



City of Pawtucket, RI

\*\*\*\*\* Addendum #1 \*\*\*\*\*

## **RFP # 23-014 - Prospect Heights Sewer Reconstruction**

November 8, 2022

The attention of bidders submitting proposals for the above-referenced project is called to the following Addendum to the Request for Proposals indicated above. The items set forth herein, whether of omission, addition, substitution or other change, are all to be included in, and form a part of the proposed Contract Documents for the work.

Inclusion of this Addendum must be acknowledged in the spaces provided in the document entitled "Request for Proposals 23-014 - Prospect Heights Sewer Reconstruction". Failure to acknowledge any and all addenda in the above specified bid form may be cause for rejection of the bids by the Owner on the grounds that it is not responsive.

This addendum consists of thirty-seven (37) pages

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Peter Wingate

Purchasing Director

ADDENDUM NO.2  
NOVEMBER 8, 2022  
CITY OF PAWTUCKET

**PROSPECT HEIGHTS SEWER RECONSTRUCTION**  
Beverage Hill Avenue, Pawtucket.

NOTICE TO PROSPECTIVE BIDDERS

ADDENDUM NO. 2 Prospective bidders and all concerned are hereby notified of the following changes in the Plans, Pricing Proposal and Technical Specifications for this contract. These changes shall be incorporated in the Plans, Pricing Proposal and Technical Specifications.

**A. Pricing Proposal (Pages 20 through 29 of 418 of the RFP)**

1. Pages 26 through 28 of 418

Replace Pages 26 through 28 of 418 with new Pages 26 through 28 of 418 (R-1) attached to this Addendum No. 2.

The quantity for Item 45 “Class 9.5 Full Depth Sawcut of Bituminous Pavement” has been revised to eliminate the unneeded A at the end of the quantity.

Item 56 “Policing (Allowance)” has been removed from the Bid.

Formatting has moved 2.00 Acceptance to Page 28

R-1 has been added to the applicable pages.

**B. Appendix F- Technical Specifications (Pages 140 through 315 of 418)**

1. Index

Replace Page 1 of 1 with Page 1 of 1 (R-1) attached to this Addendum No. 2. Section 01576, Policing, has been removed.

2. Section 01025- Measurement and Payment (Page 01025-1 through 01025-18 of 01025-18)

Replace Pages 01025-1 through 01025-18 of 01025-18 in its entirety, with Pages 01025-1 through 01025-18 (R-1) attached to this Addendum No. 2.

Language regarding air testing drainage pipes has been removed from Section 1.2 Work Not Paid for Separately, Paragraph R.

An additional section has been added to Item 1, Mobilization and Demobilization to include Contractor’s responsibility for pre-construction verification of existing sewer services connected to the upstream manholes. Subparagraph 3 has been changed to subparagraph 4.

Item 56, Policing, has been removed from Section 1.8 Base Bid – Item Descriptions.

3. Section 01576 (Page 01576-1 of 01576-1)

Remove Section 01576, Policing, in its entirety from the Technical Specifications.

4. Section 02601 Manholes and Catch Basins (Pages 02601-5 and 02601-6 of 02601-9)

Replace Pages 02601-5 and 02601-6 of 02601-09 with Pages 02601-5 and 02601-6 of 02601-9 (R-1) attached to this Addendum No. 2. In Section 2.3 Drainage Manhole Frames and Covers, Paragraph A and Section 2.4 Catch Basin Frame and Grates, Paragraph A, the hot-dipped bituminous coating requirement has been removed.

5. Section 02614- Reinforced Concrete Drain Pipe (Pages 02614-1 through 02614-5 of 02614-5)

Replace Pages 02614-1 through 02614-5 in its entirety with Pages 02614-1 through 02614-5 (R-1) attached to this Addendum No. 2. All language regarding pressure testing of the reinforced concrete drain pipe has been removed.

6. Section 02722- Sanitary Sewer System (Page 02722-4 of 02722-12)

Replace Page 02722-4 of 02722-12 with Page 02722-4 of 02722-12 (R-1) attached to this Addendum No. 2. Under Section 1.9 Project Conditions, the reference to Specification 02704 has been removed.

### **C. Plans**

1. C3.0 Drainage and Utility Plan

Replace the “C3.0 Drainage and Utility Plan” plan sheet, Sheet 6 of 14, with the “C3.0 Drainage and Utility Plan” (R-1) plan sheet, Sheet 6 of 14, attached to this Addendum No. 2. The invert of the existing 24” sewer connection to the 69” sewer main to be plugged has been added to the plan.

2. Supplemental Figure

Add “Figure 1- Upstream Sewer Manhole Locations” plan sheet attached to this Addendum No. 2. The figure has been added to show the locations of the upstream sewer manholes for possible need of temporary sewer bypass.

In addition to the Addendum No. 2. Pare has included responses to questions received from the Bidders at the end of the document.

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**THE BID DUE DATE HAS NOT CHANGED AS A RESULT OF THIS ADDENDUM  
THIS ADDENDUM MUST BE ACKNOWLEDGED ON THE BID FORM  
END OF ADDENDUM NO.2**

#23-014 – Prospect Heights Sewer Reconstruction

ITEM NO.	DESCRIPTION AND UNIT PRICES WRITTEN	ESTIMATED QUANTITY	ITEM AMOUNT
43	Precast Concrete Ramp Stone 18-Inch- Circular  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Each  1	\$
44	Test Pits (Paved or Unpaved)  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Each  10	\$
45	Full Depth Sawcut of Bituminous Pavement  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Linear Foot  2,080	\$
46	Full Depth Sawcut of Portland Cement Concrete Sidewalks and Driveways  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Linear Foot  75	\$
47	Reconstruct Brick Shelf and Manhole Invert  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Each  1	\$
48	Loam Borrow 4 Inches Deep  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Square Yard  40	\$
49	Seeding  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Square Yard  40	\$
50	Detectable Warning Panel  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Square Foot  8	\$
51	Adjust Frame and Grate to Grade  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Each  2	\$

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ITEM NO.	DESCRIPTION AND UNIT PRICES WRITTEN	ESTIMATED QUANTITY	ITEM AMOUNT
52	Adjust Frame and Cover to Grade  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Each  5	\$
53	Final Epoxy Resin Pavement Markings  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Lump Sum  1	\$
54	Unsuitable Material Below Grade Excavation and Disposal  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Cubic Yard  150	\$
55	Pavement Cores  Unit Price in Figures:                 \$ _____ Unit Price in Words: _____ _____	Lump Sum  1	\$
	<b>Base Bid: Prospect Height Sewer Reconstruction</b> The sum price of:  Total Base Bid Price in Words: _____ _____	<b>Total Price Bid</b>	\$

**Note:** Total Bid shown above shall match Total Price shown on the first page of this bid form. All project costs including labor, equipment, materials, overhead, and profit to complete the Work shall be included. Refer to Appendix F Section 01025, Measurement and Payment for a description of the bid items listed above as well as additional information.

1.00 ALLOWANCES:

As part of the Base Bid (Total Bid), the bidder agrees to carry quantities of materials below in the base bid of the contract. The Owner reserves the right to remove these items from the contract totally or in part and to adjust the contract sum to reflect the actual costs of the construction authorized by the Owner. Unit prices reflect replacement with suitable materials. Refer to Section 01025, Measurement and Payment for additional information.

2.00 ACCEPTANCE:

If this Bid is accepted within the time stated in the contract documents, and we fail to commence the Work, the Bid Bond shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the Bid Bond or the difference between this Bid and the Bid upon which the Contract is executed.

In the event our Bid is not accepted within the time stated in the contract documents, the required Bid Bond shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

The City of Pawtucket reserves the right to increase or decrease the quantities stated in the bid at the unit prices quoted.

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**DIVISION 1 – GENERAL REQUIREMENTS**

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01200	Meetings
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01500	Temporary Facilities
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SECTION 01025

MEASUREMENT AND PAYMENT

**PART 1 – GENERAL**

1.1 EXTENT OF WORK

- A. Measurement. The quantities to be measured under the various items in the proposal will be those quantities of work completed in accordance with the drawings and specifications. The methods of measurement will be as stated hereinafter for the individual items.
- B. Prices. The unit or lump sum prices for all items in the schedule of prices shall be full compensation for the work of the Contractor specified and shall include the cost of furnishing all materials, labor, tools and equipment and all work and expense incidental to and necessary to complete the work in accordance with the drawings and specifications.

