HENDERSON WATER UTILITY

INVITATION FOR BIDS
and TECHNICAL SPECIFICATIONS

Countryview Stormwater Project
Phase 1B

HENDERSON, KENTUCKY

July 2018
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COUNTRYVIEW STORMWATER PROJECT – PHASE 1B

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

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- Technical Specifications

- HWU Purchase Order Form – Sample – Shown for information only

_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. (CDT), on the 15th day of August 2018, at which time the bids will be opened and considered for the purchase of the following:

COUNTRYVIEW STORMWATER PROJECT – PHASE 1B
FOR THE
HENDERSON WATER UTILITY

REF# 201815 Countryview Stormwater Project

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.
SOLICITATION INSTRUCTIONS AND CONDITIONS

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; and the attached plans and technical specifications for Countryview Stormwater Project, prepared by Henderson Water Utility, dated May 2018.
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. 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.

18. 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.

19. 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.
20. 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.

<table>
<thead>
<tr>
<th>A. Workman’s Compensation</th>
<th>Statutory</th>
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<tr>
<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>
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<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>
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<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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<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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<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 FORM

PROJECT IDENTIFICATION:  
Countryview Stormwater Project – Phase 1B  
Henderson Water Utility  
Ref# - 2018 – 15

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:  13 August 2018  
Bid Closing:  15 August 2018, 1:30 p.m.  
HWU Board Meeting (award):  20 August 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):

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<th>NUMBER</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. Where unit prices and extended amounts are not properly computed, the unit price shall govern. Where words and figures do not agree, figures shall govern. It is the intention of the Owner to award all items to be constructed to a single bidder.

**Bid Form**

**Furnish and Install Storm Sewer Materials**

**Pricing to be held for 30 days after submittal is opened**

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**ITEM No. 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)

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**ITEM No. 2: Demolition of Existing Facilities**

Includes excavation and disposal of miscellaneous materials, including an existing 36” corrugated metal pipe and twin 18” corrugated metal pipe (Sta. 10+00 to 12+00, Ilex Drive); driveway pipes at locations where new storm sewers are installed parallel to roadways; miscellaneous materials encountered during excavation, including landscape elements and driveway pavements; includes all costs of disposal; all complete and ready for use.

LUMP SUM BID PRICE ________________________________

______________________________________________ Dollars ($_______________).

(Use words) (figures)
ITEM No. 3: 36” Storm Sewer

172 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 and inlets as required; testing; furnishing and installing bedding and backfill (Methods A, B or C, as required); all complete in place and ready for use.

172 Linear Feet @ $__________________  Equals $ _____________________

    Unit Price L.F.                     Extended Amount

ITEM No. 4: 24” Storm Sewer

268 Linear Feet of 24” 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 and inlets as required; testing; furnishing and installing bedding and backfill (Methods A, B or C, as required); driveway repairs; all complete in place and ready for use.

268 Linear Feet @ $__________________  Equals $ _____________________

    Unit Price L.F.                     Extended Amount

ITEM No. 5: 18” Storm Sewer

328 Linear Feet of 18” 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 and inlets as required; testing; furnishing and installing bedding and backfill (Methods A, B or C, as required); driveway repairs; all complete in place and ready for use.

328 Linear Feet @ $__________________  Equals $ _____________________

    Unit Price L.F.                     Extended Amount

ITEM No. 6: 15” Storm Sewer

1,699 Linear Feet of 15” 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 and inlets as required; testing; furnishing and installing bedding and backfill (Methods A, B or C, as required); driveway repairs; all complete in place and ready for use.

1,699 Linear Feet @ $__________________  Equals $ _____________________

    Unit Price L.F.                     Extended Amount
ITEM No. 7:  **12” Storm Sewer**

565 Linear Feet of 12” 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 and inlets as required; testing; furnishing and installing bedding and backfill (Methods A, B or C, as required); driveway repairs; all complete in place and ready for use.

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<tr>
<th>565 Linear Feet @ $___________</th>
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<tr>
<td>Unit Price L.F.</td>
<td>Extended Amount</td>
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**ITEM No. 8: Storm Inlet**

43 Storm Inlets (per attached Detail) including excavation and disposal of existing materials; furnishing and installing precast concrete catch basin; furnishing and installing frame and grate; spacers; grout and all other incidental materials; furnishing and installing bedding and backfill (Methods A, B or C, as required); all complete in place and ready for use.

