HENDERSON WATER UTILITY

INVITATION FOR BIDS
and TECHNICAL SPECIFICATIONS

Briarcliff Trail
Sewer Repair/Relocation Project

HENDERSON, KENTUCKY

November 2018
Table of Contents

Briarcliff Trail
Sewer Repair/Relocation Project

• Invitation to Bid, Solicitation Instructions and Conditions, Bid Form and List of Required Attachments and Non-Collusive Bid Statement.

• Required Affidavit for Bidders, Offerors and Contractors Claiming Qualified Bidder Status

• Required Affidavit for Bidders, Offerors and Contractors Claiming Resident Bidder Status

• Statement Required Pursuant to KRS 45A.395.

• Technical Specifications

Note: Items shown with Bold Underline in this Table of Contents must be completed in their entirety in the bid submittal.
INVITATION FOR BID

The Henderson Water and Sewer Commission of the City of Henderson, Kentucky will receive sealed competitive bids at its office at 111 Fifth Street, Henderson, Kentucky 42420, until 1:30 p.m. (CST), on the 28th of November 2018, at which time the bids will be opened and considered for the purchase of the following:

BRIARCLIFF TRAIL SEWER REPAIR/RELOCATION PROJECT
FOR THE
HENDERSON WATER UTILITY

REF# 201835 BRIARCLIFF TRAIL SEWER REPAIR

Specifications and Instructions to Bidders, and copies of plan sheets for this project may be obtained from:

   HWU website:  http://tinyurl.com/hwu-bids

   HWU Administration Building:  111 Fifth Street, Henderson, KY  42420

The Water and Sewer Commission reserves the right to accept or reject any or all bids in whole or in part and to waive informalities and/or technicalities in the bids. Conflicts of interest, gratuities and kickbacks as defined and provided for in K.R.S. 45A.455 are absolutely prohibited.

Clarifications and Addenda will be posted on the HWU procurement web site as listed above.
1. DEFINITIONS:

As used herein:

a. The term “solicitation” includes the Invitation for Bid, Solicitation Instructions and Conditions, Bid Form and Technical Specifications, and any Clarifications or Addenda issued by the Owner.
b. The term “offer” means “bid” or “proposal”.
c. The term “Vendor” shall mean the party responsible for furnishing submittals, equipment, accessories, controls, operation and maintenance manuals and training, startup services and warranting the equipment as required in this Request for Proposals. Prior to award of contract, a potential Vendor may be referred to by the terms “Bidder” or “Offeror”.
d. The term “Owner” shall mean the Henderson Water Utility (HWU), 111 Fifth Street, Henderson, Kentucky, 42420.
e. The term “Engineer” refers to an individual employee of the Owner, acting as design engineer or inspector for this project or procurement.
f. The term “Purchase Order” shall mean the document executed by the Vendor and the Owner of which each of the following form a part: the Invitation for Bids; the Vendor’s Proposal; the attached plan and technical specifications for the Briarcliff Trail Sewer Repair/Relocation Project, prepared by Henderson Water Utility, dated November 2018; and plans prepared by Qk4, dated 25 October 2018, and attached hereto.
g. The term “Nonresident bidder” is defined by KRS 45A.494(3).
h. The term “Resident bidder” is defined by KRS 45A.494(2).
i. The term “Qualified bidder” means Kentucky Industries for the Blind, Incorporated; any nonprofit corporation that furthers the purposes of KRS Chapter 163; or a qualified nonprofit agency for individuals with severe disabilities as described in KRS 45A.465(3).

2. PREPARATION OF OFFERS

a. Offerors shall examine the drawings, specifications, schedule, and all instructions. Failure to do so shall be at the offeror’s risk.
b. Offers shall set forth full, accurate, and complete information as required by the solicitation. Offers that contain an offeror’s own special terms and conditions in conflict with the terms of the solicitation or state statutes and regulations may be rejected.
c. Each offeror shall furnish the information required by the solicitation on the bid forms included herein. The offeror shall sign the solicitation in ink and type or print in ink his name, firm, address, telephone number, and date. Erasures or other changes shall be initialed in ink by the person signing the offer. Approved electronic format may also be accepted.
d. Any explanation or statement which the offeror wishes to make concerning the bid shall be written separately and independently of the proposal or bid, attached to the bid form, and placed in the envelope with the bid. Any such statement or explanation must refer to the bid submitted and shall also be signed by the offeror.
e. Unit price for each unit offered shall be shown and such price shall include packing and delivery to HWU unless otherwise specified within the Bid Form, and shall include startup and training services where specified in the Technical Specifications. Fuel Surcharges and any other miscellaneous charges should be included in the unit price. A total shall be entered in
the amount column of the schedule for each item offered. In case of discrepancy between a unit price and extended price, the unit price shall govern.
f. Cash discounts shall not be considered in making the award of the contract.
g. Trade discounts shall be deducted by the vendor in calculating the unit price quoted, unless otherwise stated.
h. Offers for supplies or services other than those specified shall not be considered unless authorized by the solicitation.
i. Proposal shall include guaranteed time schedules for submission of shop drawings after award of the Purchase Order, and for shipment of equipment after receipt of approved shop drawings. The award of the Purchase Order will be based on the quoted price and an acceptable shop drawing and equipment delivery schedule.
j. Time, if stated as a number of days, shall include Saturdays, Sundays, and Holidays. One day is 24 hours; one week is 7 days; one month is 28 days.

3. OFFEROR CLARIFICATION – REQUEST AND RESPONSE
Any explanation desired by an offeror regarding the meaning or interpretation of the solicitation drawings, specifications, etc., shall be requested in writing to the HWU Purchasing Manager, not less than five (5) calendar days prior to the bid opening date. Oral explanations or instructions given before the award of the contract shall not be binding. Any information given to a prospective vendor concerning a solicitation shall be furnished to all prospective vendors as an amendment or clarification of the solicitation, if such information is necessary to vendors in submitting offers on the solicitation, or if the lack of such information would be prejudicial to uninformed vendors.

4. ACKNOWLEDGEMENT OF ADDENDA TO SOLICITATIONS
Receipt of an addendum to a solicitation shall be acknowledged by the offeror. Acknowledgement shall be received prior to the hour and date specified for receipt of offers, or shall be shown in the appropriate place on the Bid Form. Verbal acknowledgement shall not be accepted. Failure to acknowledge addenda may cause the bid to be considered non-responsive.

5. PROTEST PROCEDURES
a. Protests prior to bid opening
Any protests, prior to bid opening must be submitted in writing and received by HWU at least ten (10) calendar days prior to bid opening. This ten (10) calendar day deadline may be waived by the HWU Purchasing Manager for good cause shown. The HWU Purchasing Manager will issue a response to the protest no later than five (5) calendar days after receipt of the protest. The response shall be in writing and set forth the reasons for the response. Upon receipt of a protest, the HWU Purchasing Manager will immediately determine if the bid opening should be postponed. If the bid opening is postponed, HWU will notify all prospective bidders who have been furnished a copy of the specifications that a request for review has been received and that the bid opening is postponed. Upon issuance of its response to the protest, HWU will issue an appropriate addendum rescheduling the bid opening.
b. **Protests after bid opening**
   Protests after bid opening will be considered only as to issues which were not apparent before bid opening. After bid opening no protests of specifications will be considered. Any protest after bid opening, including a protest of contract award, must be submitted in writing and received by HWU within five (5) calendar days of the action being protested. No other form of protest will be considered. After the time for protest of contract award has expired, these protest procedures will be considered to be inapplicable, and any disputes will be resolved by HWU under contract provisions or other remedies, if available.
   Protests submitted to HWU shall:
   (a) Include the name and address of the protestor.
   (b) Identify clearly the procurement under which the protest is being submitted.
   (c) Identify the action being protested and provide sufficient detailed documentation to support the protest action.
   (d) Indicate the action, ruling or relief desired from HWU.

   The HWU Purchasing Manager will review the protest and render his or her decision in writing within five (5) calendar days of receipt of the protest, setting forth reasons for his or her decision. HWU is responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of the procurement, including protests, contract defaults, disputes or breaches. The decision of the HWU Purchasing Manager as to protests shall be final and conclusive, unless, within five (5) calendar days of the date a decision was rendered by the HWU Purchasing Manager, a written appeal of the same is submitted by the bidder to the City of Henderson Water and Sewer Commissioners. Any appeal to the Commissioners shall include:
   (a) A statement of the grounds for review and any supporting documentation.
   (b) A copy of the protest filed with HWU and a copy of the HWU Purchasing Manager’s decision.

   If the appeal is submitted prior to award of a contract, HWU will not award until the matter is resolved. If the contract has been awarded prior to the appeal, the contractor shall proceed diligently with the performance of the contract.

6. **SUBMISSION OF OFFERS**
   a. Offers and modifications thereof shall be enclosed in sealed envelopes and addressed to the office specified in the solicitation. The offeror shall show the opening hour and date specified in the solicitation, the solicitation number, and the name and address of the offeror on the face of the envelope(s).
   b. Telegraphic or facsimile offers shall not be considered unless authorized by the solicitation; however, offers may be modified by telegraphic or facsimile notice, if such notice is received prior to the hour and date specified for receipt. Telegraphic or facsimile modifications shall not mention unit prices or total price; but shall only refer to percentage change or numerical change (i.e., “reduce unit price of item 1 by $1.00”).
   c. Samples of items, if required, shall be submitted within the time specified, and not unless otherwise specified, at no expense to HWU. If not destroyed by testing, samples shall be
returned at the offeror’s request and expense, unless otherwise specified by the solicitation. Unless a request for their return is made within thirty (30) days of award of contract, all samples shall become property of HWU.

7. MODIFICATION OR WITHDRAWAL OF OFFERS
Offers may be modified or withdrawn by written notice received prior to the exact hour and date specified for receipt of offers. An offer may also be withdrawn in person by an offeror or his authorized representative, if his identity is made known and he signs a receipt for the offer, but only if the withdrawal is made prior to the exact hour and date set for receipt of offers.

8. LATE OFFERS AND MODIFICATIONS
Offers and modifications of offers received at the office designated in the solicitation after the exact hour and date specified for receipt shall not be considered for an award of contract, UNLESS:
   a. No bids are received other than the late bid; and
   b. The needs of HWU are determined to preclude the re-solicitation of bids.

9. MULTIPLE AND ALTERNATE BIDS
Bidders shall submit one response only to the solicitation and shall not propose more than one price, model, and brand for each bid item. Multiple or alternate bids offering more than one bid price in total (or by line-item) shall be cause for rejection unless specifically called for in special provisions provided elsewhere in the solicitation.

10. AWARD OF CONTRACT
   a. It is the intent of HWU to award this contract to the vendor or vendors offering the lowest evaluated bid price for products which meet the specifications set forth in this document. Any and all anticipated costs for HWU to implement the project will be taken into consideration.
   b. HWU reserves the right to reject any offers and to waive informalities and minor irregularities in offers received. The award of this contract will be contingent upon funds being appropriated for this purchase.
   c. The bidder, if awarded an order or contract, agrees to protect, defend, and save harmless the Henderson Water and Sewer Commission and the Henderson Water Utility against any demand for the use of any patented materials, process, article, or device, that may enter into the manufacture, construction, or form a part of the work covered by either order or contract and he further agrees to indemnify and save harmless the Henderson Water and Sewer Commission and the Henderson Water Utility from suits or actions of every nature and description brought against it, for on account of any injuries or damages received or sustained by any party or parties, by or form any of the acts of the contractor, his servants, or agents.
   d. The awarded contract shall agree to offer the prices and the terms and conditions offered herein to any municipality, county or state government; public utility; non-profit hospital; educational institute; special governmental agency; and non-profit corporation performing governmental functions in Western Kentucky area who wish to participate in a cooperative purchase program with Henderson Water Utility. Other agencies will be responsible for entering into separate agreements with the Contract and for all payments thereunder.
   e. The bidder agrees to hold the proposed pricing for up to 90 days after bid proposal is opened, or for such time as specified on the Bid Form, if different.
f. A written award mailed (or otherwise furnished) to the successful offeror within the time for acceptance specified in the offer shall be deemed to result in a contract without further actions by either party.