1.2 WORK NOT PAID FOR SEPARATELY

- A. Stripping Topsoil. Payment for stripping topsoil, including stockpiling, is included in the prices for the various Items of Work on the Bid Form and no separate payment will be made thereof.
- B. Trench Excavation. Payment for trench excavation to the depths indicated on the drawings or authorized by the Engineer for the construction of all structures, foundations, pipes, and appurtenances, including disposal of the excavated materials in fills, backfills, embankments, designated stockpiles, or as spoil as approved by the Engineer, is included in the prices for the various items of work in the Schedule of Prices and no separate payment will be made thereof.
- C. Boulder Excavation. Payment for boulder excavation less than one (1) cubic yard in size, including furnishing and installing appropriate backfill material, is included in the various items of work on the Bid Form and no separate payment will be made thereof.
- D. Filling, Backfilling, Embankment, and Disposal of Surplus Materials. Payment for filling; backfilling for all structures, foundations, pipes, including appurtenances; construction of embankment; and disposal of surplus material is included in the prices for the various items of work on the Bid Form and no separate payment will be made thereof, unless otherwise indicated.
- E. Trimming and Fine Grading. Payment for all required trimming and fine grading, is included in the various items of work on the Bid Form and no separate payment will be made thereof.
- F. Sheeting, Shoring and Bracing. Payment for all necessary sheeting, shoring and bracing is included in the prices for the various items on the Bid Form and no separate payment shall be made thereof.
- G. Pumping, Draining and Bailing. Payment for all necessary pumping, draining, bailing, etc., including the use of underdrains or well points, is included in the prices for the various items on the Bid Form and no separate payment will be made thereof.



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- H. Preparation of Site. Payment for preparation of site is included in the Lump Sum Price for Bid Item 1 – Mobilization and Demobilization in the Schedule of Prices and no separate payment will be made thereof. Preparation of site includes setting up construction plant(s), offices, shops, storage areas, sanitary and other facilities required by the specifications or Federal, State, and Local law or regulations; grading (including furnishing and installing fill material and removal and disposal of excess material) and rock removal at the site for all temporary facilities required as part of construction; obtaining necessary permits and licenses and payment of fees; general protection, temporary heat and utilities; providing shop and working drawings, certificates and schedules; sampling and testing materials; providing required insurance; cleaning up; and all other work regardless of its nature which may not be specifically referred to on the Bid Form but is necessary for the complete construction of the project set forth by the contract.
- I. Water or Calcium Chloride for Dust Control. Payment for work under this Section is included in the prices for the various items on the Bid Form and no separate payment will be made thereof.
- J. Bonds. Payment for bonds required by the contract is included in the prices bid for the various items of work on the Bid Form and no separate payment will be made thereof.
- K. Environmental Protection. Payment for work under this Section is included in the prices for the various Items on the Bid Form and no separate payment will be made thereof.
- J. No separate payments will be made for cleaning up. Such clean-up shall be considered incidental to the item to which it applies and shall be included in the price for that item. Contractor is made aware that equipment, materials, and construction vehicles will not be allowed to remain onsite on weekends or holidays and shall be returned to Contractor's staging area. This includes road plates when not being used to protect excavations. No separate payment will be made for hauling and transporting equipment, materials and construction vehicles to and from the site.
- K. All existing work removed or damaged by the Contractor's operations shall be replaced to the satisfaction of the Engineer at no additional expense to the Owner.
- L. No separate payment will be made for work or items associated with Division 1 - General Requirements. Contractor shall incorporate the cost for these items into the Bid Items listed on the Bid Form.
- M. No separate payment will be made for relocation, repair, or replacement of existing utilities that are damaged due to Contractor's negligence or those that are temporarily removed or relocated for Contractor's convenience. Bid items have been provided for utility relocation/replacement/repairs (e.g., storm drain replacements and sewer system replacements) proposed as part of the work as shown on the drawings or where replacement is directed by the Engineer.
- N. No separate payment shall be made for support of underground or overhead utilities. Payment for these items is included in Item No. 22- Reinforced Concrete Pipe (PCP) M 170 Class III\* 12", Item No. 23- Reinforced Concrete Pipe (PCP) M 170 Class III\* 15", Item No. 24- Reinforced Concrete Pipe (PCP) M 170 Class V\* 24" and Item No. 26- Polyvinyl Chloride (PVC) Sewer Pipe- 24."

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- O. No separate payment shall be made for costs associated with licensed Professional Engineer(s) performing all design calculations, which shall be sealed and signed by said Professional Engineer(s). The Contractor is called to the attention that individual sections of these contract documents indicate when design calculations are required. Design calculations performed, sealed and stamped by a licensed Professional Engineer is included in the prices for the various Items in the Schedule of Prices and no separate payment will be made thereof.
- P. Hydrostatic/Bacteriological/Testing. Payment for work under this Section is included in the prices for the various Items in the Schedule of Prices and no separate payment will be made thereof. This shall include, but is not limited to, furnishing and installing required corporations, valves, tubing, piping, fittings and any other incidentals required to successfully perform all required testing. It also includes labor and laboratory costs associated with analytical testing of samples collected. Owner and Engineer make no guarantee as to the availability of adequate pressures to perform required testing, and it shall be the contractor's responsibility to provide and operate all necessary pumping equipment for all testing purposes. Any other incidentals required to perform testing, including laboratory fees, shall not be paid for separately.
- Q. Compaction and costs associated with 3<sup>rd</sup> party compaction testing are the responsibility of the Contractor, which shall be performed for the Contractor through an approved subcontractor, are incidental to the items described. No separate payment shall be made for labor, materials, or equipment necessary to adequately compact backfilled excavations and to conduct compaction testing in accordance with the specifications.
- R. Costs associated with vacuum testing of sewer manholes and air testing of gravity sewer is incidental to the items described. No separate payment shall be made for labor, materials, or equipment necessary to adequately perform testing in accordance with the specifications.

1.3 BID ITEMS

- A. Appurtenant items of work shown on the drawings or specified which are required to complete the work but are not listed separately under the various applicable bid items of work, shall have no separate payment for such items. It shall be the responsibility of the Contractor to verify any missing or incomplete items.
- B. The Owner reserves the right to remove select bid items and to increase or decrease the unit quantity of bid items. The successful bidder is made aware that the unit price so stated on the proposal form constitutes full compensation for that item, regardless of any increase or decrease in the unit quantity of that bid item. There is no guarantee of any minimum or maximum quantity for any bid item. Standards of the industry (e.g. renegotiation of the bid price due to a 25% increase or decrease in the unit quantity of the bid item) shall not be enforceable under this contract. Renegotiation of bid prices is solely at the discretion of the Owner.

1.4 MEASUREMENT

- A. The measurement of all quantities of items listed on the Bid Form shall be done by the Contractor. The measurement will include proper and complete documentation of all items to

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the satisfaction of the Owner and Engineer prior to the submission for payment. The measurement submitted shall be in the same unit description listed on the Bid Form.

1.5 PAYMENT

- A. Payments shall be made to the Contractor only after proper documentation of the unit quantity provided or percentage of work completed, and in accordance with the contract terms and conditions regarding payment.
- B. Payment for bid items shall include full compensation for all incidentals required for the complete installation of the completed product.
- C. Payment shall be made only for that work which is performed within the pay limits shown on the drawings or detailed in the specifications. No payment shall be made for work beyond these limits unless the work has been authorized by the Engineer in writing.

1.6 PARTIAL PAYMENT FOR PRODUCTS

- A. Contractor may request partial payment for Products (supplies, material and/or equipment) as defined in Section 01600, Materials and Equipment, which will be incorporated into the Work and which are delivered and stored off-site. The request may only be made when submitting Contractor's proposal for a Schedule of Values. In order for this request to be considered, the Contractor must comply with the requirements of this sub-section and the Agreement. Any payments approved pursuant to this sub-section shall not exceed sixty-five percent (65%) of the Product's invoiced value and shall be subject to retainage as set forth in the Agreement. Contractor shall obtain prior approval since the Owner reserves the right to refuse approval for payment for any equipment or materials suitably stored off-site in its sole discretion, regardless of whether all conditions contained herein have been met.
- B. Partial payment may be made for Products eligible for off-site delivery and storage only upon presentation by the Contractor of a Bill of Sale, an invoice or an Affidavit certifying that the material is received by the Owner free and clear of all liens, encumbrances and security interests of any kind and including for off-site delivery evidence acceptable to the Owner that "all risks" property insurance in an amount sufficient to protect the interests of the Owner is in effect at the approved site and that the Owner is a loss payee equal to or greater than its percentage of ownership.
- C. Partial payment for Products delivered and stored off-site shall be contingent upon Contractor's compliance with the storage and protective maintenance requirements set forth in Section 01600 and all other requirements necessary to preserve equipment warranties for the benefit of the Owner.
- D. All costs associated with delivery to and storage of equipment or material at an off-site facility shall be assumed by the Contractor notwithstanding the Contractor's request for, and obtaining approval of the Owner to so deliver and store the materials.
- E. Contractor shall provide written evidence to the Owner of having made arrangements for unrestricted access by the Owner and its authorized representatives to the materials wherever stored, including provision for the Owner to take control and possession of such materials at any time and without restriction.