<table>
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<tr>
<th>43 Each @ $___________</th>
<th>Equals $ ____________________</th>
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<tr>
<td>Unit Price Each</td>
<td>Extended Amount</td>
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**ITEM No. 9: 48” Storm Sewer Manholes (Less than 6’ Depth)**

Twelve (12) 48-inch diameter Storm 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 (Methods A, B or C, as required); ground restoration; all complete in place and ready for use.

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<tr>
<th>12 Each @ $___________</th>
<th>Equals $ ____________________</th>
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<tbody>
<tr>
<td>Unit Price Each</td>
<td>Extended Amount</td>
</tr>
</tbody>
</table>

**ITEM No. 10: 60” Storm Sewer Manholes (Less than 6’ Depth)**

One (1) 60-inch diameter Storm 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 (Methods A, B or C, as required); ground restoration; all complete in place and ready for use.

<table>
<thead>
<tr>
<th>1 Each @ $___________</th>
<th>Equals $ ____________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Price Each</td>
<td>Extended Amount</td>
</tr>
</tbody>
</table>
ITEM No. 11: 72” Storm Sewer Manholes (Greater than 6’ Depth)

One (1) 72-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 (Methods A, B or C, as required); ground restoration; all complete in place and ready for use.

\[
\begin{array}{ll}
1 \text{ Each} @ \$ & \text{ Equals } \$ \\
\text{Unit Price Each} & \text{Extended Amount}
\end{array}
\]

ITEM No. 12: 18” Standard Pipe Headwall

One (1) 18-inch diameter Standard Pipe Headwall (per Figure 6-8, appended) including excavation and disposal of existing materials; furnishing and installing precast or poured in place concrete unit; connecting boots and all other incidental materials; furnishing and installing bedding and backfill; ground restoration; all complete in place and ready for use.

\[
\begin{array}{ll}
1 \text{ Each} @ \$ & \text{ Equals } \$ \\
\text{Unit Price Each} & \text{Extended Amount}
\end{array}
\]

ITEM No. 13: 36” Standard Pipe Headwall

One (1) 36-inch diameter Standard Pipe Headwall (per Figure 6-9, appended) including excavation and disposal of existing materials; furnishing and installing precast concrete headwall; connecting boots and all other incidental materials; furnishing and installing bedding and backfill; ground restoration; all complete in place and ready for use.

\[
\begin{array}{ll}
1 \text{ Each} @ \$ & \text{ Equals } \$ \\
\text{Unit Price Each} & \text{Extended Amount}
\end{array}
\]

ITEM No. 14: Grading, Seeding, Mulching, and Erosion Control

Includes all grading of ditches as shown on the plans, including setting alignment and grade; seeding and mulching; erosion control during construction; NOI submittal and reporting; all complete in place and ready for use.

\[
\text{LUMP SUM BID PRICE } \text{Dollars ($___________)}. \\
\text{(Use words) (figures)}
\]
ITEM No. 15: Riprap

30 Tons of Class III Riprap, including excavation and disposal of existing materials; furnishing and installing geotextile fabric and KYTC Class III channel lining; ground restoration; all complete in place and ready for use.

30 Tons @ $_______________    Equals $ ______________________
   Unit Price Each       Extended Amount

ITEM No. 16: Asphalt Base Course

120 Tons of Asphalt Base (KYTC Class 2 Asphalt Base, 1.00D PG64-22), for street repairs, including preparation of subgrade; furnishing and installing all materials, including trucking, hauling spreading, and compaction; all complete in place and ready for use. This item does not include driveway repairs.

120 Tons @ $_______________    Equals $ ______________________
   Unit Price Each       Extended Amount

TOTAL 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). □
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                                               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 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

_________________________________________
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 [ ]
A. GENERAL

1. SCOPE OF WORK

This request is for a proposal to furnish and install a Stormwater Collection System in a portion of the Countryview Subdivision for the Henderson Water Utility, Henderson, Kentucky.

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.

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
t 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 manholes. Manhole joints shall consist of "O" ring type conforming to ASTM
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. **GRATED INLETS AND HEADWALLS**

   Headwalls shall be constructed to forms and dimension shown on Figures 6-8 and 6-9. Headwalls shall be required on all storm drains that terminate in an existing or proposed opened waterway. All concrete for reinforced walls and slabs shall be Class “A” concrete. Reinforcing steel shall be ASTM A-615, Grade 60 and the size and layout approved by the Engineer. At the option of the Contractor, precast or cast in place headwalls may be used.