11. METHOD OF AWARD: BEST VALUE - RANKING APPROACH
The Owner intends to award a Contract to the Contractor whose bid, conforming to the BID FORM, is the most advantageous on the basis of "best value" for all products, services, and requirements contained herein. An evaluation committee or a designated individual will evaluate the information provided by the Contractor in response to the established measurable criteria contained herein.

   Measurable Criteria: Price 100 Points

TOTAL POINTS 100 Points

Each Contractor is responsible for submitting all relevant, factual and correct information with their Bid to enable the evaluator(s) to afford each Contractor the maximum score based on the available data submitted by the Contractor. The Contractor shall explicitly adhere to the BID FORM which contains adequate space for the Contractor's pricing.

**Bid Price (100 Points)**
The bidder with the lowest Bid Price receives the maximum score. The bidder with the next lowest Price receives points by dividing the lowest Price by the next lowest Price and multiplying that percentage by the available points. For Example, 100 points is allocated to the lowest Price criteria for this procurement, Bidder "A" bids $3.00 as the lowest bidder and receives the maximum 100 points ($3.00 / $3.00 = 1.00 X 100 = 100). Assume Bidder "B" is next lowest bidder at $4.00, then "B" receives 75 points ($3.00 / $4.00 = .75 X 100 = 75).

Best Value scoring is subject to Reciprocal preference for Kentucky resident bidders and Preferences for a Qualified Bidder or the Department of Corrections, Division of Prison Industries (KAR 200 5:410). The Contractor is required to submit a complete copy of the "Required Affidavit for Bidders, Offerors, and Contractors Claiming Resident Bidder Status" attached to the BID FORM.

12. KENTUCKY / INDIANA SALES AND USE TAXES
Sales of tangible personal property or services to HWU are not subject to state sales or use taxes. Henderson Water Utility's Kentucky/Indiana sales tax exemption number will be provided to the successful bidder(s).

13. COMPLIANCE WITH FEDERAL, STATE, AND LOCAL LAWS
Any contracts or orders placed as a result of the offer shall be governed by the laws of the Commonwealth of Kentucky. The rights and obligations of the parties thereto shall be determined in accordance with these laws. Any offer conditioned upon governance by the laws of a state other than Kentucky shall not be considered.

Conflicts of interest, gratuities and kickbacks as defined and provided for in KRS 45A.455 are absolutely prohibited. Bidder acknowledges and certifies by submission of his bid that all the provisions of KRS 45A.455 are complied with fully.
A City of Henderson business license is required for all vendors servicing accounts within the City of Henderson. A Henderson County business license is required for all vendors servicing accounts at HWU locations outside the City of Henderson but in Henderson County. Information regarding the business license can be obtained by calling the business license office at 270-831-1200. Vendors will be allowed ten (10) days after award of bid to submit a copy of their current business license(s) to the Purchasing Manager.

14. CONFLICTS OF INTEREST – Gratuities and kickbacks – Use of confidential information (KRS 45A.455)

a. It shall be a breach of ethical standards for any employee with procurement authority to participate directly in any proceeding or application; request for ruling or other determination; claim or controversy; or other particular matter pertaining to any contract, or subcontract, and any solicitation or proposal therefore, in which to his knowledge:
   i. He, or any member of his immediate family has a financial interest therein; or
   ii. A business or organization in which he or any member of his immediate family has a financial interest as an officer, director, trustee, partner, or employee, is a party; or
   iii. Any other person, business, or organization with whom he or any member of his immediate family is negotiating or has an arrangement concerning prospective employment is a party. Direct or indirect participation shall include but not be limited to involvement through decision, approval, disapproval, recommendation, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing or in any other advisory capacity.

b. It shall be a breach of ethical standards for any person to offer, give, or agree to give any employee or former employee, or for any employee or former employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment, in connection with any decision, approval, disapproval, recommendation, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling or other determination, claim or controversy, or other particular matter, pertaining to any contract or subcontract and any solicitation or proposal therefore.

c. It is a breach of ethical standards for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

d. The prohibition against conflicts of interest and gratuities and kickbacks shall be conspicuously set forth in every local public agency written contract and solicitation therefore.

e. It shall be a breach of ethical standards for any public employee or former employee knowingly to use confidential information for his actual or anticipated personal gain, or the actual or anticipated personal gain of any other person.
15. CONTRACT MODIFICATIONS
During the period of the contract, no modification shall be permitted in any of its conditions and specifications unless the contractor receives written approval from the Purchasing Manager. If the contractor finds at any time that existing conditions make modification in requirements necessary, he shall promptly report such matter to the Purchasing Manager for consideration and decision. All contract modifications shall be subject to the provisions of 200 KAR 5:311.

16. ADDITIONAL CHARGES/FEES
The bid price of the product is the complete product price. There will be no fuel surcharges, delivery fees, handling fees, container return fees, or any other fees/charges associated with the purchase, installation or delivery of products.

17. WARRANTY – CORRECTIVE WORK
The Contractor shall guarantee all work performed under this contract for a period of one (1) year after the date of Substantial Completion. This provision covers any work performed by the Contractor that is found to be defective, the repair of any damages to the site and adjacent areas that the contractor used during construction. Where defective work has been corrected or removed and replaced, the correction period with respect to that work will be extended for an additional period of one year after correction has been satisfactorily completed.

18. SELLER’S INVOICES
Invoices shall be prepared and transmitted via fax or USPS to HWU at the provided address. Invoices shall contain, at a minimum, the following information: Purchase Order number, Bill of Lading number, delivery location, and an appropriate weight ticket, where applicable.
HWU is a municipality and invoices are processed for payment not less than once per month. Terms are net 30 after receipt of invoice.

19. PRECEDENCE OF PROVISIONS
In the event of an inconsistency between provisions of the solicitation, the inconsistency shall be resolved by giving precedence in the following order: (a) Addenda, if issued; (b) Solicitation Instructions and Conditions; (c) General Conditions; (d) other provisions of the contract, whether incorporated by reference or otherwise; and, e) the Technical Specifications.

20. NONDISCRIMINATION
Civil Rights Act of 1964: In accordance with the provisions of Title VI of the Civil Rights Act of 1964 and the regulations of the Federal Department of Transportation (49 CFR, part 21) issued pursuant to such Act, all bidders are hereby notified that HWU will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the responsible bidder with the lowest evaluated bid without discrimination on the grounds of race, color, national origin, disability, gender, or age.

Americans with Disabilities Act: In accordance with the provisions of The Americans with Disabilities Act of 1990 (ADA) which specifically prohibits discrimination against persons with disabilities, all bidders are hereby notified that the contract entered into pursuant to this advertisement shall include a clause that specifically requires compliance with the ADA and prohibits discrimination against persons with disabilities. The ADA further requires that all new construction, reconstruction, and
alterations to existing pedestrian facilities be constructed in accordance with Federal accessibility standards.

21. INSURANCE
Contractors, including all Subcontractors, furnishing labor, and/or equipment under this requirement shall carry the following insurance in addition to all insurance required by law. Valid certificates of insurance shall be furnished to the Owner prior to the Contractor causing any work to begin.

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<tr>
<th>A. Workman’s Compensation</th>
<th>Statutory</th>
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<td>B. Broad Form Comprehensive General Liability including coverage for Bodily Injury, Personal Injury, Products, Completed Operations, and Broad Form Property Damage, (No deductible clauses are acceptable for these coverages), and Independent Contractors (Subcontractors)</td>
<td>Bodily Injury: $1,000,000 each occurrence $2,000,000 aggregate Property Damage: $1,000,000 each occurrence</td>
</tr>
<tr>
<td>C. Comprehensive Automobile Liability, including Hired Car and Employer’s Non-Ownership Liability Coverage.</td>
<td>$1,000,000 Combined Single Limit</td>
</tr>
<tr>
<td>D. Endorsement naming as additional insured “The Henderson Water and Sewer Commission, its elected and appointed officials, employees, agents, boards, consultants, assigns, volunteers and successors in interest.”</td>
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<tr>
<td>E. Endorsement that Contractor’s insurance coverage shall be primary insurance as respects HWU. Any insurance or self-insurance maintained by HWU shall be separate from Contractor’s insurance and shall not contribute with it.</td>
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<tr>
<td>F. Certificates of insurance, issued by companies authorized to do business in the state of Kentucky, satisfactory in form to the HWU and signed by the Bidder’s insurer shall be supplied by Bidder to HWU evidencing that the above insurance is in force and that not less than thirty (30) calendar days written notice will be given to the HWU prior to any cancellation or restrictive modification of the policies. Bidder shall replace any cancelled policy within the thirty (30) day notice period so that there is no lapse in coverage at any time during the period covered by this contract.</td>
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The insurance shall:

a) Include the interests of the Owner, Contractor, Subcontractor, Engineer, Engineer’s consultants and any other individuals, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

b) Be written on a Builder’s Risk “all-risk” or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils or causes of loss.

c) Remain in effect for the duration of the contract and warranty period.
BID FORMS

PROJECT IDENTIFICATION: Briarcliff Trail Sewer Repair/Relocation
Henderson Water Utility
Ref# - 2018 - 35

THIS BID SUBMITTED TO: Henderson Water Utility
111 Fifth Street
Henderson, KY  42420

CONTACT INFORMATION: All questions regarding this bid solicitation should be directed to the
Purchasing Manager as per item #3 in the Solicitation Instructions and Conditions.

DATE REFERENCES:

Last day for bid clarifications: 26 November 2018
Bid Closing: 28 November 2018, 1:30 p.m.
HWU Board Meeting (award): 17 December 2018

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to furnish equipment as
specified or indicated in the Bid Documents and Technical Specifications for the Bid Price(s) and in
accordance with the other terms and conditions of the Bid Documents and Technical Specifications.

2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and the Bid
Documents and Specifications. This bid will remain subject to acceptance for ninety days after the day
of bid closing.

3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement that:

a. BIDDER has examined copies of all the Bidding Documents and of the following addenda
   (receipt of all which is hereby acknowledged):

<table>
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<th>DATE</th>
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b. BIDDER has familiarized itself with the nature and extent of the Bid Documents and Technical
   Specifications, and all conditions, laws and regulations that in any manner may affect cost, or
   furnishing the equipment required.

c. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person,
   firm or corporation and is not submitted in conformity with any agreement or rules of any
   group, association, organization or corporation; BIDDER has not directly or indirectly induced
   or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or
   induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought
   by collusion to obtain for itself any advantage over any other Bidder or over the PURCHASER.
Bidder acknowledges and certifies by submission of his bid that all the provisions and statutes of KRS 45a.465 are complied with fully.

d. Specify a unit price in figures for each bid item for which a quantity is given and show the products of the respective unit prices and quantities written in figures in the space provided for that purpose. Round the products by dropping all digits past the cent. Write in ink or type all figures. In case of discrepancy between a unit price and extended price, the unit price shall govern.

e. It is the intent of HWU to award this project to the low evaluated bidder. The evaluation will include costs of an easement on the adjacent property which is required for the relocation of the lines on this project. That cost may impact the choice of the four alternate bids.

