



CITY OF DANVILLE, VIRGINIA
DEPARTMENT OF PUBLIC WORKS

NOTICE TO BIDDERS
AND
SPECIAL PROVISIONS
FOR CONSTRUCTION OF

APPLE BRANCH SANITARY SEWER
INTERCEPTOR RECONSTRUCTION

Under

Project Plans by Rummel, Klepper & Kahl, LLP

VDOT Road & Bridge Specifications dated 2020

VDOT Road and Bridge Standards Dated 2016 and as amended

Identified by

IFB No.

21-22-083

May 2022

Prepared by the Office of the City Engineer

DANVILLE, VIRGINIA

Plans and Technical Specifications by Rummel, Klepper & Kahl, LLP

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VOLUME I - NOTICE TO BIDDERS

NOTICE TO BIDDERS

Invitation for Bid No. 21-22-083

Bids open June 27, 2022.

Advertisement dated: May 13, 2022

General work description: Sanitary sewer replacement and construction of approximately 3,235 linear feet of 10-inch, 12-inch, and 16-inch sanitary sewer main, 27 sanitary sewer manholes totaling approximately 240 vertical feet, and approximately 530 linear feet of sanitary sewer laterals. Also included is all necessary bypass pumping, pavement restoration, traffic control, erosion control measures, appurtenances, and all other work that may be required to complete the work de-scribed under the contract documents for this project.

Contractors are encouraged to do business with Disadvantaged Business Enterprises (DBEs) however, there is no contract requirement for DBE participation.

The Contractor must obtain licensure in the Commonwealth of Virginia in accordance with the requirements of Title 54.1, Chapter 11, of the Code of Virginia (1950), as amended.

Contract Completion Time: Complete the work within three hundred (300) days from the date of Notice to Proceed.

A non-mandatory **Prebid Conference** (project showing) will convene at the Second Floor Conference Room, Municipal Building, 427 Patton Street, Danville, Virginia, 24541 at **10:00 a.m. local prevailing time on June 15, 2022.** The purpose of the conference is for Bidders to familiarize themselves with the work and existing conditions and to ask questions pertaining to the Contract Documents. Bidders are reminded that no oral interpretations of the contract documents will be made. Conflicts in documents, if any, will be resolved by written addendum.

The City will receive bids until 2:00 p.m. local prevailing time on the bid open date at 427 Patton Street, Room 304, Danville, Virginia, 24541. Bids received after this time will not be accepted.

The City will open and publicly read aloud the bids at the above location immediately after the specified closing time.

Submit your bid with proposal guaranty (bid bond, certified check, or cash escrow) equal to at least 5% of the bid.

The City reserves the right to reject any or all bids and to waive any irregularities or informalities in the bidding.

An agreement will be presented to the Contractor for signature within 30 days after opening of bids if contract is to be awarded.

The procedure for withdrawal of bids due to error shall be according to Virginia Administrative Code §2.2-4330.

Electronic copies of the Project Plans and Special Provisions for this project may be obtained from the City's Bid Postings website and physical copies will be provided Contractor's following written request.

City of Danville
J. Gary Via, CPPO
Director of Purchasing

COPY OF BID ITEM LIST

Note: Estimated Quantity Schedule is provided for comparison purposes only and may not be all inclusive of the work depicted in the bid documents. **The bidder is responsible for estimating all quantities associated with the bid.**

ITEM NO.	SPEC NO.	DESCRIPTION OF WORK	SCHED QTY	UNIT
1	3	Clearing and Grubbing Easements	0.9	AC
2	3	Removal of Existing Trees	15	EA
3	4	Concrete Piers at Stream Crossings	7	CY
4	4	Inlet Protection	18	EA
5	4	Permanent Seeding, Std. 3.32	10,430	SY
6	4	Silt Fence	3,325	LF
7	4	Stream Stabilization at Stream Crossings	1	LS
8	4	Temporary Seeding, Std. 3.31	10,430	SY
9	4	Utility Stream Crossings	4	EA
10	7	10" DI Pipe (Class 52), 0-8'	80	LF
11	7	10" DI Pipe (Class 52), 16-20'	70	LF
12	7	10" DI Pipe (Class 52), 8-12'	164	LF
13	7	10" PVC Pipe, 0-8'	17	LF
14	7	10" Sewer Pipeline Abandonment	752	LF
15	7	12" DI Pipe (Class 52), 0-8'	862	LF
16	7	12" DI Pipe (Class 52), 16-20'	120	LF
17	7	12" DI Pipe (Class 52), 20-24'	230	LF
18	7	12" DI Pipe (Class 52), 8-12'	780	LF
19	7	16" DI Pipe (Class 52), 0-8'	728	LF
20	7	16" DI Pipe (Class 52), 8-12'	184	LF
21	7	16" DI Rigid Restrained Joint (Mech-Lok) D.I. at Stream Crossing	80	LF
22	7	4" DI Sanitary Lateral Pipe (Class 52)	525	LF
23	7	8" DI Pipe (Class 52), 0-8'	31	LF
24	7	8" Sewer Pipeline Abandonment	566	LF
25	7	Concrete Encasement at Stream Crossings	10	LF
26	7	Connect to Existing Manhole	2	EA
27	7	DI Wye, 12-inch x 4-inch	22	EA
28	7	DI Wye, 16-inch x 4-inch	4	EA
29	7	Doghouse Manhole, 4' I.D.	1	EA
30	7	Excavation of Rock	250	CY
31	7	Extra Depth in 4' I.D. Manholes Beyond 8'	5	VF
32	7	Extra Depth in 5' I.D. Inside Drop Manholes Beyond 8'	26	VF
33	7	Extra Depth in 5' I.D. Manholes Beyond 8'	23	VF
34	7	Foundation Stone, VDOT No. 5	60	TNS
35	7	Inside Drop Manhole, 5' I.D. 0-8'	4	EA
36	7	Manhole Abandonment	5	EA

ITEM NO.	SPEC NO.	DESCRIPTION OF WORK	SCHED QTY	UNIT
37	7	Manhole Rehabilitation	8	VF
38	7	Manhole Removal and Disposal	4	EA
39	7	Sanitary Cleanout Assembly	33	EA
40	7	Slipline 10" Sewer w/ 6" HDPE and Grout Annual Space	95	LF
41	7	Standard Manhole, 4' I.D.	16	EA
42	7	Standard Manhole, 5' I.D.	6	EA
43	7	Stone Backfill, VDOT No. 21B	6,300	TNS
44	7	Undercut/Disposal/Backfill Unsuitable Material	600	CY
45	8	Repair of Existing Paved Concrete Driveways	4	TNS
46	8	Replacement of Concrete Curb & Gutter	50	LF
47	9	Asphalt Pavement Flush Patching	30	TNS
48	9	Full Width Asphalt Overlay	515	TNS
49	9	Pavement Milling	5,800	SY
50	9	Saw Cut Existing Asphalt Pavement	3,200	LF
51	9	Temporary Asphalt Pavement Patch (BM-25.0)	320	TNS
52	10	Adjust Existing Water/Gas Valve Box to Grade	18	EA
53	11	Mobilization/Demobilization	1	LS
54	11	Survey Stakeout	1	LS
55	12	Temporary Shed Relocations	2	EA
56	13	Residential Traffic Control	1	LS
57	17	Tree Protection	13	EA
58	18	Sanitary Sewer Bypass Pumping	1	LS

Note: NS = Non-Standard, ATTD = See Supplemental General Conditions for Bid Item Description

DIVISION I - AMENDMENTS TO CITY STANDARDS

The amendments contained herein supersede the "City of Danville Standard Requirements and Instructions for Bidding", Version 2.0 Dated April 2, 2015, which may be found online at https://www.danvilleva.gov/DocumentCenter/View/17209/Standard-Requirements-and-Instructions-for-Bidding_updated-4-2-15?bidId= or by contacting the Purchasing Division at 434-799-6528.



1.1 DEFINITIONS

In 1.1 replace the first sentence with:

The following terms and expressions used in the Standard Requirements and Instructions for Bidding shall be understood as follows:

In 1.1.13 replace instances of the word "Contractor" with:

Engineer

After 1.1.15 add:

1.1.16 LAP Manual: The current edition of the VDOT Locally Administered Projects Manual found at http://www.virginiadot.org/business/locally_administered_projects_manual.asp



1.3 BID SUBMITTAL

In 1.3.2-a. replace "shown on page one of the bid invitation" with:

specified in the Contract Documents

In 1.3.2-b. replace "indicated on page number one (1) of the bid invitation" with:

specified in the Contract Documents

Replace 1.3.3.d with:

In resolving conflicts between the Contract Documents and federal, state, and local laws, codes, regulations, ordinances, orders, rulings, and the like, the stricter provision shall prevail.

In resolving conflicts in the Plans and technical specifications of the Work, the order of highest precedence is established as follows:

1. Any Federal-Aid Required Contract Provisions
2. The MUTCD including the Virginia Supplement
3. The latest revised Virginia Work Area Protection Manual (VWAPM)
4. The Virginia Erosion & Sediment Control Handbook (VESCH)
5. Contract Change Orders.
6. Work Change Directives
7. Modifications to the Agreement
8. The Agreement.
9. Addenda, with those of later date having precedence over those of earlier date.
10. Amendments to the City of Danville Standard Requirements and Instructions for Bidding.
11. The City of Danville Standard Requirements and Instructions for Bidding.
12. General Conditions and Supplemental General Conditions
13. Technical Specifications
14. SPCNs, SPs, and Bid Item Sheets
15. The Plans

- 16. VDOT Supplemental Specifications (SS) and Supplemental Drawings
- 17. Other referenced manuals and guidance (such as the LAP Manual)
- 18. The VDOT Road and Bridge Specifications dated 2020.
- 19. The VDOT Road and Bridge Standards dated 2016 and as amended

Figure dimensions on drawings shall be given precedence over scaled dimensions. Detailed drawings shall be given precedence over general drawings.



1.7 BONDS, INSURANCE, ETC.

Following 1.7.3.h add:

- i. Certificates of insurance shall show the solicitation (IFB) number and project title.



1.8 MATTERS OF LAW

In 1.8.10, add:

All contract requirements included in the prime contract shall be incorporated into any subcontract agreement. All subcontract agreements shall be made available to the City for examination upon request.



1.9 SPECIFICATIONS AND PRODUCT DESCRIPTION

In 1.9.1 delete the last sentence.



1.11 COMPLETION SCHEDULE

Replace 1.11.1.a with:

- a. The completion time for this project shall be as specified in the Contract Documents.

Replace 1.11.2.a. with:

The City shall be authorized to assess liquidated damages against the Contractor in an amount equal to that which is established in the Contract Documents.

Delete Section 1.11.2.b.