4. **RIPRAPH CHANNEL LINING (KYTC CLASS III)**

   Provide material meeting the general requirements of KYTC Standard Specifications Section 805. Ensure that 100 percent passes through a square opening of 16 inches by 16 inches, and no more than 20 percent passes through square openings of 8 inches by 8 inches. The Engineer may allow stones of smaller sizes for filling voids in the upper surface and dressing to the proper slope.

   Underlay Class III riprap, crushed aggregate slope protection and all classes of channel lining with geotextile fabric (Type I fabric, conforming to KYTC Standards Specifications section 843).

5. **ASPHALT BASE COURSE**

   Asphalt base course shall be hot-mixed and hot-laid on a prepared subgrade, old surface or underlying course in existing city streets. For this project, the base course shall consist of not less than four inches (4”) of KYTC Class 2 Asphalt Base, 1.00D PG64-22. Aggregates and asphalt binders shall conform to Sections 804, 805 and 806 of the KYC Standards Specifications.
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 INLET BOXES

Inlet boxes shall be Forterra PB-30, 24” x 24” x 36” deep Catch Basin with knock-out panels, per the attached detail, or approved equal. Frame and grate shall be John Bouchard JB 4075 or approved equal. All concrete for inlets and headwalls shall have a minimum 28-day compressive strength of 3500 psi.

Provide spacers or extensions as required to adjust height to that shown on the plans. Spacers/extensions shall be secured to the Catch Basin by approved means.

Where knock-out panels are removed to allow pipe entry, cut the pipe flush with the catch basin wall. Fill the void between the pipe and the box with non-shrink grout, minimum 4,000 psi compressive strength, the full depth of the catch basin walls. Grout in any lifting devices, after installation.

Inlet boxes may be cast-in-place with approval of the Engineer.

2.6 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.

If pavement is not placed immediately following trench backfilling in streets and highways, the Contractor shall be responsible for maintaining the trench surface in a level condition at proper pavement grade at all times. The Contractor shall be liable for any damage to persons or property resulting from the Contractor’s failure to maintain the trench surface.

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.
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.

3.4 DRIVEWAYS

Sections of residential driveways that are disturbed by the Contractor’s work shall be replaced with like materials (concrete/asphalt/gravel). Sawcut paved driveway surfaces to neat, clean lines. Driveway thickness shall match existing thickness. Place asphalt materials as per the following section. For concrete driveway, match existing thickness, with a minimum of four inches (4”) of concrete on six inches (6”) of compacted DGA. Concrete driveway surfaces shall be made smooth and even by proper means and given a broom finish.

Driveway repairs are not included in the bid item for Asphalt Base Course. They are incidental to placement of storm sewer pipes in the various sizes under bid items for Storm Sewer.

3.5 ASPHALT BASE COURSE

On this project, the asphalt base course is to be the top four inches (4”) of the trench backfill and will be overlaid by the City at a later date. The Contractor will be responsible for refilling settled areas of the trench for the warranty period of one year from date of final completion. All asphalt shall be placed at a temperature of not less than 225 degrees F and not more than 300 degrees F. After screeding and before rolling, the surface of each course shall be checked for irregularities and corrected as necessary. In areas where machine paving is impractical, hand spreading will be allowed. The material shall be uniformly distributed, without segregation, to the depth necessary to provide the required compacted depth. Rakes may be used, but the final leveling and surface adjustment shall be done with mechanical or manually operated screeds or lutes.
COMPACATION - Roll each course as soon as the mixture has cooled sufficiently to bear the weight of the roller without undue displacement. Each paving operation shall have a minimum of one tandem steel-wheeled roller weighing not less than ten (10) tons and having a compressive capability at the rear wheels of at least 325 pounds per lineal inch of wheel width.

Provide intermediate rolling of at least 3 complete coverages with a tandem roller weighing at least ten (10) tons. Pneumatic tired rollers may be used when approved by the Engineer.

These rollers shall be in good condition, capable of reversing without backlash. The steel-wheel rollers shall be equipped with wetting devices to prevent the mixture from sticking to the roller wheels.

Perform final rolling of the uppermost layer or surface course with a tandem roller. Operate the roller, at all times, parallel to the centerline. Operate the rollers parallel to the centerline, and lap successive trips of each roller uniformly to the previous trip. End alternate trips of the rollers on transverse lines at least 3 feet apart. Regulate starting and stopping of the rollers to avoid distorting the surface.

In areas inaccessible to equipment, the mixture shall be thoroughly compacted by the use of hand tampers or hand operated mechanical tampers.

