



PRE-BID MEETING MINUTES

- Required Bid security in the form of 5% Bid Bond or Bank Check in the amount of 5% of the Total Bid (form located in Section 00430)
- Tabulation of subcontractors, suppliers and other individuals and entities required to be identified in this bid
- Required Qualifications Statement w/ supporting data (Section 00451)
 - List of project references
 - Prime Bidder's license no.
- All required certifications and ARPA forms (see Section 00 41 43, Article 7).

3. SCHEDULE

Key Dates are as follows:

- **Sunday, May 19, 2024** Advertisement ran in Knoxville News-Sentinel
 - **Monday, May 20, 2024** Bid documents available
 - **Thursday, May 30, 2024** Mandatory Pre-Bid Meeting at 2:00 PM
 - **Thursday, June 6, 2024** Cut-off for questions at 5:00 PM
 - **Monday, June 10, 2024** Issue Addendum if necessary by 2:00 PM
 - **Thursday, June 13, 2024** **Bid opening at 2:00 PM** (local time)
-
- Bid Opening at HUB, 200 N Roane Street, Harriman, TN 37748
 - Direct questions in writing to Will Littlejohn, PE (wlittlejohn@cci-corp) by cut-off date above. Questions not received in writing or received after the cut-off for questions will not be answered.
 - Board Approval on or about Monday, June 24, 2024
 - Notice of Award within the week
 - Notice to Proceed will be coordinated with the contractor and owner. Expected in early July 2024
 - Submittals and work are expected to begin within 1 month of NTP.
 - Required Substantial Completion within **240** days from contract commencement date listed on Notice to Proceed
 - Required Final Completion within **270** days from contract commencement date listed on Notice to Proceed
 - Liquidated damages - \$500 per day

4. PROJECT OVERVIEW

The work to be bid on is as follows:

The Project includes the rehabilitation of 500 LF of 8-inch sewer lines by CIPP, open-cut replacement of 2,250 LF of 8-inch sewer line, and pipe bursting 2,900 LF of 6-inch sewer lines to increase them to 8-inch diameter lines. There are 33 manhole replacements and 100 VF of cementitious manhole rehabilitation, and 100 service lateral connections to be open-cut



PRE-BID MEETING MINUTES

replaced to the property line. Project also includes miscellaneous system repairs as noted in the plans.

- A. Discussion of deductive alternates:
 - i. The project will be evaluated based on the Total of the Base Bid. The Owner shall have the discretion to remove work as shown in Deductive Alternatives #1 through #6 as detailed on the plans. Deductive Alternatives shall be removed in sequential order, beginning with #1 first, and continuing through #6, per the Owner's discretion. Unit pricing submitted by contractors in the base bid shall apply to all alternates.
 - ii. SA1.01 – Base Bid. Work on this page must be completed before September 1, 2024. TDOT has a paving project planned for SR-27 (N Roane Street), and sewer work must be completed prior to paving.
 - iii. SA1.02 – Base Bid and Deductive Alternate #3
 - iv. SA1.03 – Deductive Alternative #3 and #6
 - v. SA1.04 – Base Bid, Deductive Alternative #5 and #6
 - vi. SA1.05 – Deductive Alternative #3, #4, and #5
 - vii. SA1.06 - Deductive Alternative #1 and #2
- B. Erosion Control (Section 01 57 13) is the Contractor's responsibility.
 - i. No ARAP or SWPPP for this project.
- C. Traffic control is the Contractor's responsibility. Work in TDOT ROW (Sheet SA1.01) must be coordinated with the TDOT prior to construction.
 - i. TDOT Utility Occupancy Permit (# Roane3565) for work in ROW is included in Appendix.
- D. Sewer Flow shall be maintained at all times. Contractor is responsible for maintaining all customer connections during construction. (See Section 01 51 43)
- E. Contractor is responsible for staking all items of construction, including property lines and easements as necessary.

5. QUESTIONS AND DISCUSSION

- A. HUB plans to self-inspect this project
- B. Pre-Construction video recording is required for the project. Payment shall be made under Pay Item 100d.



PRE-BID MEETING MINUTES

- C. Owner states that the project budget is comprised of grant funds and is limited to the grant amount of approximately \$1.1 million. The intent of the deductive alternates is to allow for a project to be awarded that closely meets the grant budget.
- D. Owner states that some portions of N Roane Street have concrete pavement under the asphalt surface.

The minutes contained herein are Cannon & Cannon, Inc.'s understanding of the meeting. They are assumed to be complete and correct unless the undersigned is otherwise notified.

Respectfully Submitted,

CANNON & CANNON, INC.

Will Littlejohn, P.E.



SIGN IN SHEET

PROJECT	ARPA Sanitary Sewer Rehabilitation (ARPA 2022-8536, WW-PDC-2)	CCI PROJ. NO.	00923-0013
DATE	May 30, 2024	TIME	2:00 PM EST
LOCATION	Harriman Utility Board, 200 N Roane Street, Harriman, TN 37748	PURPOSE	Mandatory Pre-Bid Meeting

NAME	COMPANY	PHONE NUMBER	EMAIL ADDRESS
Joseph Lehrer	Portland Utilities Const. Co.	615/456-8344	joellehrer@pucc.org
Cotten Bayles	Morgan Contracting	865.396.1328	cbayles@morgan1.com
Zachary Williams	Xylem (Pumps)	615 712 0625	Zachary.Williams@xylem.com
CHRIS JACO	XYLEM	423-268-0536	CHRISTOPHER.JACO@xylem.com
Trey Baylon	Hurst Excavating	865-356-4903	estimating@hurstexc.com
Jay Boatman	Pipeworks Plus	615-210-7458	boatmanconst@gmail.com
Will Littlejohn	Cannon & Cannon	865-770-4043	w.littlejohn@cci-corp.com
Justin P. City	HUB	865-296-4407	jg.littlejohn@hub-tn.com
Jessica Hub	Cannon + Cannon	865-335-3881	jsandls@cci-corp.com
Frankie Davis	HUB	865-882-3242	Fdavis@hub-tn.com
Candace Vannasdale	HUB	865-882-3242	cvannasdale@hub-tn.com

SECTION 01 22 00
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SCOPE

- A. The Bid lists each item of the Project for which payment will be made. No payment will be made for any items other than those listed in the Bid.
- B. Required items of work and incidentals necessary for the satisfactory completion of the work which are not specifically listed in the Bid, and which are not specified in this section to be measured or to be included in one of the items listed in the Bid, shall be considered as incidental to the work. All costs thereof, including Contractor's overhead costs and profit, shall be considered as included in the lump sum or unit prices bid for the various Bid items. The Contractor shall prepare the Bid accordingly.
- C. Work includes furnishing all plant, labor, equipment, tools and materials, which are not furnished by the Owner and performing all operations required to complete the work satisfactorily, in place, as specified and as indicated on the Drawings.

1.2 DESCRIPTIONS

- A. Measurement of an item of work will be by the unit indicated in the Bid.
- B. Final payment quantities shall be determined from the actual quantities installed in the field.
- C. Payment will include all necessary and incidental related work not specified to be included in any other item of work listed in the Bid.
- D. Unless otherwise stated in individual sections of the Specifications or in the Bid, no separate payment will be made for any item of work, materials, parts, equipment, supplies or related items required to perform and complete the work. The costs for all such items required shall be included in the price bid for the item of which it is a part.
- E. Payment will be made by extending unit prices multiplied by quantities provided and then summing the extended prices to reflect actual work. Such price and payment shall constitute full compensation to the Contractor for furnishing all plant, labor, equipment, tools and materials not furnished by the Owner and for performing all operations required to provide to the Owner the entire Project, complete in place, as specified and as indicated on the Drawings.
- F. "Products" shall mean materials or equipment permanently incorporated into the work.

1.3 MEASUREMENT

- A. General: Measuring, and metering devices used to measure quantity of materials for the Work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.
- B. Where measurement of quantities depends on elevation of existing ground, elevations obtained during construction will be compared with those shown on Drawings. Variations of 1 foot or less will be ignored, and depths shown on the Drawings will be used for determining quantities.
- C. Units of measurement shown on the bid schedule shall be as follows, unless specified otherwise:
 - 1. EA Each – Field count by Owner.
 - 2. LF Linear Foot – Horizontal field measure by Owner.
 - 3. LS Lump Sum – Percentage complete by Owner.
 - 4. SY Square Yard – Field measure by Owner.
 - 5. VF Vertical Foot – Vertical field measure by Owner.
 - 6. GAL Gallon – Field count by Owner.
- D. Definitions:
 - 1. Each (EA): Field counted by the Owner as installed and accepted.
 - 2. Linear Foot (LF): Field measured horizontally by the Owner. Measured centerline to centerline of manhole or fitting. Manhole diameter and fitting length shall be included in the linear measurement.
 - 3. Lump Sum (LS): Field verified by Owner.
 - 4. Square Yard (SY): Field measured and calculated by Owner. Measurement shall be horizontal distances measured to the nearest 0.5 foot, calculated in square feet, converted to square yards, and rounded to the nearest square yard by the Owner.
 - 5. Vertical Foot (VF): Field measured by Owner. Measure from manhole rim to lowest pipe invert.
 - 6. Gallon (GAL): Field counted by Owner as installed and accepted.

1.4 STORED MATERIALS AND EQUIPMENT

- A. No applications shall be processed by Owner which includes amounts for stored materials. Owner shall not pay Contractor for stored materials.
- B. Contractor's application for payment for unit price components shall be based upon installed units identified on the bid form.
- C. Contractor's application for payment for lump sum components shall be based upon percent completion of work associated with the lump sum component.

1.5 ITEMS NOT CONSIDERED AS PAY ITEMS

- A. Unless explicitly stated in the Contract Documents, the following items are not considered as pay items:
 - 1. Excavation for Utilities (Section 31 23 16.01)
 - 2. Sanitary Sewer Testing (Section 33 05 05)

- B. Unclassified excavation for utilities is not a pay item unless explicitly stated in this Contract Document. Unclassified excavation shall be considered and designated a necessary part of the construction for trench depths as defined by the individual unit price for the line installation and as required by the Project Drawings. Unit prices bid for utilities with which unclassified excavation is connected shall be full compensation for this item.
- C. Rock excavation is not a pay item unless explicitly stated in this Contract Document. Rock excavation shall be considered and designated a necessary part of the construction, and unit prices bid for items which rock excavation is connected shall be full compensation for this item.
- D. Payment will not be made for rejected or unused products. Payment will not be made for the following:
 - 1. Loading, hauling, and disposing of rejected material.
 - 2. Quantities of material wasted or disposed of in a manner not called for under the Contract Documents.
 - 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of the Contract Documents.
 - 4. Material not unloaded from transporting vehicle.
- E. Site cleanup is not a separate pay item unless explicitly stated in this Contract Document. It includes the equipment, material, and labor to maintain the Site on a daily and weekly basis in a clean environment, removing debris, unused material, cleaning, raking, general restoration of disturbed areas to a condition equal to or better than prior to construction. All debris and material shall be removed from the site and properly disposed of offsite in an approved permitted manner. Site cleanup is not a pay item and shall be considered and designated a necessary part of the construction and unit prices bid for utilities which unclassified excavation is connected shall be full compensation for this item. See Section 32 11 00.01 – Surface Restoration.
- F. Routine maintenance and removal of erosion and pollution control measures is not a separate pay item but shall be completed for items that have been installed, including the establishment/replacement of damaged items, removal of accumulated “silt” behind the temporary structures as well as final removal once construction is complete and accepted by the Owner. See Section 31 25 00 – Erosion and Sedimentation Controls.

1.6 BID ITEM PAYMENT

- A. Payment for unit price items covers all the labor, materials, tools, equipment, overhead, and services necessary to furnish and install the following items. Payment for bid items will be as stated below.
- B. **Pay Item No. 101– Mobilization, Bonds, and Insurance** is a lump sum pay item. One time cost to include all mobilization costs incurred by the Contractor associated with such site. Payment for Mobilization is limited to the unit price bid or 8.0% of project base bid total, whichever is less. Payment for Mobilization, Bonds, and Insurance is also limited to 8.0% of the total of each specific deductive alternate. Lump sum shall include all labor, material, tools and equipment required for mobilization. Demobilization is not a pay item.
- C. **Pay Item No. 102 – Traffic Control** is a lump sum pay item for all approved traffic control plans, as required for Work, which have been prepared, and stamped by a registered

professional engineer and submitted to OWNER for approval. Payments for this lump sum item will be made based on percentage of work complete for the entire project. The pay item also includes temporary facilities, maintenance, relocation, removal, personnel, police officers, signage, and routine coordination with permitting agencies. Item also include installation, maintenance, relocation, and removal of temporary chain link fencing, as required by traffic permits. Payments for this lump sum item will be made based on percentage of work complete for the entire project.