1.12 TRAFFIC CONTROL

Replace 1.12.1 with:

The method of controlling the traffic passing through a work zone and all traffic control and street closed signs and barricades shall be in accordance with the State and Federal *Manual on Uniform Traffic Control Devices* (2009 Edition, Revisions 1 & 2), the *Virginia Work Area Protection Manual* (2011 Edition, with Revisions 1 and 2), and the Plans. The Contractor shall not close or excavate within the right-of-way of a street or alley without obtaining the approval of and any required per-

mits from the City. The Contractor shall report planned lane closures and other planned traffic control modifications to the Engineer at least one (1) working day prior to proceeding. The Engineer or Project Manager will specify the format and reporting requirements at the pre-construction conference.



1.14 PROGRESS OF WORK

Replace 1.14.2.b with:

The Contractor shall submit a narrative schedule and present it at the Pre-Construction conference.

Replace 1.14.3 with:

The Contractor shall include in his bid price the placing and furnishing of all materials, labor, tools, equipment, traffic control, and incidentals necessary to complete the work in accordance with the Contract Documents.

In 1.14.5.g replace “rainfall” with “all potential hazards.”

In 1.14.6.a insert before “centerline” in the first sentence:

available data pertaining to

Replace 1.14.6.b with:

The City will provide survey location of proposed centers of manholes and cleanouts. All other surveying shall be provided by the Contractor with the cost thereof not paid separately, but to be included and paid in the cost of other appropriate bid items.

Replace 1.14.7 with:

1.14.7 Working Hours

- a. Working hours shall be 7:00 a.m. to 7:00 p.m. local time. Work outside these hours shall be requested by the Contractor at least one working day in advance and will be approved at the discretion of the Engineer.

Replace 1.14.8 with:

1.14.8 Use of Explosives

The use of explosives and blasting shall not be allowed.



1.15 REMUNERATION

Replace 1.15.3.a with:

- a. Except as hereinafter provided, the City will pay by the end of the month all complete applications for payment submitted by the Contractor by the 10th day of that month; otherwise, payment will be made by the end of the following month. Unless otherwise provided under the

terms of this contract, interest shall accrue at the rate of one percent (1%) per month. The Contractor shall submit requests for payment on the forms and in the format the Project Manager prescribes. The request shall be accompanied by all required submittals and documentation including, but not limited to: updated schedules, Buy America certifications, mill test reports, product invoices, E&S and Traffic Control inspection forms, QC documentation, and copies of materials tickets all as required by the Contract.

Replace 1.15.3.d. with:

- d. Retainage will not be withheld by the City except for cause. Cause shall be determined by the Engineer and may include (but not be limited to) failure to submit required documents or unsatisfactory work progress and other repetitive failures to deliver contract requirements. To the extent required by Subsection 11-56.1 of the Code of Virginia, 1950, as amended, the Contractor shall be given the option to use an escrow account procedure for utilization of such retainage funds as described in that Code section. He may indicate his desire to use this procedure in the space provided on the bid proposal form.

Delete 1.15.3.f.



1.20 EROSION CONTROL

Replace 1.20.5 with:

1.20.5 RIPRAP

Riprap shall be placed in accordance with the Contract Documents.



END OF SECTION

DIVISION II – CONDITIONS OF THE CONTRACT AND SPECIFICATIONS

SECTION 1 - GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS

PART 1 GENERAL CONDITIONS

1.1 INTENT

- A. Intent: Secure qualified contractor to perform the Work described herein.
- B. Sealed Bids shall be received by the City in the Purchasing Office no later than

2:00 p.m. on June 27, 2022

Submit sealed bids to the following address:

ATTN: IFB 21-22-083
 City of Danville
 Purchasing Department-Room 304
 427 Patton Street
 Danville, VA 24541

1.2 PRE-BID CONFERENCE

- A. A non-mandatory pre-bid conference (project showing) will be held on the following date:

10:00 a.m. on June 15, 2022

at the following location:

2nd Floor Conference Room
 Municipal Building (City Hall)
 427 Patton Street
 Danville, VA 24541

1.3 BONDS REQUIRED

- A. A five percent (5%) bid bond (proposal guaranty) and one hundred percent (100%) payment and performance bonds as detailed in the City of Danville Standard Requirements and Instructions for Bidding or as amended.

1.4 TIME OF COMPLETION

- A. Complete the work within three hundred (300) days after a written Notice to Proceed issued by the Engineer.
- B. Once the Contractor begins work he shall prosecute the work continuously to completion unless otherwise instructed by the Engineer.
- C. Time Extensions for Weather
 1. The Contract Time will not be extended due to inclement weather conditions that are normal to the general locality of the work site. The time for performance of this Contract includes an allowance for workdays (based on a 5-day workweek) which may not be suitable for construction work. The *monthly* anticipated normal inclement weather workdays for the project location and will constitute the base line for monthly weather time extension evaluations is 7 days per month.
 2. The Contractor, in his planning and scheduling of the work as required by the Contract Documents, shall allow for normal inclement weather for the locality of the work site. If the Contractor believes that the progress of the work has been adversely affected and that it will result in a failure to meet Substantial Completion within the Contract Time, by weather conditions above and beyond the amount normally expected, he shall submit a written request to the Engineer.

3. Such a request shall be evaluated by the Engineer in accordance with the provisions of the Contract Documents and shall include a comparison of actual weather statistics compiled by the City of Danville's inspection team for the work site with the days claimed by the Contractor and the normal inclement weather days as stated herein. The decision of the Engineer shall be final.
4. The Contractor shall not be entitled to any monetary damages whatsoever for any delays resulting from inclement weather, whether normal or abnormal, foreseeable or unforeseeable. The Contractor and City stipulate and agree that, for delays due to weather, the Contractor's sole relief is a time extension granted in accordance with this section.

1.5 LIQUIDATED DAMAGES

- A. Liquidated damages shall be six hundred (600) dollars per day that the project remains incomplete.

1.6 PROJECT REPRESENTATIVES

- A. City of Danville Public Works Department – Engineering Division
 1. Brian L. Dunevant, PE, City Engineer
 2. Chris Franks, PE, CFM, Chief Engineer
- B. Engineer of Record: Rummel, Klepper & Kahl, LLP
 1. Jeffrey S. Tyler, PE, Design Engineer
 2. Jennifer L. Robinett, PE – Project Manager

1.7 PROJECT PLANS

- A. Work is detailed in Project Plans dated April 8, 2022 entitled "Apple Branch Interceptor Sewer Replacement" labeled "BID SET." One set of plans is available for inspection at the City Engineer's Office and electronic PDF plans are available on the City's bid postings website.
- B. The City will provide the Contractor with two (2) full size and up to five (5) reduced size sets of construction plans as well as the complete electronic plan assembly.
- C. The City may provide the Contractor digital CADD files in AutoCAD.dwg format if it is deemed necessary.
- D. The City will provide prospective bidders with up to two (2) sets of reduced size plans upon request at no charge.

1.8 SCOPE OF WORK

The Contractor shall provide all labor, material, equipment, supervision, and incidentals required to perform the Work of the Project as defined by the Contract Documents which consists of the following:

Sanitary sewer replacement and construction of approximately 3,235 linear feet of 10-inch, 12-inch, and 16-inch sanitary sewer main, 27 sanitary sewer manholes totaling approximately 240 vertical feet, and approximately 530 linear feet of sanitary sewer laterals. Also included is all necessary bypass pumping, pavement restoration, traffic control, erosion control measures, appurtenances, and all other work that may be required to complete the work described under the contract documents for this project.

PART 2 SUPPLEMENTAL GENERAL CONDITIONS

2.1 COMPLIANCE

- A. The Contractor shall comply with the provisions of the City of Danville's *Standard Requirements & Instructions for Bidding*, Version 2.0 dated April 2, 2015 (the Standard Requirements) and as amended herein. The amendments shall supersede the standard.

- B. To the extent of the Work indicated in the Contract Documents, the Contractor shall comply and the construction shall conform to all applicable and current editions or revisions of the articles listed in the Standard Requirements as amended. In addition, the following codes, specifications, and standards shall be included in the Contract Documents and shall be complementary to those listed in 1.3.3.d whereas what is required by one shall be as binding as if required by all:
1. The Virginia Uniform Statewide Building Code (USBC), as amended.
 2. The International Building Code (IBC)
 3. All other codes incorporated by the USBC and IBC.
 4. The Danville Utilities Water & Gas Specifications and Standards

Copies of the Danville Utilities Water & Gas Specifications and Standards may be obtained by emailing the Project Manager if they are not posted to the City's bidding website along with the project documents.

- C. The contractor is encouraged to contact DBEs to solicit their interest, capability and qualifications to perform work on this contract. Lists of DBE contractors may be obtained from the Virginia Department of Small Business and Supplier Diversity (SBSD). There is no required contract percentage for DBE participation.

2.2 Permits Required: No City-issued permits are required.

Nationwide Permit: Nationwide Permit No. 58 applies. See Appendix C of this document for requirements.

2.3 EEO Bulletin Boards are not required.

2.4 All excavation is unclassified. The Engineer makes no claims or assumptions as to the nature of any existing project soils or utilities. Geotechnical or subsurface information, where provided, is provided solely for informational purposes and shall not be taken to provide an accurate representation as to the subsurface characteristics of the project site.

2.5 Where items marked "NS" (for non-standard) or "ATTD" in the bid item list, the work included in the item shall be as listed in the special provisions, as detailed or listed in the plans, or as directed by the Engineer.

2.6 The Contractor shall provide at least one (1) authorized person on site to be responsible to direct and supervise the work of subcontractors any time subcontractors are performing work unless otherwise approved in writing by the Engineer.

2.7 BID PREPARATION & SUBMITTAL

- A. Submit executed bid bond in conformance with the contract requirements.
- B. Submit certificates and proof of insurance with: (1) the City of Danville, its officers, agents, and employees listed as additional insured, and (2) 30 days cancellation notice to be provided to the City of Danville.
- C. Sign and submit all written addenda issued to the Contract.
- D. Submit completed Contractor's bid form in accordance with the contract requirements.
- E. Submit legible copies of all required Contractor's and business licenses and registrations. These will be checked prior to award.

2.8 PRE-AWARD SUBMITTALS

- A. Apparent low bidder: Submit Performance and Payment Bonds when requested or within ten (10) business days after the bid date.

2.9 AWARD OF CONTRACT

- A. Award of Contract shall be based on lowest base bid and in accordance to the Procurement

Code of the City of Danville.

2.10 POST-CONTRACT EXECUTION SUBMITTALS

- A. Submit, within fourteen (14) business days after Contract execution, copies of all subcontract agreements.
- B. Submit at least five (5) days prior to the Pre-Construction Conference to be scheduled at a later date, electronic copies of the Contractor's proposed sequence of work activities and schedule. These items will be discussed in detail at the Pre-Construction Conference.
- C. Submit all other required submittals and documentation as specified in the Contract Documents and as required by the Engineer or Project Manager.