Bid Form A
Furnish and Install 8” Sanitary Sewer and 36” Storm Sewer
Pricing to be held for 30 days after submittal is opened

ITEM No. A - 1: Mobilization & Demobilization
Includes Mobilization and Demobilization of personnel and subcontractors to site, general conditions, traffic control, Bid Bond, Performance and Payment Bond, etc., and all other costs not included in the other items under this Contract. This item will be paid 75% with the first pay application after the start of construction, and 25% with the last pay application, and includes all costs of any subsequent demobilizations and re-mobilizations as required by the project schedule.

LUMP SUM BID PRICE___________________________________________________________

_______________________________________ Dollars ($_______________).
(Use words) (figures)

ITEM No. A - 2: Demolition of Existing Facilities
Includes excavation and disposal of miscellaneous materials, including an existing brick/block manhole at 3013 Briarcliff Trail (Manhole BB1 on attached plan); miscellaneous materials encountered during excavation, including landscape elements; includes all costs of disposal; all complete and ready for use.

LUMP SUM BID PRICE___________________________________________________________

_______________________________________ Dollars ($_______________).
(Use words) (figures)
ITEM No. A - 3:  36” Storm Sewer

127.3 Linear Feet of 36” HDPE, Double Wall Pipe, including excavation and disposal of trench materials; furnishing and installing all pipe, connections, joint materials and other materials; connection to manholes, inlets, and existing storm sewers as required; testing; furnishing and installing bedding and backfill (Method A, per Figure 6-1, appended); all complete in place and ready for use.

\[
\text{127.3 Linear Feet @ } \$ \ \text{Equals } \$ \\
\text{Unit Price L.F.} \quad \text{Extended Amount}
\]

ITEM No. A - 4: 60” Storm Sewer Manholes (Greater than 6’ Depth)

Three (3) 60-inch diameter Storm Sewer Manholes (per Figure 6-4, appended) including excavation and disposal of existing materials; furnishing and installing base, riser and top sections; furnishing and installing manhole frame and lid; stub-outs, concrete bench, connecting boots and all other incidental materials; testing; furnishing and installing bedding and backfill (Method A, per Figure 6-1, appended); ground restoration; all complete in place and ready for use.

\[
\text{3 Each @ } \$ \ \text{Equals } \$ \\
\text{Unit Price Each} \quad \text{Extended Amount}
\]

ITEM No. A - 5: Safe-loading of Existing 36” Corrugated Metal Storm Sewer Pipe

Includes forming of plugs at ends of pipe to be filled; furnishing and installing all safe-loading materials; repair of existing outlets in existing manholes; ground restoration; all complete and ready for use. Note: Curing of concrete will not be required.

LUMP SUM BID PRICE~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ Dollars ($\ldots$);

(Use words) \quad (figures)
ITEM No. A - 6: 8” Sanitary Sewer
115.2 Linear Feet of 8” PVC Sanitary Sewer Pipe, including excavation and disposal of trench materials; connection of new pipe to Manhole A1; furnishing and installing all pipe, connections, joint materials and other materials; connection to manholes and inlets as required; testing; furnishing and installing bedding and backfill (Method A, per Figure 6-1, appended); all complete in place and ready for use.

115.2 Linear Feet @ $__________________  Equals $ ____________________

Unit Price L.F.  Extended Amount

ITEM No. A - 7: 48” Sanitary Sewer Manholes (Less than 6’ Depth)
Three (3) 48-inch diameter Sanitary Sewer Manholes (per Figure 6-5, appended) including excavation and disposal of existing materials; furnishing and installing base, riser and top sections; furnishing and installing manhole frame and lid; stub-outs, concrete bench, connecting boots and all other incidental materials; testing; furnishing and installing bedding and backfill (Method A, per Figure 6-1, appended); ground restoration; all complete in place and ready for use.

3 Each @ $__________________  Equals $ ____________________

Unit Price Each  Extended Amount

ITEM No. A - 8: Safe-loading of Existing 8” Clay Sanitary Sewer Pipe
Includes forming of plugs at ends of pipe to be filled; furnishing and installing all safe-loading materials; repair of existing outlets in existing manholes; ground restoration; all complete and ready for use. Note: Curing of concrete will not be required.

LUMP SUM BID PRICE______________________________

______________________________ Dollars ($______________).

(Use words)  (figures)

TOTAL ALTERNATE “A” BID PRICE
TOTAL BID PRICE______________________________

______________________________ Dollars ($______________).

(Use words)  (figures)

Bidders – please attach a “post-it” note or other tag to this page, in your completed bid.
Bid Form B
Furnish and Install Cured-in-Place Lining for Both a
8” Sanitary Sewer and a 36” Storm Sewer
Pricing to be held for 30 days after submittal is opened

ITEM No. B - 1: Mobilization & Demobilization
Includes Mobilization and Demobilization of personnel and subcontractors to site, general conditions, traffic control, Bid Bond, Performance and Payment Bond, etc., and all other costs not included in the other items under this Contract. This item will be paid 75% with the first pay application after the start of construction, and 25% with the last pay application, and includes all costs of any subsequent demobilizations and re-mobilizations as required by the project schedule.

LUMP SUM BID PRICE ____________________________________________________________

__________________________________________ Dollars ($ ____________).
(Use words) (figures)

ITEM No. B - 2: Cured-In-Place Pipe Lining - 8” Sewer
Install approximately 210 linear feet of 8” Cured-In-Place Pipe Lining, from SMH 1750 to Manhole A1, including cleaning and video inspection of the existing sewer; procurement, fabrication, transport and delivery of liner and appurtenances; placement, curing, inspection, testing, etc., of liner; bypass pumping, as required to maintain flow of wastewater around the construction zone, including accessing existing sewers upstream and downstream, piping, ramps, power, etc.; protection and/or relocation of other utilities; removal and disposal of demolished and unusable materials, spoil, soil, pavement, etc.; ground restoration and repair of any private property disturbed during construction; post-installation video inspection; all complete in place and ready for use.

210 Linear Feet @ $ ____________ Equals $ ________________
Unit Price L.F. Extended Amount

ITEM No. B - 3: 4” or 6” Gravity Sewer Lateral Reconnection
Reconnection of four (4) Sewer Laterals along the 8” sanitary sewer, as per Specification Section 02560; provision for use of laterals during the construction period; removal and disposal of demolished and unusable materials, etc.; all complete in place and ready for use.

4 Laterals @ $ ____________ Equals $ ________________
Unit Price L.F. Extended Amount
ITEM No. B - 4: Cured-In-Place Pipe Lining - 36” Sewer

Install approximately 101 linear feet of 36” Cured-In-Place Pipe Lining, from Existing Catch Basin BB4 to Existing Storm Manhole BB1, including cleaning and video inspection of the existing storm sewer; procurement, fabrication, transport and delivery of liner and appurtenances; placement, curing, inspection, testing, etc., of liner; bypass pumping, as required to maintain flow of wastewater around the construction zone, including accessing existing sewers upstream and downstream, piping, ramps, power, etc.; protection and/or relocation of other utilities; removal and disposal of demolished and unusable materials, spoil, soil, etc.; ground restoration and repair of any private property disturbed during construction; post-installation video inspection; all complete in place and ready for use.

101 Linear Feet @ $__________________  Equals $ ______________________

Unit Price L.F.  Extended Amount

TOTAL ALTERNATE “B” BID PRICE

TOTAL BID PRICE____________________________________________________

__________________________________ Dollars ($_______________).  

(Use words)  (figures)

Bidders – please attach a “post-it” note or other tag to this page, in your completed bid.
ITEM No. C - 1: Mobilization & Demobilization

Includes Mobilization and Demobilization of personnel and subcontractors to site, general conditions, traffic control, Bid Bond, Performance and Payment Bond, etc., and all other costs not included in the other items under this Contract. This item will be paid 75% with the first pay application after the start of construction, and 25% with the last pay application, and includes all costs of any subsequent demobilizations and re-mobilizations as required by the project schedule.

LUMP SUM BID PRICE

____________________________________________________

____________________________________________ Dollars ($_______________).

(Use words)                                           (figures)

ITEM No. C - 2: Demolition of Existing Facilities

Includes excavation and disposal of miscellaneous materials, including an existing brick/block manhole at 3013 Briarcliff Trail (Manhole BB1 on attached plan); miscellaneous materials encountered during excavation, including landscape elements; includes all costs of disposal; all complete and ready for use.

LUMP SUM BID PRICE

____________________________________________________

____________________________________________ Dollars ($_______________).

(Use words)                                           (figures)
ITEM No. C - 3: Cured-In-Place Pipe Lining - 8” Sewer

Install approximately 210 linear feet of 8” Cured-In-Place Pipe Lining, from SMH 1750 to Manhole A1, including cleaning and video inspection of the existing sewer; procurement, fabrication, transport and delivery of liner and appurtenances; placement, curing, inspection, testing, etc., of liner; bypass pumping, as required to maintain flow of wastewater around the construction zone, including accessing existing sewers upstream and downstream, piping, ramps, power, etc.; protection and/or relocation of other utilities; removal and disposal of demolished and unusable materials, spoil, soil, pavement, etc.; ground restoration and repair of any private property disturbed during construction; post-installation video inspection; all complete in place and ready for use.

<table>
<thead>
<tr>
<th>210 Linear Feet @ $_________</th>
<th>Equals $ ________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Price L.F.</td>
<td>Extended Amount</td>
</tr>
</tbody>
</table>

ITEM No. C - 4: 4” or 6” Gravity Sewer Lateral Reconnection

Reconnection of two (2) Sewer Laterals along the 8” sanitary sewer, as per Specification Section 02560; provision for use of laterals during the construction period; removal and disposal of demolished and unusable materials, etc.; all complete in place and ready for use.

<table>
<thead>
<tr>
<th>2 Laterals @ $_________</th>
<th>Equals $ ________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Price L.F.</td>
<td>Extended Amount</td>
</tr>
</tbody>
</table>

ITEM No. C - 5: 36” Storm Sewer

127.3 Linear Feet of 36” HDPE, Double Wall Pipe, including excavation and disposal of trench materials; furnishing and installing all pipe, connections, joint materials and other materials; connection to manholes, inlets, and existing storm sewers as required; testing; furnishing and installing bedding and backfill (Method A, per Figure 6-1, appended); all complete in place and ready for use.

<table>
<thead>
<tr>
<th>127.3 Linear Feet @ $_________</th>
<th>Equals $ ________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Price L.F.</td>
<td>Extended Amount</td>
</tr>
</tbody>
</table>
ITEM No. C - 6: 60” Storm Sewer Manholes (Greater than 6’ Depth)

Three (3) 60-inch diameter Storm Sewer Manholes (per Figure 6-4, appended) including excavation and disposal of existing materials; furnishing and installing base, riser and top sections; furnishing and installing manhole frame and lid; stub-outs, concrete bench, connecting boots and all other incidental materials; testing; furnishing and installing bedding and backfill (Method A, per Figure 6-1, appended); ground restoration; all complete in place and ready for use.