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- F. Contractor must provide the Owner, upon request and prior to any partial payment, documentation that transfers absolute legal title to such material to the Owner conditional only upon receipt of final payment. Neither such transfer of this nor any partial payment shall constitute acceptance by the Owner of the materials nor void the right to reject materials subsequently found to be unsatisfactory, or in any way relieve the Contractor of any obligation arising under the Contract Documents.

1.7 EXTRA WORK

- A. Extra work, if any, shall be performed and paid for in accordance with the Contract Agreement.

1.8 BASE BID - ITEM DESCRIPTIONS

A. Item 1, Mobilization and Demobilization

1. The Work of this section shall be measured as specified at the Lump Sum price provided on the Bid Form. The payable quantity will be for the preparatory work and operations which must be performed or for costs which must be incurred prior to beginning work, final clean-up and demobilization of temporary facilities and equipment, restoration of impacted areas disturbed due to construction of all temporary facilities, preparation of red-line markups to facilitate preparation of as-built drawings, and the cost of payment and performance bonds as well as fees for all permits and Federal, State, and local approvals. Mobilization shall include, but is not limited to, movement of personnel, equipment, supplies, and incidentals to the project site for the establishment of all Contractor's utilities, temporary fencing, installation, maintenance, and removal of tracking pads, supplying, furnishing, installing and subsequent removal of steel sheeting at the end of each working day, and other facilities necessary for work on the project. Demobilization shall include, but is not limited to, moving out of personnel and equipment, cleaning entire site, and removing debris and rubbish.
2. This work shall include all necessary labor, materials and incidentals required to including the installation and subsequent removal of a temporary bypass as needed, including all pipes, pumps and other materials needed to complete the work, furnishing and installing steel plates at the end of each working day, as needed, subsequent removal of steel plates to conduct work, perform post construction CCTV inspections of all newly constructed sewer mains and drain pipes. Required deliverables shall be as described within these contract documents.
3. This work shall also include verifying existing service connection tie ins along the existing sewer pipe connected to upstream sewer manholes, including all labor, materials, equipment, and for all incidentals required to finish the work, complete and accepted by the Engineer.
4. The payment for work associated with site mobilization and demobilization shall be a Lump Sum Price as provided on the Bid Form for Bid Item No. 1. Payment will be limited to 75% of the lump sum amount of this item until the work is complete and the contractor has completely demobilized. The initial payment of 75% mobilization cost shall be payable when the Contractor is operational on site. The lump sum price bid for this item shall not exceed 5 percent of the total of all items, excluding this item.

B. Item 2, Erosion and Sedimentation Controls

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1. The work of this section shall be measured as specified at the Lump Sum price on the bid form for installation, cleaning, maintenance, removal, and disposal of erosion and sedimentation controls where shown on the drawings, as required to comply with applicable regulations and permits, or as otherwise required by the Owner and Engineer. Work shall include all necessary equipment, materials, workmen, and all incidental work required for completion of the work specified herein and included on the Contract Drawings and in these specifications.
2. The work of this section includes restoration of areas damaged or impacted by erosion and sedimentation resulting from Contractor's operations with no additional cost to the Owner.

C. Item 3, Traffic Control and Management

1. The work of this section shall be measured as specified at the Lump Sum price on the bid form for the installation, maintenance, protection, relocation and final removal of temporary traffic control signs, devices and pavement markings as shown in the Drawings and required by the Owner and Engineer. Work shall include all necessary labor, equipment, materials, workmen and for all incidental work required for the completion of the work specified herein and included in the Contract Drawings and in these specifications.
  2. The work shall include the replacement of any damaged traffic control devices resulting from the Contractor's operations at no additional expense to the Owner
  3. This Contractor is responsible for any costs associated with no parking signage where temporary parking bans are needed to complete the work.
  4. Flag persons are to be used to direct traffic unless the work is deemed a hazard to public safety in which the Contractor shall request the use of Police which shall be paid for under Item 56- Policing.

D. Item 4, Remove and Dispose Concrete Curb

1. The work of this section shall be measured as specified at the Linear Foot price on the bid form to remove and legally dispose concrete curbing as shown in the Drawings and/or as specified by the Engineer
2. The work shall include the removal and legal disposal of concrete curbing, including curb lock, and all labor, materials and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Saw cutting for the removal of curbing is included in other bid items under this contract.

E. Item 5, Remove and Dispose Sidewalks

1. The work of this section shall be measured as specified at the Square Yard price on the bid form to remove and legally dispose sidewalks as shown in the Drawings and/or as specified by the Engineer
2. The work shall include the removal and legal disposal of sidewalks and all labor, materials and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Saw cutting for the removal of sidewalk is included in other bid items under this contract.

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F. Item 6, Remove and Dispose Flexible Pavement

1. The work of this section shall be measured as specified at the Square Yard price on the bid form to remove and legally dispose of flexible pavement, including surface and base courses, as shown in the Drawings and/or as specified by the Engineer
2. The work shall include the removal and legal disposal of flexible pavement, including surface and base courses and temporary trench patches, and all labor, materials and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Saw cutting for the removal of flexible pavement is included in other bid items under this Contract.

G. Item 7, Cutting and Dispose Isolated Trees and Stumps (4"-24")

1. The work of this section shall be measured as specified at the EACH price on the bid form to cut, remove and legally dispose of trees and stumps in excess of 4 inches in diameter and as large as 24" in diameter (measured at 4 inches above existing ground) as shown in the Drawings and/or as directed by the Engineer.
2. The work shall include the cutting and legal disposal of isolated trees and stumps, and all labor, materials and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.

H. Item 8, Remove and Dispose Catch Basins  
Item 9, Remove and Dispose Manholes

1. The work of this section shall be measured as specified at the EACH price on the bid form to remove, in whole or in part, drainage structures such as catch basins and manholes as shown in the Drawings and/or as directed by the Engineer.
2. The work shall include the removal and legal disposal of catch basins and manholes, and all labor, materials and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Removing and disposing frame and grates or frame and covers is included in other bid items under this Contract.

I. Item 10, Remove and Dispose Pipes- All Types and Sizes

1. The work of this section shall be measured as specified at the LINEAR FOOT price on the bid form to remove all pipe of whatever nature and sizes as shown in the Drawings and/or as directed by the Engineer.
2. The work shall include the removal and legal disposal of pipes as shown in the Drawings, and all labor, including cutting pipes to be removed or abandoned, materials and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Plugging and capping of abandoned drain or sewer pipes is included in other bid items under this contract.

J. Item 11, Remove and Dispose Frame and Grate or Frame and Cover

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1. The work of this section shall be measured as specified at the EACH price on the bid form to remove metal frames, covers or grates from existing utility and drainage structures as shown in the Drawings and/or as directed by the Engineer.
2. The work shall include the removal and legal disposal of frame and grates or frame and covers as shown in the Drawings, and all labor, materials and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.

**K. Item 12, Earth Excavation**

1. The work of this section shall be measured as specified at the CUBIC YARD price on the bid form to remove and legally dispose unsuitable soils, remove and stockpile suitable soils and the removal of boulders and rock fragments less than one (1) cubic yard in volume from areas within the design excavation as shown in the Drawings and/or as directed by the Engineer.
2. The work shall include the removal and legal disposal of unsuitable soils, removal and stockpiling of suitable soils, removal and legal disposal of rock fragments less than one (1) cubic yard, all labor, materials and equipment, including excavation within the prescribed pay limits, formation of embankments, grading, compaction, disposal of surplus materials, preparation of subgrade and shoulders, and for all incidentals required to finish the work, complete and accepted by the Engineer.

**L. Item 13, Common Borrow**

1. The work of this section shall be measured as specified at the CUBIC YARD price on the bid form for the installation of common borrow for backfilling trenches where the existing excavated materials have been deemed unsuitable as directed by the Engineer.
2. The work shall include all fees, leases, permits, and equipment, labor and operating cost associated with procuring, cleaning, working and restoring a borrow pit; all labor, materials and equipment, hauling, formation of embankments, grading, compaction, disposal of surplus materials, preparation of subgrade and shoulders; and for all incidentals required to finish the work, complete and accepted by the Engineer.

**M. Item 14, Structure Rock Excavation- Mechanical**

1. The work of this section shall be measured as specified at the CUBIC YARD price on the bid form to remove and legally dispose bedrock or boulders and detached bedrock fragments over one (1) cubic yard in volume when encountered within the limits of Structure Excavation by employing hydraulic splitters, air rams, paving breakers, or any other mechanical methods approved by the Engineer.
2. The work shall include all labor, materials and equipment, including dewatering, removal within the prescribed limits, backfilling and disposal of surplus material, and for all incidentals required to finish the work, complete and accepted by the Engineer
3. Structure Excavation-Earth for the removal of boulders and rock fragments less than one (1) cubic yard volume is included in other bid items under this Contract.
4. When rock is encountered, the material shall be uncovered and the Engineer notified. The Engineer shall determine quantities by volumetric computation determined from measurements performed before rock excavation begins and measurements performed after completion of rock excavation. If the Contractor fails to uncover the rock and notify the Engineer to allow ample time for cross sectioning the undisturbed material,

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the Contractor shall have no right-of-claim to any classification other than that allowed by the Engineer.