2.11 PROPRIETARY ITEMS

- A. Proprietary items or brands, part numbers, and the like, where specified in the Contract Documents, are included for the purpose of furnishing bidders with information concerning the style, type or kind of article desired and a bidder may offer an article which he certifies to be equal in quality, performance and other essential characteristics. The City shall make the decision as to the acceptability of the alternate based on engineering judgment.

2.12 SAFETY

- A. The Engineer or Inspector is authorized to stop work due to an apparent safety hazard or violation without warranting contract time extensions. This shall not in any way be construed to either relieve the Contractor of his sole responsibility for safety or hold the City responsible for the safety of the work zone.

2.13 HOLIDAYS

- A. Construction activities will not be permitted during the following date ranges unless approved in writing by the City Engineer:
 - 1. Virginia State holidays
 - 2. Wednesday before Thanksgiving (November 23, 2022) through the Monday after Thanksgiving (November 28, 2022). Construction can resume on Tuesday, November 29, 2022.
 - 3. Monday, December 19, 2022 through Friday, January 6, 2023. Construction can resume on Monday, January 9, 2023.

END OF SECTION

SECTION 2 – CONTRACTOR’S RELATIONSHIP TO THE CITY

PART 1 - CONTRACTUAL REQUIREMENTS

1.1 INDEPENDENT CONTRACTOR

- A. It is expressly agreed and understood that the Contractor is in all respects an independent Contractor as to work and is in no respect any agent, servant, or employee of the City. The contract specifies the work to be done by the Contractor, but the method to be employed to accomplish the work shall be the responsibility of the Contractor.

1.2 SUBCONTRACTING

- A. Contractor may subcontract services to be performed hereunder with the prior approval of the City, which approval shall not be unreasonably withheld. No such approval will be construed as making the City a part of, or to, such subcontract, or subjecting the City to liability of any kind to any subcontractor. No subcontract shall, under any circumstances, relieve the Contractor of its liability and obligation under this contract; and despite any such subcontracting the City shall deal through the Contractor, and subcontractors will be dealt with as representatives of the Contractor.

B. Payments to Subcontractors:

1. The contractor shall take one of the two following actions within seven days after receipt of amounts paid to the contractor by the City of Danville for work performed by the subcontractor:
 - a. Pay the subcontractor for the proportionate share of the total payment received from the agency attributable to the work performed by the subcontractor under that contract; or
 - b. Notify the agency and subcontractor, in writing, of his intention to withhold all or a part of the subcontractor’s payment with the reason for nonpayment.
2. Individual Contractors shall provide their social security numbers and proprietorships, partnerships, and corporations to provide their federal employer identification numbers.
3. The contractor shall pay interest to the subcontractor on all amounts owed by the contractor that remain unpaid after seven days following receipt by the contractor of payment from the City of Danville for work performed by the subcontractor, except for amounts withheld as allowed in Part 1, Section 1.2.B.1.
4. Unless otherwise provided under the terms of this contract, interest shall accrue at the rate of one percent per month.
 - a. The contractor shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.
 - b. A contractor’s obligation to pay an interest charge to a subcontractor pursuant to the payment clause in this section shall not be construed to be an obligation of the City of Danville. A contract modification shall not be made for the purpose of providing reimbursement for the interest charge. A cost reimbursement claim shall not include any amount for reimbursement for the interest charge.

1.3 NOVATION

- A. The Contractor shall not assign or transfer, whether by as Assignment or Novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the City; provided, however, that assignments to banks, trust companies, or other financial institutions for the purpose of securing bond may be made without the consent of the City. Assignment or Novation of this Contract shall not be valid unless the Assignment or Novation expressly provides that the assignment of any of the Contractor’s rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment supplied for the performance of the work under this Contract in favor of all persons, firms, or corporations rendering such labor or services or supplying such materials, tools, and equipment.

PART 2 - CONTRACTOR’S OBLIGATIONS

2.1 DRUG-FREE WORK PLACE

- A. During the performance of this contract, the contractor agrees to:
 1. Provide a drug-free workplace for the contractor's employees.
 2. Post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.
 3. State in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace.
 4. Include the provisions of the foregoing clauses in every subcontract or purchase order of or over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.
- B. "Drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

2.2 INDEMNIFICATION

- A. The Contractor shall indemnify the City, its agents, officers, and employees, against any damages to property or injuries to or death of any person or persons, including property and employees or agents of the City, and shall defend and indemnify the City, its agents, officers, and employees, from any claims, demands, suits, actions, or proceedings of any kind, including workers' compensation claims, of or by anyone, in any way resulting from or arising out of the operations in connection with the work described in the contract, including operations of subcontractors and acts or omissions of employees or agents of Contractor or Contractor's subcontractors. Contractor shall procure and maintain, at Contractor's own cost and expense, any additional kinds and amount of insurance that, in Contractor's own judgment, may be necessary for Contractor's proper protection in the prosecution of the work.
- B. The Contractor shall, at his own expense, appear, defend, and pay all charges of attorney and other expenses arising there from or incurred in connection therewith, and, if any judgment shall be rendered against the City, and/or its officers, agents, and employees, in any such action, the Contractor shall, at his own expense, satisfy and discharge the same. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep, and save harmless and defend the City, its agents, officers, and employees as herein provided.
- C. The Contractor shall assume all risks and responsibilities for casualties of every description in connection with the work, except that he shall not be held liable or responsible for delays or damage to the work caused by acts of God, acts of Public Enemy, acts of Government, quarantine restrictions, general strikes through the trade, or by freight embargoes not caused or participated in by the Contractor. The Contractor shall have charge and control of the entire work until completion and acceptance of the same by the City.
- D. The Contractor shall alone be liable and responsible for, and shall pay, any and all loss or damage sustained by any person or party either during the performance or subsequent to the completion of the work under this agreement, by reason of injuries to persons and damage to property, buildings, and adjacent work, that may occur either during the performance of the work covered by this contract or that may be sustained as a result of or in consequence thereof, irrespective of whether or not such injury or damage be due to negligence or the inherent nature of the work.
- E. The Contractor, however, will not be obligated to indemnify the City, its officers, agents, or employees against liability for damage arising out of bodily injury to persons or damage to property caused by or resulting solely from the negligence of the City or its officers, agents, and employees.

2.3 INSURANCE

- A. The Contractor shall not commence work under any contract until he has obtained all the insurance required hereunder and such insurance has been approved by the City; nor shall the Contractor allow any Subcontractor to commence work on his subcontract until all similar insurance has been so obtained and approved. Approval of the insurance by the City shall not relieve or decrease the liability of the Contractor hereunder.

- B. Worker's Compensation including Occupational Disease and Employer's Liability Insurance: The Contractor shall take out and maintain during the life of the Contract, Workers' Compensation and Employer's Liability Insurance for all of his employees to be engaged in work on the project under this Contract in an amount no less than the minimum allowed by the State Corporation Commission, and in case any such work is sublet, the Contractor shall require the Subcontractor similarly to provide Workers' Compensation and Employers' Liability Insurance for all of the latter's employees to be engaged in such work.
- C. Comprehensive General Liability Insurance: The Contractor shall maintain during the life of the Contract comprehensive general liability insurance as shall protect him and the City of Danville and its officers, agents and employees from claims for damages for personal injury, including death, as well as from claims for property damage, which may arise from operations under the Contract, whether such operations be by himself or by any Subcontractor, or by anyone directly or indirectly employed by either of them. The amount of such insurance shall be not less than a combined single limit of \$1,000,000.00 per occurrence on bodily injury and property damage and \$1,000,000.00 aggregate on completed operations. The comprehensive general liability insurance shall provide the following coverage:
- Comprehensive
 - Premises – Operation
 - Products/Completed Operations Hazard
 - Contractual Insurance
 - Independent Contractor and Subcontractor
 - Broad Form Property Damage
 - Personal Injury
1. Automobile liability insurance with minimum combined single limits of \$500,000.00 per occurrence. This insurance shall include bodily injury and property damage for the following vehicles:
 - Owned Vehicles
 - Non-owned Vehicles
 - Hired Vehicles
 2. Umbrella Policy: At the option of the Contractor, primary limits may be less than required, with an umbrella policy providing the additional limits needed. This form of insurance will be acceptable provided that the primary and umbrella policies both provide the insurance coverage herein required. However, any such umbrella policy must have minimum coverage limits of \$2,000,000.00.

2.4 EQUAL OPPORTUNITY

- A. During the performance of the contract, the contractor agrees as follows:
1. The Contractor will not discriminate against any employee or applicant for employment because of age, disability, race, religion, color, sex, or national origin. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions for this nondiscrimination clause.
 2. The Contractor, in solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such contractor is an equal opportunity employer.
 3. Notices, advertisements, and solicitations placed in accordance with Federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
 4. The Contractor will include the provisions of the foregoing paragraphs in every subcontract or purchase order over \$10,000 so that the provisions will be binding upon each subcontractor or vendor.
 5. The Contractor will otherwise comply with all other applicable provisions of local, State, and Federal law.
 6. The contractor does not, and shall not during the performance of the contract for goods and services in the Commonwealth, knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986.

- B. The City of Danville does not discriminate against faith-based organizations.

2.5 STATE CORPORATION COMMISSION NUMBER

- A. Contractors organized as a stock or non-stock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Virginia Title 13.1 or Title 50 or as otherwise required by law.
- B. A Contractor organized or authorized to transact business in the Commonwealth pursuant to Virginia Title 13.1 or Title 50 shall include in its bid or proposal the identification number issued to it by the State Corporation commission. Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized.

END OF SECTION

SECTION 3 – CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SUMMARY

A. Description:

1. This work shall consist of clearing, grubbing, removing, and disposing of vegetation, debris, and other objects within the construction limits except for vegetation and objects that are designated to be preserved, protected, or removed in accordance with the requirements of other provisions of these specifications.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 PREPARATION

- A. Identify any existing vegetation that will remain and confirm clearing limits are marked such that it is protected during construction.
- B. Prior to beginning the grubbing operations in the work area, the Contractor shall install the erosion and sediment control measures to protect any streams in the work area. Other erosion and sediment control measures shall be installed as soon as possible or when it is practical.

3.2 PROTECTION

- A. Locate, identify, and protect existing utilities that are to remain.
- B. Perform clearing & grubbing activities with minimal impact to public or private accesses and/or facilities.
- C. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed, Contractor shall contact Engineer so that necessary steps may be taken to record replacement or relocation.
- D. Vegetation, structure, or other items outside the construction limits shall not be damaged. Trees and shrubs in ungraded areas shall not be cut without the approval of the Engineer.