3 Each @ $_______________  Equals $ _________________

Unit Price Each  Extended Amount

ITEM No. C - 7: Safe-loading of Existing 36” Corrugated Metal Storm Sewer Pipe

Includes forming of plugs at ends of pipe to be filled; furnishing and installing all safe-loading materials; repair of existing outlets in existing manholes; ground restoration; all complete and ready for use. Note: Curing of concrete will not be required.

LUMP SUM BID PRICE____________________________________________________

_____________________________ Dollars ($_______________).

(Use words)  (figures)

TOTAL ALTERNATE “C” BID PRICE

TOTAL BID PRICE____________________________________________________

_____________________________ Dollars ($_______________).

(Use words)  (figures)

Bidders – please attach a “post-it” note or other tag to this page, in your completed bid.
Bid Form D
Furnish and Install 8” Sanitary Sewer and Furnish and Install Cured-in-Place Lining For 36” Storm Sewer Pricing to be held for 30 days after submittal is opened

ITEM No. D - 1: Mobilization & Demobilization
Includes Mobilization and Demobilization of personnel and subcontractors to site, general conditions, traffic control, Bid Bond, Performance and Payment Bond, etc., and all other costs not included in the other items under this Contract. This item will be paid 75% with the first pay application after the start of construction, and 25% with the last pay application, and includes all costs of any subsequent demobilizations and re-mobilizations as required by the project schedule.

LUMP SUM BID PRICE ____________________________ Dollars ($_______________).

(Use words) (figures)

ITEM No. D - 2: 8” Sanitary Sewer
115.2 Linear Feet of 8” PVC Sanitary Sewer Pipe, including excavation and disposal of trench materials; connection of new pipe to Manhole A1; furnishing and installing all pipe, connections, joint materials and other materials; connection to manholes and inlets as required; testing; furnishing and installing bedding and backfill (Method A, per Figure 6-1, appended); all complete in place and ready for use.

115.2 Linear Feet @ $_______________ Equals $ ______________________

Unit Price L.F. Extended Amount

ITEM No. D - 3: 48” Sanitary Sewer Manholes (Less than 6’ Depth)
Three (3) 48-inch diameter Sanitary Sewer Manholes (per Figure 6-5, appended) including excavation and disposal of existing materials; furnishing and installing base, riser and top sections; furnishing and installing manhole frame and lid; stub-outs, concrete bench, connecting boots and all other incidental materials; testing; furnishing and installing bedding and backfill (Method A, per Figure 6-1, appended); ground restoration; all complete in place and ready for use.

3 Each @ $__________________ Equals $ ______________________

Unit Price Each Extended Amount
ITEM No. D - 4: Safe-loading of Existing 8” Clay Sanitary Sewer Pipe

Includes forming of plugs at ends of pipe to be filled; furnishing and installing all safe-loading materials; repair of existing outlets in existing manholes; ground restoration; all complete and ready for use. Note: Curing of concrete will not be required.

LUMP SUM BID PRICE______________________________________________________________

____________________________________________ Dollars ($______________).
(Use words) (figures)

ITEM No. D - 5: Cured-In-Place Pipe Lining - 36” Sewer

Install approximately 101 linear feet of 36” Cured-In-Place Pipe Lining, from Existing Catch Basin BB4 to Existing Storm Manhole BB1, including cleaning and video inspection of the existing storm sewer; procurement, fabrication, transport and delivery of liner and appurtenances; placement, curing, inspection, testing, etc., of liner; bypass pumping, as required to maintain flow of wastewater around the construction zone, including accessing existing sewers upstream and downstream, piping, ramps, power, etc.; protection and/or relocation of other utilities; removal and disposal of demolished and unusable materials, spoil, soil, etc.; ground restoration and repair of any private property disturbed during construction; post-installation video inspection; all complete in place and ready for use.

101 Linear Feet @ $_______________ Equals $ _____________________
Unit Price L.F. Extended Amount

TOTAL ALTERNATE “D” BID PRICE

TOTAL BID PRICE______________________________________________________________

____________________________________________ Dollars ($______________).
(Use words) (figures)

Bidders – please attach a “post-it” note or other tag to this page, in your completed bid.
Shop Drawing / Completion Schedule:

Number of days from Award of Purchase Order to shop drawings: ________ days

Number of days from shop drawing approval to substantial completion: ________ days

Exceptions Taken to this Proposal: List any and all exceptions. (If none, check here). □

Please explain your plan for performing these repairs (attach additional sheets as needed):
SIGNATURE PAGE

Non-Collusive Bid Statement: The undersigned bidder, having fully informed himself regarding the accuracy of the statements made herein, certifies that: (1) The bid has been arrived at by the bidder independently and has been submitted without collusion with and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment, or services described in the bid, designed to limit independent bidding or competition, and (2) The contents of the bid have not been communicated by the bidder or its employees or agents to any person not any employee or agent of the bidder or its surety on any bond furnished with the bid, and will not be communicate by any such person prior to the official opening of the bid.

_________________________________
Signature of Authorized Official

____________________________
Name and Title (printed)

____________________________
Legal Name of Business

____________________________
Address

____________________________
Address

____________________________
Address

____________________________
Telephone Number

_________________________________
Date

Affix seal below if bid is by corporation.

This seal was herewith affixed in the presence of:

Signature ____________________________ Title ______________________________
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING QUALIFIED BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:
I. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, and all subcontractors therein, meets the requirements to be considered a “qualified bidder” in accordance with 200 KAR 5:410(3); and will continue to comply with such requirements for the duration of any contract awarded. Please identify below the particular “qualified bidder” status claimed by the bidding entity.

_______ A nonprofit corporation that furthers the purposes of KRS Chapter 163

_______ Per KRS 45A.465 (3), a “Qualified nonprofit agency for individuals with severe disabilities” means an organization that:

(a) Is organized and operated in the interest of individuals with severe disabilities; and

(b) Complies with any applicable occupational health and safety law of the United States and the Commonwealth; and

(c) In the manufacture or provision of products or services listed or purchased under KRS 45A.470, during the fiscal year employs individuals with severe disabilities for not less than seventy-five percent (75%) of the man hours of direct labor required for the manufacture or provision of the products or services; and

(d) Is registered and in good standing as a nonprofit organization with the Secretary of State.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of qualified bidder status. Failure to provide such documentation upon request may result in disqualification of the bidder or contract termination.

_________________________  ___________________________
Signature                  Printed Name

_________________________
Title

_________________________
Company Name

_________________________
Address

_________________________
Subscribed and sworn to before me by ______________________ this _____ day of _________________, 2018.

_________________________
Notary Public

_________________________
My Commission Expires

[Seal of Notary]

Check this box if not claiming Qualified Bidder Status ☐
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS
CLAIMING RESIDENT BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:

The bidder or offeror hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the entity bidding is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:

1. Is authorized to transact business in the Commonwealth;
2. Has for one year prior to and through the date of advertisement
   a. Filed Kentucky corporate income taxes;
   b. Made payments to the Kentucky unemployment insurance fund established in KRS 341.49; and
   c. Maintained a Kentucky workers’ compensation policy in effect.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

__________________________________________  ______________________________________
Signature                                      Printed Name

__________________________________________  ________________________________
Title                                           Date

__________________________________________  ________________________________
Company Name                                    Address

Subscribed and sworn to before me by ____________________________ this _____ day of
________________________, 2018.

__________________________________________  ________________________________
Notary Public                                   My Commission Expires

[Seal of Notary]

Check this box if not claiming Resident Bidder Status  [ ]
STATEMENT REQUIRED PURSUANT TO KRS 45A.395
NON-COLLUSIVE AFFIDAVIT OF PRIME BIDDER

State of_________________________
County of_______________________

_______________________________, being first duly sworn, deposes and says that:

1. He or she is the owner, partner, officer, representative, or agent of
   __________________________________, the Bidder that he or she has submitted the
   attached bid;
2. He or she is fully informed respecting the preparation and contents of the attached
   Bid and of all pertinent circumstances respecting such Bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidder nor any of its officers, partners, owners, agents, 
   representatives, employees or parties in interest, including this affiant, has in any 
   way colluded, conspired, connived or agreed, directly or indirectly, with any other 
   Bidder, firm or person to submit a collusive or sham Bid in connection with the 
   Contract for which the attached bid has been submitted or to refrain from bidding in 
   connection with such Contract, or has in any manner, directly or indirectly, sought by 
   agreement or collusion or communication or conference with any other Bidder, firm 
   or person to fix the price or prices in the attached bid or of any other bidder, or to fix 
   any overhead, profit or to secure through any collusion, conspiracy, connivance or 
   unlawful agreement any advantage against the Henderson Water Utility, the City of 
   Henderson or any person interested in the proposed Contract: and
5. The price or prices quoted in the attached bid are fair and proper and are not tainted 
   by any collusion, conspiracy, connivance, or unlawful agreement on the part of the 
   Bidder or any of its agents, representatives, owners, employees, or parties in interest, 
   including this affiant.

______________________________
Signed

______________________________
Title

Subscribed and sworn to before me this
   _____day of __________________, 2018.

______________________________
My commission expires _____________
Title
TECHNICAL SPECIFICATIONS
FOR THE BRIARCLIFF TRAIL
SEWER REPAIR/RELOCATION PROJECT

A. GENERAL

1. SCOPE OF WORK

This request is for a proposal to furnish and install cured in place lining, or new piping, for an 8” sanitary sewer and a 36” storm sewer at 3013 Briarcliff Trail for the Henderson Water Utility, Henderson, Kentucky. The project is being bid with four alternative strategies that line or replace each utility pipe, making four combinations of bids:

- **Bid A**: Move both the Storm and Sanitary lines.
- **Bid B**: Line Storm and Sanitary and leave in existing locations.
- **Bid C**: Move Storm, line Sanitary.
- **Bid D**: Move Sanitary, line Storm.

Each bid item should include any delivery fees, handling fees, fuel surcharges, or any other fees/charges associated with the purchase, delivery and installation of the product.

If the total construction contract amount (bid) awarded is an amount in excess of twenty-five thousand dollars ($ 25,000), a Performance bond and a Payment bond shall be furnished. Performance and Payment bonds shall be in an amount equal to one hundred percent (100%) of the contract price.

Bid security (bid bond) in an amount equal to five percent (5%) of the amount of the bid shall be furnished for all bids. If the successful low bidder fails or refuses to execute the contract and bonds required within ten (10) days after notice of acceptance of his bid, he shall forfeit to the Owner as liquidated damages the bid security submitted with his bid.

If the work is not completed within the time specified, liquidated damages in the amount of $ 1,000 per week shall be deducted from the compensation due the contractor.

2. SUBMITTALS (Shop Drawings)

The Vendor shall submit to the Engineer a minimum of three copies of information describing and depicting the details of the equipment, controls, materials and/or services to be provided, hereinafter referred to as “shop drawings.” After approval, the Engineer will distribute the shop drawings as follows: two sets to Owner’s central files, and one set to the Vendor. If the Vendor requires more copies, specify that at the time of submittal; the Engineer will review up to five sets of each shop drawing submittal.

Shop drawings shall be submitted no later than 30 days after the purchase order date.

Rejection of the same shop drawings on three separate occasions shall constitute grounds for total rejection of the proposed vendor as being unable or unwilling to meet the requirements of this request for proposals.
Shop drawings for the equipment and materials described in this Request for Proposals must show, as a minimum, the following information:

a. Manufacturer’s cut sheets or other detailed product information.
b. Detailed dimensional drawings of each valve and fitting.
c. Detailed description of materials of construction and applicable standards.