- D. **Pay Item No. 103 – Erosion Prevention and Sediment Control** is a lump sum pay item and includes all erosion control devices required by OWNER and/or agency having jurisdiction. This includes all material, labor, and installation complete. See Section 01 57 13. All measures shall be monitored and maintained per specifications and shall not be removed until all associated permits or approvals have been obtained.
- E. **Pay Item No. 104 – Pre-Construction Site Video Recording** is a lump sum pay item. Video recording shall include all materials, equipment, and labor to record the sewer route at the beginning of the project as specified in Section 01 32 33.
- F. **Pay Item No. 200a-d – 8” PVC Gravity Sewer, by Open Cut, Unpaved** are linear foot unit price items. Unit price items include trench excavation, dewatering if needed, pipe material as shown on the Unit Price Schedule, pipe zone material, backfill, including full stone where required, compaction, testing, and inspection. See Section 31 23 16.01 Excavation for Utilities and 33 31 11 Gravity Sewer Pipe.
- G. **Pay Item No. 201a-d – 8” PVC Gravity Sewer, by Open Cut, Paved** are linear foot unit price items. Unit price items include trench excavation, dewatering if needed, pipe material as shown on the Unit Price Schedule, pipe zone material, backfill, including full stone where required, compaction, testing, and inspection. See Section 31 23 16.01 Excavation for Utilities and 33 31 11 Gravity Sewer Pipe.
- H. **Pay Item No. 202a-b – 8” DIP Gravity Sewer, by Open Cut, Unpaved** are linear foot unit price items. Unit price items include trench excavation, dewatering if needed, pipe material as shown on the Unit Price Schedule, pipe zone material, backfill, including full stone where required, compaction, testing, and inspection. See Section 31 23 16.01 Excavation for Utilities and 33 31 11 Gravity Sewer Pipe.
- I. **Pay Item No. 203a-b – 8” DIP Gravity Sewer, by Open Cut, Paved** are linear foot unit price items. Unit price items include trench excavation, dewatering if needed, pipe material as shown on the Unit Price Schedule, pipe zone material, backfill, including full stone where required, compaction, testing, and inspection. See Section 31 23 16.01 Excavation for Utilities and 33 31 11 Gravity Sewer Pipe.
- J. **Pay Item No. 204b –Pipe Lining, CIPP** are linear foot unit price pay items. Unit price items include pre- and post-CCTV inspections, high-velocity cleaning, lining, installing, curing, cutting out to connections, required testing (including laboratory testing), end sealing, and debris collection and disposal and is paid per linear foot. See Section 33 01 30 Sewer Inspection, Cleaning, and Flow Control and Section 33 01 30.72 Cured-in-Place Pipe.
- K. **Pay Item No. 205a-b – Pipe Bursting** are linear foot unit price pay items. Unit price items include mobilization/demobilization of specialty equipment for pipe bursting, operation of equipment, HDPE replacement pipe sizes per Unit Price Schedule, excavation as necessary to

carry out pipe bursting operations, pipe testing, and connection to manholes and cutting outs for service laterals. Price includes pre- and post-CCTV inspections. See Section 33 01 30 Sewer Inspection, Cleaning, and Flow Control and Section 33 01 30.23 Pipe Bursting.

- L. **Pay Item No. 206 – Point Repair** is a linear foot unit price pay item. Unit price item includes excavation, pipe removal, disposal, pipe bedding, pipe installation, and compacted backfill, either as shown on Construction Drawings or as directed by OWNER. Price includes pre- and post-CCTV inspections.
- M. **Pay Item No. 207 – Cut and Buff Service Lateral Connections** is a per each unit price pay item. Unit price item includes cutting and buffing service lateral connections. This item is to be paid only on services that have been called out on the construction drawings to cut and buff or where the OWNER has given prior approval. See Section 33 01 30.72 Cured-in-Place Pipe and Section 33 31 30, Sanitary Sewer Services.
- N. **Pay Item No. 208 – PVC Sewer Lateral Appurtenances** is a per each unit price pay item. Unit price item includes connection fitting to sewer, PVC stack pipe, two-way cleanout with cap, 6-inch by 4-inch PVC reducer, cast-iron box and lid, connection to existing private lateral and excavation, bedding, and backfill. See Section 33 31 30, Sanitary Sewer Services.
- O. **Pay Item No. 209 – Additional Cleanout on Sewer Lateral** is a per each unit price pay item. Unit price item includes PVC stack pipe, two-way cleanout with cap, 6-inch by 4-inch PVC reducer, cleanout, connection to existing private lateral and excavation, bedding, and backfill. See Section 33 31 30, Sanitary Sewer Services.
- P. **Pay Item No. 210a-b – PVC Sewer Lateral** are linear foot unit price pay items. Unit price items include excavation, bedding, backfill, compaction, PVC pipe and fittings, connection to private lateral, testing, and inspection. **This pay item also includes all permanent surface restoration, including asphalt, concrete, curbing, sidewalk, and other materials, as well as seeding, sodding, and all non-permanent surface restoration.** See Section 31 23 16.01 Excavation for Utilities, 33 31 11 Gravity Sewer Pipe, and 33 31 30, Sanitary Sewer Services.
- Q. **Pay Item No. 211a-e – Manhole, Concrete, 4-Foot Diameter** are per each unit price pay items. Unit price items include, clearing and grubbing, removal of existing manhole, base, precast sections, concrete riser rings, gaskets, steps, cast-in or core drilled pipe openings, necessary pipe and pipe fittings, grout, vacuum testing, frame and either standard or watertight cover as depicted in project drawings or as designated by Owner. See Section 33 05 61 Manholes.
- R. **Pay Item No. 212a-b – Manhole Lining, Cementitious** are vertical foot unit price pay item. Unit prices bid for this item shall be per each vertical foot of manhole rehabilitated based on manhole diameter. This shall also include vacuum testing, flow control or bypassing if necessary, internal plugging of inactive connections, and horizontally adjusting frame to allow for 48-inch diameter clear opening and subsequent realignment or reinstalling of existing frame and cover unless otherwise specified. If replacement of manhole frames and covers with watertight frames and covers and installation of lid plugs are required, they will be listed as separate pay items in this section. See Section 33 05 61 Manholes.
- S. **Pay Items No. 213 – Locate and Survey Existing Manhole** is a per each unit price pay item. Unit price item includes, clearing and grubbing, locating buried manholes and excavating down to the bottom of the frame and cover, obtaining the services of a licensed land surveyor and

providing survey-grade information to the OWNER and Engineer. Payment shall include all work necessary and incidental to completion of the work. See Section 33 05 61 Manholes.

- T. **Pay Items No. 214 – Locate and Raise Top of Casting to Grade** is a per each unit price pay item. Unit price item includes, clearing and grubbing, locating buried manholes and excavating down to the bottom of the frame and cover, obtaining the services of a licensed land surveyor and providing survey-grade information to the OWNER and Engineer. Unit price item includes removal of existing frame, lid, and cone section (if necessary), preparation of the existing structure to receive a new cone, riser, or concrete grade rings, as well as labor and material as directed by the OWNER. Payment shall include all work necessary and incidental to completion of the work. See Section 33 05 61 Manholes.
- U. **Pay Item No. 215 – Abandon Existing Manhole** is a per each unit price pay item. Unit price item includes excavating, cutting and plugging pipes, removing and disposing of the frame, cover, grade rings, and exposed riser sections, and filling abandoned manhole. See Section 33 05 61 Manholes.
- V. **Pay Item No. 216 – Abandon Existing Sewers by Grouting in Place** is a linear foot unit price items. Unit price items include cleaning and pressure grouting. See Section 33 01 30 Sewer Inspection, Cleaning, and Flow Control and Section 31 23 16.01 Excavation for Utilities.
- W. **Pay Item No. 217 – Sewer Flow Control** is a lump sum pay item. Lump sum price bid for sewer flow control shall be full compensation for this item and includes sewer dams, by-pass pumps with standby units, fuel, maintenance, operation, supervision, suction and discharge piping. Payments for this lump sum item will be made based on percentage of work complete for the entire project. See Section 33 01 30 Sewer Inspection, Cleaning, and Flow Control.
- X. **Pay Item No. 218 – Inside Drop Assembly** is a per each unit price pay item for the installation of an internal drop assembly to be installed on a new or existing gravity sewer manhole which includes the appropriately sized drop bowl, pipe, pipe fittings, anchoring brackets, and appurtenances needed for the complete installation as depicted in project drawings or as designated by Owner.
- Y. **Pay Item No. 219 – CCTV Investigation** is a linear foot unit price pay item. Unit price item includes closed circuit television of 6-, 8-, 10-, and 12- inch diameter sanitary sewers. Item shall be paid for additional CCTV inspections and associated high-velocity cleaning as directed by the OWNER. This item does not include Pre- and Post- Construction CCTV inspections. See Section 02540, Sewer Cleaning, and Section 33 01 30 Sewer Inspection, Cleaning, and Flow Control.
- Z. **Pay Item No. 300a –Asphalt Pavement Replacement** is a per square yard unit price item. Unit price items include excavation, removal and disposal of material, replacement material to duplicate material type and specification, depth, width, and length of removed materials, cleanup, and 30 days of maintenance. Compensation will be by square yard of repair for Owner approved areas surrounding the work. See Section 32 11 00.01 – Surface Restoration.
- AA. **Pay Item No. 300b – Concrete Pavement Replacement** is a per square yard unit price item. Unit price items include excavation, removal and disposal of material, replacement material to duplicate material type and specification, depth, width, and length of removed materials, cleanup, and 30 days of maintenance. Compensation will be by square yard of repair for Owner approved areas surrounding the work. See Section 32 11 00.01 – Surface Restoration.

- BB. **Pay Item No. 300c – Concrete Curb Replacement** is a per square yard unit price item. Unit price items include excavation, removal and disposal of material, replacement material to duplicate material type and specification, depth, width, and length of removed materials, cleanup, and 30 days of maintenance. Compensation will be by square yard of repair for Owner approved areas surrounding the work. See Section 32 11 00.01 – Surface Restoration.
- CC. **Pay Item No. 300d – Concrete Sidewalk Replacement** is a per square yard unit price item. Unit price items include excavation, removal and disposal of material, replacement material to duplicate material type and specification, depth, width, and length of removed materials, cleanup, and 30 days of maintenance. Compensation will be by square yard of repair for Owner approved areas surrounding the work. See Section 32 11 00.01 – Surface Restoration.
- DD. **Pay Item No. 300e – Gravel Pavement Replacement (6-inch Depth)** is a per square yard unit price item. Unit price items include excavation, removal and disposal of material, replacement material to duplicate material type and specification, depth, width, and length of removed materials, cleanup, and 30 days of maintenance. Compensation will be by square yard of repair for Owner approved areas surrounding the work. See Section 32 11 00.01 – Surface Restoration.
- EE. **Pay Item No. 300f – Seeding** is a square yard unit price pay item. Unit price bid for site restoration, lawn repair, landscape repair, etc., shall be full compensation for this item and for all labor, materials, tools, water, and equipment required to complete the restoration to its original or better condition. Item includes topsoil, reseeding per property owner’s preference and as directed by the Owner to match existing conditions, maintenance for 60 days or until re-established; maintenance includes water, fertilizer, and mowing. Re-establish at no additional compensation. See Section 32 11 00.01 – Surface Restoration.

END OF SECTION 01 22 00

SECTION 00 41 43 - BID FORM

ARPA Sanitary Sewer Rehabilitation
Grant Number: 2022-8536 WW-PDC-2

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

*Harriman Utility Board
200 N. Roane Street
Harriman, TN 37748*

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

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

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder’s safety precautions and programs.

E. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- G. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- H. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- I. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER’S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

- A. Base Bid. The project will be evaluated based on the Total of the Base Bid. The Owner shall have the discretion to remove work as shown in Deductive Alternatives #1 through #6 as detailed on the plans. **Deductive Alternatives shall be removed in any order per the Owner’s discretion.** Unit pricing submitted by contractors in the base bid shall apply to all alternates

<u>Item No. and Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>
100 Mobilization, Bonds, and Insurance (8% Max.)			
a. Base Bid	LS	1	\$
b. Deductive Alternate 1	LS	1	\$
c. Deductive Alternate 2	LS	1	\$
d. Deductive Alternate 3	LS	1	\$
e. Deductive Alternate 4	LS	1	\$
f. Deductive Alternate 5	LS	1	\$
g. Deductive Alternate 6	LS	1	\$
101 Traffic Control			
a. Base Bid	LS	1	\$
b. Deductive Alternate 1	LS	1	\$
c. Deductive Alternate 2	LS	1	\$
d. Deductive Alternate 3	LS	1	\$
e. Deductive Alternate 4	LS	1	\$
f. Deductive Alternate 5	LS	1	\$
g. Deductive Alternate 6	LS	1	\$
102 Erosion Prevention and Sediment Control			
a. Base Bid	LS	1	\$
b. Deductive Alternate 1	LS	1	\$
c. Deductive Alternate 2	LS	1	\$
d. Deductive Alternate 3	LS	1	\$
e. Deductive Alternate 4	LS	1	\$
f. Deductive Alternate 5	LS	1	\$
g. Deductive Alternate 6	LS	1	\$
103 Pre-Construction Site Video Recording			
a. Base Bid	LS	1	\$
b. Deductive Alternate 1	LS	1	\$
c. Deductive Alternate 2	LS	1	\$
d. Deductive Alternate 3	LS	1	\$
e. Deductive Alternate 4	LS	1	\$
f. Deductive Alternate 5	LS	1	\$
g. Deductive Alternate 6	LS	1	\$

<u>Item No. and Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>
200 8" PVC Gravity Sewer, by Open Cut, Unpaved Areas			
a. 0-6 Feet Deep	LF	260	\$
b. 6-8 Feet Deep	LF	430	\$
c. 8-10 Feet Deep	LF	200	\$
d. 10-12 Feet Deep	LF	65	\$
201 8" PVC Gravity Sewer, by Open Cut, Paved Areas			
a. 0-6 Feet Deep	LF	720	\$
b. 6-8 Feet Deep	LF	570	\$
c. 8-10 Feet Deep	LF	175	\$
d. 10-12 Feet Deep	LF	120	\$
202 8" DIP Gravity Sewer, by Open Cut, Unpaved Areas			
a. 0-6 Feet Deep	LF	220	\$
b. 6-8 Feet Deep	LF	60	\$
203 8" DIP Gravity Sewer, by Open Cut, Paved Areas			
a. 0-6 Feet Deep	LF	105	\$
b. 6-8 Feet Deep	LF	10	\$
204 Pipe Lining, CIPP			
b. 8-Inch Diameter	LF	810	\$
205 Pipe Bursting			
a. Exist. 6-Inch Diameter, upsize to 8-inch Diameter	LF	1,965	\$
b. 8-Inch Diameter	LF	1,040	\$
206 Point Repair (As Directed by Owner)	LF	200	\$
207 Cut and Buff Service Lateral Connections	EA	8	\$
208 Sewer Lateral Appurtenances	EA	83	\$
209 Additional Cleanout on Sewer Lateral	EA	7	\$
210 PVC Sewer Lateral Replacement			
a. 6-inch Diameter, in Road	LF	1,200	\$
b. 6-inch Diameter, in Easement/Unpaved ROW	LF	800	\$
211 Manhole, Concrete, 4-Foot Diameter			
a. 0-6 Foot Depth	EA	23	\$
b. 6-8 Foot Depth	EA	8	\$
c. 8-10 Foot Depth	EA	6	\$
d. 10-12 Foot Depth	EA	1	\$
e. 12-14 Foot Depth	EA	1	\$
212 Manhole Lining, Polyurea			
a. 4-Foot Diameter	VF	40	\$
b. 5-Foot Diameter	VF	10	\$
213 Locate and Survey Existing MH	EA	1	\$
214 Locate and Raise Top of Casting to Grade	EA	1	\$
215 Abandon Manhole	EA	4	\$
216 Abandon Existing Sewer Mains	LF	1,150	\$

Item No. and Description	Unit	Quantity	Unit Price
217 Sewer Flow Control			
a. Base Bid	LS	1	\$
b. Deductive Alternate 1	LS	1	\$
c. Deductive Alternate 2	LS	1	\$
d. Deductive Alternate 3	LS	1	\$
e. Deductive Alternate 4	LS	1	\$
f. Deductive Alternate 5	LS	1	\$
g. Deductive Alternate 6	LS	1	\$
218 Internal Drop Assembly	EA	1	\$
219 CCTV Inspection	LF	315	\$
300 Restoration And Replacement			
a. Asphalt Pavement Replacement	SY	2,000	\$
b. Concrete Pavement Replacement	SY	50	\$
c. Concrete Curb Replacement	LF	50	\$
d. Concrete Sidewalk Replacement	SY	50	\$
e. Gravel Pavement Replacement (6-inch Depth Max.)	SY	50	\$
f. Seeding	SY	2,500	\$

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Total of Base Bid \$ _____

(words)

DOLLARS.

(words)

- B. Deductive Alternate No. 1. This includes all work associated with Line '1' on Sheet SA1.06. **At the owner's discretion, the work is to be deducted from the base bid.** Unit prices shown in the base bid apply.

Item No. and Description	Unit	Quantity
100 Mobilization, Bonds, and Insurance		
b. Deductive Alternate 1	LS	1
101 Traffic Control		
b. Deductive Alternate 1	LS	1
102 Erosion Prevention and Sediment Control		
b. Deductive Alternate 1	LS	1
103 Pre-Construction Site Video Recording		
b. Deductive Alternate 1	LS	1
205 Pipe Bursting		
a. Exist. 6-Inch Diameter, upsize to 8-inch Diameter	LF	570
208 Sewer Lateral Appurtenances	EA	15
209 Additional Cleanout on Sewer Lateral	EA	1
210 PVC Sewer Lateral Replacement		
a. 6-inch Diameter, in Road	LF	300
b. 6-inch Diameter, in Easement/Unpaved ROW	LF	150
211 Manhole, Concrete, 4-Foot Diameter		
c. 8-10 Foot Depth	EA	2
e. 12-14 Foot Depth	EA	1
217 Sewer Flow Control		
b. Deductive Alternate 1	LS	1
300 Restoration And Replacement		
a. Asphalt Pavement Replacement	SY	35
c. Concrete Curb Replacement	LF	30

- C. Deductive Alternate No. 2. This includes all work associated with Line 'J' and 'K' on Sheet SA1.06. **At the owner's discretion, the work is to be deducted from the base bid.** Unit prices shown in the base bid apply.

Item No. and Description	Unit	Quantity
100 Mobilization, Bonds, and Insurance		
c. Deductive Alternate 2	LS	1
101 Traffic Control		
c. Deductive Alternate 2	LS	1
102 Erosion Prevention and Sediment Control		
c. Deductive Alternate 2	LS	1
103 Pre-Construction Site Video Recording		
Deductive Alternate 2	LS	1
205 Pipe Bursting		
b. 8-Inch Diameter	LF	440
208 Sewer Lateral Appurtenances	EA	4
209 Additional Cleanout on Sewer Lateral	EA	1
210 PVC Sewer Lateral Replacement		
a. 6-inch Diameter, in Road	LF	10
b. 6-inch Diameter, in Easement/Unpaved ROW	LF	40
211 Manhole, Concrete, 4-Foot Diameter		
a. 0-6 Foot Depth	EA	2
b. 6-8 Foot Depth	EA	1
c. 8-10 Foot Depth	EA	1
217 Sewer Flow Control		
c. Deductive Alternate 2	LS	1
300 Restoration And Replacement		
a. Asphalt Pavement Replacement	SY	10
f. Seeding	SY	60

D. Deductive Alternate No. 3.

This includes work associated with Line 'C' from Sta. 33+47 (MH WH-69) to Sta. 38+03 E.O.L. (MH WH-71) on Sheet SA1.05.

Also included is work from Sta. 6+42 (MH WH-56) to Sta. 14+15 (MH WH-60), as well as Line 'F' from Sta. 0+00 (MH WH-60) to Sta. 3+86 (MH WH-95) on Sheet SA1.03.

Also included is work from MH WH-55 to WH-56 on Sheet SA1.02. **At the owner's discretion, the work is to be deducted from the base bid.** Unit prices shown in the base bid apply.

<u>Item No. and Description</u>	<u>Unit</u>	<u>Quantity</u>
100 Mobilization, Bonds, and Insurance		
d. Deductive Alternate 3	LS	1
101 Traffic Control		
d. Deductive Alternate 3	LS	1
102 Erosion Prevention and Sediment Control		
d. Deductive Alternate 3	LS	1
103 Pre-Construction Site Video Recording		
Deductive Alternate 3	LS	1
200 8" PVC Gravity Sewer, by Open Cut, Unpaved Areas		
a. 0-6 Feet Deep	LF	55
b. 6-8 Feet Deep	LF	360
c. 8-10 Feet Deep	LF	200
d. 10-12 Feet Deep	LF	65
201 8" PVC Gravity Sewer, by Open Cut, Paved Areas		
b. 6-8 Feet Deep	LF	20
204 Pipe Lining, CIPP		
b. 8-Inch Diameter	LF	645
205 Pipe Bursting		
a. Exist. 6-Inch Diameter, upsize to 8-inch Diameter	LF	460
b. 8-Inch Diameter	LF	165
207 Cut and Buff Service Lateral Connections	EA	3
208 Sewer Lateral Appurtenances	EA	18
209 Additional Cleanout on Sewer Lateral	EA	1
210 PVC Sewer Lateral Replacement		
a. 6-inch Diameter, in Road	LF	180
b. 6-inch Diameter, in Easement/Unpaved ROW	LF	180
211 Manhole, Concrete, 4-Foot Diameter		
a. 0-6 Foot Depth	EA	4
b. 6-8 Foot Depth	EA	1
c. 8-10 Foot Depth	EA	2
212 Manhole Lining, Polyurea		
a. 4-Foot Diameter	VF	13
217 Sewer Flow Control		
d. Deductive Alternate 3	LS	1
300 Restoration And Replacement		
a. Asphalt Pavement Replacement	SY	70
e. Gravel Pavement Replacement (6-inch Depth Max.)	SY	10
f. Seeding	SY	1,000

- E. Deductive Alternate No. 4. This includes work associated with Line 'H' from Sta. 0+00 (MH WH-69) to Sta. 2+08 E.O.L. (MH WH-70) on Sheet SA1.05. **At the owner's discretion, the work is to be deducted from the base bid.** Unit prices shown in the base bid apply.

Item No. and Description	Unit	Quantity
100 Mobilization, Bonds, and Insurance		
e. Deductive Alternate 4	LS	1
101 Traffic Control		
e. Deductive Alternate 4	LS	1
102 Erosion Prevention and Sediment Control		
e. Deductive Alternate 4	LS	1
103 Pre-Construction Site Video Recording		
e. Deductive Alternate 4	LS	1
201 8" PVC Gravity Sewer, by Open Cut, Paved Areas		
a. 0-6 Feet Deep	LF	210
208 Sewer Lateral Appurtenances	EA	4
209 Additional Cleanout on Sewer Lateral	EA	1
210 PVC Sewer Lateral Replacement		
a. 6-inch Diameter, in Road	LF	60
b. 6-inch Diameter, in Easement/Unpaved ROW	LF	40
211 Manhole, Concrete, 4-Foot Diameter		
a. 0-6 Foot Depth	EA	3
216 Abandon Existing Sewer Mains	LF	205
217 Sewer Flow Control		
e. Deductive Alternate 4	LS	1
300 Restoration And Replacement		
a. Asphalt Pavement Replacement	SY	250
f. Seeding	SY	15

- F. Deductive Alternate No. 5. This includes work associated with Line 'C' from Sta. 23+02 to Sta. 33+47 E.O.L. (MH WH-69) on Sheet SA1.05. Also included is work from Line 'C' Sta. 21+44 (MH WH-64) to Sta. 23+02 on Sheet SA1.04. At the owner's discretion, the work is to be deducted from the base bid. Unit prices shown in the base bid apply.

Item No. and Description	Unit	Quantity
100 Mobilization, Bonds, and Insurance		
f. Deductive Alternate 5	LS	1
101 Traffic Control		
f. Deductive Alternate 5	LS	1
102 Erosion Prevention and Sediment Control		
f. Deductive Alternate 5	LS	1
103 Pre-Construction Site Video Recording		
f. Deductive Alternate 5	LS	1
205 Pipe Bursting		
a. Exist. 6-Inch Diameter, upsize to 8-inch Diameter	LF	760
b. 8-Inch Diameter	LF	435
208 Sewer Lateral Appurtenances	EA	15
209 Additional Cleanout on Sewer Lateral	EA	1
210 PVC Sewer Lateral Replacement		
a. 6-inch Diameter, in Road	LF	225
b. 6-inch Diameter, in Easement/Unpaved ROW	LF	150
211 Manhole, Concrete, 4-Foot Diameter		
a. 0-6 Foot Depth	EA	2
b. 6-8 Foot Depth	EA	3
c. 8-10 Foot Depth	EA	1
217 Sewer Flow Control		
f. Deductive Alternate 5	LS	1
300 Restoration And Replacement		
a. Asphalt Pavement Replacement	SY	80
f. Seeding	SY	50

- G. Deductive Alternate No. 6. This includes work associated with Line 'C' from Sta. 18+42 (MH WH-63) to Sta. 21+44 (MH WH-64A) on Sheet SA1.03. At the owner's discretion, the work is to be deducted from the base bid. Unit prices shown in the base bid apply.