5. Measurements of rock excavation within a trench shall be in accordance with the trench payment limits shown on the project drawing details. The depth of rock removal will be limited to 12 inches below the bottom of the pipe or structure. No compensation will be made for rock excavated beyond the limits shown on the drawings and in these specifications, unless specifically authorized in writing by the Owner and Engineer. The contractor should include in the price provided for this bid item any and all costs associated with over excavation of rock beyond pay limits that they deem necessary for construction purposes due to their own means and methods.
6. Backfilling sections where rock has been removed is included for payment under this item.

N. Item 15, Trench Rock Excavation- Mechanical

1. The work of this section shall be measured as specified at the CUBIC YARD price on the bid form to remove and legally dispose bedrock or boulders and detached bedrock fragments over one ½ cubic yard in volume when encountered within the limits of Trench Excavation by employing hydraulic splitters, air rams, paving breakers, or any other mechanical methods approved by the Engineer.
2. Horizontal Pay Limits: For all pipe sizes up to and including 36 inches in diameter, measurement will be made between parallel vertical planes located 2 feet on each side of the inside diameter of the pipe; the length of trench will be measured from 1 foot beyond the outside face of a drainage structure to 1 foot beyond the outside face of the adjacent drainage structure.
3. Vertical Pay Limits in Cut Areas: Within the limits of Roadway Excavation, payment lines will extend vertically from one foot below the pipe to the subgrade; Outside the limits of Roadway Excavation, payment lines will extend vertically from one foot below the pipe to the subgrade.
4. The work shall include all labor, materials and equipment, including dewatering, removal within the prescribed limits, backfilling and disposal of surplus material, and for all incidentals required to finish the work, complete and accepted by the Engineer.
5. When rock is encountered, the material shall be uncovered and the Engineer notified. The Engineer shall determine quantities by volumetric computation determined from measurements performed before rock excavation begins and measurements performed after completion of rock excavation. If the Contractor fails to uncover the rock and notify the Engineer to allow ample time for cross sectioning the undisturbed material, the Contractor shall have no right-of-claim to any classification other than that allowed by the Engineer.
6. Measurements of rock excavation within a trench shall be in accordance with the trench payment limits shown on the project drawing details. The depth of rock removal will be limited to 12 inches below the bottom of the pipe or structure. No compensation will be made for rock excavated beyond the limits shown on the drawings and in these specifications, unless specifically authorized in writing by the Owner and Engineer. The contractor should include in the price provided for this bid item any and all costs associated with over excavation of rock beyond pay limits that they deem necessary for construction purposes due to their own means and methods.
7. Trench Excavation-Earth for the removal of boulders and rock fragments less than 1/2 cubic yard volume is included in other bid items under this Contract.



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- O. Item 16, Gravel Borrow Subbase Course
1. The work of this section shall be measured as specified at the CUBIC YARD price on the bid form to install one or more course of gravel borrow on prepared subgrade surfaces in reasonably close conformity with the dimensions and details indicated in the Drawings and as directed by the Engineer.
  2. The work shall include all labor, materials and equipment, and for all incidentals, including trimming and fine grading required to finish the work, complete and accepted by the Engineer.
- P. Item 17, Class 12.5 HMA for Patching  
Item 18, Class 9.5 HMA for Patching  
Item 19, Class 9.5 HMA for Miscellaneous Work
1. The work of this section shall be measured as specified at the TON price on the bid form to construct HMA pavements on prepared foundations in conformity with the details indicated in the drawings and in accordance with the Contract Specifications.
  2. The work included under Items 17 and 18 is to construct permanent trench patching. Item 19 is used to patch the gutter lines where new curbing has been installed.
  3. The work for all items identified above shall include all labor, materials and equipment, and for all incidentals, including trimming and fine grading and cleaning and sweeping required to finish the work, complete and accepted by the Engineer.
  4. In case of settlement or other defects in new or replaced pavements, the Contractor shall cut out, replace, restore or repair the damaged pavements at no additional expense to the Owner. This requirement shall remain in effect for 2 years after the acceptance of the work by the Owner and Engineer. The pavement area to be replaced, repaired or restored, shall extend from edge of pavement to edge of pavement, a minimum of 20 feet on either side of the defect; final pavement course shall be feathered to provide a smooth finish detail.
- Q. Item 20, Asphalt Emulsion Tack Coat
1. The work of this section shall be measured as specified at the SQUARE YARD price on the bid form to furnish, deliver, and place RS-1 liquid asphalt tack coat at the specified rate on hot mix asphalt, prior to the placement of a hot mix asphalt overlay as shown on the Drawings and as directed by the Engineer.
  2. The work shall include all labor, materials and equipment, and for all incidentals, required to finish the work, complete and accepted by the Engineer.
- R. Item 21, Temporary Patching Materials/Trench
1. The work of this section shall be measured as specified at the TON price on the bid form to construct HMA pavement on backfilled and prepared trenches to achieve a temporary patch as shown in the Drawings and as directed by the Engineer as well as patching pavement at the end of each work week as approved by the Engineer.
  2. The work shall include all labor, materials and equipment, and for all incidentals, including trimming and fine grading and cleaning and sweeping required to finish the work, complete and accepted by the Engineer.
  3. This bid item shall also include all necessary dust control measures to prevent dust from becoming a nuisance to residents and businesses. This shall include the

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application of water and calcium chloride to inhibit dust from trenches, stockpiles or any other exposed surfaces that may produce dust. Calcium chloride and water application shall be performed as necessary to prevent a dust nuisance and as required by the Engineer. The contractor shall at a minimum budget in this bid item the cost associated with daily application of calcium chloride and water to exposed trenches prior to application of temporary pavement.

- S. Item 22, Reinforced Concrete Pipe (RCP) M 170 Class III\* 12”  
Item 23, Reinforced Concrete Pipe (RCP) M 170 Class III\* 15”  
Item 24 Reinforced Concrete Pipe (RCP) M 170 Class V\* 24”
1. The work of this section shall be measured as specified at the LINEAR FOOT price on the bid form to furnish and install Class III and Class IV Reinforced Concrete Drain Pipe of various sizes at the locations and various depths shown on the Drawings and as directed by the Engineer.
  2. Measurement for payment shall be measured by the linear feet of continuous runs of drain pipe. Pipe with sloped or skewed ends will be measured along their respective inverts. For the purposes of measurement, the end of pipe in closed structures shall be considered to be flush with the inside face of said structure.
  3. The work shall include trench excavation to a depth sufficient to receive the appropriate layer of bedding material, shaping of the top of the bedding material, to receive the bell of the pipe, dewatering, laying, setting, and jointing all pipe, pipe couplings, fitting and gaskets, including connection to existing drainage structures or pipes, filter fabric, for design and furnishing, placing and subsequently removing support of excavations and trench protection, repair and/or relocation of any utility lines broken and/or conflicting with construction, backfilling support of excavations, backfilling with suitable on-site material, water for dust control, furnishing and installing backfill material where adequate material does not exist, the legal disposal of all excess unsuitable materials and for all labor, materials and equipment, and for all incidentals required to finish the work, complete and accepted by the Engineer.
  4. Removal, disposal and backfilling of unsuitable material below grade, saw cutting, removal and disposal of flexible pavement and pipe bedding shall be included in other items under this Contract.
  5. Required testing of drain pipe shall be included in this item.
  6. Support of overhead utilities and underground utilities to be crossed as part of the drain pipe installation shall be included in this item.
- T. Item 25, ¾” Crushed Stone Pipe Bedding
1. The work of this section shall be measured as specified at the CUBIC YARD price on the bid form to deliver and furnish crushed stone bedding material below and around the drain or sewer pipe at the depth specified on the Drawings and as directed by the Engineer.
  2. The work shall include all labor, materials and equipment for providing and installing such bedding material and for all incidentals required to finish the work, complete and accepted by the Engineer.
- U. Item 26, Polyvinyl Chloride (PVC) Sewer Pipe- 24”