3. MATERIAL TO BE OBTAINED FROM THE CONTRACTOR

The Bidder shall provide all items named in this Request for Proposals or so noted on the Purchase Order and such incidental items as may be required for the safe and proper installation and operation of the materials and equipment furnished for the purpose(s) intended.

The Vendor shall provide all gaskets, bolts, and other miscellaneous items required to install the material described in this Request for Proposals.

Equipment or materials offered contrary to the provisions of this Paragraph will be subject to rejection.

4. TRANSPORT AND DELIVERY

Transport and handle items using equipment and methods that prevent damage to the coating. Deliver pipe adequately stored on timbers or pallets. Valves, gaskets, fittings and small parts shall be delivered on pallets, and shall be boxed, shrink-wrapped, or otherwise protected from weather and loss.

Repair minor damage to exterior and interior coatings as the Engineer directs before pipe installation. Significant damage due to improper procedures for packing and handling of pipe and other materials will be reason for rejection.

5. MATERIALS OR EQUIPMENT TO BE FURNISHED (“OR EQUAL” CLAUSES)

Where the specifications state "equal to" followed by a brand name or model, a standard of quality is being set. The naming of a brand or model is a matter of convenience to avoid writing a volume. Other brands or equipment under this category may be submitted. The Engineer will consider other products on the basis of materials of construction, weight, function, size (it must fit the space provided), service history and electrical and mechanical characteristics.

Where the specifications state one or more model numbers and manufacturers followed by the words "or approved equal" the meaning is that the product(s) specified is acceptable and that while there may be other products that are acceptable the only way to be assured is to submit the desired substitution during the BID PROCESS and receive an affirmative answer. The Engineer will consider the factors previously described in making the determination.

Unless otherwise specified, all materials shall be the best of their respective kinds and shall be in all cases fully equal to approved samples. The Engineer shall have the right to require the use of such specifically designated material, article, or process. The Engineer, where practical, may require submission of actual samples of materials or products.

6. SAFETY
All work shall be carried out in accordance with all applicable rules and regulations of the Kentucky Labor Cabinet, Division of Occupational Safety and Health, and HWU Safety Policies.

7. PRODUCT DELIVERY, STORAGE AND HANDLING

Care shall be exercised in transporting and handling to avoid damage to pipe and fittings, and all appurtenances. Materials shall be stored in an enclosure or under protective coverings if required by the engineer to prevent damage. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris.

Contractor shall be responsible for all materials furnished and shall replace at his own expense all materials found defective in handling after delivery. Contractor shall report to HWU immediately upon finding defects in any material supplied by HWU. Contractor shall furnish all materials and labor required for replacement of installed materials discovered defective or damaged.

HWU reserves the right to reject any materials that do not comply with these standards.

8. NOTIFICATION

The Contractor shall give the Owner or Owner’s representative a minimum of 48-hour notice before starting construction. Where a public roadway must be closed, notify all safety agencies and the general public in accordance with local and state regulations. Where a private driveway must be closed, provide the resident a minimum 48-hours’ notice. Maintain continuous access to residential private driveways to the maximum extent possible.

9. INSPECTION

The Owner’s Engineer shall make periodic observations during construction to provide final certification that the improvements were installed in conformance with HWU standards and the approved construction drawings. In addition to observation by the Engineer, a final inspection will be made prior to putting the facilities in service. Final inspection will be made prior to acceptance of any facilities and only after all construction is complete. The Contractor shall provide labor and materials as required to complete the punch list developed during final inspection. Access to the construction site and construction records shall be provided to inspectors at all times.

B. MATERIALS

1. HDPE PIPE

HDPE pipe shall have annular exterior corrugations with an integrally formed smooth interior wall. The pipe shall have a full circular cross-section. Pipe shall be joined using a water-tight bell and spigot joint meeting the requirements of ASTM F2881 or AASHTO M330. Gaskets shall meet the requirement of ASTM F477.

The pipe shall comply with the requirements for test methods, dimensions and markings found in AASHTO Specification M252 and M294. Pipe joints and fittings shall be of the same stiffness as the pipe. Gaskets shall be manufactured in accordance with ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during
assembly. 12- through 60-inch diameter pipes shall have an exterior bell wrap installed by the manufacturer.

Fittings shall conform to ASTM F2881 or AASHTO M330. Bell and spigot connections shall utilize a welded or integral bell and valley or inline gaskets meeting the watertight joint performance requirements of ASTM D3212.

Pipe and fittings shall be ADS N-12, double wall pipe, or approved equal.

2. MANHOLES

   a. Reinforced concrete manholes shall conform to ASTM C-478. The minimum inside diameter, except for the eccentric cone, shall be 48". Xypex admixture shall be used in all precast sanitary manholes but is not required for storm manholes. Manhole joints shall consist of "O" ring type conforming to ASTM 443 or 1-1/2" wide strip of "Kent Seal" bituminous mastic strip with non-shrink grout on the inside.

   b. Precast manhole bases shall conform to ASTM C-478 with a steel finish flowline channel and ledge. A chemical resistant rubber compression diaphragm will be precast into the manhole wall for every pipe entering the manhole. The diaphragm shall meet ASTM C-923. Poured in place manholes will use 3,500 psi concrete. Precast manhole base bedding shall be No. 5 crushed stone or Dense Graded Aggregate conforming to KYTC Specifications.

   c. Heavy duty manhole castings shall be traffic type of grey cast iron, East Jordan Iron Works part number 00102494 or Neenah foundry part number 1015T41, or approved equal, all meeting ASTM A48 Class 35. Frames shall be attached to the manhole barrel by four, 5/8-inch anchor bolts and shall be set in a bed of mastic to provide a watertight seal between the barrel and frame. Unless indicated as watertight, manhole covers shall be of the solid, self-sealing type, with no holes except watertight pick notches. The surface between the frame and cover shall fit smoothly without rocking. Top of casting shall be level with pavement or sidewalk, and shall be a minimum of 1" above finished ground line in non-paved areas.

   d. Manholes shall not have steps.

3. FLOWABLE FILL (FOR SAFELOADING PIPE)

Materials, placement, finishing and testing shall conform to the KYTC Standard Specifications, current edition. Digable Flowable Fill shall obtain an average compressive strength of 50 to 100 psi in 28 days. Non-Digable Flowable Fill shall obtain a minimum compressive strength of 250 psi in 28 days.

**Flowable Fill for Pipe Backfill:** Proportion as follows, per cubic yard batch:

<table>
<thead>
<tr>
<th>Material</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>30 pounds</td>
</tr>
<tr>
<td>Fly Ash, Class F</td>
<td>300 pounds</td>
</tr>
<tr>
<td>Natural Sand (S.S.D.)</td>
<td>3,000 pounds</td>
</tr>
<tr>
<td>Water (Maximum)</td>
<td>550 pounds</td>
</tr>
</tbody>
</table>
4. PVC PIPE
   
a. All PVC pipe for gravity sewer lines shall conform to ASTM D-3034 and ASTM F-679, and shall be SDR-35 or greater wall thickness.

b. The chemical resistance of the pipe and fittings shall be tested in accordance with ASTM D-543.

c. All fittings shall be of the same material as the pipe and shall be consistent in strength, dimensions, and utility. Adaptors shall be provided for transitions to other pipe products.

d. Pipe joints are to be made using an integral bell with elastomeric gasket and according to manufacturer’s recommendations. Push-on joints shall form a watertight seal and lubricants shall be non-toxic and compatible with the gasket and pipe material.

e. Each length of pipe and fittings shall have the following information plainly marked on the pipe exterior: Nominal size; SDR or Class; type of material; manufacturer; NSF seal of approval. Pipe shall be furnished in standard fourteen-foot (14’) lengths.

C. INSTALLATION

1. TRENCH EXCAVATION

   Trenching shall be accomplished as described hereinafter. All excavation is “unclassified” and no additional payment will be made for rock excavation.

   Unless otherwise directed by the Engineer, trenches in which pipes are to be laid shall be excavated in open cut to the depths shown on the plans. Excavation in earth shall undercut the pipe to a depth below the required invert elevation that will permit laying the pipe in a bed of granular material to provide continuous support for the bottom quadrant of the pipe. The bedding shall be as set out hereinafter.

   Trenches shall be of sufficient width to provide free working space on each side of the pipe and to permit backfilling around the pipe, but unless specifically authorized by the Engineer, trenches shall in no case be excavated or permitted to become wider than 2 feet 6 inches plus the nominal diameter of the pipe at the level of or below the top of the pipe. If the trench does become wider than 2 feet 6 inches at the level of or below the top of the pipe, special precautions may be necessary, such as providing compacted, granular fill up to top of the pipe or providing the pipe with additional crushing strength as determined by the Engineer after considering the actual trench loads that may result and the strength of the pipe being used. The Contractor shall bear the cost of such special precautions as are necessary.

   Prior to excavating the trench, Contractor shall pothole far enough ahead to reveal obstructions that may necessitate changing the line or grade of the pipeline, to avoid delays or the addition of avoidable fittings. Before laying the pipe, the trench shall be opened far enough ahead to reveal obstructions that may necessitate changing the line or grade of the pipeline.

   Unless specifically directed otherwise by the Engineer, not more than 100 feet of trench shall be opened ahead of pipe laying work of any one crew, and not more than 100 feet of open ditch shall be left behind the pipe laying work of any one crew. Watchman or barricades,
lanterns and other such signs and signals as may be necessary to warn the public of the danger of open trenches, excavation and other obstructions, shall be provided by and at the expense of the Contractor. Conformance to all state highway requirements shall be the responsibility of the Contractor when encroachment on state right-of-way is necessary.

When directed by the Engineer, only one-half of street crossings and road crossing shall be excavated before placing temporary bridges over the side excavated for the convenience of the traveling public. All backfilled ditches shall be maintained in such a manner that they will offer no hazard to the passage of traffic. The convenience of the traveling public and property owners abutting shall be taken into consideration. All public or private drives shall be taken into consideration and shall be promptly backfilled or bridged at the direction of the Engineer. Disposal of excavated materials shall cause as little interference with the work as possible, and in every case the disposition of materials shall be satisfactory to the Engineer. Trenches in which pipes are to be laid shall be excavated in open cut to the depths shown on the approved plans, cut sheets or as specified by the Engineer.

Where conditions exist that may be conducive to slides or cave-ins, proper and adequate sheeting, shoring and bracing shall be installed to provide safe working conditions and to prevent damage to work. Trenches shall be kept free of water during the laying of the pipe and until the pipeline has been backfilled. All excavation shall be in accordance with OSHA and/or KOSHA regulations. Where a trench box is used, the excavation shall be made such that the box rests on undisturbed soil fully above the top of the installed pipe to a maximum of two (2) feet or the maximum allowed by other regulation, whichever is less; to avoid disturbing the pipe bedding when the box is pulled forward. Where sheeting or shoring is used, it shall be fully removed with the completion of backfilling unless otherwise approved in writing by HWU. Adequate and proper shoring of all excavations shall be the entire responsibility of the Contractor.

Dewatering of trenches shall be considered a part of trenching, at no extra cost to the Owner. Dewatering of trenches shall include ground water and storm or sanitary sewage. Suitable pumping and other dewatering equipment are to be provided by the Contractor, to insure the installation of the pipeline structure in a dewatered trench and under the proper conditions. Dewatering shall include all practical means available for prevention of surface runoff into trenches and scouring against newly laid pipe. Discharge water from dewatering operations shall be suitably handled and/or treated to prevent the discharge of sediment or other pollutants to storm sewers or waterways.