Item No. and Description	Unit	Quantity
100 Mobilization, Bonds, and Insurance		
g. Deductive Alternate 6	LS	1
101 Traffic Control		
g. Deductive Alternate 6	LS	1
102 Erosion Prevention and Sediment Control		
g. Deductive Alternate 6	LS	1
103 Pre-Construction Site Video Recording		
g. Deductive Alternate 6	LS	1
200 8" PVC Gravity Sewer, by Open Cut, Unpaved Areas		
a. 0-6 Feet Deep	LF	10
b. 6-8 Feet Deep	LF	10
202 8" DIP Gravity Sewer, by Open Cut, Unpaved Areas		
a. 0-6 Feet Deep	LF	220
203 8" DIP Gravity Sewer, by Open Cut, Paved Areas		
a. 0-6 Feet Deep	LF	85
208 Sewer Lateral Appurtenances	EA	2
209 Additional Cleanout on Sewer Lateral	EA	1
210 PVC Sewer Lateral Replacement		
a. 6-inch Diameter, in Road	LF	30
b. 6-inch Diameter, in Easement/Unpaved ROW	LF	10
211 Manhole, Concrete, 4-Foot Diameter		
a. 0-6 Foot Depth	EA	2
b. 6-8 Foot Depth	EA	1
217 Sewer Flow Control		
g. Deductive Alternate 6	LS	1
300 Restoration And Replacement		
a. Asphalt Pavement Replacement	SY	100
f. Seeding	SY	300

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security;
 - B. Certification of proposed prime bidder regarding equal employment opportunity
 - C. Certification regarding debarment, suspension and other responsibility matters**
 - D. Bidder's Qualification Statement
 - E. Non-collusion affidavit of prime bidder
 - F. Drug-Free Affidavit
 - G. Certification regarding lobbying**
 - H. DBE Documentation**
 - I. ARPA Forms in Appendix 1, Including:
 - 1. Byrd Anti-Lobbying Amendment Certification
 - 2. Certification Regarding Debarment, Suspension, and Other Responsibility Matters
 - 3. Iran Divestment Act Certification
 - 4. Non-Boycott of Israel Certification
 - 5. Certification of Bidder Regarding Use of Women/Minority Subcontractors

ARTICLE 8 – DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: [Indicate correct name of bidding entity]

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____
(where applicable)

END SECTION 01 41 43

SECTION 33 01 30.81 – MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and DIVISION 01 specifications sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Manhole Rehabilitation
- B. Related Requirements:
 - 1. Section 33 01 30 – Sewer Inspection and Cleaning
 - 2. Section 33 05 05 – Sanitary Sewer Testing
 - 3. Section 33 05 61 – Concrete Manholes

1.3 SUBMITTALS

- A. Action Submittals
 - 1. Manufacturer's literature and product data describing the following:
 - a. Rehabilitation System
 - b. Equipment Components
 - c. Material/Chemical Properties
 - d. Mixing and Proportioning Requirements
 - e. Maximum Pot Life
 - f. Coating Thickness
 - g. Curing
 - h. Environmental Requirements for Application
 - i. Epoxy Resins
 - j. Hydraulic Cement
- B. Informational Submittals
 - 1. Manufacturer's Certificate of Compliances
 - 2. Material Safety Data Sheets
 - 3. Manufacturer's instructions on shipping, storage, and handling requirements
 - 4. Manufacturer's application and repair instructions
 - 5. Testing, certification, and warranty sample statements
 - 6. Confined space entry plan
 - 7. Qualifications and experience history of installers.

1.4 QUALITY ASSURANCE

- A. Mortar mix for cementitious lining shall have at least 5 years of successful performance in similar applications, and shall be supplied by an ISO 9002 certified manufacturer. Manufacturer's ISO 9002 certificate shall be submitted to the Owner.
- B. Installers shall have a minimum of 5 years of experience installing the product provided and shall be certified by the manufacturer. Installers of liners, coatings, and wall repair systems shall submit qualifications and include:
 - 1. Manufacturer's approved equipment list, by name and model number for application of product and Contractor's equipment list showing approved equipment available for use in product application.
 - 2. List of Contractor's personnel who have satisfactorily completed manufacturer's training in product application within the previous two years. Include date of certification for each person.
- C. Polyurea lining systems shall be provided with a 10-year manufacturer warranty against material defects and a 10-year installer warranty against proper installation.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products as recommended by the manufacturer to prevent damages. Deliver lining products to site in unopened containers that clearly show, at time of use, product name, date of manufacture, batch number, and name manufacturer. Materials shall be made safe from theft, vandalism, and damage.
- B. Store lining products in protected area with heating or cooling to maintain temperatures within range recommended by lining manufacturer.
- C. All products and materials specified herein shall be inspected at the request of Owner or Inspector. All materials that fail to conform to these Specifications shall be rejected. After delivery to the Site, any materials that have been damaged in transit or are otherwise unsuitable for use in the Work shall be rejected and removed from the Site by the Contractor at no cost to the Owner.
- D. The Contractor shall dispose of all wastes in accordance with all applicable laws, codes, and regulations.

1.6 PERFORMANCE REQUIREMENTS

- A. Perform work needed to make manholes structurally sound, improve flow, prevent entrance of inflow or groundwater, prevent entrance of soil or debris, and provide protection against corrosion
- B. Manufacturer's Product Support:
 - 1. Through the Contractor, manufacturers of wall sealing, coating or lining systems shall submit to the Engineer for review and approval a detailed description of the proposed rehabilitation process. Describe surface preparation, independent laboratory test results, mix design procedures and methods of controlling uniform thickness.
 - 2. A representative employed by the manufacturer and having technical training in admixture and concrete mix design shall be named and available for consultation by telephone during

business hours and on site upon 48 hours' notice.

3. Manufacturer's representative on concrete lining systems shall provide technical assistance to concrete batch plant operators to ensure proper usage of dispensing equipment and accurate proportions of admixtures.

1.7 PROJECT CONDITIONS

A. Manholes Containing Mechanical or Electrical Equipment:

1. Contract Drawings may not show locations of flow monitoring equipment. If a manhole contains any mechanical hardware or electrical flow monitoring equipment, do not remove or disturb and immediately notify the Owner or Inspector.
2. Reschedule work in such manholes until equipment has been removed by Owner and further instructions are given.
3. Do not subject manholes with mechanical hardware or electrical equipment to diversion/bypass pumping.
4. Damage to installed equipment, due to negligence of Contractor, will be repaired by Owner and cost of repairs charged to Contractor.

B. Field Location of Manholes, Cleanouts and Inlets:

1. Contractor is responsible for locating and uncovering all manholes and cleanouts in lines being rehabilitated. If difficulty is encountered in locating a manhole or clean-out covered by ground or pavement, notify the Owner or Inspector and await instructions.
2. Manholes may be located within project limits which are not part of the system being rehabilitated. Properly identify manholes before starting cleaning and sealing operations.

PART 2 - PRODUCTS

A. GENERAL

1. The materials used shall be designed, manufactured and intended for sewer manhole rehabilitation and the specific application in which they are used. The materials shall have a proven history of performance in sewer manhole rehabilitation. The materials shall be delivered to the job site in original unopened packages and clearly labeled with the manufacturer's identification and printed instructions. All materials shall be mixed and applied in accordance with the manufacturer's written instructions.
2. Each lining system shall be designed for application over wet (but not active running water) surfaces without degradation of the final product and the bond between the product and the manhole surfaces.

B. Mortar:

1. Standard premixed in accordance with ASTM C387, or proportion one part Portland cement to two parts clean, well-graded sand that will pass a 1/8-inch screen.

C. Hydraulic Cement:

1. Rapid-setting, high early strength, cementitious product specifically formulated for high volume leak control.
 - a. Manufacturers and Products:
 - 1) Strong Systems Inc.; Strong-Seal Plug
 - 2) Quadex; Quad-Plug
2. Improved Construction Methods; ThoRoc Plug

3. Rapid setting, fiber-reinforced, high early strength, corrosion-resistant material formulated for filling voids and repairing inverts in concrete, brick and other masonry structures.
 - a. Manufacturers and Products:
 - 1) Strong Systems, Inc.; Stong-Seal QSR
 - 2) Quadex; Hyperform
 - 3) Improved Construction Methods; ThoRoc Patch
 - 4) IPA; Octocrete

D. Chemical Pressure Grouting System:

1. Where pressurized injection of chemical grout behind manhole chimney and joints is required, material supplied shall be urethane gel or polyurethane resin with the following properties:
 - a. During injection, chemical sealant shall be able to react/perform in the presence of infiltrating water.
 - b. Cured sealant capable of withstanding submerged conditions, freeze/thaw cycles, and wet/dry cycles without degradation. Must prevent passage of water and must be flexible, chemically stable, and resistant to sewer environments.
2. Urethane Gel shall be AV-350 multi-grout or AV-254 urethane gel as manufactured by Avanti International.
3. Polyurethane resin grout shall have the following properties:
 - a. Viscosity of 120 to 350 centipoise
 - b. Weight of 8.65 pounds to 9.48 pounds per gallon
 - c. Solids content of 88% to 100% by ASTM D2834
 - d. Induction time of 3 to 4 minutes
 - e. Cure time of 5 to 6 minutes
 - f. Tensile strength of 40 to 450 psi by ASTM D3574
 - g. Elongation of 3% to 350% by ASTM D3574
 - h. Shrinkage of less than 2% by ASTM D1042
 - i. Tear resistance of 21 pounds per inch by ASTM D3574
 - j. Density of 28 to 119 pounds per cubic foot by ASTM D3574
 - k. No catalyst required; single component product

E. Spray Applied Polyurea Manhole Coating

1. Polyurea manhole coating systems shall be comprised of a polyurea moisture barrier/adhesion layer applied to the manhole, a closed-cell polyurethane foam surfacer, and a polyurea corrosion barrier.
2. The polyurea moisture barrier/adhesion layer and polyurea corrosion barrier shall be produced by the same manufacturer and meet the following criteria:
 - a. Plural component polymeric composed of 100% solids and capable of spray or roller application.
 - b. Capable of application to damp concrete surfaces in high relative humidity environments.
 - c. Resistant to attack from hydrogen sulfide and sulfuric acids generated from microbiological sources.
 - d. Component properties shall be:
 - 1) Viscosity – 350 cps (A Side) and 350-650 cps (B Side)
 - 2) Gel Time – 9-15 seconds
 - 3) Tack Free Time – 15-30 seconds
 - 4) Return to Service – 60 minutes
 - e. Physical properties shall be:
 - 1) Hardness (ASTM D2240-05) – 48 Shore D (min.)