3.3 CLEARING

- A. Clear areas only necessary for access to site and performance of work.
- B. The surface area of earth material exposed by grubbing, stripping topsoil, or excavation shall be limited to that necessary to perform the next operation within a given area.
- C. Grubbing of root mat and stumps shall be confined to that area of land which excavation or other land disturbance activities shall be performed by the Contractor within 15 days following grubbing.
- D. The Contractor shall remove from the project site and dispose of all material generated by these clearing and grubbing operations.

PART 4 - MEASUREMENT AND PAYMENT

- 4.1 Clearing and grubbing shall be measured in acres and will be paid for at the contract unit price per acre.
- 4.2 Removal of individual trees, to be marked for removal by the City, paid for at the contract unit price per tree.

END OF SECTION

SECTION 4 – EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. It shall be the responsibility of the Contractor to install and maintain adequate erosion control measures to satisfactorily control sediment generated by rainfall so that streams, drainage pipes, and structures are not infiltrated and that adjacent properties are not damaged.
- B. The City reserves the right to require additional control measures should any erosion issues arise or if the designated measures are ineffective.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All materials used in the control of erosion and sediment shall conform to Sections 242.02(c), 245.03, and 303.03 of the VDOT Road and Bridge Specifications.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation of Erosion and Sediment Control Measures shall conform to the requirements of the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992 and the applicable VDOT standards.

3.2 EROSION AND SEDIMENTATION CONTROL

- A. The Contractor shall remove any sediment and/or debris deposited in the project area or adjacent streets by runoff from this project area. Such sediment or debris shall be removed within twelve hours after the end of the rainfall event. The City may, at its discretion, after twelve hours, remove or have removed said sediment or debris from the affected area. Any costs incurred for that removal shall be borne by this Contractor and may be deducted from any monies owed to the Contractor by the City.
- B. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade, but will remain dormant for longer than 30 days, but less than one year. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

PART 4 - MEASUREMENT AND PAYMENT

- 4.1 For each type of control measure used, and at the contract unit price or lump sum for that control measure, field measurements shall be made to determine actual quantities used.
- 4.2 The unit price bid per square yard for seeding shall include all costs for lime, seed, fertilizer, mulch and the manipulation to install each.
- 4.3 Riprap stream stabilization shall be paid as a lump sum item and shall include all labor, materials, tools, and equipment necessary for installation of the riprap as shown on the plans and details. This includes but is not limited to all stone, geotechnical fabric, site preparation, fine grading to provide a smooth transition between the riprap and existing grade, compaction, and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions.
 - A. Temporary bypass pumping of the stream is included in the utility stream crossing bid item.
 - B. Concrete piers are included as a separate line item.

END OF SECTION

SECTION 5 – NOT USED

SECTION 6 – NOT USED

SECTION 7 – SANITARY SEWER

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This work shall consist of the installation of sanitary sewer piping and specialties for municipal sewer and services outside of building structures. The Contractor shall furnish all necessary materials, equipment, labor, and tools to install the sanitary sewer mains and service connections in accordance with these specifications and in conformity with the dimensions, lines and grades shown on the plans or as designated by the Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. PIPE

1. Piping for these sewer mains and/or service connections shall be either polyvinyl chloride (PVC), or ductile iron as specified on the plans and shall conform to the following standard specifications:
 - a. Polyvinyl Chloride: ASTM D3034 and D2321
 - b. Ductile Iron: ANSI A21.16, A21.51/C151 and ASTM A746. Ductile iron pipe and fittings shall have a Protecto 401 interior lining.
 - c. Repair Couplings: ASTM A240/A240M-07, C 425-04, and C 1173-06

B. JOINT MATERIALS

1. Joint materials for the sanitary sewer piping shall be compression type and shall conform to ASTM D3034 for PVC and AWWA C111 for ductile iron.
2. Joint materials between manhole sections shall be the compression type-Rings for watertight manholes; bituminous mastic material is also acceptable between sections of manholes that are not required to be watertight.
3. Joints between pipe and manholes shall be the rubber boot type as manufactured by the Press Seal Gasket Corporation (PSX), Thunderline (link seal) or an approved equal.
4. Joints between the frame and cover and the concrete manhole shall be XSEAL, as manufactured by SealGuard, Incorporated of Mars, PA, M-1 Universal Sealant, or bituminous mastic or approved equivalent.
5. Sewer repair couplings of choice shall be the Mission Flex-Seal® ARC or an approved equivalent.

C. MANHOLES

1. Definitions:
 - a. Abandon: Remove and dispose of the existing casting and cone section down to full barrel; plug pipes in and out; fill the remainder with soil; and, backfill with soil to grade.
 - b. New: Install a new structure in a new location.
 - c. Remove: Completely remove and dispose of an existing manhole with no new structure being replaced.
 - d. Replace: Completely remove and dispose of the existing manhole and replace a new structure in the same location.
2. Wall Materials
 - a. Material for new manhole walls shall be precast concrete conforming to ASTM C478 and Detail Drawing for manholes.
3. Invert Mortar
 - a. Where constructed in the field, inverts shall be composed of Portland cement, sand, and water thoroughly mixed together in proportions of one (1) part cement to three (3) parts sand. The cement and sand shall be mixed dry and then gradually wetted and tempered to the

proper consistency in such quantity as may be required for immediate use. No mortar mixed for more than one hour, or, that has begun its first set, or becomes hard shall be remixed or used.

4. Sand
 - a. All sand used in mortar for this work shall be clean and sharp, free from loam, dirt or vegetation, and the best that is available locally.
 5. Cement
 - a. Portland cement, freshly delivered, shall be used as needed and shall conform to ASTM C9-36, method C77-37, and ASTM C150.
 6. Castings
 - a. The manhole frame and cover castings in pavement shall be composed of gray iron, Class 35B and shall conform to the dimensions and design of the applicable Detail Drawing. The combined weight of the frame and cover shall be at least 305 pounds.
 - 1) Castings for manholes in paved areas shall be the USF 926 Ring and US Cover by U.S. Foundry & Manufacturing Corporation of Medley, Florida.
 - b. Manhole frame and cover castings in off-road or easement areas not subject to vehicular traffic shall be composed of ductile iron or composite materials and shall conform to the dimensions and design of the applicable Detail Drawing.
 - 1) Ductile iron castings for manholes in areas not subject to vehicular traffic shall be the CertainTeed PAMTIGHT CDPE70AF frame and cover, or approved equal.
 - 2) Composite castings for manholes in areas not subject to vehicular traffic shall be the Composite Access Products (CAP) A-1BK24B4-C01CPGSS-H1 frame and cover, or approved equal.
 7. Steps
 - a. Steps in manholes are neither required nor desired and are to be omitted.
 8. Aggregate
 - a. Foundation stone (to be used where soft subgrade or rock is encountered) shall be VDOT No.5 Ballast.
 - b. Bedding stone for pipe shall be VDOT, No. 21B.
 - c. Trench repair stone and maintenance stone shall be VDOT No. 21B.
 9. Connecting with Existing Manholes
 - a. A flexible pipe to manhole connector shall be used for connecting sewer pipes to existing manholes. The connector shall be of a size specifically designed for the pipe material and size being utilized on this project.
 - b. Flexible connectors shall be Kor-N-Seal or approved equal.
 10. Manhole Rehabilitation
 - a. Manhole rehabilitation shall be composed of a sprayable microsilica restoration mortar such as Mainstay ML-72 or approved equal.
 - b. Manhole frames shall be sealed with a urethane rubber product such as Flex-Seal Utility Sealant or approved equal.
- D. SLIP-LINING
1. HDPE pipe shall conform to ASTM D-1248 and shall be of the outside diameter indicated on the contract drawings.
 2. HDPE pipe joints shall be of the butt heat fusion type.

PART 3 - EXECUTION

3.1 PROCEDURES

A. Pipeline Crossings

1. Sanitary sewer mains shall be located to the line and grade as shown on the plans and shall maintain horizontal separation between water lines and these sanitary sewer mains of not less than ten feet (10'). If and when this horizontal separation cannot be maintained, the bottom of the water lines shall be at least 18 inches (18") above the top of the sewer pipe; and, when neither of these separations can be maintained or achieved, all lines shall be constructed of slip-on or mechanical joints of ductile iron pipe and shall be pressure tested prior to backfilling the trenches.
2. Joint Welding: The joints of the steel casing pipe shall be butt welded to the preceding joint in accordance with the American Welding Society's recommended procedures. The welded joints shall be watertight.
3. Any casing pipe damaged during the installation operations shall be repaired or replaced at the Contractor's expense.
4. The ends of casing pipe shall be suitably sealed as approved by the Engineer. A casing vent shall be installed on the high end of the pipe and a drain hole shall be installed in the low end.
5. A drain line to a one cubic yard French drain of VDOT #57 aggregate shall be provided on the lowest end.
6. Each casing pipe shall have a carrier pipe. After installing the casing pipe, the carrier pipe shall be installed. The carrier pipe may be either mechanical joints or push-on joints and shall be ductile iron in the size and grade shown on the plans and as specified for sewer pipe.
7. To help prevent movement and provide protection, the carrier pipe shall be supported in the casing pipe. The first choice for the support is the Spider Support and Spacer Assembly by Spider Manufacturing, Inc. and using the three support units per each joint of carrier pipe. As an alternate, and, if approved by the Engineer, the carrier pipe may be supported on two sets of 4"X4"X3' long pressure treated blocks per length of pipe. Additional blocks shall be added as necessary to prevent flotation or movement of the carrier pipe.
8. Underground Crossings
 - a. A jacking operation shall be carried on in such a manner the settlement of the ground or roadway above the pipeline will not occur. On earth bores, the use of water or other liquids in connection with the boring and jacking operation shall not be allowed. Excavation shall not precede the jacking operation more than is necessary and shall be made by auger and manual methods at the Contractor's option to suit conditions encountered.
 - b. All boring and jacking operations by the contractor shall allow free and unobstructed use of roadways for the passage of traffic without delay or danger to life, property, or equipment. The Contractor shall provide all necessary bracing, bulkheads, shields, barriers, barricades and signs to ensure complete safety at all times.

B. Trenches

1. All installations of sanitary sewer mains and service connections, when applicable, shall be made by open cut from the surface unless otherwise stated on the plans and shall conform to the following requirements:
 - a. Excavation
 - 1) The banks of all trenches shall be kept vertical to one foot (1') above the top of the sewer pipe. Where the proper execution of the work or the protection of the workers requires it, the trench shall be braced or sheathed by the Contractor. No additional payment will be made for bracing or sheathing except where the Engineer shall deem it essential that said bracing or sheathing be left in place for the safety of the pipe.
 - 2) The width of the trench shall be not less than twenty-four inches (24") wider (not including space for the trench box/shoring) than the outside diameter of the pipe being installed, divided evenly on each side of the pipe or center line. See Detail Drawing S-01.