Wherever pipelines are in, or cross, driveways and streets, the Contractor shall be responsible for any trench settlement which occurs within these right-of-ways within one (1) year from the time of final acceptance of the work. If paving shall require replacement because of trench settlement within this time, it shall be removed and/or replaced by the Contractor at no extra cost to the Owner. Repair of settlement damage shall meet the approval of the Engineer, and the agency having jurisdiction over the roadway.
2. LAYING OF PIPE

2.1 Laying Requirements

All pipe shall be laid to lines, cover or grades shown on the Drawings.
All pipe shall be visually inspected for cleanliness, soundness and proper jointing.
All pipe shall be laid with: Proper alignment; evenness of width and depth of joints; perfection in jointing; and care of the pipe in handling.
The allowable pipe deflection at joints shall not exceed one-half the manufacturer’s allowed deflection.
Precautions must be taken to prevent flotation of the pipe prior to putting the pipeline into operation.
In wet, yielding or mucky locations where pipe is in danger of sinking below grade or floating out of grade or alignment, or where the backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective.
A manhole will be required at the termination of any line installation, except for those that terminate at inlets.
No pipe shall be laid resting on solid rock, blocking or other unyielding objects. Jointing before placing in the trench and subsequent lowering of more than one section jointed together will not be allowed.
When locating near water lines, the horizontal separation between water and sewer lines should be at least 10 feet measured from the outside edge of each pipe wall. Should location conditions prevent a horizontal separation of 10 feet, HWU may allow a deviation on a case-by-case basis. Such deviation may be allowed if the sewer is laid in a separate trench or if it is laid in the same trench with the water main located at one side on a bench of undisturbed earth. In either case, the elevation of the crown of the sewer must be at least 18 inches below the bottom of the water main.
Whenever sewer lines must pass below water mains, the sewer lines shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. Should location conditions prevent the sewer line from being buried to meet the above requirements, HWU may allow a deviation on a case-by-case basis.

2.2 PIPE BEDDING

Standard Bedding – Sewer pipe shall, as a standard practice, be laid using bedding of No. 9 crushed limestone that shall be placed a minimum depth of four-inches (4”) below the bottom of the pipe barrel.
In no case shall the pipe be supported directly on solid rock. When rock is encountered in the trench bottom, bedding shall consist of size #9 crushed limestone only.
2.3 SPECIAL PIPE BEDDING - UNSTABLE SOILS

Unstable soils shall be stabilized by over excavating to allow a bedding of #3 crushed stone below the 4” of #9 crushed stone bedding.

All bore pits and any over digging related to such shall be stabilized with #3 stone and backfilled with #9 stone to sub-grade.

2.4 INSTALLATION AND JOINTING

Jointing of HDPE pipe shall be accomplished in accordance with the manufacturer’s specifications.

Pipe shall not be laid in water or upon frozen sub grade at any time or condition when, in the opinion of the Engineer, conditions are unsuitable.

2.5 BACKFILLING

Backfilling of pipeline trenches shall be accomplished in accordance with the details set forth hereinafter. Backfill is not a separate pay item, but shall be included in the unit price for the various types of pipes and structures included in the work.

In all cases walking or working on the completed pipelines, except as may be necessary in tamping or backfilling, will not be permitted until the trench has been backfilled to a point one foot (1’) above the top of the pipe. The filling of the trench and compaction of the backfill shall be carried on simultaneously on both sides of the pipe in such a manner that the completed pipeline will not be disturbed and injurious side pressures do not occur. The methods of backfilling shall be as follows:

Method “A” - Backfilling in Open Terrain (see Figure 6-1 Appended):

The lower portion of the trench, from the bottom of the trench to a point six (6) inches above the top outside surface of the pipe, shall be backfilled with #9 stone.

The upper portion of the trench above the #9 stone shall be backfilled with material which is free from large rock. Incorporation of rock with any individual piece having a volume exceeding eight (8) cubic inches is prohibited. Backfilling this portion of the trench may be accomplished by any means approved by the Engineer, but the incorporation of unsuitable material (trash, large rock) is prohibited. The trench backfill may be heaped over the top of the trench or leveled as directed by the Engineer.

Method “B” - Backfilling Under Sidewalks and Unpaved Driveways (see Figure 6-2 Appended):

The lower portion of the trench to a point six inches (6") above the top of the storm sewer pipe shall be backfilled with No. 9 crushed stone.

The upper portion of the trench, from the top of the #9 stone to the finished surface, shall be backfilled with dense graded aggregate, placed in six-inch (6") lifts and compacted with a plate compactor or other approved method.

Method “C” - Backfilling Under Streets, Roads and Paved Driveways (see Figure 6-3 Appended):
The lower portion of the trench to a point six inches (6") above the top of the storm sewer pipe shall be backfilled with No. 9 crushed stone or fine gravel.

The upper portion of the trench, from the top of the #9 stone to the base of the asphalt or concrete pavement, shall be backfilled with dense graded aggregate, placed in six-inch (6") lifts and compacted with a plate compactor or other approved method. If bituminous base is not placed immediately when the trench is backfilled, place stone or other approved material to the level of the existing pavement. At such time that pavement replacement is accomplished, any excess base course shall be removed and disposed of as required.

Before final acceptance, the Contractor will be required to level off all trenches or to bring the trench up to grade. The Contractor shall, at his expense, also remove and legally dispose of all excess earth or other materials from roadways, right-of-ways and/or private property. Hazardous materials shall be handled and disposed of in accordance with all local, state and federal requirements.

Flowable fill shall be allowed as an alternate method for backfilling of utility cuts and trenches, with approval of the Engineer.

2.6 CONCRETE CRADLE ANCHORS, THRUST BLOCKS OR ENCASEMENTS

Concrete cradle, anchors or encasement of sewer lines and/or fitting shall be placed where shown on the plans, required by the specifications, or as directed by the Engineer. Concrete shall be 2,500 psi and shall be mixed sufficiently wet to permit it to flow under the pipe to form a continuous bed. In tamping concrete, care shall be taken not to disturb the grade or line of the pipe or injure the joints.

2.7 SAFELOADING ABANDONED UNDERGROUND STRUCTURES

When safeloading, either completely fill the designated areas with grout in such a manner to make them safe from collapse or fill the designated area with flowable fill. Mix flowable fill according to KYTC Standards. Furnish grout consisting of one part cement or cement with fly ash to 6 parts mortar sand or concrete sand, by volume, and water. Mix to a workable consistency.

2.8 CURED-IN-PLACE PIPE (CIPP) LINING

Furnish and install Cured in Place Pipe Lining (CIPP), including all items and appurtenances, and miscellaneous work necessary to complete work shown or specified. Work shall conform to ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube. Conform to Section 02560 CIPP Lining, attached.
3. OTHER ITEMS OF WORK

3.1 GRADING, SEEDING AND MULCHING

Grade ditches around catch basins to drain as per the plans. Contractor shall be responsible for filling all low spots in trenched areas for a period of one year from substantial completion.

Unless otherwise specified by the Engineer, all graded areas shall be left smooth and sown with a mixture of grasses at a rate of not less than 100 pounds per acre. Seed mixture shall be as shown below. When final grading has been completed, the area to be seeded shall be fertilized with number 12-12-12 fertilizer at a rate of 1000 lbs. per acre. After the fertilizer has been distributed, the Contractor shall disc or harrow the ground to thoroughly work the fertilizer into the soil. The seed shall then be broadcast either by hand or by approved sowing equipment. After the seed has been distributed, the contractor shall then lightly cover the seed by use of a drag or other approved device. All seed shall be certified. The seeded area shall then be mulched with clean, weed-free straw to a depth of approximately 2 inches. Any necessary reseeding or repairing shall be performed by the contractor prior to final acceptance.

Seed mixture for permanent seeding shall consist of the following:

a. 30% Kentucky 31 Tall Fescue (Festuca arundinacea)
b. 20% Creeping Red Fescue (Festuca rubra)
c. 35% Hard Fescue (Festuca longifolia)
d. 10% Ryegrass, Perennial (Lolium perenne)
e. 5% White Dutch Clover (Trifolium repens)

3.2 EROSION CONTROL

Contractor shall control water pollution through use of best management practices that limit eroded sediment leaving the site and shall coordinate these measures with the construction schedule to ensure effective and continuous erosion control throughout the construction and post construction periods. If more than 1 acre is disturbed during construction, Contractor shall apply for and maintain an NOI from the Kentucky Division of Water and from HWU.

Before any disturbance is made, perform an initial site inspection with the Engineer, record what areas are to be disturbed, submit an erosion and sediment control plan showing what BMPs will be used, design BMPs according to good engineering practices, and install the designated BMPs. Before opening or affecting any new areas, repeat this process and ensure all BMPs are installed before starting work.

Erosion control measures shall include the following:

(i.) Soil stabilization shall be initiated within fourteen (14) days of clearing or inactivity in construction.
(ii.) If seeding or another vegetative erosion control method is used, adequate temporary erosion control shall be provided until permanent cover is established.
(iii.) Techniques shall be employed to prevent the blowing of dust or sediment from the site.
Construction site access requirements shall include:

(i.) Approved temporary access entrance(s) provided at all sites.
(ii.) Other measures necessary to ensure that sediment is not tracked onto public streets by construction vehicles or washed into storm drains.

Other requirements include:

(i.) Trash control.
(ii.) Contained washout facility for concrete trucks.

3.3 EXISTING UTILITIES

Special precautions shall be taken by the Contractor to avoid damage to existing overhead and underground utilities owned and operated by the City or by public or private utility companies.

Where existing utilities or appurtenant structures, whether underground or aboveground are encountered, they shall not be displaced or disturbed unless necessary, and in such cases shall be replaced in as good or better condition than found as quickly as possible.

The Contractor shall bear the entire responsibility for locating, avoiding or repairing damage to said existing utilities. No work shall be performed prior to contacting Kentucky 811 and existing underground utilities being located and marked. Contractor is responsible for contacting utilities that do not subscribe to Kentucky 811.

3.3 BYPASS PUMPING

Construct and maintain all temporary bypass systems and be responsible for all bypass pumping of sewage that may be required to prevent backing up of sewage and allow proper installation, inspection, rehabilitation, testing or drainage during sewer replacement or reconnections to existing sewers. Ensure that no damage will be caused to private property because of bypass pumping operations. Primary bypass pumps shall be critically silenced when used in residential settings or areas where excessive noise levels would create a disturbance.

Where no alternate sanitary sewer route is available or when twenty-four hours of storage is not feasible, redundant bypass pumping shall be installed.

The design, installation, and operation of the temporary pumping system shall be the Contractor’s responsibility. The Contractor shall demonstrate or employ the services of a subcontractor who can demonstrate to the Engineer that he specializes in the design and operation of temporary bypass pumping systems.

The Contractor may be required to provide on-site manual oversight of all bypass pumping operations 24 hours per day, 7 days per week when the bypass pumping system is in operation. To the maximum extent possible, Contractor shall phase and coordinate his work so as not to require bypass pumping overnight.

In the event that sewage accidentally discharges into the separate storm sewer system or street, immediately stop the overflow, notify the Engineer, and take the necessary
action to clean up and disinfect the spillage and all residual contamination to the satisfaction of the Engineer. If sewage is spilled onto public or private property, wash down, clean up and disinfect the spillage and all residual contamination to the satisfaction of the Engineer.