- 2) Tensile Strength (ASTM D412-06) – 2,550 psi (min.)
 - 3) Tear Strength (ASTM D624-00) – 417 pli (min.)
 - 4) Ultimate Elongation (ASTM D412-06) – 269% (min.)
 - 5) Taber Abrasion (ASTM D4060-14, CS17) – 23 (max.)
 - 6) Flexibility (ASTM D522-13, 1/8” Mandrel) – Pass
3. Polyurea coatings systems shall be manufactured by:
 - a. SpectraShield
 - b. OBIC
 - c. Approved Equal

~~F. Spray Applied Cementitious Manhole Coating~~

- ~~1. Shall consist of a preblended mixture of cements, chemically active aggregates, glass fibers, and other additives. No material, other than potable water, shall be used with or added to the design mix without prior approval or recommendation from the Owner.~~
- ~~2. One component, rheoplastic, fiber, or polypropylene reinforced, shrinkage compensated mortar lining system with the following minimum requirements at 28 days:

 - ~~a. Compressive strength of 8,000 psi by ASTM C109~~
 - ~~b. Tensile strength of 800 psi by ASTM C496~~
 - ~~c. Flexural strength of 1,200 psi by ASTM C293~~
 - ~~d. Shrinkage of 0% with 90% relative humidity by ASTM C596~~
 - ~~e. Minimum bond strength of 200 psi by ASTM C952~~
 - ~~f. Slant shear bond strength of 2,400 psi ASTM D882~~
 - ~~g. No visible damage due to 100 freeze/thaw cycles by ASTM C666~~
 - ~~h. Applied density of 105 pounds per cubic foot~~~~
- ~~3. Product shall be made with calcium aluminate cement except in cases when cementitious lining is used as underlayment for epoxy lining.~~

~~G. Spray Applied Epoxy Coating for Manholes~~

- ~~1. Products shall meet federal, state, and local requirements limiting emissions of volatile organic compounds. Materials, including underlayment and monolithic lining shall be produced by the same manufacturer and meet the following criteria:

 - ~~a. Plural component epoxy composed of 100% solids and capable of spray or roller application~~
 - ~~b. Capable of application to damp concrete surfaces in high relative humidity environment~~
 - ~~c. Resistant to attack from hydrogen sulfide and sulfuric acids generated from microbiological sources

 - ~~1) Bond strength to concrete failure by ASTM C478~~
 - ~~2) Tensile strength of 2,500 psi by ASTM C307~~
 - ~~3) Flexural strength of 4,800 psi by ASTM C580~~
 - ~~4) Moisture absorption of 0.1% by ASTM C413~~
 - ~~5) Shrinkage of 0.11% or less by ASTM C631~~~~~~

H. Formed Concrete Lining

1. Concrete used in formed concrete lining shall be Type 1 Portland cement concrete with 3/4-inch and smaller coarse aggregate with fiber reinforcement and plasticizer producing a compressive strength of 4,000 psi at full cure.
2. When corrosive elements are present, a white ribbed plastic liner shall be anchored into the new interior wall during the procedure to create an impermeable barrier.
3. Formed concrete lining shall be by the Permacast process or approved equal.

- I. Chimney Liner Seals
 - 1. Chimney liner seals shall be one of the following or Owner approved equal:
 - a. Internal Manhole Chimney Seal by Cretex Specialty Products
 - b. FlexRib Chimney Seal by NPC, Inc.
 - c. Flex-Seal by Sealing Systems, Inc.

PART 3 - EXECUTION

3.1 REHABILITATION OF MANHOLE STRUCTURES

- A. General Procedures:
 - 1. Safety: The Contractor shall perform all work in strict accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements regarding confined space entry. Provide barricades, warning lights and signs for excavations.
 - 2. Maintaining waste water flows: By-pass pumping shall be conducted in accordance with Section 33 01 30 – Sewer Inspection and Cleaning.
 - 3. Cleaning: All concrete and masonry surfaces to be rehabilitated shall be clean. All grease, oil, laitance, coating, loose bricks, mortar, unsound concrete and other foreign materials shall be completely removed. Water blasting with proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface to meet the manufacturer's requirements. All surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products. Debris resulting from cleaning shall be removed from the manhole and not allowed to be carried downstream.
 - 4. Stopping Infiltration: After surface preparation and prior to the application of linings and coatings, infiltration shall be eliminated with the materials specified herein and in accordance with the manufacturer's recommendation. Remove existing roots prior to application by cutting them flush with the manhole wall.
 - 5. Patching: Prepare surfaces with any necessary patching in accordance with manufacturer's instructions. All holes, voids, cracks, and disintegrated material shall be patched or repointed, providing a subbase that meets the manufacturer's recommendations.
 - 6. Invert & channel repairs: Remove all loose grout and rubble from existing channel. Rebuild channel if required by reshaping, repairing slope of shelves or benches. Work shall include aligning inflow and outflow ports in such a manner as to prevent the deposition of solids at the transition point. All inverts shall follow the grades of the pipe entering the manhole. Changes in direction of the sewer and entering branch or branches shall have a true curve as large a radius as the size of the manhole will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, T.V. camera, etc.
 - 7. Manhole steps: Existing manhole steps shall be cut and removed and not replaced after rehabilitation.
 - 8. All abandoned pipe and associated connections to the manhole shall be properly sealed with a bulkhead and filled with grout prior to manhole rehabilitation.

3.2 SPRAY APPLIED POLYUREA COATING

- A. Surface must be clean, dry, and in sound condition. Remove all oil, grease, dirt, water, or other contaminants in accordance with ASTM and SSPC standards. Abrasive grit blast, wet abrasive blast, or high-pressure water blast all surfaces to be coated to remove all laitance, efflorescence,

surface hardeners, curing compounds, old coatings, and loose concrete.

- B. Inspect and repair the concrete for cracks and other defects. Inspect the concrete construction joints, edges, corners, joints, etc. Thoroughly clean blasted surfaces to remove all dust and debris after dry blasting or to remove all water, sludge, and debris after wet blasting.
- C. Primer Application (As Required)
 - 1. Ensure the area to be primed is clean and dry. Apply the recommended primer over an area of the prepared surface that can be completed within the primer's re-coat window. Apply polyurea when primer becomes tacky to the touch.
- D. Coating Application
 - 1. Adhesion Layer: Apply in a single monolithic layer to a nominal dry film thickness of 50 mils using a high-pressure plural component spray reactor at the required pressure.
 - 2. Closed Cell Foam Surfer: Apply using high pressure plural component proportioning equipment at the appropriate temperature and pressure.
 - 3. Corrosion Barrier: Apply in a single monolithic layer to a nominal dry film thickness of 50 mils using a high-pressure plural component spray reactor at the appropriate pressure.
- E. Testing
 - 1. Holiday/Spark testing shall be conducted in accordance with ASTM 4787 to detect discontinuities or pinholes in the lining system.
 - 2. Repair and retest discovered discontinuities and pinholes.

~~3.3 APPLICATION OF CEMENTITIOUS COATING~~

- ~~A. Clean and prepare substrate surfaces in accordance with these specifications, and recommendations of manufacturer. Materials shall be spray applied to a minimum uniform thickness to ensure that all cracks, crevices, and voids are filled and to a somewhat smooth surface.~~
- ~~B. Bonding agent: Apply to existing surface per the manufactures recommendations to provide firm adhesion between original and new material.~~
- ~~C. Apply cementitious lining material per manufactures recommendations to a minimum thickness of 1 inch for depth. For manhole depths greater than 12 feet increase the minimum thickness to 1 ½ inches below the 12-foot depth. Cementitious lining shall be applied to fresh mortar before new bacterial growth or debris can contaminate underlying mortar.~~
- ~~D. The bench and invert shall be sprayed such that a gradual slope is produced from the walls to the invert with the thickness at the edge of the invert being no less than 1/8 inch. The wall-bench intersection shall be rounded to a uniform radius the full circumference of the intersection.~~
- ~~E. No application shall be made to frozen surfaces or if freezing is expected to occur within the manhole for 24 hours after application. Do not apply materials if ambient temperature is below 40 degrees F. If ambient temperatures are in excess of 90° F, precautions shall be taken to keep the mix temperature at time of application below 90° F, using ice if necessary. Do not exceed a mix water temperature of 80° F.~~
- ~~F. The final application shall be allowed to cure for a minimum of four (4) hours before being subjected to active flow. If the manufacture recommends a longer cure time the Contractor shall~~

~~follow the manufactures recommendation.~~

3.4 ~~SPRAY APPLIED EPOXY COATING~~

- A. ~~The material shall be spray applied to a minimum uniform dry film thickness of 50 mils to ensure all cracks, crevices, and voids are filled and a somewhat smooth surface remains. Apply material per the manufactures recommendation to prevent material run or sag. After the epoxy liner has set, repair any visible pinholes or defects per the manufacturer's recommendations.~~

3.5 CHIMNEY LINER SEALS

- A. Chimney liner & seals shall be installed as specified in the Drawings.
- B. Internal double pleated elastomeric sleeve shall be mechanically attached to and sealed against the manhole frame and chimney with internal expanding bands.
- C. The inside diameter of both the base of the manhole frame and the chimney or cone/corbel section shall be accurately measured as recommended by the manufacturer to obtain the proper size and shape of the seal.
- D. The contact surfaces for the sleeve shall be circular, clean, reasonably smooth, and free of loose material and excessive voids. If the masonry surface is rough or irregular and will not provide an effective seal, it shall be smoothed with mortar. A bed of butyl rubber caulk shall be applied to the sealing surface of the sleeve to fill minor irregularities in the masonry surface. After the sleeve has been placed in proper position, the bands are positioned and individually tightened or expanded as required to provide a watertight seal. Detailed installation instructions shall be in accordance with the manufacturer's instructions.

3.6 MANHOLE REHABILITATION ACCEPTANCE

- A. After the manhole rehabilitation work has been completed, the manhole shall be visually inspected during high groundwater by the Contractor in the presence of the Engineer and the work shall be accepted if found satisfactory to the Engineer. No evidence of visible leaks shall be allowed. In addition, at the Owner's request, the Contractor may be required within one year to visually inspect the manholes that were rehabilitated. Any work that has become defective within the one-year period shall be redone by the Contractor at no additional expense to the Owner.

3.7 MANHOLE VACUUM TESTING

- A. All manholes shall be negative air pressure (vacuum) tested in accordance with ASTM C1244 and Section 33 05 05 – Sanitary Sewer Testing.

END OF SECTION 33 01 30.81

SECTION 33 01 30.23 – PIPE BURSTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and DIVISION 01 specifications sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipe Bursting
- B. Related Requirements:
 - 1. Section 30 01 30 – Sewer Inspection, Cleaning, and Flow Control
 - 2. Section 33 05 05 – Sanitary Sewer Testing
 - 3. Section 33 05 61 – Concrete Manholes
 - 4. Section 33 31 30 – Sanitary Sewer Services

1.3 COORDINATION

- A. Coordinate Work of this Section with users connected to system.

1.4 SUBMITTALS

- A. Action Submittals
 - 1. Catalog cuts and specifications:
 - a. Pipe.
 - b. Electrofusion fittings.
 - c. Joining, including alignment jig, equipment.
 - d. De-beading equipment.
 - 2. Dimensioned layout drawings including installation details.
 - 3. Samples: Trial field fusion welds, when requested by the Owner.
- B. Informational Submittals:
 - 1. Manufacturer's Certificates:
 - a. Certificate of material compliance.
 - 2. Contractor Certifications:
 - a. Installer: Certifications of training by pipe bursting system manufacturer stating that installer have been fully trained in the use of the pipe bursting equipment by an authorized representative of the equipment manufacturer.
 - b. Insertion Equipment Operator: Certification from pipe manufacturer of training in the proper method for handling and installing the new pipe.

- c. Fusion Equipment Operator: Certifications of training by the pipe fusion equipment manufacturers that the operators have been fully trained in the use of the fusion equipment by an authorized representative of the equipment manufacturer.
- 3. Design Calculations:
 - a. Pull/push loads for specified material.
 - b. Thrust loads for specified material.
- 4. Test Results: Certified factory. For trial fusion weld testing follow ASTM D638.
- 5. Installation Plan and Sequencing:
 - a. Detailed Construction Methods & Procedures:
 - b. Layout plans to include sequence of construction.
 - c. Locations, sizes, sequencing for all insertion, receiving, and access pits.
 - d. Arrangement and position of jacks, pipe guides, and backstops complete in assembled position.
 - e. Reconnection and restoration of existing service laterals.
 - f. Detailed descriptions of the methods of modifying and sealing existing manholes.
 - g. Detailed procedures for the installation and bedding of the new pipe in the launching and receiving pits.
 - h. Description of the method to remove and dispose of the host pipe, if required.
- 6. Bypass pumping submittals shall be in accordance with Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control.
- 7. Contingency Plan: Provide for the following potential conditions at a minimum:
 - a. Unforeseen obstruction causing burst stoppage, such as unanticipated change in host pipe material, repair section, concrete encasement or cradle(s), buried or abandoned manhole or changes in direction not depicted on Drawings provided by the Owner.
 - b. Substantial surface heave occurs due to the depth of the existing pipe versus the amount of upsizing.
 - c. Damage to existing service connections or to the replacement pipeline’s structural integrity.
 - d. Damage to other existing utilities.
 - e. Soil heaving or settlement.
 - f. Loss of and return to line and grade.
- 8. Pre- and Post-Installation Inspection Data & Reports:
 - a. Pre-installation DVD or external hard drive, original.
 - b. Post-installation DVD or external hard drive, original.
 - c. CCTV Inspection Equipment shall be in accordance with Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control.