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1. The work of this section shall be measured as specified at the LINEAR FOOT price on the bid form to furnish and install 24 Inch PVC Gravity Sewer main at the locations and depths shown on the Drawings and as directed by the Engineer.
2. Measurement for payment shall be measured by the linear feet of continuous runs of sewer pipe. Pipe with sloped or skewed ends will be measured along their respective inverts. For the purposes of measurement, the end of pipe in closed structures shall be considered to be flush with the inside face of said structure.
3. The work shall include trench excavation to a depth sufficient to receive the appropriate layer of bedding material, shaping of the top of the bedding material, to receive the bell of the pipe, dewatering, laying, setting, and jointing all pipe, pipe couplings, installation and subsequent removal of temporary bypass, as needed, including all pipes, pumps and all other materials needed to complete the work, fitting and gaskets, including connection to existing sewer manholes or pipes, including coring a new invert into the existing manhole and removing the existing plug in the existing sewer main to achieve the pipe cut in connection, all grout and concrete needed to properly secure the pipe to pipe cut in connection, patching of the old invert in both the manhole and sewer main, filter fabric, for design and furnishing, placing and subsequently removing support of excavations and trench protection, repair and/or relocation of any utility lines broken and/or conflicting with construction, backfilling support of excavations, backfilling with suitable on-site material, water for dust control, furnishing and installing backfill material where adequate material does not exist, the legal disposal of all excess unsuitable materials and for all labor, materials and equipment, and for all incidentals required to finish the work, complete and accepted by the Engineer.
4. Removal, disposal and backfilling of unsuitable material below grade, saw cutting, removal and disposal of flexible pavement and pipe bedding shall be included in other items under this Contract.
5. Required testing of the gravity sewer main shall be included for payment under in this item.
6. Support of overhead utilities and underground utilities to be crossed as part of the sewer main installation shall be included for payment under this item.

- V. Item 27, Frame and Grate- Heavy Duty (Bicycle Safe)  
Item 28, Frame and Cover- Heavy Duty  
Item 29, Frame and Cover – Light Duty

1. The work of this section shall be measured as specified at the EACH price on the bid form to deliver and furnish frame and grate or frame and cover assemblies on existing and proposed catch basins and manholes as shown on the drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment for providing said assemblies and for all incidentals, including trimming and fine grading required to finish the work, complete and accepted by the Engineer
3. This includes furnishing and installing brick and mortar and/or riser rings under frames.

- W. Item 30, Precast Concrete Apron Stone 38"

1. The work of this section shall be measured as specified at the EACH price on the bid form to construct precast apron stone curbing on prepared gravel bases for catch basins as shown in the Drawings and as directed by the Engineer.

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2. The work shall include all labor, materials and equipment, including excavation, joints, gravel borrow subbase course including compaction and trimming and fine grading backfilling, compacting, and for all incidentals, including concrete curb lock, required to finish the work, complete and accepted by the Engineer.
3. Saw cutting, removal and disposal of flexible pavement and sidewalk is included in other bid items under this Contract.

X.           Item 31, Precast 4'-0" Round Catch Basin  
              Item 32, Precast 4'-0" Round Manhole

1. The work of this section shall be measured as specified at the EACH price on the bid form to construct manholes and catch basins between zero to 12 feet in depth in reasonably close conformity with the dimensions and details included in the Drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment for providing said structures including excavation (except rock excavation), placing and compacting backfill, steps, dewatering, as needed, design, furnishing, installing and subsequently removing support of excavation waterproofing structures, repair and/or relocation of any utility lines broken and/or conflicting with construction, the legal disposal of all surplus excavated and/or unsuitable material, connecting new and existing drain pipes, testing for leakage, clean-up and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Structure Rock Excavation shall be included in other bid items under the Contract.
4. Support of overhead utilities and underground utilities to be crossed as part of the drain catch basin installation shall be included in this item.

Y.           Item 33, Precast 4'-0" Round Manhole (Greater than 12'-0" in Depth)  
              Item 34, Precast 6'-0" Round Manhole (Greater than 12'-0" in Depth)  
              Item 35, Precast 8'-0" Round Manhole (Greater than 12'-0" in Depth)

1. The work of this section shall be measured as specified at the EACH price on the bid form to furnish and install manholes of reinforced precast concrete at a depth greater than 12'-0" in reasonably close conformity with the dimensions and details included in the Drawings and as directed by the Engineer.
2. The work shall include excavation (except rock excavation), placing and compacting backfill, steps, dewatering, design, furnishing, installing and subsequently removing support of excavation, furnishing and installing concrete bases including crushed stone foundation, furnish and install crushed stone bedding, riser sections, cones or top slabs, landing platforms, repair and/or relocation of any utility lines broken and/or conflicting with construction, connecting proposed and existing drain pipes, waterproofing structures, testing for leakage, butyl rubber, clean-up, the legal disposal of all surplus excavated and/or unsuitable material, clean-up and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Structure Rock Excavation shall be included in other bid items under the Contract.
4. Support of overhead utilities and underground utilities to be crossed as part of the drain manhole installation shall be included in this item.

Z.           Item 36, Plug and Cap Pipe- All Sizes

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1. The work of this section shall be measured as specified at the EACH price on the bid form to provide and furnish plugs and caps for various sizes and types of pipe at the locations shown in the Drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment required to provide said plugs or caps and for all incidentals required to finish the work, complete and accepted by the Engineer.

AA. Item 37, Cleaning and Flushing Pipe- All Types and Sizes

1. The work of this section shall be measured as specified at the LINEAR FOOT price on the bid form to clean storm drains of all types and sizes as shown in the Drawings and as directed by the Engineer.
2. Measurement for payment will be from center-to-center of drainage structures for all pipe lines actually cleaned, regardless of the sizes of said pipe.
3. The work shall include all labor, materials and equipment required to conduct this operation by normal methods and for all incidentals required to finish the work, complete and accepted by the Engineer.
4. Cleaning of newly installed drain pipes will be included in other bid items under the Contract.

BB. Item 38, Cleaning Catch Basins - All Sizes

1. The work of this section shall be measured as specified at the EACH price on the bid form to clean catch basins of all types and sizes as shown in the Drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment required to conduct this operation by normal methods and for all incidentals required to finish the work, complete and accepted by the Engineer
3. Cleaning of newly installed catch basins and manholes shall be included in other bid items under this Contract.

CC. Item 39, Portland Cement Sidewalk Monolithic

1. The work of this section shall be measured as specified at the CUBIC YARD price on the bid form to construct sidewalks and wheelchair ramps on prepared gravel bases as shown in the Drawings and as directed by the Engineer.
2. The work shall include all labor, including trimming and fine grading, materials and equipment, including expansion joint material, reinforcement, and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Excavation and gravel borrow subbase will be included in other bid items under this Contract.
4. A maximum 5 percent overrun of calculated quantities based on the required thickness as shown in the Drawings is permissible.

DD. Item 40, Cement Concrete Curb Precast- Straight  
Item 41, Cement Concrete Curb Precast- Circular

1. The work of this section shall be measured as specified at the LINEAR FOOT price on the bid form to construct concrete curb on prepared gravel bases including cement

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concrete curb lock as shown in the Drawings and as directed by the Engineer.

2. Measurement for payment will be measured along the front face of the sections of curbing at the finished grade elevation.
3. The work shall include all labor, materials and equipment, including excavation, joints, gravel borrow subbase course including compaction and trimming and fine grading backfilling, compacting and for all incidentals, including concrete curb lock, required to finish the work, complete and accepted by the Engineer.
4. Saw cutting, removal and disposal of flexible pavement and sidewalk shall be included in other bid items under this Contract.

EE. Item 42, Precast Concrete Wheelchair Ramp Curb Transition  
Item 43, Precast Concrete Ramp Stone 18- Inch- Circular

5. The work of this section shall be measured as specified at the EACH price on the bid form to construct concrete transition curb and concrete ramp stones on prepared gravel bases including cement concrete curb lock as shown in the Drawings and as directed by the Engineer.
6. The work shall include all labor, materials and equipment, including excavation, joints, gravel borrow subbase course including compaction and trimming and fine grading backfilling, compacting and for all incidentals, including concrete curb lock, required to finish the work, complete and accepted by the Engineer.
7. Saw cutting, removal of flexible pavement and sidewalk shall be included in other bid items under this Contract.

FF. Item 44, Test Pits (Paved or Unpaved)

1. The work of this section shall be measured as specified at the EACH price on the bid form to excavate exploratory test pits for the purpose of locating utilities of every type, including but not limited to, water, sewer, storm drains, gas, and power distribution and communications, and for determining water table elevations and soil condition as shown in the Drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment, including saw cutting, cutting and matching, removal and legal disposal of bituminous pavement and excess soil, excavation to depths required by the Engineer, de-watering, shoring, providing means of egress for the Engineer to safely access the test pit, furnishing and installing bedding material for utilities or structures encountered in the test pit, furnishing and installing loam and seed in areas outside of paved areas, and furnishing, installing, and properly compacting backfill including 12-inch processed gravel sub-base under paved areas and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Test pits performed for the Contractor's convenience are not payable under this item and are considered incidental to the work of the Contract.
4. Replacing pavement shall be included in other bid items under this Contract.