- 3) The material excavated in trenching shall be banked on one side (preferably the upstream side of the trench) of the trench except where the Engineer may allow otherwise. It shall be kept trimmed up so as to leave a travel-way of two feet (2') in width between the banks and the trench, and shall be so placed as to be the least inconvenient to the traveling public and adjoining owners. Free access shall be provided to all fire hydrants and gates in the vicinity.
- 4) Special care shall be taken not to interfere with the free passage of surface water along the gutters. No material excavated or otherwise shall be placed so as to obstruct the gutters.
- 5) In trenches where soft, yielding bottom is encountered, excavation shall be made below the pipe grade to such depth as directed by the Engineer. This undercut area shall be backfilled with suitable material that will provide adequate support to the pipe being installed. Where stone is required, it shall be VDOT No.5 and capped with a layer four inches (4") deep of No.21B stone. This stone base will be paid for by the ton at the contract unit price. Should pilings and/or timber foundation be necessary, they shall be handled as extras or by prior quoted price agreed to and approved by the Engineer.
- 6) Where rock is encountered in the trench, it shall be removed to a minimum width of twenty-four inches (24"), not including trench box/shoring, greater than the outside diameter of the pipe being installed and at least six inches (6") below the invert grade of the pipe. The trench shall be fully opened at least thirty feet (30') in advance of the pipe laying. Rock shall be removed in sections not less than fifty feet (50') in length for measurement and shall be measured for payment by the Engineer or his designee after the rock is excavated and before backfilling begins.

b. Backfilling

- 1) The material filled around the sides and above the pipe for two feet (2') in height shall be free from large stones and compacted with care. In filling around the pipe, the material on both sides must be kept at equal height and compacted with the same thoroughness. There shall be enough workers in the trench to spread the material and compact each layer to the desired density.
- 2) In trenches where rock was excavated, suitable earth material shall be furnished for backfill material except under pavement; no additional payment will be made for this material.
- 3) Where trenches are cut in pavement and the native material under that pavement is unsuitable for backfill material, that trench shall be backfilled up to the pavement subgrade with VDOT No. 21B aggregate, per the plan details. The City's inspector shall determine the suitability of the backfill material.
- 4) In all streets the backfilling shall be performed in layers not exceeding eight inches (6"), compacted at 20% of optimum moisture to a minimum density of 95% in accordance with AASHTO T147 using adequate methods to obtain the desired results. Note: Should unusually dry soil conditions be encountered, moisture shall be added in sufficient quantity and shall be mixed into the backfill material to provide suitable soil cohesion. The City's Inspector shall determine the "unusually dry soil conditions" and "suitable soil cohesion".
- 5) Where sewer trenches are not located in streets or improved property such as yards, easements, or outfalls, after the pipe has been properly covered and compacted to a depth of three feet (3'), the backfilling may be completed with loaders, dozers, or other methods without tamping, and the material piled up three inches (3") over the trench. Compaction tests shall not be required on these areas.
- 6) As the trenches are backfilled and the work is completed, all surplus material shall be removed from the project area to such locations as the Contractor may arrange subject to approval by the City.

- 7) Compaction testing of backfill in streets shall be provided by and paid for by the City through an independent testing laboratory. Any test section that fails to meet compaction requirements shall be corrected by whatever means necessary to achieve the compaction requirements.
- 8) A minimum of two (2) field density tests per each 300 linear feet of pipe, or fraction thereof, and for each six feet (6') of trench depth shall be performed by the testing laboratory to assure compliance with the compaction requirements.
- 9) The Contractor shall be responsible for providing trench boxes or other safety devices as may be required by the testing personnel for them to safely enter the trenches to perform the compaction tests.
- 10) Horizontal test locations shall be randomly selected by the City's inspector.
- 11) Vertical test locations shall be determined in accordance with table 7-1 or as otherwise specified:

Table 7-1 – Vertical Test Requirements

Trench Depths	Tests Re-quired	Test Number	Incremental Test Loca-tions*
0-6'	2	1	TTD/2
6-12'	3	1 2	TTD/3 TTD/3
12-18'	4	1 2 3	TTD/4 TTD/4 TTD/4
18-24'	5	1 2 3 4	TTD/5 TTD/5 TTD/5 TTD/5
Greater than 24'	As Required by Engineer		

TTD (Trench Test Depth) = Overall Depth Minus 1 foot.

*Incremental Tests Locations are measured from the bottom of the trench except the last test which is 1 foot below finish grade.

C. Pipe Laying

1. All pipe shall be installed to line and grade, with joints close and even, butting all around, and so that a true and even surface or invert is made over the joints and throughout the entire length of the sewer line.
2. The installation of the pipe shall begin at the downstream end and shall proceed upstream. The downstream sections shall be completed, tested and approved prior to any sewage entering the new system being installed.
3. Unless otherwise permitted by the Engineer in special occasions, no pipe or manholes shall be installed until all water has been removed from the trench.
4. Each joint of pipe shall be carefully inspected at the surface before being lowered into the trench. No crooked, broken, or otherwise defective pipe shall be installed. Joints of pipe and fittings shall be lowered carefully into the trench by a suitable means and handled with care at all times to avoid damage. Pipe of imperfect shape or size that a true and tight joint cannot be readily made shall not be permitted. This requirement is intended to apply especially to the amount and uniformity of the annular space between the bells and spigots as required herein under the specifications for pipe. Any pipe found on the site that fails to conform to this specification shall be rejected and shall be removed by and remain the property of the Contractor. Under no circumstances shall the materials be dropped or dumped into the trench.

5. The bed of each pipe joint shall be graded and shaped so that the pipe shall have a uniformly firm bearing throughout its entire length when installed to line and grade. In case an excavation is made too deep, the trench shall be backfilled with suitable material and thoroughly compacted to the proper grade. At each joint a bell hole shall be dug to give ample room for proper jointing.
6. Where field cutting of pipe is necessary, it shall be performed in a neat and workmanlike manner, so as to leave a smooth end at right angles to the axis of the pipe. Care shall be taken to avoid damaging the pipe and any coatings or linings. Ductile iron pipe shall not be cut with an oxyacetylene torch.
7. The Contractor shall exercise every precaution to prevent foreign materials or small animals from entering the pipe once it has been placed in the trench. No tools, clothing, soil, rocks, debris or any other material shall be allowed in the pipe once it is installed in the line. Ends of the pipe shall be plugged or covered at night or during periods of no work.
8. The Contractor shall establish and maintain the horizontal alignment and the vertical elevation and grade of the pipe in accordance with the plans. Horizontal alignment of the pipe shall be maintained by use of a transit or theodolite plumbed over the center of the downstream manhole.
9. Vertical elevation and grade shall be maintained by use of an adjustable laser level mounted in the downstream manhole with the target placed in the bell end of the pipe being installed.

D. Pipeline Abandonment

1. Sanitary sewers designated to be abandoned, but not removed, shall be excavated at the main, cut and properly capped or plugged at all open ends.
2. Grout plugs shall use ordinary cement-sand grout.
3. Pipes, once plugged as required above, shall be filled with a cement-sand grout slurry or flowable fill. Lines to be filled shall be capped or plugged at the downstream end, filled with the approved mixture, and capped or plugged at the upstream end.

E. Manholes

1. Manholes shall be constructed at such points as may be necessary in accordance with the plans. Manholes shall be installed as soon as the pipe laying workers are out of the way and shall be completed without undue delay. Each manhole shall conform to Detail Drawing. All manholes shall be left clean and in good order until final acceptance of the project.
2. Bottoms:
 - a. Bottoms of manholes shall be at least six inches (6") thick under the lowest invert and shall extend above the invert a height equal to three-fourths (3/4) of the diameter of the out-flowing pipe. Where there is a change of direction in the manhole, the channel shall follow the center lines of the pipes and shall have a true curve of as large a radius as the manhole will allow. When the line runs straight through the manhole, the sewer pipe may serve as the invert. Inverts may be precast in conformity with the Detail Drawing.
 - b. The inverts or channels shall be precast concrete or masonry formed of select hard brick laid with edges facing the invert and shall have a cross-section of the same shape of the connecting inverts with changes in sizes being made gradually and evenly. No water shall be permitted to flow through the manholes while work on inverts is in progress.
 - c. From the invert or channel, the manhole bottom shall be sloped back to the walls with the slope being not less than one inch (1") vertical to one foot (1') horizontal and shall be smoothly finished with plaster of one to one cement mortar.
3. Walls
 - a. The walls shall be at least five inches (5") thick and shall be reinforced with wire mesh or steel and O-Rings shall be used between each section of manhole.
4. Steps
 - a. Steps are neither required nor desired in manholes and shall be omitted. If installed for the contractor's convenience during the construction period, they shall be removed when the manhole construction is completed or project acceptance.

5. Frames and Covers
 - a. The frames and covers for each manhole shall be provided and set to the proper elevation as shown on the plans and any adjustments that may be necessary shall be the responsibility of the Contractor. No additional costs may be charged for these adjustments. The costs for the frames and covers shall be included in the unit price for manholes in the Bid Proposal.
 - 1) The frames shall be sealed with XSEAL or bituminous mastic joint material between the concrete manhole and the iron flange of the frames.
 - 2) The frames shall be anchored to the concrete manhole with stainless steel anchor bolts.
6. Height Adjustments
 - a. When an existing manhole must be adjusted up or down more than eight inches (8"), it shall be torn down to the point where the full diameter of the manhole begins and then rebuilt as necessary to meet the new elevations on the plans. For adjustments up to eight inches (8"), adjustments rings under the cast iron frames are acceptable. These adjustments shall also use the joint material under the casting flanges.
7. Drop Manholes
 - a. Whenever the vertical distance between the incoming and outgoing sewer lines in a manhole exceeds two feet (2'), it shall be deemed to be a "drop manhole". All drop connections shall be inside drop connections (i.e. the vertical pipe is installed within the manhole structure. Outside drop connections are not permitted. An inside drop shall require the Reliner® by Duran, Inc. of Lyme, CT, 1-800-509-6001, and shall be mounted in accordance with the manufacturer's instructions, otherwise, the construction of a drop manhole is the same as a standard manhole.
8. Connecting to Existing Manholes
 - a. A flexible pipe to manhole connector shall be used for connecting sewer pipes to existing manholes. Flexible connectors shall be installed in strict accordance with the manufacturer's recommendations.
 - b. The connector shall be installed by coring the manhole wall. Coring of the manhole wall for new connections shall only be performed in the presence of a City inspector.
9. Manhole Rehabilitation
 - a. Preparation of the Manhole:
 - 1) Prior to beginning manhole rehabilitation, the Contractor shall place covers over manhole invert to prevent extraneous material from entering the sewer main.
 - 2) All foreign material shall be removed from the manhole wall and bench using a high-pressure water spray (minimum 1200 psi). Loose and protruding brick, mortar, and concrete shall be removed using a mason's hammer and chisel and/or scraper. Fill any large voids with quick-setting patching mix. The surface to be repaired must be clean and free of any loose materials with walls totally saturated with water.
 - 3) Minor leaks shall be stopped using the quick-setting specially formulated infiltration control mix and shall be mixed and applied per manufacturer's recommendations. Some leaks may require weep holes to localize the infiltration during the application, after which the weep holes shall be plugged with the quick-setting infiltration control mix prior to the final liner application. When severe infiltration is present, drilling may be required in order to pressure grout using a cementitious or chemical grout. Manufacturer's recommendations shall be followed when pressure grouting is required.
 - 4) After all preparation work has been completed, remove all loose material and wash wall again.
 - b. Spraying:

- 1) Contractor shall prepare a watertight seal and smooth transition between the pipe liner and manhole liner system. No leakage or gaps will be allowed. The method of sealing and preparing a smooth transition shall be approved by the Engineer.
- 2) Anything covering the manhole invert shall be removed and the bench sprayed such that a gradual slope is produced from the walls to the invert with the thickness at the edge of the invert being no less than ½ inch. The wall bench intersection shall be rounded to a uniform radius equal to the full circumference of the intersection.
- 3) The Contractor shall take precautions to keep overspray or excess material from entering the newly installed liner pipe and any other pipes in the manhole.
- 4) The installation of the approved coating and/or liner system shall be in strict accordance with the manufacturer's written instruction. This shall include re-grouting all steps, inlet and outlet lines and benches as needed, plus the preparation, installation, curing, and finish operation, for the completion of the rehabilitation process.

c. Manhole Frame Sealing:

- 1) The manhole frame and the chimney above the cone shall be sealed in accordance with the manufacturer's recommendations.
- 2) Installation Procedure:
 - a) All loose and protruding mortar and brick that would interfere with the seal's performance shall be removed.
 - b) Preparation of the surface should include sandblasting (minimum of 70CFM) and an acetone wet wipe to ensure a clean surface as required by manufacture. Ensure casting and structure surfaces are clean and dry where the primer is intended to adhere.
 - c) After allowing for proper drying of primer to occur, sealant may be applied by brush as evenly as possible over the entire chimney area that includes 2" above the frame joint area, 2" below the top of the manhole cone, and the area above the manhole cone including all extensions to the chimney area.

F. Testing

1. The Contractor shall provide all equipment, materials, water, labor, etc. needed to perform tests in accordance with procedures listed below. All equipment and materials used shall be checked and approved by the Engineer or his designee prior to its use. It shall be the responsibility of the Contractor to ensure that the pipe is clean prior to beginning the tests. The cost of this testing shall be included in the contract unit price per linear foot of pipe.
2. A test for leakage of gravity sewer lines shall be performed. Infiltration and exfiltration tests and /or low pressure air tests may be used.
3. If the pipe installation fails to meet the testing requirements, the Contractor shall determine, at his own expense, the source or sources of leakage, and shall repair or replace all damaged or defective materials and correct the cause of failure and shall retest the repaired line. Contract time extensions will not be granted to correct deficiencies found during line testing. The Contractor shall employ qualified and skilled personnel for performing the tests and evaluating the results. The Engineer will only observe tests and certify the results. Sewer lines shall successfully pass all testing requirements before being considered acceptable.
4. Exfiltration and Infiltration Test: The Contractor shall perform water exfiltration and infiltration leakage test in the presence of the Engineer after the lines are completed and backfilled.
 - a. Lines: Where exfiltration is tested for, the lines shall be subjected to a minimum of four feet (4') of head, or head to the top of the manhole, whichever is lesser, above the crown of the pipe at the upstream manhole of the section of line being tested. The leakage shall not exceed 100 gallons per inch of nominal pipe diameter per mile per day for any section of the system, including manholes.
 - b. Manholes: Manholes shall be plugged with inflatable stoppers and shall be filled with water for a 12-hour soak period. After the soak period, the manhole shall be refilled to the top and

the test shall begin. Leakage shall not exceed one-quarter (1/4) gallon per hour in the one hour test period following the soak period.

- c. The infiltration test shall be used only when the hydrostatic head outside the pipe is a minimum of four feet (4') above the crown of the pipe for the entire length of the pipe being tested. Plug the pipe at the lower manhole. Fill the line and the manhole to four feet (4') , or to the top of the straight section if less than four feet. Let the water stand until the pipe has reached maximum absorption and until all trapped air has escaped, four (4) hour minimum. Once maximum absorption is reached, refill the manhole to the original level. After thirty (30) minutes, record the difference in the water level and convert to gallons. Subtract manhole loss to obtain pipe line loss. Manhole loss is found by plugging both the inlet and outlet and filling the manhole with water to four feet (4') or to the top of the straight section, if less than four feet (4'). Let water stand for one (1) hour. Refill manhole to the original level. After thirty (30) minutes, check the difference in the water level and convert to gallons.

5. Approved Alternate Leakage Testing Methods:

- a. In lieu of exfiltration tests, manholes may be tested using a vacuum test, provided the test conforms to the following conditions:
 - 1) This test method shall only be used on precast concrete manholes.
 - 2) Manholes shall be tested after assembly and prior to backfilling.
 - 3) Stub-outs, manhole boots and pipe plugs shall be secured to prevent movement while the vacuum is drawn.
 - 4) The installation and operation of the vacuum equipment and indication devices shall be in accordance with equipment specifications for which performance information has been provided by the manufacturer and approved by the City of Danville.
 - 5) A measured vacuum of ten inches (10") of mercury shall be established in the manhole. The time for the vacuum to drop to nine inches (9") of mercury shall be recorded.
 - 6) Acceptance standards for leakage shall be established from the elapsed time for a negative pressure change from ten inches (10") to nine inches (9") of mercury. The maximum allowable leakage rate for a four-foot (4') diameter manhole shall be accordance with Table 7-2 herein.
 - 7) When a manhole fails a test, necessary repairs shall be made and the vacuum test shall be repeated until the manhole passes the test or the manhole passes a standard exfiltration test with water.
 - 8) If the joint material is pulled out of a section joint during the vacuum test, the manhole shall be disassembled, the material replaced and the manhole retested.

Table 7-2 - Acceptable Vacuum Change in 4' Diameter Manholes

Manhole Depth	Min. Elapsed Time for a Pressure Change of 1" of Hg
≤ 10'	60 seconds
10' < Depth ≤ 15'	75 seconds
15' < Depth ≤ 25'	90 seconds

b. Low Pressure Air Test for Sewer Lines

- 1) In lieu of water exfiltration tests, a low pressure air test may be employed on sewer lines. Before the test is made, all wyes, tees, or end of side sewer stubs and connections shall be plugged with flexible-joint caps, or acceptable alternate, securely fastened to withstand the internal test pressures. Such plugs or caps shall be readily removable, and their removal shall provide a socket for making a flexible-jointed lateral connection or extension.
- 2) The testing equipment, procedure, and results will all be subject to the approval of the Engineer. Results of the air test will be reviewed for compliance with UNI-B-6-79. The

air test is to be conducted between two (2) consecutive manholes at a time. The test equipment shall be Air-Lock, as manufactured by Cherne Industrial, Inc., or an approved equal. All air shall pass through a single control panel. Individual air hoses shall be used from control panel to pneumatic plugs; from control panel to sealed line for introducing low pressure air; and from sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

- 3) Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe being tested. The plugs shall resist internal test pressures without requiring external bracing or blocking. Plugs shall be tested prior to installation in the pipe run. A joint of pipe shall be sealed at both ends with the plugs to be used in the sewer test. Air shall be introduced into the plugs at 25 psi. The sealed pipe shall then be pressurized to 9 psi. The plugs shall withstand the pressure without bracing or movement. The tested line segment shall be plugged and pressurized to 4.0 psi greater than the groundwater back pressure but not to exceed 10 psi. The line shall be allowed to stabilize for two minutes after pressurization. After the pressure has stabilized, the air pressure shall be decreased slowly to 3.5 psi (greater than groundwater back pressure) and the timing shall commence. The time for the pressure to drop 1 psi from 3.5 psi shall be recorded. The minimum acceptable time durations are shown in Table 7-3 herein. If the elapsed time to drop 1 psi is less than that shown in Table 7-3, then the air loss shall be considered excessive and the section of pipe has failed the test.
- 4) For safety reasons, no person shall remain in a manhole while the pipe is being pressurized or throughout the test period.
- 5) **Table 7-3 – Air Test Table**

Pipe Diameter, in.	Minimum Time, mm:ss	Length for Min. Time, ft.	Time for Longer Length, sec.	Specification Time for Length, mm:ss						
				100'	150'	200'	250'	300'	350'	400'
4	03:46	597	0.380L	03:46	03:46	03:46	03:46	03:46	03:46	03:46
6	05:40	398	0.854L	05:40	05:40	05:40	05:40	05:40	05:40	05:42
8	07:34	298	1.520L	07:34	07:34	07:34	07:34	07:36	08:52	10:08
10	09:26	239	2.374L	09:26	09:26	09:26	09:53	11:52	13:51	15:49
12	11:20	199	3.418L	11:20	11:20	11:24	14:15	17:05	19:56	22:47
14	13:13			13:13	13:13	15:40	19:35	23:33	27:25	31:20
15	14:10	159	5.342L	14:10	14:10	17:48	22:15	26:42	31:09	35:36
16	16:04			16:04	17:32	23:01	28:47	34:34	40:18	46:03
18	17:00	133	7.692L	17:00	19:13	25:38	32:03	38:27	44:52	51:16
21	19:50	114	10.470L	19:50	26:10	34:54	43:37	52:21	61:00	69:48
24	22:40	99	13.674L	22:47	34:11	45:34	56:58	68:22	79:46	91:10
27	25:30	88	17.306L	28:51	43:16	57:41	72:07	86:32	100:57	115:22
30	28:20	80	21.366L	35:37	53:25	71:13	89:02	106:50	124:38	142:26
33	31:10	72	25.852L	43:05	64:38	86:10	107:43	129:16	150:43	172:21
36	34:00	66	30.768L	51:17	76:55	102:34	128:12	153:50	179:29	205:07

SPECIFICATION TIME REQUIRED FOR A 1.0 PSI PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015

Note: Times for 14" and 16" derived by interpolation

c. Deflection Test for PVC Pipe

- 1) All plastic sewer pipe, except pipe with a stiffness of 200 psi or greater, shall be subjected to a deflection test. This test shall be administered by the Contractor in the presence of the Engineer no sooner than thirty (30) days after the final full backfill has been placed. Plastic pipe with a stiffness of 200 or greater shall be certified by the manufacturer.