1.5 QUALITY ASSURANCE

- A. The Contractor shall be certified by pipe bursting system manufacturer as a fully trained user of the pipe bursting system. Operation of the pipe bursting system shall be performed by trained personnel. Such training shall be conducted by a qualified representative of the pipe bursting system manufacturer. The Contractor shall provide certificates of training for any employee directly involved in the supervision or operation of the pipe bursting system. Contractor shall have a minimum of 40,000 linear feet of pipe during preceding 3 years using pipe bursting technology as specified herein.
- B. Polyethylene pipe jointing shall be performed by personnel trained in the use of butt-fusion equipment and the recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and

installing the polyethylene pipe. Such training shall be certified and conducted by a qualified representative of the pipe manufacturer. Personnel shall have a minimum of 2 years' experience of fusion welding of HDPE pipe.

- C. Installation of other materials shall be performed by personnel qualified by the specific product manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products as recommended by the manufacture to prevent damages. Materials shall be made safe from theft, vandalism, and damage.
- B. Packing and Shipping:
 - 1. Markings: Pipe materials shall be legibly marked by manufacturer with the following:
 - a. Name and trademark of manufacturer.
 - b. Nominal pipe size.
 - c. SDR.
 - d. Letters PE, followed by polyethylene grade per ASTM D3350, followed by Hydrostatic Design Basis in hundreds of psi.
 - e. Manufacturing standard reference.
 - f. Production code from which date and place of manufacture can be determined.
 - 2. Use pads, strips, skids, or blocks for each pipe during transportation and while awaiting installation in the field.
- C. Storage and Protection:
 - 1. HDPE pipe without ultraviolet inhibitor shall not be stored unprotected against outside elements.
 - 2. Store pipe so as not to be deformed axially or circumferentially.
- D. Handling: Use wide band slings for lifting and skids, rollers, or non-abrasive pads for moving pipe. Use of chains and dragging is prohibited.

PART 2 - PRODUCTS

2.1 PIPE:

- A. High-Density Polyethylene (HDPE):
 - 1. Confirm to requirements of AWWA C906.
 - 2. In compliance with NSF 61.
 - 3. Resin:
 - a. Polyethylene resin shall meet or exceed requirements of ASTM D3350 for PE 4710 material with cell classification of 445474C, or better. Pressure rating shall be based on hydrostatic design stress of 1,000 psi at 73.4 degrees F.
 - b. Unless specified on the project drawings the minimum Pressure Rating ~~shall be 200 PSI and nominal DR of 11~~ shall be 125 psi and nominal DR of 17.

4. Pipes 4” and larger shall have Ductile Iron Pipe Size outside diameter.
5. Pipe lengths, fittings, and flanged connections to be joined by thermal butt-fusion shall be of a compatible resin mix for the fusion process.
6. Fittings:
 - a. PE:
 - 1) Shall be thermal butt-fusion type.
 - 2) Shall have same or higher pressure rating as pipe.
 - b. Ductile Iron:
 - 1) Join to mechanical joint ductile iron fittings w/ restraining gland follower with internal stiffener.
 - 2) Restraining follower glands shall be manufactured by EBAA Iron “Mega-Lug” Model 2000PV or 2100.
7. Electrofusion Couplings:
 - a. May be used for repairs or connecting pipe burst segments in the trench with approval of the Owner.
 - b. Manufacturers:
 - 1) Central Plastics Company; Central Electrofusion System.
 - 2) IPEX, Inc; Friatec.

2.2 SERVICE CONNECTION AT MAINLINE SEWER

- A. Service saddles shall be butt fusion or electrofusion saddle type fitting with DIP outside dimension branch connection:
 1. Specifically designed for connection to type of HDPE being installed.
 2. Manufacturers:
 - a. Central Plastics Company; Central Electrofusion System.
 - b. IPEX Inc.; Friatec.
- B. Option: For HDPE pipe sizes 8 inches or greater an Inserta Tee by Inserta Fittings Company may be used.

2.3 PIPE CONNECTION TO EXISTING MANHOLES

- A. Pipes shall be connected to existing manholes using a sanded manhole adapter
 1. Manufacturers:
 - a. GPK Products Inc.
 - b. Approved equivalent

2.4 SOURCE QUALITY CONTROL

- A. Certify laboratory data confirming that said tests have been performed on sample of pipe to be provided under this Contract, or pipe from that production run, and that satisfactory results were obtained prior to shipping.
- B. Pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, or other injurious defects. It shall be uniform in density and other physical properties. Pipe not meeting these criteria shall be rejected.

PART 3 - EXECUTION

3.1 EQUIPMENT:

- A. Pipe Bursting: Provide equipment of sufficient size and power to accomplish the specified pipe replacement under adverse conditions. Utilize hydraulically powered constant tension static pull pipe bursting system or pneumatic hammer.
- B. Joining: Capable of meeting conditions recommended by pipe manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure.
- C. De-beading equipment shall be capable of removing a cold bead in a continuous strip without damaging the joint or bead.

3.2 PREPARATION

- A. General:
 - 1. Work shall be supervised by personnel experienced in installation of similar pipe and shall be onsite at all times from time of commencement to time of completion.
 - 2. Locate insertion or access pits so that the total number is minimized and footage of pipe installed in a single run is maximized. Use excavations at point repair locations for insertion pits where possible.
- B. Pre-CCTV Inspections:
 - 1. The Contractor shall perform a pre-installation CCTV inspection.
 - 2. Existing pipe shall be clean and free of obstructions so as not to prohibit pipe bursting operations.
 - 3. CCTV inspections shall be completed in accordance with Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control.
- C. Locating Utilities:
 - 1. The Contractor shall, prior to starting work, verify the location of all adjacent utilities. The minimum clearance from other utilities shall be approximately two feet. The Owner may at its discretion reduce the minimum clearance with justification from the Contractor.
 - 2. The Contractor shall expose all interfering and crossing utilities by spot excavating at the planar intersection of the pipe and removing the soil from around the utility. The cost of exposing these utilities shall be borne by the Contractor as part of the pipe bursting operation.
- D. Sub-Surface Conditions:
 - 1. Owner will furnish the Contractor with available information listed in the Contract Documents, if any are available. The Contractor shall verify this information in the field. All additional subsurface investigations deemed necessary by the Contractor to complete the work shall be included in the Contract at no additional cost to Owner.
 - 2. Copies of all reports and information obtained by additional subsurface investigations by the Contractor shall be provided to the Owner.
- E. Point Repairs:
 - 1. Prior to Pipe Bursting

- a. Contractor shall perform a point repair if indicated on the Project Drawings.
 - b. If the pre-installation CCTV inspection reveals obstructions in the existing sewer (heavy solids, dropped joints, protruding service taps or collapsed pipe) which will prevent completion of the pipe bursting process, and that cannot be removed by conventional sewer cleaning equipment, then a point repair shall be made by the Contractor, with the approval of the Owner.
 - c. Point repairs on existing pipe shall be completed in accordance with Section 33 31 11 – Gravity Sewer Pipe.
2. Post Pipe Bursting:
- a. If the post CCTV inspection reveals a sag in the new sewer after pipe bursting has been completed, the Contractor shall notify the Owner to determine if a point repair is necessary to correct the sag. At the direction of the Owner, the Contractor shall take the necessary measures to eliminate these sags by performing a point repair and bringing the bottom of the newly installed pipe to a uniform grade by excavating the pipe, lifting it, and placing compacted crushed stone bedding under and around the pipe to eliminate the sag.
3. Backfill per Section 31 23 16.01 – Excavation for Utilities shall be used for the new pipe as support in order to avoid sagging after backfill and compaction.
- F. Locating Service Connections:
- 1. Sewer service connections shall be identified and located by CCTV prior to start of pipe bursting operation and pipe insertion.
 - 2. The Contractor shall locate all and expose all sewer service connections prior to pipe insertion to expedite reconnection.
 - 3. The Contractor shall exercise due diligence in excavating the existing pipe sufficiently to allow for uniform circumferential expansion of the existing pipe through the service connection pit.

3.3 PIPE JOINING

- A. General:
- 1. When requested by the Owner, prior to pipe installation, two trial fusion welds shall be performed, and reviewed and approved by the Owner. Full penetration welds shall provide homogeneous material across the cross section of weld. Fusion machine employed for trial welds shall be same machine utilized for project installation.
 - 2. The HDPE pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak proof joint. Threaded or solvent-cement joints and connections are not permitted.
 - 3. All equipment and procedures used shall be in strict compliance with ASTM F2620 and with the pipe manufacturer's recommendations.
 - 4. Terminal sections of pipe that are joined within the insertion pit shall be connected with an electrofusion coupling (e.g., Central Plastics couplings).
 - 5. All connections shall be completed in the absence of flow and in conformance with the manufacturer's installation procedures.
- B. Joint Preparation:
- 1. Inside and outside of pipe ends shall be cleaned with cotton or non- synthetic cloth to remove dirt, water, grease, and other foreign materials.
 - 2. Pipe ends shall be cut square and carefully aligned prior to heating.

- C. Joining:
 - 1. Fusion shall be performed by technicians certified by a manufacturer of pipe fusion equipment.
 - 2. Using an alignment jig, the butt-fused joint shall be true alignment, brought together in firm, rapid motion, applying sufficient pressure to form a uniform rollback bead (1/8 inch to 3/16 inch) on the entire outer and inside circumference of pipe. The joint shall be allowed adequate cooling time before removal of pressure.
 - 3. The fused joint shall be watertight and shall have tensile strength equal to or greater than that of the pipe.
 - 4. All joints shall be subject to acceptance by the Owner prior to insertion.
 - 5. The Contractor shall cut out and replace defective joints at no additional cost to Owner.

- D. Weld De-beading:
 - 1. Internal beads shall be removed with an approved de-beading device without inducing any defects to the pipe or bead. The pipe and bead must be completely cooled before the bead is removed.
 - 2. The removed beads shall be in one continuous strip without splitting or defect. The contractor shall remove any joint with defective beads and fuse a new joint.

- E. Defects:
 - 1. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than 10 percent of the wall thickness (ASTM F585), shall not be used and shall be removed from the Site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above.
 - 2. Any section of the pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, pitting, variable wall thickness or any other defect of manufacturing or handling as determined by the Owner shall be discarded and not used.

3.4 BYPASSING OF FLOWS

- A. Use flow bypass pumping for reducing flow below the maximum depth or for completely bypassing flow.
- B. Bypassing of flows shall be provided in accordance with Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control.

3.5 PIPE INSTALLATION

- A. General:
 - 1. The minimum depth of cover over the installed pipe shall be 4 feet for size-on-size pipe bursting, and shall be 8 feet for increased pipe size pipe bursting. The Contractor may request approval of the Owner reduce the minimum depth of cover.
 - 2. A minimum amount of ground heaving may be allowed, as determined by the Owner, if soil conditions are not favorable and up-sizing of the pipe is required.
 - 3. Unless otherwise noted, settlement or heaving of the ground surface during or after construction will not be allowed. The Contractor is solely responsible for the costs for repairing any surface heaving at no additional cost to the Owner, unless specified otherwise.

4. Existing pipe shall be clean and free of obstructions so as not to prohibit pipe bursting operations.
 5. Pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the Owner
 6. Lay pipe true to lines and grades within existing sewer as indicated on the Project Drawing
 7. Conduct pipe insertion operations to prevent damage to the installed pipe and adjacent facilities.
 8. Advancement of bursting head with “chain” is prohibited.
 9. Void created by bursting device shall be sufficient in size to accommodate HDPE pipe.
- B. Pit Shaft:
1. Excavate for the purpose conducting the trenchless operations and for placing end joints of pipe.
 2. Wherever end trenches are cut in the sides of an embankment or beyond, such work shall be sheeted and braced in a manner to prevent earth caving.
 3. Backfill in accordance with Section 31 23 16.01 – Excavation for Utilities after pipe has been installed and tested.
- C. Existing Manhole:
1. Utilize existing manholes where practicable. Otherwise, excavate predetermined machine and insertion pits.
 2. Remove inverts, benches, and channels to permit access for installation.
 3. Enlarge input and output pipe openings to accommodate maximum OD size of bursting device.
 4. At no time shall bursting device and installation process place undue stress on existing manhole opening surface. In the event the existing manhole sustains visible damage the manhole shall be replaced in accordance with Section 33 05 61 – Concrete Manholes.
 5. Make structure and manhole connections 12 hours (or as otherwise recommended by pipe manufacturer), after pipe insertion.
 6. Secure pipe to concrete structures or manholes after pipe has been installed.
 - a. Grout in place approved manhole adapter to create a water tight seal between the manhole and adapter.
 - b. Connect the newly installed pipe to the existing manhole by inserting the pipe into the manhole adapter.
 7. Reconstruct benches and channels after new pipe is installed to form a smooth transition to eliminate sharp edges.
- D. Manhole Drop Connections:
1. Manhole drop connections shall be installed in accordance with Section 33 05 61 – Concrete Manholes.
- E. Rescue Shafts:
1. In the event that the pipe-bursting machine encounters an obstruction and is halted, the Contractor will be required to excavate down to the machine to free the obstruction and continue the installation.
 2. The Contractor is notified that the construction of such shafts will be considered incidental to the installation by the pipe bursting construction method.
 3. Any rescue shafts will be properly braced, shored, or utilize trench boxes to meet applicable Federal, State, and local requirements.
 4. Backfill and compaction for such rescue shafts shall be in accordance with Section 31 23 16.01 - Excavation for Utilities.