SURFACE TOLERANCE - Final surface shall show no deviation greater than 1/4 inch from a ten (10) foot straight edge placed parallel to the centerline of the street, nor more than 1/4 inch from the typical cross-section.
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>MH Depth (feet)</th>
<th>4' Diameter MH</th>
<th>5' Diameter MH</th>
<th>6' Diameter MH</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 Feet or less</td>
<td>50 sec.</td>
<td>1 min. 5 sec.</td>
<td>1 min. 20 sec.</td>
</tr>
<tr>
<td>15.01 to 30 Feet</td>
<td>1 min. 20 sec.</td>
<td>1 min. 45 sec.</td>
<td>2 min. 10 sec.</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.
# Purchase Order

**Ship To**

Henderson Water Utility  
230 N. Alvasia St.  
Henderson, KY 42420

**Contact:** Mike Moore  
**Phone:** 270-869-6613  
**Fax:** 270-826-9343  
**Email:** moorem@hkywater.org

**Date:** 03/22/2017  
**Purchase Order:** 25189

**Vendor ID:** 4742  
**Vendor Name:** Badger Meter Inc  
**Vendor Address:** PO BOX 245036  
MILWAUKEE, WI, 53244-9536

**Comments:** Budget# 22 04 802 4224 - For (36") 3/4" Meters and (4) 6" for inventory stock and replacement.  
Prices from the 201421 Ext.# 2 Water Meter Bid\  
Purchased from Badger Meter.

<table>
<thead>
<tr>
<th>Order Quantity</th>
<th>Unit Price</th>
<th>Extended Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.00</td>
<td>$87.24</td>
<td>$3,140.64</td>
</tr>
</tbody>
</table>
| C-700 5/8"x3/4" CF  
3/4 Meter - Touchread  
**HWU ID:** A0005 |
| 4.00           | $2,482.25  | $9,929.00      |
| 6" Turbo Series CF  
6 METER TURBINE TOUCHREAD CF  
**HWU ID:** A0573 |

**Total:** $13,069.64
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.

CONTRACTOR MUST MAINTAIN FILL UNTIL SETTLEMENT IS COMPLETE.

#9 CRUSHED STONE BEDDING (SEE NOTE)
4" MINIMUM OR 12" MAXIMUM

BACKFILL (SEE NOTE)
METALLIC LOCATOR TAPE (SEE NOTE)
FINISHED GRADE
TRENCH SECTION METHOD "B" SIDEWALKS & UNPAVED DRIVEWAYS
STORM SEWER OPEN CUT INSTALLATION

NOTE:

BACKFILL TRENCH FROM BEDDING TO FINISH GRADE WITH 4" CRUSHED STONE. HAND PLACE AND
TAMP BEDDING TO 6" ABOVE TOP OF PIPE SO AS NOT TO DISTURB OR DAMAGE PIPE.

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.
PORTION OF TRENCH FROM TOP OF BEDDING TO BOTTOM OF PAVEMENT:
DGA, COMPACTED 8' PLATE COMPACTOR, 6" LIFTS

TRENCH SECTION METHOD "C"
STREETS, ROADS, & PAVED DRIVeways
STORM SEWER
OPEN CUT INSTALLATION

NOTE:

HAND PLACE AND TAMP BEDDING MATERIAL TO 6" ABOVE THE TOP OF PIPE SO AS NOT TO DISTURB OR DAMAGE PIPE.
LOWER PORTION OF TRENCH FROM BEDDING TO SIX INCHES BELOW BASE OF PAVEMENT USE #9 CRUSHED STONE.
UPPER PORTION OF TRENCH FROM #9 STONE TO BASE OF PAVEMENT USE A BASE COURSE OF DENSE GRADED AGGREGATE.
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.

HENDERSON
WATER
UTILITY
111 FIFTH STREET
HENDERSON, KENTUCKY
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 - 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

1/8" WIDE STRIP OF JOINT SEAL BITUMINOUS MASTIC STRIP WITH NON-SHRINKING GROUT APPLIED TO INSIDE SEAM

1/4" MAX DIA.

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

48" MINIMUM

CONCRETE BENCH

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

SEWER PIPE

FLOW CHANNEL

CAST-IN-PLACE SWEEPING CONCRETE BENCH

NOTES:
MULTIPLE INLET CONFIGURATION SHOWN FOR CLARITY ONLY. REFER TO SITE PLAN FOR ACTUAL ORIENTATION OF PIPE.