- 2) Unless waived by the City, the Contractor shall test the pipe for deflection by means of a "Go/No Go" mandrel to assure that a deflection of 5% has not been exceeded. The mandrel, one for each size of pipe, shall be supplied by the Contractor and shall be a nine arm mandrel, with proving ring, sized at 5% less than the ASTM dimension for the pipe and in accordance with Table 7-4 herein.

Table 7-4 – Mandrel Sizes

Nominal Diameter, in.	L, in.	SDR-35 ASTM D-3034 D, in.
8	8	7.50
10	10	9.33
12	12	11.16
15	15	13.60
18	18	16.60

L = Mandrel Arm Length

D = I.D. for Proving Ring

Note: The mandrel shall be pulled through the sewer line manually. Any sewer line tested that fails shall be repaired and retested until it passes this deflection test at the Contractor's expense.

G. Service Connections

1. Service connection laterals shall be made to the sewer pipe or manholes as shown on the plans or where located in the field by the Engineer. A service connection made into the sewer pipe shall be made with a wye fitting, commercially manufactured and installed in accordance with the recommendations of the manufacturer.
 - a. The sewer pipe shall not be cut or tapped for service connections, unless otherwise approved by the City engineer.
 - b. All service connections shall be made with four inch diameter pipe as a minimum, unless otherwise directed and shall be installed on a minimum grade of one-quarter inch (1/4") per one foot (1') from the sewer pipe or manhole to the property line or easement line.
 - c. Service connections installed for future use shall extend to the property or easement line and shall be properly capped with a watertight fitting to prevent infiltration into the sewerage system. The fitting shall be installed in accordance with the manufacturer's instructions.
 - d. Service connections shall be installed in conformity with Detail Drawing SS-7 herein and shall include the clean-out assembly on the end of the connection. The top of the clean-out assembly shall have a cap to seal.
 - e. Existing services that are to be connected to a new sewer pipe and are in satisfactory condition, as approved by the Engineer, shall not be replaced to the property or easement line but shall be connected to the first compatible joint of pipe which will ensure a watertight connection.
 - f. When conditions are such that service connections cannot be adequately supported on suitable material, it shall be encased in concrete or supported on a suitable bedding material approved by the City's Inspector.
 - g. Service connections shall be installed a minimum of eighteen inches (18") under water mains or private water services.
 - h. All non-metallic sanitary sewer mains and connections shall be locatable with wire and tape made for that purpose. An insulated copper tracer wire, 12 AWG in size, green in color, and suitable for direct burial shall be utilized. The wire shall be installed in the same trench above and within 12 inches of the horizontal pipe and shall be attached to the vertical cleanout with

duct tape and terminating at the top of the cleanout with a set screw. The wire continuity shall be confirmed prior to payment for the service connection.

H. Sliplining

1. Cleaning of sewer line: Prior to sliplining, it shall be the responsibility of the Contractor to clean the debris out of the host sewer line in accordance with Section III "Sewer Line Cleaning" NASSCO Specifications for Sewer Collection System Rehabilitation.
2. Television Inspection: The Contractor shall perform a CCTV inspection of the line section to be sliplined and shall record the locations of all obstructions and service taps.
3. It shall be the responsibility of the Contractor to clear the line of obstructions, solids, dropped joints, or collapsed pipe that will prevent the insertion of the liner. If inspection reveals an obstruction which would prevent the installation of the specified size liner, such as a badly dropped or misaligned joint, protruding services, that are not at the point of the entry shaft, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction.
 - a. It shall be the responsibility of the Contractor to clear the line of obstructions, solids, dropped joints, or collapsed pipe that will prevent the insertion of the liner. If inspection reveals an obstruction which would prevent the installation of the specified size liner, such as a badly dropped or misaligned joint, protruding services, that are not at the point of the entry shaft, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction.
4. Bypassing Sewage: The Contractor shall bypass the sewage around the sections of line that are to be sliplined. Bypass pumping shall be in accordance with Section 18 of the specifications.
5. Pipe Joining: Sections of HDPE shall be assembled and joined together prior to insertion of the pipe. Assembly shall be accomplished above ground, either at the job site or a remote location. Joining shall be accomplished by the thermal butt fusion method, in accordance with the manufacturer's recommendations. All fusion joining shall be performed with equipment designed for butt fusion of thermoplastic pipe and by trainer personnel. Tensile strength at yield of the butt fusion joints shall not be less than that of the pipe.
6. Insertion of the Liner
 - a. The HDPE liner shall be inserted into the existing sewer line with a power winch and steel cable connected to the end of the liner by use of an appropriate pulling head. A second pulling head may be attached to the other end of the liner for attachment of a tag line to pull the liner back out of the sewer line, if necessary. Length of the liner pipe to be inserted at any one time shall be governed by the winch drum capacity and winching power available and consideration of the size and condition of the sewer.
 - b. During insertion, precautions should be taken to protect the liner pipe from scoring the outside of the liner as it is being pulled into the sewer.
 - c. Once the insertion is initiated, it is desirable to continue the pull to completion without interruption.
 - d. The manufacturer's recommendations should be followed regarding relaxation of the liner prior to connecting services and sealing the annular space between the liner and the existing sewer pipe at the manhole.
7. Sealing the HPDE Pipe in the Manhole
 - a. The annular space between the polyethylene liner and the existing sewer line shall be sealed using an approved flowable fill material.
 - b. Form sealant should not protrude into the manhole and should be finished over with a quick-set, non-shrink type of cement grout.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Pipe

- A. Pipe for mains shall be measured in linear feet actually installed and will be paid for at the contract unit price per linear foot for that size of pipe and depth of trench. Measurement shall be made straight through

manholes or fittings and shall include excavation, pipe laying, backfilling, wyes for service connections and the disposition of any surplus material.

- B. Pipe for service connections (laterals) shall be measured in linear feet from the centerline of the main or manhole to the centerline of the cleanout on the end of the connections and will be paid for at the contract unit price per linear foot. This price shall include the pipe, excavation, backfilling, equipment, labor, and tools necessary to install these connections.

C. Sanitary Sewer Pipe Abandonment

1. Abandonment of sanitary sewer mains shall be paid for at the contract unit price per linear foot. This price includes all labor, equipment, and materials required for proper pipeline abandonment, including but not limited to, flowable fill, grout, capping and sealing of connections, and any necessary site restoration required to return the site to preconstruction conditions.

4.2 Rock Encountered in Trenches

- A. Excavated rock in trenches shall be measured in cubic yards and will be paid for at the contract unit price per cubic yard. Rock shall be measured to a width equal to twenty-four inches (24") wider than the outside diameter of the pipe being installed plus any width up to six inches (6") on either side for the trench box/shoring for the distance and depth that the rock is excavated.

4.3 Manholes

A. Standard, Doghouse, and Drop Manholes (Install and Replace):

1. Standard manholes, doghouse manholes, and drop manholes, 0-8' in depth, shall be counted in completed-in-place units in the field and will be paid for at the contract unit price per each. The unit price shall include frames and covers, any specialty fittings, excavation, installing the manhole, backfilling, and the disposition of any surplus material.
- a. When replacing a manhole, the price shall also include the removal and disposal of the existing manhole.
 - b. Additional depth in standard manholes, doghouse manholes, and drop manholes beyond eight feet (8') shall be measured and paid for at the contract unit price per vertical foot of height when measured from the lowest invert to the top of the casting plus 0.5' added for the manhole bottom.
 - c. Where new manholes are to be connected to existing sewer mains, the cost to make the connection, including all necessary pipe and couplings, is considered incidental to the cost of the manhole and is not paid under a separate item.
2. Drop Connections
- a. All materials associated with drop connections, including but not limited to PVC pipe, fittings, couplings, mortar, and stainless steel straps and bolts are included in the unit price cost of the drop manhole. These items will not be paid under a separate item.

B. Manhole Abandonment

1. Manhole abandonment will be paid for at the contract unit price per each manhole to be abandoned. Payment shall include disposal of the top section and casting, plugging the pipes in and out; soil backfill of the manhole and the resultant excavation where the top was removed. Manhole debris shall not be left on the project site.

C. Manhole Removal

1. Manhole removal will be paid for at the contract unit price per each manhole to be removed and shall include the disposal of the removed manhole. Manhole debris shall not be left on the project site. Existing manholes that are being removed and replaced with an existing manhole are to be paid under a separate item.

D. Connect to Existing Manhole

1. Connecting pipes to existing manholes shall be paid for at the contract unit price per each connection and shall include all labor, equipment, and materials required to make each connection in accordance with the project specifications

E. Manhole Rehabilitation

1. Manhole rehabilitation shall be paid at the contract price per vertical foot and shall be measured from the lowest invert to the top of the manhole casting. It includes all labor, equipment, and materials to properly rehabilitate the manhole, including all necessary cleaning and invert and wall repairs. Manhole frame sealant is considered incidental to the cost of the manhole rehabilitation and will not be paid under a separate item.

4.4 Aggregates

- A. Each type of stone will be paid for at the contract unit price per ton and for which a ticket from the supplier verifying the tonnage is provided.
- B. Where material that is determined to be unsuitable for backfill material is encountered, Contractor will be paid per cubic yard of unsuitable material. This includes the removal and disposal of the material. The City's inspector shall determine the suitability of the backfill material.

4.5 Specialties

A. Service Connections

1. Wyes installed in the main line for service connections shall be a separate item paid for at the contract unit price per each.
2. Cleanout assemblies shall be paid for at the contract unit price per each.

- B. Main and service connection tracer wire and tape is included in the cost per linear foot of pipe and will not be paid as a separate item.

- C. Steel casing pipe shall be measured in linear feet of the size and thickness specified and will be paid for at the contract price per linear foot.

- D. Sliplining of the existing sewer using HDPE pipe shall be paid at the contract unit price per linear foot and shall include all labor, equipment, and materials necessary for sliplining of the existing sewer.

1. Flowable fill associated with the sliplining is included in the cost of the sliplining will not be paid under a separate line item.
2. Cleaning of the existing sewer is included in the cost of the sliplining and will not be paid under a separate line item.
3. Post-Installation CCTV of the HDPE lined pipe will be paid under a separate line item.
4. Bypass pumping will be paid under a separate line item.