3.6 LUBRICATION

- A. Lubrication shall be used if in the opinion of Contractor such lubrication is necessary to ensure the successful completion of the job.
- B. The Contractor shall make arrangements for the injection of bentonite into the annular space behind the pipe bursting head, as the lubricant if required.

3.7 Service Lateral Connection:

- 1. The exact location and number of service connections shall be determined from a pre-CCTV inspection and field located by marking existing service connections. Contractor shall determine and identify all active services. Contractor shall connect all active service connections.
- 2. Services shall not be reconnected from abandoned or vacant lots, unless directed otherwise by Owner. Restore and correct missed or faulty reconnections as well as damage caused to property owners for not reconnecting the services soon enough or for not giving notice to the owners.
- 3. Make service connections 12 hours, minimum, (or as recommended by pipe manufacturer) after pipe insertion to allow for cooling and relaxation.
- 4. Sewer service connections shall be connected to new pipe and installed in a hole drilled to the full inside diameter of the outlet. Service connections shall be an Inserta-T or an electrofusion saddle per the material requirements herein.
- 5. Service laterals and associated appurtenances shall be installed in accordance with Section 33 31 30 – Sanitary Sewer Services.

3.8 RESTORATION

- A. The Contractor shall restore all lateral, launching pits and disturbed surface areas to their original condition.

3.9 POST INSTALLATION CCTV INSPECTIONS

- A. The Contractor shall perform post-installation CCTV inspections in accordance with Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control.
 - 1. Post construction video shall be submitted to the Owner on DVDs for review within two weeks after permanent lateral reinstatements have been completed. Should any portion of the inspection video be of inadequate quality or coverage, as determined by the Owner, the Contractor will have that portion re-inspected at no additional expense to the Owner.
- B. From the CCTV inspection, the newly installed pipe shall be visibly free of defects, which may affect the integrity or strength of the pipe. If in the opinion of the Owner such defects exist, the pipe shall be repaired or replaced at the Contractor's expense.

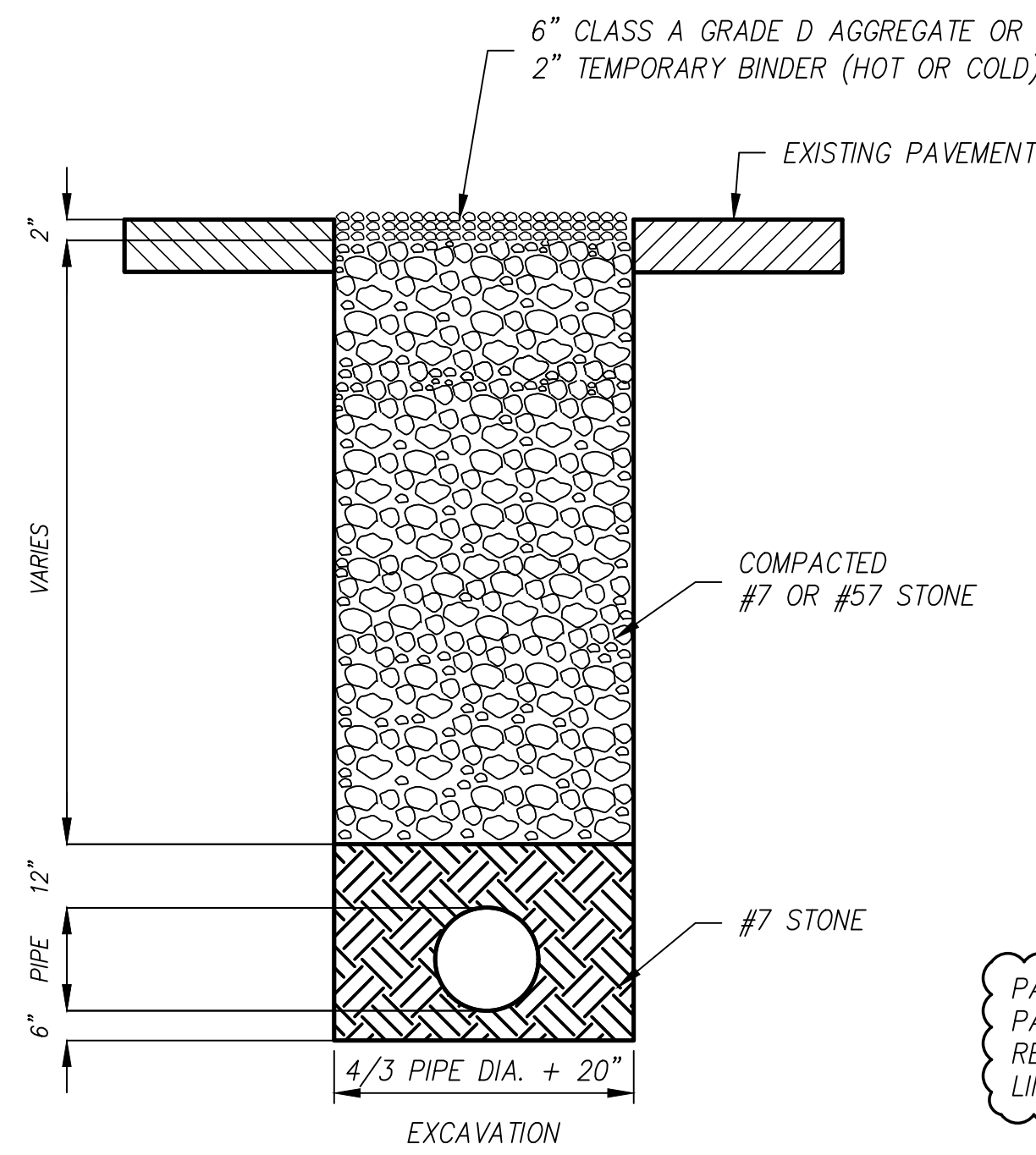
3.10 TESTING OF GRAVITY SEWERS

- A. Testing of gravity sewers shall be in accordance with Section 33 05 05 – Sanitary Sewer Testing.

3.11 FINAL CLEANING

- A. Prior to inspection and acceptance of pipe by Owner, flush and clean system to remove accumulated construction debris, rocks, gravel, sand, silt, and other foreign material in accordance with Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control.

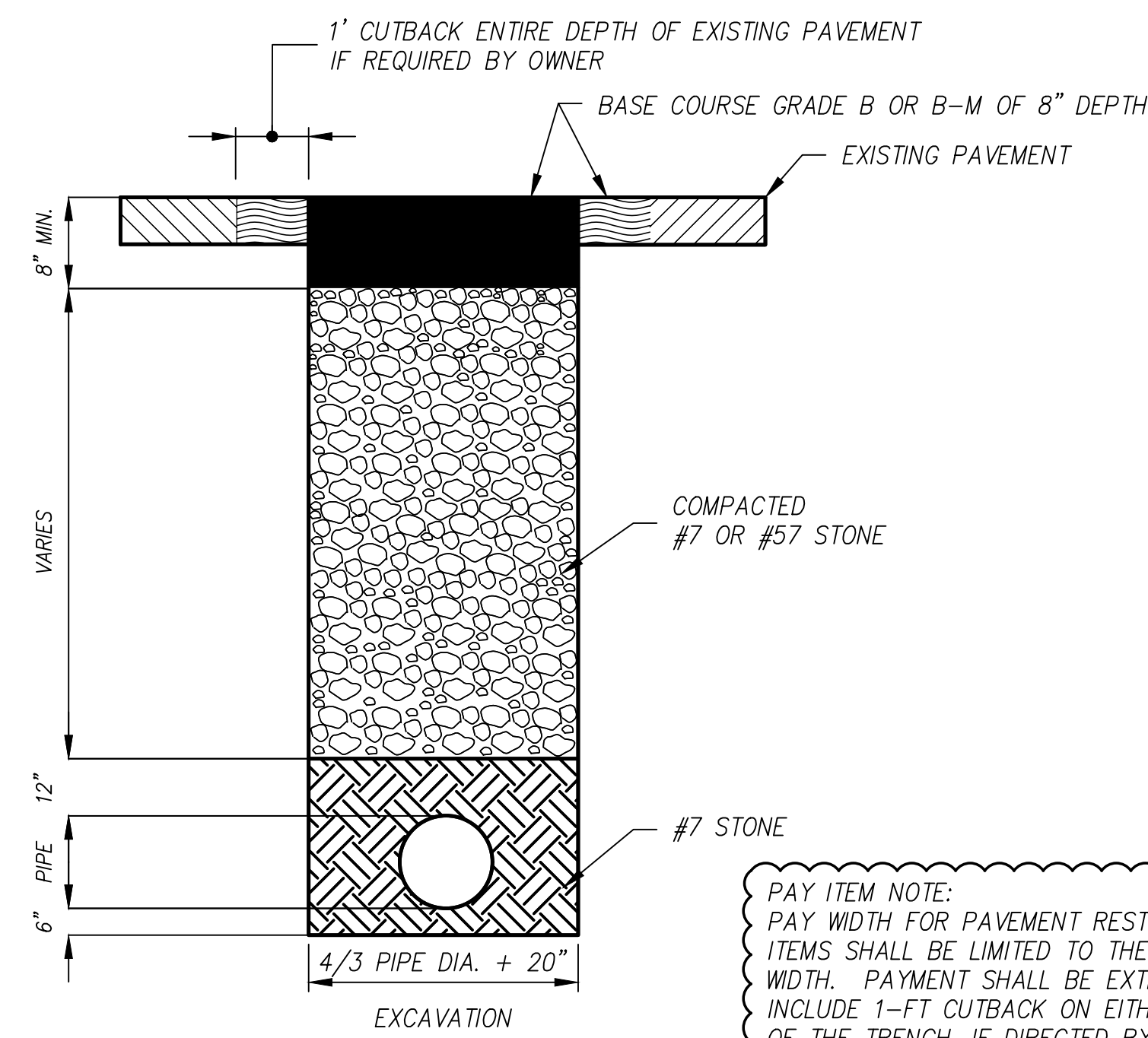
END OF SECTION 33 01 30.23



PAY ITEM NOTE:
PAY WIDTH FOR PAVEMENT RESTORATION ITEMS SHALL BE LIMITED TO THE TRENCH WIDTH

TEMPORARY PAVEMENT REPAIR (INSTALLED BY CONTRACTOR)