GG. Item 45, Full Depth Sawcut of Bituminous Pavement  
Item 46, Full Depth Sawcut of Portland Cement Concrete Sidewalks and Driveways

1. The work of this section shall be measured as specified at the LINEAR FOOT price on the bid. The work in Item 47 consists of cutting bituminous pavement to be removed for trench excavation and for the replacement of curbing as shown in the Drawings

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and as directed by the Engineer. The work in Item 47 consists of cutting sections of cement concrete sidewalk to remain to create a neat line for replacement as shown in the Drawings and as directed by the Engineer.

2. The work shall for both items shall include all labor, materials and equipment, and for all incidentals required to finish the work, complete and accepted by the Engineer.
3. Any existing surface course, base course or combination thereof, or cement concrete beyond the neat lines called for on the Drawings that is damaged or destroyed by the Contractor's operations shall be either repaired or replaced at no additional cost to the Owner.
4. Removing and disposing flexible pavement and trench excavation shall be included under in other bid items under this Contract.

HH. Item 47, Reconstruct Brick Shelf and Manhole Invert

1. The work of this section shall be measured as specified at the EACH price on the bid form to rebuild the existing brick shelf and manhole inlet in the existing sewer manhole at the location and elevation shown on the Drawings and as directed by the engineer. The work consists of removing and legally disposing bricks and furnishing and installing bricks to create a new shelf and invert.
2. The work shall include all labor, materials and equipment, including the removal and legal disposal of bricks, furnishing bricks, mortar, installation and subsequent removal of temporary bypass, as needed, including all pipes, pumps and all other materials needed to complete the work, and all incidentals required to finish the work, complete and accepted by the Engineer.

II. Item 48, Loam Borrow 4 Inches Deep

1. The work of this section shall be measured as specified at the SQUARE YARD price on the bid form to place loam to the lines, grades, depths at the locations shown on the Drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment including trimming and fine grading, and all incidentals required to finish the work, complete and accepted by the Engineer.
3. Areas outside the project limits that have been damaged by the Contractor's operations shall be replaced at no additional cost to the Owner.

JJ. Item 49, Seeding

1. The work of this section shall be measured as specified at the SQUARE YARD price on the bid form to place prepare the seed bed, furnish and place materials, and establish grass areas for areas adjacent to lawns or sidewalks at the locations shown on the Drawings and as directed by the Engineer.
2. The work shall include preparation of seed beds, furnishing and applying lime, fertilizer, mulch, seed, raking, mowing, watering, and care during construction of the seeded areas and for all labor, materials and equipment including trimming and fine grading, and all incidentals required to finish the work, complete and accepted by the Engineer.
3. Eighty-five percent of the total contract price will be paid at the time of the initial seeding. The remainder, 15 percent, will be paid when the newly seeded areas have

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been accepted.

4. If seeding is done at a time other than the specified seeding date, the entire payment for seeding will be withheld until a uniform acceptable stand or turf, as determined by the Engineer, has been obtained.

**KK. Item 50, Detectable Warning Panel**

1. The work of this section shall be measured as specified at the SQUARE FOOT price on the bid form provide and install a panel with truncated domes in an array pattern that is compliant with the Americans with Disabilities Act (ADA) warning and directional systems for the visually impaired at the locations shown on the Drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment, and all incidentals required to finish the work, complete and accepted by the Engineer.

**LL. Item 51, Adjust Frame and Grate to Grade  
Item 52, Adjust Frame and Cover to Grade**

1. The work of this section shall be measured as specified at the EACH price on the bid form to adjust drainage catch basin frame and grates and frame to match the grades of the temporary and permanent trench patching locations shown on the Drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment, and all incidentals required to finish the work, complete and accepted by the Engineer.

**MM. Item 53, Final Epoxy Resin Pavement Markings**

1. The work of this section shall be measured as specified at the LUMP SUM price on the bid form to apply pavement markings including broken lines, centerlines, stop bars, words and arrows, at the width, color and locations shown on the Drawings and as directed by the Engineer.
2. The work shall include all labor, materials and equipment, including protection of newly applied markings from traffic, layout, cleaning and sweeping, furnishing and applying the pavement markings and all incidentals required to finish the work, complete and accepted by the Engineer.
3. Payment shall be as follows:
  - a. Minimum 350/225 (white/yellow): 100% contract unit price
  - b. Minimum 330/205 (white/yellow): 90% contract unit price
  - c. Minimum 310/185 (white/yellow): 80% contract unit price
  - d. Minimum 300/175 (white/yellow): 75% contract unit price
  - e. Below 300/175 (white/yellow): 0% contract unit price
4. The payment for work associated with placing final epoxy resin pavement markings controls shall be a Lump Sum Price as provided on the Bid Form for Bid Item No. 54.

**NN. Item 54, Unsuitable Material Below Grade Excavation and Disposal**

1. Under the unit price bid for Item 55 the Contractor shall excavate below the specified depth to clear utilities or match existing mains, or to remove peat, clay or other



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unsuitable material, below the grade of pipe a minimum of 6-inches, when and as directed by the Engineer; load, transport, and legally dispose of such material away from the job; furnish and place approved process gravel material in the place of material removed.

2. Measurement for payment will be on the basis of cubic yards of material excavated within the detailed trench payment width and at authorized depth, as measured by the Engineer. There will be no separate payment for fill used to replace excavated unsuitable material – it shall be included in this bid item.

OO. Item 55, Pavement Cores

1. Under the unit price bid for Item 55 the Contractor shall hire an experienced Subcontractor, prior to the start of construction, to extract three (3) 4-inch diameter full depth pavement cores by wet core method within the proposed limits to verify the pavement thickness for trench patching.
2. This work also includes repairing core holes using a high strength grout or cold patch, further examining/testing cores, including measurements and photographs and to provide a subsequent report documenting findings
3. The payment for work associated with Pavement Cores shall be a Lump Sum Price as provided on the Bid Form for Bid Item No, 55.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

END OF SECTION

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**2.2 BRICK MATERIALS**

- A. Brick shall be sound, hard and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Brick shall conform to ASTM Specification C-32 for Grade SS, hard brick, except that the mean of five tests for absorption shall not exceed 8 percent by weight.
- B. Rejected brick shall be immediately removed from the work and brick satisfactory to the Engineer substituted.
- C. Mortar shall be composed of Portland cement, hydrated lime, and sand in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime. The proportions of cement and lime shall be directed and may vary from 1:1/4 for dense hard-burned brick to 1:3/4 for softer brick. In general, the mortar for Grade SS Brick shall be mixed in the volume proportions of 1:1/2 :4-1/2; Portland cement to hydrated lime to sand.
- D. The sand shall comply with ASTM C144 specifications for "Fine Aggregate," except that all of the sand shall pass a No. 8 sieve.
- E. Hydrated lime shall be Type S conforming to ASTM C207
- F. The dome of the manholes shall be a precast concrete Section. The top 6-inches of the dome, not to exceed 12 inches, shall be built of brick and mortar to permit adjustment of the frame to meet the ground surface.
- G. Cement shall be Type II Portland cement as specified for concrete masonry.

**2.3 DRAINAGE MANHOLE FRAMES AND COVERS**

- A. Manhole Frames and Covers shall conform to the details on the Drawings. Cast iron shall conform to ASTM A-48, Class 25. The underside of the cover and upper side of lip frame must present parallel plane surfaces, and at these points of contact, the frames and covers shall be machined to prevent covers from rocking in the frames under traffic.
- B. Castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sandholes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of covers and frame seats shall be machined to prevent rocking of covers.
- C. Covers shall bear evenly in the frame and both frame seats and covers shall be accurately fabricated so that covers are interchangeable for use with any and all frames. Where indicated, frames and covers shall be watertight, and locked. The sizes and weights (medium duty, heavy duty) are shown on the detail sheets for special manholes.
- D. All castings shall be thoroughly cleaned and may be subject to a careful hammer inspection at the Engineer's discretion.
- E. Castings shall be ASTM A48 Class 30B or better.

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- F. Manhole frames with 30-inch diameter covers shall be 425 pounds minimum and shall conform to City requirements.
- G. Covers shall have a non-slip surface and shall have the word “DRAIN” or “SEWER”, as applicable, inscribed.
- H. Frames and covers shall be installed on the manholes as indicated on the Drawings. They shall be well bedded and encased in cement mortar and accurately set to the grades indicated or as directed. Red clay brick with cement mortar shall be used to adjust grade of frame and cover. One half inch of cement mortar plaster cast shall be applied to exterior of red clay bricks.
- I. All frames shall be designed for H-20 wheel loading.