Locate bypass pumping suction and discharge lines to not cause interference with the use of streets, private driveways and alleys. In cases where the suction and or discharge lines are required to be buried for vehicle / pedestrian traffic, cost for this work is incidental and includes complete restoration of any surface features disturbed.

Arrange for alternate methods of sewage disposal if individual services will be interrupted for more than 24 hours. Protect private property from backups and property damage.

Notify adjacent property owners, in writing, of disruption to service. Written notice shall be delivered the day prior to the beginning of work, and a local telephone number of the Contractor shall be included. Contractor shall personally contact any home or business which cannot be reconnected within the time stated in the written notice.

When bypass pumping operations are located on any street, the Contractor shall be responsible for erecting and maintaining Traffic Control devices for vehicular and pedestrian traffic. Submit a Traffic Control plan, at least seven days prior to beginning work at the site. This plan should delineate roads to be closed, speed restrictions, locations of signs and barricades, and sidewalk closures, in a clear and concise format, for use by the Contractor in obtaining City approval of the road closures and traffic restrictions.

Protect open excavations or manholes by use of barricades, fences, etc., from access by the public, small animals and children.

Protect bypass lines which cross open driveways, alleys or streets from traffic through the use of ramps or devices that allow passenger vehicles and light trucks to cross without damage to the bypass line or the vehicle.

Removal: When construction is complete, remove bypass piping and restore pavement and other improvements to their original condition or better.

Damages: Contractor shall clean and repair any damage that may result from his negligence, inadequate or improper installation, maintenance, and operation of the bypassing and flow control system, including mechanical or electrical failures, at his cost.
4. FIELD QUALITY CONTROL

After the lines or system have been brought to completion, and prior to final inspection, the Contractor will be required to clean all dirt, debris and trash from lines and manholes.

During the final inspection, the Engineer will inspect each individual line, from manhole to manhole, either by use of lights or other means at his/her disposal to determine whether the completed lines are true to line and grade as laid out or as shown on the plans.

4.1 TESTING REQUIREMENTS

All lines or sections of lines that are found to be laid improperly with respect to line or grade, that are found to contain broken or leaking sections of pipe or are obstructed in such a manner that they cannot be satisfactorily corrected otherwise, shall be removed and replaced.

Flexible pipe (PVC and HDPE) shall be lamp tested not less than 30 days after completion of installation and shall not be allowed to show more than 5% deflection.

4.2 MANHOLE TESTING

All manholes shall be subjected to a vacuum test in accordance with ASTM C1244, except as specified otherwise herein. Other forms of testing of some manholes may be required, as deemed necessary by the Owner.

Manholes shall be tested after installation with all connections in place and shall include testing of the seal between the cast iron frame and the concrete cone, slab or grade rings. Plug pipe openings; securely brace plugs and pipe.

A vacuum of at least ten inches of mercury (10" Hg) shall be drawn on the manhole. Shut the valve on the vacuum line to the manhole and shut off the pump or disconnect the vacuum line from the pump.

The manhole shall be considered to pass the vacuum test if the vacuum reading does not drop more than 1" Hg (i.e. from 10" Hg to 9" Hg) during the following minimum test times.

<table>
<thead>
<tr>
<th>Minimum Test Times for Various Manhole Diameters</th>
</tr>
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<tbody>
<tr>
<td>MH Depth (feet)</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>15 Feet or less</td>
</tr>
<tr>
<td>15.01 to 30 Feet</td>
</tr>
</tbody>
</table>

When vacuum drop is greater than 1 inch of Hg during test period, repair and retest manhole; when vacuum drop of 1 inch of Hg does not occur during test period, discontinue test and accept manhole.

When vacuum test exceeds 1-inch Hg drop in specified time after initial repair, repair and retest manhole repeatedly until test is passed.
Section 02560 - CURED-IN-PLACE PIPE (CIPP) LINING

Part 1 – General

1.1 DESCRIPTION
A. Scope: Furnish and install Cured in Place Pipe Lining (CIPP), including all items and appurtenances, and miscellaneous work necessary to complete work shown or specified.
B. Codes, specifications and standards referred to by title or number in this specification shall be adhered to, and the latest revisions shall apply in all cases.
C. Related Work Specifications in Other Sections
   1. Section 02531 – Sanitary Sewer Bypass Pumping
D. Definitions
   1. Abbreviations
      a. ANSI American National Standards institute
      b. ASTM American Society for Testing & Materials
      c. AWWA American Water Works Association

1.2 REFERENCES
A. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

1.3 SUBMITTALS
A. Submittals shall be as specified below and as in the ITB, Conditions and Bid Form. The Schedule of Submittal Requirements is attached to the end of this section.
B. Product Data:
   1. Manufacturer's literature for materials used in liner.
   2. Design calculations for structural properties of liner subject to conditions and constraints specified herein.
C. Miscellaneous Submittals:
   1. Video tape of pipe condition before and after installation of CIPP.
   2. Test results and certification of compliance for materials.
   3. Manufacturer's design analysis.
   4. Proposed plan for bypassing sewage during liner installation (see Section 02531, Sewer Bypass Pumping).
   5. Method of reconnecting service laterals.
D. Testing and inspecting services are required to verify compliance with requirements specified or indicated. Specified tests, inspections, and related actions do not limit Contractor’s quality control procedures that facilitate compliance with the Contract Document requirements.
E. Reports: Prepare and submit certified written reports that include a description of the tests and inspections performed, complete test data, tests and inspections results, and recommendations for retesting or re-inspecting. For permits, licenses and certificates

CURED-IN-PLACE PIPE LINING
02560-1
provide copies for Owner’s records, where required for compliance with standards and regulations bearing on performance of the Work.

1.4 QUALITY ASSURANCE
A. Corrosion: Fabricate finished liner from materials which, when cured, will be chemically resistant to withstand internal exposure to domestic sewage, liquids and gases.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING
A. The Contractor shall be responsible for the delivery, storage and handling of products.
B. Keep stored products safe from damage or deterioration. Keep the interior of pipe, fittings and appurtenances free from dirt or foreign matter. Store products, which deteriorate in sunlight, in a cool location out of direct sunlight.
C. Promptly remove damaged products from the job site and replace with undamaged products at no cost to the owner.

1.6 EROSION CONTROL & DUST AND NOISE CONTROL
A. Temporary and permanent erosion control measures shall be used during the life of the Contract to control water pollution, soil erosion, and siltation. Silt fencing and temporary seeding shall be used as mitigation measures. The Owner has the authority to limit the surface area of erodible earth exposed by excavation, borrow, and fill operation, and to direct the Contractor to provide immediate permanent and temporary erosion control measures to minimize contamination of adjacent streams or watercourses, lakes, ponds or other areas of water impoundment.
B. Contractor shall submit erosion control plans, where required, to local authorities having jurisdiction for review and approval of such plans. Submit copies to the Engineer.
C. Dust shall be minimized by use of water and salts. Noise shall be minimized by the use of properly constructed and maintained equipment provided with suitable mufflers and other sound attenuating devices, supports and enclosures.

Part 2 – PRODUCTS

2.1 GENERAL
A. The CIPP lining system includes the insertion of a resin-impregnated, flexible, fabric tube through existing pipe, and subsequently curing the resin by circulating hot water or steam inside the tube to form a tight-fitting, cured-in-place liner. CIPP system shall be Insituform, or approved equal.

2.2 LINER
A. Materials:
   1. Tube - The sewn tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216 Section 5.1, ASTM F1743, Section 5.2.1, or ASTM D 5813 Sections 5 & 6. The tube shall be constructed to
withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.

a. The wet out tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the Design thickness.
b. The tube shall be sewn to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion. Overlapped layers of felt in longitudinal seams that cause lumps in the final product shall not be utilized.
c. The outside layer of the tube (before wet out) shall be coated with an impermeable, flexible membrane that will contain the resin and allow monitoring of resin saturation during the resin impregnation (wet out) procedure.
d. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the Tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.
e. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.
f. Seams in the tube shall be stronger than the non-seamed felt.
g. The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed five feet. Such markings shall include the Manufacturers name or identifying symbol. The tubes must be manufactured in the United States.

2. Resin - The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured within the tube composite meets the requirements of ASTM F1216 and ASTM F1743, and the physical properties which are to be utilized in the design of the CIPP for this project. The resin shall produce CIPP which will comply with the structural and chemical resistance requirements of ASTM F1216.

B. Structural Requirements

1. The CIPP shall be designed as per ASTM F1216, Appendix X.1. The CIPP design shall assume fully deteriorated pipe.

2. The Contractor must have performed long-term testing for flexural creep of the CIPP pipe material to be installed. Such testing results are to be used to determine the Long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (tube and resin) and general workmanship of the installation and curing. A percentage of the instantaneous flexural modulus value (as measured by ASTM D-790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Values in
excess of 50% will not be applied unless substantiated by qualified third party test data. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in Design.

3. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occurs during testing of field samples, new samples will be cut from the work. Any reoccurrence may cause rejection of the work.

4. The cured pipe material (CIPP) shall conform to the structural properties, as listed below. The required structural CIPP wall thickness shall be based as a minimum, on the physical properties in Section 5.5 and in accordance with the Design Equations in the appendix of ASTM F 1216, and the following design parameters:

<table>
<thead>
<tr>
<th>Design Safety Factor</th>
<th>2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater Depth, Assumed</td>
<td>Saturated to Surface</td>
</tr>
<tr>
<td>Soil Depth</td>
<td>See Plans</td>
</tr>
<tr>
<td>Soil Modulus</td>
<td>700 Psi</td>
</tr>
<tr>
<td>Soil Density</td>
<td>120 pcf</td>
</tr>
<tr>
<td>Live Load</td>
<td>H20 Highway</td>
</tr>
<tr>
<td>Design Condition</td>
<td>Fully Deteriorated</td>
</tr>
</tbody>
</table>

5. The minimum fully cured design CIPP liner thickness shall be as follows:

<table>
<thead>
<tr>
<th>Minimum CIPP Liner Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Diameter (inches)</td>
</tr>
<tr>
<td>48</td>
</tr>
<tr>
<td>36</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>24</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>10 or less</td>
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</tbody>
</table>

6. Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

CURED-IN-PLACE PIPE LINING
02560-4

Briarcliff Trail Storm Sewer Repair
7 November 2018
C. Testing Requirements  
1. Chemical Resistance - The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements.  
2. Hydraulic Capacity - Overall, the hydraulic profile shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.  
3. CIPP Field Samples - When requested by the Owner, the Contractor shall submit test results from field installations in the USA of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified in Section 2.2.B.5 have been achieved in previous field applications. Samples for this project shall be made and tested as described in Section 3.4.C.2.

2.3 FABRICATION  
A. Fabricate liner to size that when installed, will neatly fit internal circumference of pipe. Allowance shall be made for circumferential stretching during insertion. Contractor shall determine actual circumference of pipes to be lined including sections where deterioration may have increased the internal circumference.  

Part 3 – INSTALLATION  

3.1 INITIAL EXAMINATION  
A. Televise condition of pipe interior before starting work; provide DVD format video to Engineer.
B. Take photographs before commencement of construction of all surrounding property, driveways, landscaping, yards, utilities, etc., as required by section 3.6 below.  