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

HENDERSON WATER UTILITY
111 FIFTH STREET
HENDERSON, KENTUCKY

FIGURE 6-4
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 - 850 LBS./VERT. FT.
CONICAL - VARIES
LEVEL AND TAMING 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. 1015141
TOP OF CASTING TO BE 1" ABOVE GROUND LINE

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

48" MINIMUM

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

CONCRETE GRADING RING
(CASSET MATERIAL REQUIRED BETWEEN CASTING AND RING)

CONCRETE BENCH

- 6" MIN. OF #9 CRUSHED STONE

SECTION

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

PLAN VIEW

FLOW CHANNEL

SEWER PIPE

CAST-IN-PLACE SWEEPING CONCRETE BENCH

PLAN VIEW

SHALLOW PRECAST MANHOLE
LESS THAN 6'-0" IN DEPTH
FIGURE 6–8

LIFTING DEVICES TO BE GROUTED IN AFTER INSTALLATION. (FOR PRECAST HEADWALLS)

<table>
<thead>
<tr>
<th>DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPE DIA.</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>12&quot;</td>
</tr>
<tr>
<td>15&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
</tr>
<tr>
<td>21&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
</tr>
<tr>
<td>27&quot;</td>
</tr>
</tbody>
</table>

NOTES:
USE CLASS A CONCRETE
2" MIN. CONCRETE COVER
OPENINGS FOR PIPE AS REQ'D.
REINF.—#5 REBAR @ 12" C.C. EA. WAY
8" THICK BASE SLAB
WEIGHT: BASE — 3,600 lbs. max
RISER — 800 lbs./vert.ft.
WINGWALLS ARE FLARED 15°

HENDERSON
WATER
UTILITY
311 FIFTH STREET
HENDERSON, KENTUCKY
LIFTING DEVICE TO BE CROUTED IN AFTER INSTALLATION FOR PRECAST.

H-1

8"

W-2

8"

L

H-2

2'-0"

W-1

1'-0"


<table>
<thead>
<tr>
<th>PIPE DIA.</th>
<th>H-1</th>
<th>H-2</th>
<th>L</th>
<th>W-1</th>
<th>W-2</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>30&quot;</td>
<td>4'-5&quot;</td>
<td>1'-3&quot;</td>
<td>4'-5&quot;</td>
<td>7'-6&quot;</td>
<td>3'-1&quot;</td>
<td>6,800lbs.</td>
</tr>
<tr>
<td>36&quot;</td>
<td>5'-0&quot;</td>
<td>1'-6&quot;</td>
<td>5'-0&quot;</td>
<td>8'-8&quot;</td>
<td>3'-8&quot;</td>
<td>8,700lbs.</td>
</tr>
<tr>
<td>42&quot;</td>
<td>5'-7&quot;</td>
<td>1'-9&quot;</td>
<td>5'-7&quot;</td>
<td>10'-0&quot;</td>
<td>4'-3&quot;</td>
<td>10,800lbs.</td>
</tr>
<tr>
<td>48&quot;</td>
<td>6'-2&quot;</td>
<td>2'-0&quot;</td>
<td>6'-2&quot;</td>
<td>11'-2&quot;</td>
<td>4'-10&quot;</td>
<td>13,200lbs.</td>
</tr>
<tr>
<td>54&quot;</td>
<td>6'-9&quot;</td>
<td>2'-3&quot;</td>
<td>6'-9&quot;</td>
<td>12'-6&quot;</td>
<td>5'-5&quot;</td>
<td>15,800lbs.</td>
</tr>
<tr>
<td>60&quot;</td>
<td>7'-4&quot;</td>
<td>2'-6&quot;</td>
<td>7'-4&quot;</td>
<td>13'-8&quot;</td>
<td>6'-0&quot;</td>
<td>18,600lbs.</td>
</tr>
</tbody>
</table>

NOTES:
USE CLASS A CONCRETE
2"MIN. CONCRETE COVER
HOLE SIZE <= PIPE O.D. + 3"
REINF.-#5 REBAR @ 12" C.C. EA. WAY
8" WALLS UNLESS OTHERWISE NOTED
3/4" CHAMFER ON ALL EXPOSED EDGES
8" THICK BOTTOM SLAB
WINGWALLS ARE FLARED 30°
GENERAL NOTES:
1. NO INVERT - LIFTERS IN FLOOR
2. MAX. PIPE SIZE FOR K-OUT = 15" RCP (B-WALL)
3. MAX. FILL OVER TOP OF CONCRETE CAP = 2'-0"
4. KNOCK-OUT PANEL SHALL BE COMPLETELY FILLED WITH NON-SHRINK GROUT. GROUT STRENGTH TO BE 4000 p.s.i.