2.4 CATCH BASIN FRAMES AND GRATES

- A. Catch Basin Frames and Grates shall conform to the details on the drawings. Cast iron shall conform to ASTM A-48, Class 25. The underside of the grate and upper side of lip frame must present parallel plane surfaces, and at these points of contact, the frames and grates shall be machined to prevent grates from rocking in the frames under traffic.
- B. Grate shall bear evenly in the frame and both frame seats and grates shall be accurately fabricated so that grate is interchangeable for use with any and all catch basin frames. The sizes and weights (medium duty, heavy duty) are shown on the detail sheets.
- C. Gratings shall have a non-slip surface.
- D. Gratings shall be installed on the catch basins as indicated on the Drawings. They shall be well bedded and encased in cement mortar and accurately set to the grades indicated or as directed. Red clay brick with cement mortar shall be used to adjust frame and grate. One half inch of cement mortar plaster cast shall be applied to exterior of red clay bricks.
- E. Catch basin frames and grates shall be as specified by the City of Pawtucket Department of Public Works or equal.
- F. Castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sandholes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of grates and frame seats shall be machined to prevent rocking of grates.
- G. Castings shall be ASTM A48 Class 30B or better.
- H. All frames shall be designed for H-20 wheel loading
- I. All castings shall be thoroughly cleaned and may be subject to a careful hammer inspection at the Engineer’s discretion.

**CITY OF PAWTUCKET  
PROSPECT HEIGHTS SEWER RECONSTRUCTION**

SECTION 02614

REINFORCED-CONCRETE DRAINPIPE

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes

- 1. Requirements for furnishing and installing reinforced-concrete pipe to where shown in the Drawings and directed by Owner or Engineer.

B. Related Sections

- 1. Section 02200 - Earthwork.

1.3 QUALITY ASSURANCE

A. Provide in accordance with Section 01400, Quality Control

- 1. Reinforced-concrete pipe shall be made by a manufacturer of established good reputation in the industry and in a plant adapted to meet the design requirements of the pipe.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM).

- 1. C33, Specification for Concrete Aggregates.
- 2. C76, Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
- 3. C361, Specification for Reinforced Concrete Low-Head Pressure Pipe.
- 4. C443, Specification for Joints for Circular Concrete Culvert and Sewer Pipe, Using Rubber Gaskets.

- B. All work specified in this Section shall conform to "Standard Specifications for Road and Bridge Construction" of the Rhode Island Department of Transportation, latest revision, herein referred to as "State Standards" excluding the provisions of Part 100- General Requirements and covenants and any reference to measurement and payment.

1.4 SUBMITTALS

- A. In accordance with the General Conditions Sections 3.10, 3.10.1, 3.10.2, 3.11, 3.12, 3.12.4, 3.12.5, 4.2, 4.2.4, 4.2.7, 5.2, 5.2.1, 5.2.3, 6.1.3, 7.3.7, 9.2, 9.3, 9.8, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3, 11.1.3, and 11.4.2 submit for review drawings showing the pipe dimensions reinforcement, joint, and other details for each type and class of pipe to be furnished for the project. All pipe furnished under the contract shall be manufactured only in accordance with the specifications and the reviewed drawings.

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**PART 2 – PRODUCTS**

**2.1 PIPE**

- A. Each unit of pipe shall have an interior surface, which is free from roughness, projections, indentations, offsets, or irregularities of any kind. The pipe units shall be Class III unless specified otherwise on the drawings and shall conform to ASTM C76 with the following exceptions and additions:
1. Type II cement shall be used unless otherwise permitted by the Engineer. Admixtures shall not be used except with the prior permission of the Engineer.
  2. Aggregates shall conform to the requirements set forth hereinafter.
  3. Elliptical reinforcement will not be permitted. Longitudinal reinforcement shall be continuous. Reinforcement shall have a minimum cover of 3/4 in.
  4. Absorption shall be as specified under "Inspection, Tests and Acceptance."
  5. Pipe units have a minimum laying length of 8 ft., except as otherwise indicated or permitted by the Engineer.
  6. Pipe units shall be cured by subjecting them to thoroughly saturated steam at a temperature between 100 and 130 degrees Fahrenheit for a period of not less than 12 hours or, when necessary, for such additional time as may be needed to enable the pipe units to meet the strength requirements.
  7. Pipe units shall not be shipped until they have aged for at least 450 day-degrees which include the steam curing period. Day-degrees are the total number of days times the average daily air temperature at the surface of the pipe units (example: Five days at a daily average temperature of 60 degrees Fahrenheit equals 300 day-degrees). Wherever the average daily temperatures are below 60 degrees Fahrenheit, the Contractor shall submit to the Engineer records of average daily temperatures and number of days the pipe units have been cured.
  8. There shall be no lift holes in the pipe.
  9. Mortar used for repairs shall have a minimum compressive strength of 4,000 psi. at the end of 7 days and 5,000 psi. at the end of 28 days, when tested in 3-in. by 6 in. cylinders stored in the standard manner. Only those repairs permitted by the above-mentioned ASTM C76 will be allowed.
  10. The date of manufacture, class of pipe unit, size of pipe unit, and trademark of the manufacturer shall be clearly and permanently marked on the inside and the outside at one end of each pipe unit.
  11. Certified copies of tests on materials and the pipe units will be required.
- B. Specials, if required, shall conform to the specifications for straight pipe insofar as applicable. Special design or construction necessary for specials shall be subject to acceptance by the Engineer.

**2.2 JOINTS**

- A. Pipe joints shall be of the rubber gasket type in which the gaskets are in compression and which will permit both longitudinal and angular movement. Each unit of pipe shall be provided with proper ends made of concrete formed true to size and formed on machined rings to ensure accurate joint surface. Joints and gaskets shall be O-ring or ribbed gasket type and shall conform to the requirements of ASTM C443, or ASTM C361 and to the additional requirements specified.

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2.3 INSPECTION, TESTS AND ACCEPTANCE

- A. Acceptance will be on the basis of tests of materials, absorption tests, plant load-bearing tests, and inspection of the complete product. The quality of all materials used in the pipe, the process of manufacture, and the finished pipe shall be subject to inspection by the Engineer. Inspection may be made at the place of manufacture, or on the work site after delivery, or both, and the pipe shall be subject to rejection at any time due to failure to meet any of the specification requirements, even though sample pipe units may have been accepted as satisfactory at the place of manufacture. All pipe which is rejected shall be immediately removed from the project site by the Contractor.
- B. Tests and certified copies in triplicate of test results will be required for the materials and the finished pipe units as described herein. If less than 100 units of a given size and class of pipe are required, the Contractor may submit certified copies of tests made on identical pipe units made by the same manufacturer within the past year. If more than 100 units of a given size and class of pipe are required, the Contractor shall, at his own expense, engage the services of an acceptable independent testing laboratory to perform or witness all tests, other than mill tests on reinforcing steel and cement, and certify the results. In addition, the Owner reserves the right to have any or all pipe units inspected or tested, or both, by an independent testing laboratory at either the manufacturer's plant or elsewhere. Such additional inspection and/or tests shall be at the Owner's expense and shall be the test results of record.
- C. All pipe units to be tested shall be selected at random by the Engineer. Unless otherwise permitted, all load-bearing tests on pipe units shall be made in the presence of the Engineer.
- D. All tests shall be made in accordance with the latest applicable ASTM specifications.
  - 1. Reinforcing Steel--Mill test reports, or reports on samples taken from each shipment to the pipe manufacturer, shall be submitted for reinforcing steel to be used on this project stating that the reinforcing meets the specified requirements.
  - 2. Cement--Mill test reports shall be submitted for each shipment to the pipe manufacturer of cement to be used on this project stating that the cement meets the specified requirements. All cement accepted for this project shall be kept segregated from other cement.
  - 3. Aggregates--Test reports shall be submitted stating that the aggregates to be used on this project meet the requirements for concrete aggregates as specified in ASTM C33. Additional tests and reports shall be made monthly thereafter during the production of the pipe.
  - 4. Absorption Tests--Three cores shall be taken from each pipe unit that is to be load tested. The cores shall be taken before the load-bearing tests are performed. All cores shall be tested for absorption by the boiling absorption test. Average absorption shall not exceed 8 percent of the dry weight and no single test shall exceed 9 percent.
  - 5. Pipe Unit Load-Bearing Tests--A load-bearing test shall be made on one pipe unit of each size and class and the report of the test submitted before delivery to the project of that size and class of pipe unit. An additional test will be required for each 200 units of each size and class of pipe. The load-bearing test shall be performed after the cores for the absorption tests have been taken. Each load-bearing test shall be carried to the specified load to produce the 0.01 in. crack. If the 0.01 in. crack is not formed, the pipe unit may be used in the project. Cored holes shall be plugged with the mortar specified above for repairs.
  - 6. Concrete Cylinders--Compression tests shall be made on standard concrete cylinders for the first or test pipe unit and then for every 100 cubic yards of concrete used in pipe manufacture, or for each additional 200 units of pipe, whichever represents the lesser amount of concrete. Four cylinder shall be made for each test and they shall be broken at 7,

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14, and 28 days with one cylinder as a spare to be used in the event of an unsatisfactory break. The reports shall be submitted within three days after each of the compression tests.