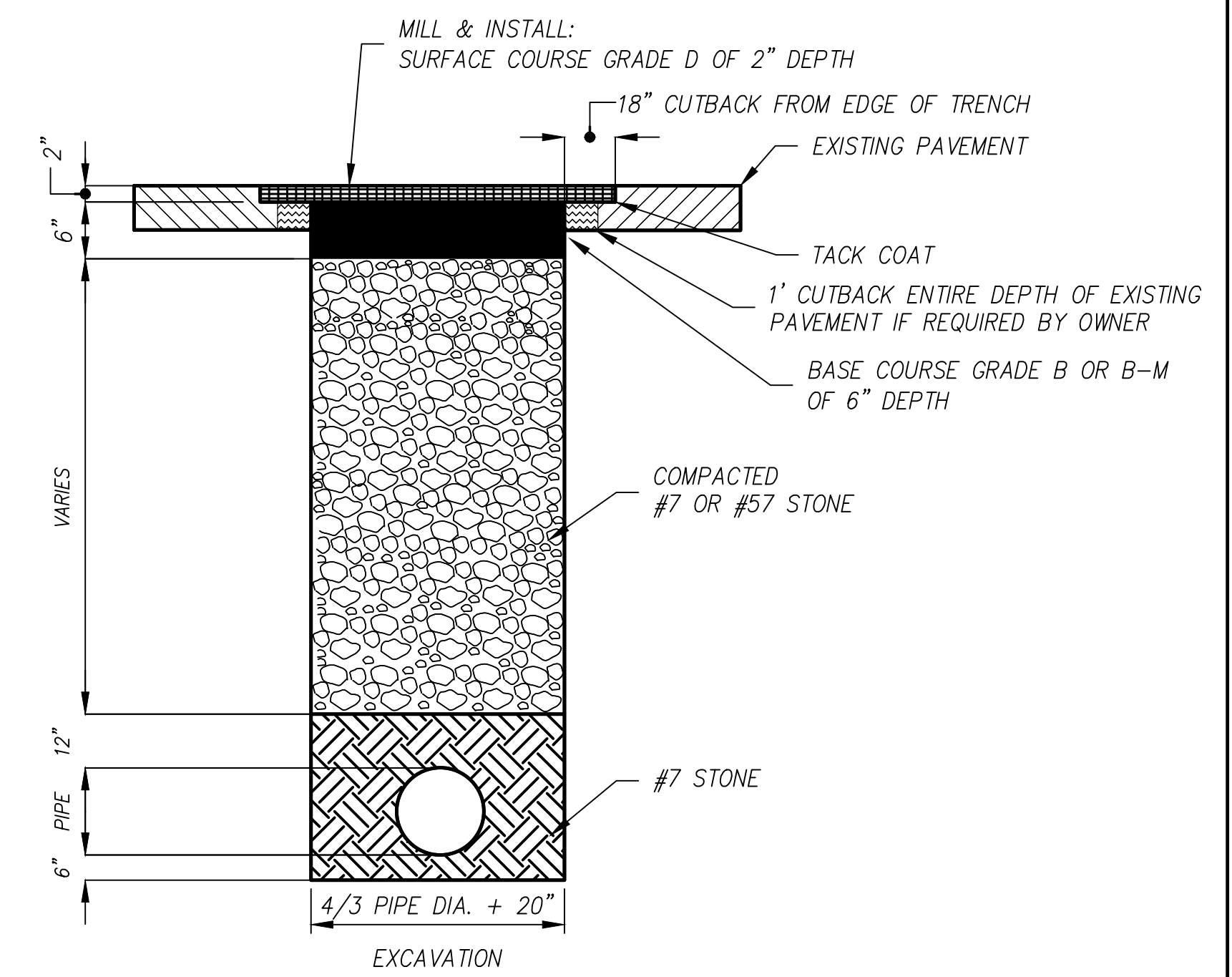
N.T.S.



PAY ITEM NOTE:
PAY WIDTH FOR PAVEMENT RESTORATION ITEMS SHALL BE LIMITED TO THE TRENCH WIDTH. PAYMENT SHALL BE EXTENDED TO INCLUDE 1-FT CUTBACK ON EITHER SIDE OF THE TRENCH, IF DIRECTED BY OWNER.

PERMANENT PATCHING: BASE COURSE PAVEMENT REPAIR (INSTALLED BY CONTRACTOR)

N.T.S.



PERMANENT PATCHING: BASE COURSE + SURFACE COURSE (INSTALLED BY OWNER OR CONTRACTOR)

N.T.S.

TEMPORARY PAVEMENT REPAIR (INSTALLED BY CONTRACTOR)

- NO. 7 STONE SHALL BE USED FOR PIPE BEDDING. PIPE BEDDING SHALL BE PLACED FROM 6" BELOW THE PIPE TO 12" ABOVE THE PIPE CROWN.
- NO. 7 OR 57 STONE SHALL BE COMPACTED IN MAXIMUM 12" LIFTS (WITH A MINIMUM OF 2 LIFTS) USING VIBRATORY COMPACTION EQUIPMENT REQUIRED TO ACHIEVE JOB SPECIFICATIONS.
- NO. 7 OR 57 STONE SHALL BE CONSOLIDATED TO A MINIMUM OF 95% MAXIMUM DRY DENSITY.
- 6" OF CLASS A GRADE D AGGREGATE OR 2" OF TEMPORARY BINDER (HOT OR COLD) SHALL BE COMPACTED UP TO THE PAVEMENT SURFACE.
- THE PAVEMENT REPAIR (INSTALLED BY CONTRACTOR) SHALL BE PLACED WITHIN 14 CALENDAR DAYS OF BACKFILL (OR 28 DAYS IF APPROVED BY THE OWNER). PRIMARY COLLECTOR OR ARTERIAL STREETS MUST HAVE 2" OF TEMPORARY BINDER WITHIN 2 CALENDAR DAYS OF BACKFILL.

PAVEMENT REPAIR (INSTALLED BY CONTRACTOR)

- AT THE TIME OF THE PAVEMENT REPAIR (INSTALLED BY CONTRACTOR) THE TEMPORARY PAVEMENT REPAIR SHALL BE REMOVED DOWN TO THE REQUIRED DEPTH LEAVING A MINIMUM OF 12" OF NO. 7 OR NO. 57 STONE.
- 8" OF BASE COURSE B OR B-M SHALL BE INSTALLED TO MATCH THE EXISTING PAVEMENT SURFACE COMPACTED IN A MINIMUM OF TWO 4" LIFTS.
- BASE COURSE LIFTS SHALL BE COMPACTED TO A MINIMUM OF 92% MAXIMUM THEORETICAL DENSITY.
- EXISTING CONCRETE STREETS THAT HAVE BEEN OVERLAID WITH ASPHALT PAVEMENT SHALL BE REPAIRED WITH NEW ASPHALT PAVEMENT. THE DEPTH OF THE NEW ASPHALT REPLACING THE CONCRETE SHALL BE A MINIMUM OF 8" COMPACTED IN A MINIMUM OF TWO 4" LIFTS PLUS THE THICKNESS OF THE OVERLAYING ASPHALT.
- CONCRETE STREETS WITHOUT ASPHALT OVERLAY SHALL BE REPAIRED FOLLOWING THE CITY PAVEMENT REPAIR STANDARD.

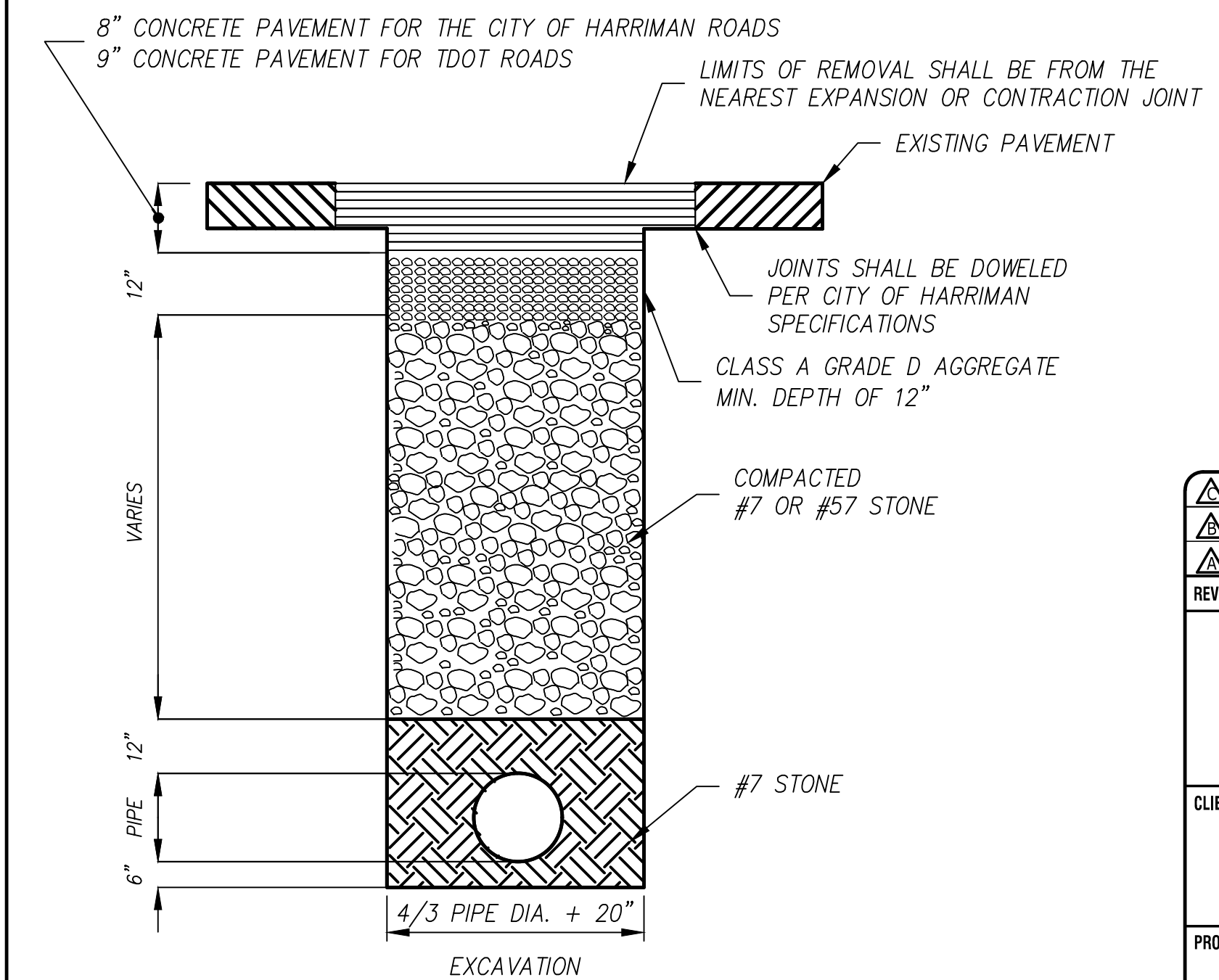
PAVEMENT SURFACING (INSTALLED BY OWNER OR CONTRACTOR)

- AT THE TIME OF PAVEMENT REPAIR (INSTALLED BY OWNER OR CONTRACTOR) THE BINDER SHALL BE MILLED TO THE REQUIRED DEPTH WITH 18 INCH CUTBACKS BEYOND THE EXCAVATED TRENCH WIDTH.
- 2" OF SURFACE COURSE GRADE D SHALL BE INSTALLED TO MATCH THE EXISTING PAVEMENT SURFACE AND COMPACTED.
- PAVEMENT SURFACING MAY BE BURNED IN USING THE PATCHMASTER METHOD IN LIEU OF MILL AND TOPPING.
- TO BE INSTALLED BY OWNER WITHIN 12 MONTHS AFTER INSTALLATION OF THE PAVEMENT REPAIRS DESCRIBED ABOVE.

Equipment Type	Equipment Weight (tons)	Minimum Downward Force (lbs)	Minimum Frequency		Minimum Amplitude (inches)	Maximum lift thickness (inches)	Minimum number of passes required
			Hertz	VPM			
Steel wheeled vibratory roller – walk behind	< 1 ton	N/A	41	2460	0.02	Equipment weight < 1 ton – 4-6" 1 – 2 tons – 8" > 2 ton – 12"	5
Steel wheeled vibratory roller – walk behind	< 2 tons	N/A	30	1800	0.02		5
Steel wheeled vibratory roller – ride on	< 1 ton	N/A	30	1800	0.02		5
Steel wheeled vibratory roller – ride on	1 – 2 tons	N/A	30	1800	0.02		5
Steel wheeled vibratory roller – ride on	> 2 tons	N/A	30	1800	0.02		5
Walk behind vibratory plate compactor – single direction	< 1 ton	N/A	38	2280	0.03		4
Walk behind vibratory plate compactor – reversible	< 1 ton	N/A	38	2280	0.03	4	
Backhoe vibratory plate attachment	N/A	7500	33	2000	0.02	Not to exceed 12"	3
Backhoe vibratory wheel attachment	N/A	7500	43	2500	0.085	Not to exceed 12"	3

NOTE:

JUMPING JACKS MAY BE USED, WITH PERMISSION OF OWNER, IN AREAS OF COMPACTION TOO SMALL FOR OTHER COMPACTION EQUIPMENT. LIFTS SHALL NOT EXCEED 4" IN DEPTH.



PERMANENT CONCRETE REPAIR (INSTALLED BY CONTRACTOR)

N.T.S.

PAY ITEM NOTE:
PAY WIDTH FOR CONCRETE RESTORATION ITEMS SHALL BE LIMITED TO THE TRENCH WIDTH OR TO THE NEAREST EXPANSION/CONTRACTION JOINT.



ADDENDUM 2 - PAY WIDTH CLARIFICATION	06/13/2024
REV. PER TDEC PERMITTING COMMENTS	04/08/2024
FINAL REVIEW SET TO OWNER	03/08/2024

REVISIONS	DATE

CLIENT:	HARRIMAN UTILITY BOARD 200 NORTH ROANE STREET HARRIMAN, TN 37748 (865) 882-3242
PROJECT:	ARPA SANITARY SEWER REHABILITATION HARRIMAN, TN

PAVING DETAIL SHEET

	CCI PROJECT NO.	00923-0013
	DRAWING DATE	MARCH 8, 2024
	PM	WWL QC TFT
	DRAWN	WBW PIC HED

D2.01