3.2 PREPARATION  
A. Prior to CIPP installation, clean roots, silt, gravel and other debris from sewer line. Contractor shall be responsible for disposal of all debris, and the costs of this disposal shall be included in his bid price for the CIPP installation. Cleaning shall be performed in a manner that does not flush rocks, sand, sludge, dirt, grease or other solid or semi-solid material or debris into downstream sections of the sewer system.
B. Remove or repair dropped joints, protruding services, or collapsed pipe that will prevent insertion of liner.
C. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing and curing the CIPP.
D. The Contractor shall be responsible for obtaining water for cleaning, inversion and other work items requiring water, and the costs of water shall be included in his bid price for the CIPP installation.

E. Sewage Bypasing: Comply with provisions of Section 02531 – Sewer Bypass Pumping.

F. Traffic Control: Comply with provisions of Section 02531 – Sewer Bypass Pumping.

G. Protect all open excavations by use of barricades, fences, etc., from access by the public, small animals and children.

3.3 LINER INSTALLATION

A. Installation of Liner:
   1. CIPP installation shall be in accordance with ASTM F1216 or ASTM F1743.
   2. Tube Insertion – The wet out tube shall be positioned in the pipeline using either an inversion or a pull-in method. If pulled into place, a power winch should be utilized and care should be exercised not to damage the tube as a result of pull-in friction. The tube should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point.
   3. Temperature gauges shall be placed inside the tube at the invert level of each end to monitor the temperatures during the cure cycle.
   4. Curing shall be accomplished by utilizing hot water under hydrostatic pressure or steam in accordance with the manufacturer’s recommended cure schedule. Cool-down shall comply with the resin manufacturer’s specification.

B. Manhole Connections:
   1. Costs of connecting the liner pipe to existing manholes is not a separate pay item and shall be included in cost of the liner system.
   2. The liner pipe shall be neatly cut so that approximately one inch of the liner pipe extends into the manhole. Provide a leak-proof connection.

C. Lateral and Service Connections:
   1. Unless otherwise directed by the owner or his authorized representative, all laterals will be reinstated. Payment for lateral re-connections will be on the basis of the unit price bid.
   2. Determine service connection locations from television inspection video provided by Contractor. Contractor shall perform dye testing in order to verify that service connections are active before lining the sewer main. No additional payment will be allowed for excavation and restoration required to reopen connections not verified prior to lining the main.
   3. Clean service lines of all roots, grease, sand and sludge by high-pressure water cleaning, or other approved means.
   4. Reconnect services without excavation, by television camera and cutting device that re-establishes services for minimum of 90% capacity. For man-entry pipes, service connections may be re-established manually.
3.4 FIELD QUALITY CONTROL

A. Finished Liner:
   1. Liner shall be continuous over entire length of inversion run and be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes, lifts, and delamination.
   2. During curing process, gauge water tightness under positive head.
   3. Liner shall conform to shape of pipe existing before installation.

B. Testing: Contractor shall test all CIPP lined gravity sewer pipes, prior to reinstatement of laterals, in accordance with ASTM F1216. Pipes shall be tested after curing to ambient temperature. Contractor shall provide water for testing. Test as follows:
   1. Seal pipe at both ends and provide a standpipe at the high end.
   2. Apply hydraulic head to the standpipe, to a level 10 feet above the lowest point in the line being tested.
   3. Monitor water level for 30 minutes. If level drops, maintain level within one foot of original level by adding water.
   4. Allowable water loss for any length of lined pipe shall not exceed 50 U.S. gallons per inch of diameter per mile of pipe lined and tested, as shown in the following table:

<table>
<thead>
<tr>
<th>Sewer Diameter (inches)</th>
<th>Gallons per 100 L.F. of Pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>0.71</td>
</tr>
<tr>
<td>30</td>
<td>0.59</td>
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<tr>
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</tr>
<tr>
<td>12</td>
<td>0.24</td>
</tr>
<tr>
<td>10</td>
<td>0.20</td>
</tr>
<tr>
<td>8</td>
<td>0.16</td>
</tr>
</tbody>
</table>

C. Examination and Inspection:
   1. Televise interior of pipe after completion of Work and provide DVD-format video to Engineer. Video inspection is not a separate pay item and shall be included in cost of the liner system.
   2. Wall thickness of samples shall be determined as described in paragraph 8.1.6 of ASTM F1743. The minimum wall thickness at any point shall not be less than 87½% of the design thickness as calculated in paragraph 5.6 of this document.
   3. Visual inspection of the CIPP shall be in accordance with ASTM F1743, Section 8.6.

3.5 ACCESS TO THE WORK & MAINTAINING TRAFFIC

A. The contractor agrees that representatives of the Engineer, Owner, and other regulatory and governmental agencies will have access to the work wherever it is in
preparation or progress, and the Contractor will provide facilities for such access and inspection.

B. Provide and maintain vehicular access to the site and within the site for use by persons and equipment involved in the construction of the project. Maintain roads and driveways with sufficient rock stone or gravel to provide a suitable support for vehicular traffic.

C. Restore areas to original or to specified conditions shown on the drawings at completion of the work.

D. During construction, the Contractor shall be responsible for maintaining and protecting pedestrian and vehicular traffic at all times on all streets and roads involved and providing access to all residential and commercial establishments adjacent to the construction area. The Contractor shall furnish and maintain signage, barricades, flares, etc., in accordance with the Manual on Uniform Traffic Control Devices. The signage, barricades, etc., must be in good condition and the cost is to be included in the total lump sum or unit price bid.

E. The Contractor shall place sufficient warning lights or arrow boards on or near the roadways affected by the work, and shall keep them illuminated during periods of construction and reduced visibility (from twilight until sunrise) and shall be held responsible for any damages that any party sustains from neglecting this provision.

F. It is the intention of the Owner that traffic lane restrictions due to this project are kept to a minimum. When Contractor operations or safety concerns do not require use of a lane closure during any 48-hour period, the lane closure shall be removed and reinstalled when again needed. The Contractor’s bid price shall include all costs associated with this requirement.

3.6 CONSTRUCTION PHOTOGRAPHS

A. Take Photographs at each major stage of construction and before commencement of construction of all areas affected by the work. Make photographs clear, in focus, with high resolution and sharpness.

B. Submit one 4 x 6 glossy print of each photograph, with date and time, item or scene pictured, and contractor’s noted on back. Submit photographs in clear plastic, 3-ring binder style notebook photo pages, a maximum of four photographs per page, in sequential order. Along with hard copies, submit a DVD disc with a JPEG file of each picture.

3.7 TEMPORARY FACILITIES

A. The Contractor shall provide and maintain suitable temporary toilet facilities for his employees and those of the Owner at the site. Comply with applicable legal and health requirements.

B. Contractor shall dispose of excess and waste materials, including chemicals, trash and other items not included in the finished work.
3.8 CLEANING AND RESTORATION
A. At completion of Work, remove rubbish, debris, dirt, equipment, and excess material from site. Clean adjoining surfaces soiled by and during course of Work.
B. Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work. Restore areas disturbed.

Schedule of Submittal Requirements

<table>
<thead>
<tr>
<th>Section</th>
<th>Item Description</th>
<th>Shop Drawings &amp; Disc. Literature</th>
<th>Installation Instructions or Construction Methods</th>
<th>Design Calculations</th>
<th>Manufacturer’s Guarantee Certification</th>
<th>Sample &amp; Test Reports</th>
<th>Calendar Days due after NTP</th>
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<tbody>
<tr>
<td>General Conditions</td>
<td>Pay Application</td>
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<td>Construction Schedule</td>
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<td>Before &amp; During Construction Period</td>
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<tr>
<td>02560</td>
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<td></td>
<td></td>
<td>X</td>
<td>After Construction Period</td>
</tr>
</tbody>
</table>
TRENCH SECTION METHOD "A" OPEN TERRAIN
STORM SEWER OPEN CUT INSTALLATION

NOTE:
HAND PLACE AND TAMP BEDDING SO AS NOT TO DISTURB OR DAMAGE PIPE.
UPPER PORTION OF TRENCH USE EXCAVATED MATERIAL FREE FROM OBJECTS HAVING A
VOLUME EXCEEDING EIGHT CUBIC INCHES.
PLACE BURIED METALLIC LOCATOR TAPE 18"–24" ABOVE TOP OF PIPE AS SHOWN. TAPE MUST
CONTINUOUSLY READ: "CAUTION: BURIED STORM SEWER LINE BELOW".
HOLES IN BEDDING FOR PIPE BELLS MUST BE PROVIDED AT EACH JOINT.
NOTES:
CONCRETE TO CONFORM TO ASTM C-478 STANDARDS
2" MIN. CONCRETE COVER
RESILIENT CONNECTORS MEET ASTM C-923
MEETS OR EXCEEDS ASTM C-478

WEIGHT: BASE – 4,350 LBS. (30" HT.)
RISER – 850 LBS./VERT. FT.
CONICAL – VARIES
LEVEL AND TAMP BEDDING MATERIAL PRIOR TO
PLACING MANHOLE SECTION
CONCENTRIC TOP SECTION TO BE USED UNLESS
SPECIFICALLY APPROVED OTHERWISE ON A
CASE-BY-CASE BASIS

EAST JORDAN IRON WORKS PART
NO. 41356043 OR NEENAH
FOUNDRY PART NO. 1015T41

TOP OF CASTING TO BE
1" ABOVE GROUND LINE

1/4" WIDE STRIP -
OF JOINT SEAL
BITUMINOUS
MASTIC STRIP WITH
NON-SHRINKING
GROUT APPLIED TO
INSIDE SEAM

48" MINIMUM

6" MIN. #9
CRUSHED STONE

CONCRETE BENCH

WATER STOPS, RUBBER
DIAPHRAGM, OR BOOT, FOR
EVERY PIPE ENTERING THE
MANHOLE MEETING ASTM
C-923, LATEST EDITION.

FLOW CHANNEL
SEWER PIPE

FIGURE 6-4

PLAN VIEW

CAST-IN-PLACE SWEEPING
CONCRETE BENCH

SECTION

STANDARD PRECAST MANHOLE
GREATER THAN OR EQUAL TO 6'-0" IN DEPTH

HENDERSON
WATER
UTILITY
111 FIFTH STREET
HENDERSON, KENTUCKY
SHALLOW PRECAST MANHOLE
LESS THAN 6'-0" IN DEPTH

FIGURE 6-5

NOTES:
CONCRETE TO CONFORM TO ASTM C-478 STANDARDS
2" MIN. CONCRETE COVER
RESILIENT CONNECTORS MEET ASTM C-923
MEETS OR EXCEEDS ASTM C-478

NOTES:
WEIGHT: BASE - 4,350 LBS. (30" HT.)
RISER - 650 LBS./VERT. FT.
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CONCENTRIC TOP SECTION TO BE USED UNLESS
SPECIFICALLY APPROVED OTHERWISE ON A
CASE-BY-CASE BASIS

WATER STOPS, RUBBER DIAPHRAGM, OR BOOT,
FOR EVERY Pipe ENTERING THE
MANHOLE MEETING ASTM
C-923, LATEST EDITION.

FLOW CHANNELER
SEWER PIPE
CAST-IN-PLACE SWEEPING
CONCRETE BENCH

WATER STOPS, RUBBER DIAPHRAGM, OR BOOT, FOR
EVERY PIPE ENTERING THE
MANHOLE MEETING ASTM
C-923, LATEST EDITION.

PRECAST CONCRETE
CONCRETE GRADING RING
(GASKET MATERIAL
REQUIRED BETWEEN
CASTING AND RING)

PRECAST BASE SECTION
6" MIN. OF #9 CRUSHED STONE

SECTION

PLAN VIEW

HENDERSON
WATER
UTILITY
151 FIFTH STREET
HENDERSON, KENTUCKY