**PART 3 – EXECUTION**

**3.1 HANDLING PIPE**

- A. Each pipe unit shall be handled into its position in the trench only in such manner and by such means as is acceptable to the Engineer.
- B. The Contractor will be required to furnish suitable devices to permit satisfactory support of all parts of the pipe unit when it is lifted.

**3.2 INSTALLATION**

- A. Each pipe unit shall be inspected before being installed. Any pipe discovered to be defective either before or after installation shall be removed and replaced with a sound pipe.
- B. Except as otherwise indicated on the drawings, the pipe shall be supported by compacted crushed stone. No pipe or fitting shall be permanently supported on saddles, blocking, or stones. Crushed stone for bedding shall be as specified under Section 02200.
- C. Suitable bell holes shall be provided, so that after placement only the barrel of the pipe receives bearing pressure from the supporting material.
- D. All pipe units shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.
- E. Pipe and fittings shall be installed to the lines and grades indicated on the drawings or as required by the Engineer. Care shall be taken to ensure true alignments.
- F. Before any joint is made, the unit shall be checked to assure that a close joint with the next adjoining unit has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be given down to the required grade by striking it with a shovel handle, timber, or other unyielding object.
- G. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe unit together so that they will fit with a minimum open recess inside and outside and have tightly seated joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends. Joints shall not be pulled or cramped without the permission of the Engineer.
- H. Immediately after the pipe joint is completed, the position of the gasket in the joint shall be inspected using a suitable feeler gage furnished by the Contractor, to be sure it is properly put together and is tight. Joints in which the gasket is damaged or not properly positioned shall be pulled apart and remade using a new gasket.
- I. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.

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- J. Details of gasket installation and joint assembly shall follow the directions of the manufacturer of the joint materials and of the pipe, all subject to acceptance by the Engineer. The resulting joints shall be watertight and flexible.
- K. After each pipe to be supported on screened gravel has been properly bedded, enough gravel shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes provided for jointing shall be filled with screened gravel and compacted, and then screened gravel shall be placed and compacted to complete the pipe bedding, as indicated on the drawings.
- L. The Contractor shall take all necessary precautions to prevent floatation of the pipe in the trench.
- M. At all times when pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs or by other suitable means. If water is in the trench when work is to be resumed, the plug shall not be removed until all conditions are suitable to prevent water, earth, or other material from entering the pipe.
- N. Pipelines shall not be used as conductors for trench drainage during construction.
- O. Backfill material shall be in accordance with Section 02200, Earthwork.

3.3 CLEANING

- A. Care shall be taken to prevent earth, water, and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out pipelines and manholes, being careful to prevent soil, water, and debris from entering any existing pipe.

END OF SECTION



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- M. Products shall not be stored on areas over the newly laid pipeline or other pipelines which might be damaged by the superimposed load. Products may not be strung out along the alignment of the project other than what Contractor intends on installing on that given day.
- N. Products may not be stored on private property unless permission to do so has been granted by the property owner.

**1.9 PROJECT CONDITIONS**

- A. **Interruption of Existing Sanitary Sewage Service:** The interruption of the existing sanitary line shall not be permitted. The Contractor shall maintain the existing flows as required in Section 02149, Maintain Existing Flows
- B. **Dig Safe:** All Contractors or Subcontractors performing drilling, boring, auguring, jetting, sheeting or pile installation, demolition, excavation or like work shall, prior to commencement of these activities, contact Dig Safe and non-member utility companies having responsibility for underground transmission systems for information relative to locations of existing underground utilities a minimum 72 hours prior to commencing excavation.
- C. **Protection of Water Lines**
  - 1. **Vertical Separations:** Whenever the sewers cross existing water mains or services to remain, or in locations where the sewer line is anticipated to cross a proposed water main or service, the vertical separation of the top of the sewer shall be at least 18 inches below the bottom of the water main.
  - 2. **Horizontal Separations:** If the proposed sewer line is to be constructed closer than 10 feet from a proposed water main or existing water main to remain, and where top of sewer is fewer than 18-inches beneath invert of water main, the sewer line shall be encased in concrete or thicker wall pipe, such as Class 52 double cement lined ductile iron pipe or DR-18 PVC, shall be utilized for a minimum of 10 feet on either side of this encroachment. This must be performed until the separation is greater than 10 feet. Appropriate manufactured fittings shall be employed to adapt the ductile iron pipe to the PVC pipe of the contract. Controlled density fill is an acceptable form of encasement.
  - 3. Should the water main in either situation (Horizontal or Vertical conflict) be at or below the sewer elevation, the waterline or the sewer must be relocated to achieve 10-foot horizontal separation or the waterline raised to achieve the required vertical separation.
  - 4. Ductile iron or DR-18 pipe used for sewer where in conflict with the required horizontal or vertical separations required above shall be subject to hydrostatic pressure testing in accordance with AWWA standards for water main.

**1.10 PERMITS**

- A. The Contractor shall obtain any permits required by the local authority prior to commencing with work affecting the sanitary sewer system. The Contractor shall be qualified to perform work in the City of Pawtucket.
- B. No work shall commence until the Contractor has acquired all required permits and receives authorization from the Owner.









Scale: 1"=60'



PROJECT NO. 22063.00

DATE: NOVEMBER 2022

**FIGURE 1**  
 UPSTREAM SEWER MANHOLE LOCATIONS  
 BEVERAGE HILL AVENUE AT PROSPECT STREET  
 PAWTUCKET, RHODE ISLAND

RESPONSE TO COMMENTS

NOVEMBER 8, 2022

CITY OF PAWTUCKET

**PROSPECT HEIGHTS SEWER RECONSTRUCTION**

Beverage Hill Avenue, Pawtucket.

1. Q: Is there an area available at the Public Works Yard for the temporary stockpiling of soil during construction?

R: In coordination with the City, the DPW does not have sufficient space to permit temporary stockpiling of soil during construction. Further coordination will be needed with the City of Pawtucket.

2. Q: The bid form includes 10 test pits. Only one proposed location was found on the drawings. Please advise on the anticipated locations for the other 9.

R: Test pits at the location shown are to verify if sheeting in the area identified remains from the previous sewer reconstruction. The other test pits are included for the Contractor are for the purpose of locating utilities, determining the water table elevation, and determining soil conditions.

3. Q: Please confirm if all traffic control will be by police. It was discussed at the prebid meeting that the preferred method is for the contractor to use flaggers. If this is the case, can Bid Item 56 be revised accordingly?

R: Bid item 56 will be removed from the Bid. Where possible, the Contractor should use flaggers instead of police officers. If/when police officers are necessary, the City will pay for the police protection directly. This has been reflected as part of Addendum No. 2.

4. Q: Please provide the invert elevation of the existing 24" connection to the 69" main that is to be plugged.

R: Invert has been added to the plans and is included in Addendum No. 2.

5. Q: Please provide information related to the sewer system upstream of the manhole that is to receive the new shelf/invert (specifically the location of the next manhole and any services contributing to the system between the two manholes).

R: Figure 1- Upstream and downstream sewer manhole locations has been included as part of Addendum No. 2. However, it is the Contractor's responsibility to determine if there are any direct connections between the upstream manhole and the work area.

6. Q: Have any borings been completed for the project? Is there any information related to groundwater depths in the project area?

R: No borings have been completed for the project. Test pits have been provided for the Contractor's use to determine the elevation of the groundwater table.

7. Q: Do pavement markings that are removed also need to be blacked out?

R: No. Pavement markings removed by grinding shall be sufficient.

8. Q: The specifications reference hot dipped bituminous coating for castings. At least one vendor has indicated that these may not be available. Can this requirement be waived?

R: The requirement has been removed from the applicable sections and is included as part of Addendum No. 2.

9. Q: The Bid form has 800' of Cleaning and Flushing pipe. The project calls for the installation of approximately 440' of pipe. What additional pipe is to be cleaned/flushed?

R: Existing pipes that are to be tied back into the proposed system from the Housing Authority and other pipes that are not directly being impacted by the work but are connected to the existing storm system on Beverage Hill Avenue are proposed to be cleaned and flushed as part of this project.

10. Q: Section 02614 for Reinforced Concrete Pipe, part 2.3, paragraph D, Item 6) calls for pressure testing of drain pipe. At least one manufacturer of this pipe has concerns related to this test, considering that the pipe is manufactured for drainage and not sewer applications. Can this requirement be waived?

R: The requirement has been removed from the applicable sections and is included as part of Addendum No. 2.