END OF SECTION

SECTION 8 – CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This work shall consist of constructing curbs, gutters, combination curbs and gutters, sidewalks, pads, driveway entrances, ADA ramps, paved ditches, paved flumes, bridge drainage aprons and chutes, concrete median barriers, median strips, sign islands, or directional island curbs in accordance with these specifications and in conformity to the lines and grades shown on the plans or as established by the Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All concrete materials including hydraulic cement concrete, asphalt concrete, preformed joint filler, curing materials, reinforcing steel, rubble stone, grout, foundation course, dry filler, seed, and topsoil shall conform to the requirements set forth for incidental concrete items in Section 502.02 of the VDOT Road and Bridge Specifications.
- B. Hydraulic cement concrete shall be VDOT Class A-3 General Concrete unless otherwise specified or established by the plans or by the Engineer.

PART 3 - EXECUTION

3.1 PROCEDURES

- A. The procedures for installation of these items shall conform to Section 502.03 of the VDOT Road and Bridge Specifications or to the technical criteria contained herein.
- B. The sub-grade shall be graded, shaped and thoroughly compacted to provide a uniform and smooth surface. Unsuitable material, if encountered, shall be removed and replaced as directed by the Engineer. The sub-grade shall be moist when the concrete is placed on it.
- C. Fixed Form Requirements
 - 1. Fixed forms shall be straight, free from warp, and of such construction that there will be no interference with the inspection of grade and alignment. Forms shall extend the entire depth of the item and shall be braced and secured so that no deflection from alignment or grade will occur during the placement of the concrete. Radial forms shall be sufficiently flexible or otherwise designed to provide a smooth and uniform curved surface of the required radius. Face forms shall be removed as soon as the concrete has attained sufficient set to stand without slumping.
 - 2. Transverse joints for crack control shall be provided at intervals of twenty feet (20'). These joints may be formed by using removable templates, 1/8" in thickness, by scoring or sawing to a depth of at least 1 1/2" using an approved leave-in insert, or by other approved methods that will successfully induce and control the location and shape of transverse cracks.
 - 3. The ends of the concrete sidewalk that abut the back of the concrete curb shall have transverse expansion joints of preformed joint filler, 1/2" in thickness, that extends from the bottom of the concrete slab to approximately 1/4" below the top of the slab.
 - 4. Exposed concrete surfaces shall be smoothed by using a suitable finishing tool and shall be given a light broom finish.
- D. Slipform Requirements
 - 1. The Contractor will be permitted to slipform incidental concrete items provided the following conditions contained herein are met. Approval by the Engineer to allow the Contractor the option of slipforming concrete items is permissive only and in no way relieves the Contractor from his responsibility to comply with the contract requirements and conditions.
 - 2. The requirements set forth in the VDOT Road and Bridge Specifications Section 502.02(b) shall apply to any slipforming operations.
- E. Protection

1. Concrete surfaces shall be adequately protected from damage.
2. Protection from traffic shall be provided by flag persons or other watch persons, erecting and maintaining warning signs, lights or barricades, or by erecting temporary bridges or crossovers.
3. Protection from the effects of rainfall before the concrete has attained final set shall be provided by covering the concrete with a protective covering such as burlap, cotton mats, curing paper or plastic sheeting in compliance with VDOT Standards.
4. Protection from the effects of cold weather shall be provided to prevent the temperature of the concrete surface from falling below 40° F during the first seventy-two hours immediately following concrete placement. Protective material shall be left in place for an additional forty-eight hours if freezing air temperatures are expected to continue. Damaged concrete due to the absence of this protective material shall be removed and replaced at the Contractor's expense.
5. Protection from the effects of hot, low-humidity, or windy weather shall be provided by applying the curing medium at the earliest possible time after the finishing operations are completed and after the sheen has disappeared from the surface of the concrete. "Hot" weather shall be deemed to be ambient temperature exceeding 85°F.

PART 4 - MEASUREMENT AND PAYMENT

- 4.1 Curb and gutter and paved ditch will be measured in linear feet, complete-in-place, and will be paid for at the contract unit price per linear foot.
- 4.2 Driveway entrances, tie-ins, and sidewalks will be measured in square yards of surface area, and will be paid for at the contract unit price per square yard.
- 4.3 ADA ramps shall be counted by each and will be paid for at the contract unit price per each.
- 4.4 Concrete for encasement and piers will be measured in cubic yards, and will be paid for at the contract unit price per cubic yard. Rebar, steel straps, bolts, and other appurtenances are considered incidental to the cost of the concrete piers and will not be paid under any other item.

END OF SECTION

SECTION 9 – ASPHALT PAVEMENT

PART 1 – GENERAL

DESCRIPTION

The Contractor shall furnish all labor, supervision, material (except as herein provided), tools, equipment, supplies, and services; and, shall perform all work necessary for cutting, replacing and constructing courses of asphalt, pavement milling and pavement patching during pipe installations, in accordance with the requirements of these specifications and in conformity with the lines shown in the Contract Documents or as established by the Owner. Pavement milling/planning shall consist of mechanically planning rigid or flexible pavement to the designated depth specified in the Contract Documents in preparation for pavement repair or pavement overlay and disposing of milled cuttings or using such cuttings in the Work if permitted in the Contract or directed by the Owner. Rigid pavement will mean hydraulic cement concrete pavement or hydraulic cement concrete surfaced pavements and flexible pavement will mean asphalt concrete or asphalt concrete surfaced pavements. Planning as used in this section may also be referred to as milling or grinding.

PART 2 - PRODUCTS

2.2 MATERIALS

A. GENERAL

The Contractor shall use all means necessary to protect materials and products before, during and after installation.

Material and products shall be loaded, transported, and unloaded in accordance with the recommendations of the material and product Supplier. All required certifications shall be supplied with each delivery and have valid certifications to substantiate the material received with the certifications supplied.

Materials and products shall be stored so as to assure the preservation of quality and fitness for the work.

ASPHALT PAVEMENT

Shipments of asphalt material shall be made in transporting media that are free from contamination. Tank trucks or trailers shall be equipped with a sampling device approved by the Owner.

Asphalt material to be stored shall be placed in storage tanks that are free from contamination.

Asphalt shall consist of a combination of mineral aggregate and asphalt material mixed mechanically in a plant specifically designed for such purpose. Mix types shall meet the requirements of the latest edition of the *VDOT Road and Bridge Specifications*, Section 211.

2.3 EQUIPMENT

B. ASPHALT PAVEMENT

Equipment utilized in paving operations shall conform to section 315.03 of the *VDOT Road and Bridge Specifications*.

Hauling Equipment:

Trucks used for hauling asphalt mixtures shall have tight, clean, smooth metal or other non-absorptive, inert material bodies equipped with a positive locking metal tailgate. Metal surfaces in contact with asphalt mixtures shall be given a thin coat of an aliphatic hydrocarbon invert emulsion release agent (nonpuddling), a lime solution, or other material on the VDOT's list of approved release agents. The beds of dump trucks shall be raised to remove excess agent prior to loading. Only a nonpuddling agent shall be used in truck beds that do not dump. Each truck shall be equipped with a tarpaulin or other cover that will protect the mixture from moisture and foreign matter and prevent the rapid loss of heat during transportation.

Asphalt Pavers:

The asphalt paver shall be designed and recommended by the manufacturer for the type of asphalt to be placed and shall be operated in accordance with the manufacturer's recommendations. Written recommendations pertaining to handling and placing of the mix shall be made readily available

on the project site to the Owner. In the absence of manufacturer's recommendations, the recommendations of the National Asphalt Pavement Association shall be followed. The paver (including the screed extensions, when used) shall be capable of producing a smooth uniform texture, dense joints and a smooth riding surface. The paver shall be capable of smoothing and adjusting longitudinal joints between adjacent strips or courses of the same thickness.

Rollers:

Rollers shall be steel wheel, static or vibrator, or pneumatic tire rollers and shall be capable of reversing without backlash. Rollers shall be operated at speeds slow enough to avoid displacement of the mixture. The number and weight of rollers shall be sufficient to compact the mixture to the required density while it is still in a workable condition. The use of equipment that results in excessive crushing of aggregate or marring of pavement surface will not be permitted. If during construction, it is found that the equipment being used mars the surface to the extent that imperfections cannot satisfactorily be corrected or produces permanent blemishes, the use of the equipment shall be discontinued, and it shall be replaced with satisfactory units.

Rotary Saw:

A gasoline-powered rotary saw with a carbide blade shall be furnished for cutting test samples from the pavement. The Contractor shall furnish gasoline, oil, additional carbide blades, and maintenance for the rotary saw. The Contractor shall cool the pavement prior to sawing the sample. In lieu of a rotary saw, the Contractor may furnish the necessary equipment for coring and testing 4-inch core samples in accordance with the requirements of the Virginia Test Methods Manual VTM-22.

Material Transfer Vehicle (MTV):

When required in the Contract, the Contractor shall furnish a self-propelled MTV storage unit capable of receiving material from trucks, storing the material, and transferring the material from the unit to a paver hopper insert via a conveyor system. The paver hopper insert, and unit shall have a combined minimum storage capacity of 15 tons. The storage unit or paver hopper insert must be able to remix the material in order to produce a uniform, non-segregated mix having a uniform temperature prior to placing the asphalt material on the roadway surface.

PAVEMENT MILLING

The Contractor shall perform planning with a pavement planning or pavement grinding machine of capacity and type that has operated successfully on work comparable to that specified in the Contract Documents. Milling or cold planning equipment shall be capable of accurately cutting to the depth, width, length, and typical section specified for flexible pavement or rigid pavement while leaving a uniformly cut or ground roadway surface capable of safely handling traffic prior to pavement repair or overlay placement. The milling equipment shall not damage the underlying pavement surface or structure. The milling machine shall be equipped with an automatic grade control system that will control the longitudinal profile and cross slope of the milled pavement surface as the milling operation proceeds. The ground speed of the machine and the cutting equipment shall operate independently. The machine shall have a self-contained water system for the control of dust and fine particles. The width of the machine shall allow for the safe passage of controlled public traffic while in use. The machine shall have a dust collection system or have a system capable of minimizing the dust created by the planning operation.

The Contractor shall continuously monitor the cutting or grinding head of the machine so as to produce and maintain the creation of a uniformly textured milled surface. Equipment and vehicles in use under traffic shall be equipped according to the requirements of the Virginia Work Area Protection Manual.

The milling shall incorporate a machine capable of cutting at least two inches deep into flexible pavement while leaving a uniformly cut and drivable roadway surface capable of handling traffic prior to placement of the overlay. The machine shall be capable of working in wet and dry conditions down to 32° Fahrenheit.

PART 3 - EXECUTION

C. ASPHALT PAVEMENT

The Contractor shall execute the Work in accordance with the latest edition of the VDOT Road and Bridge Specifications, Section 315.05, Procedures. Any references to “Engineer” or VDOT personnel shall mean the “Owner”.

Placement Limitations

- a) Asphalt Produced with Warm Mix Asphalt Additives or Processes:
 - 1) When the base temperature is 40°F and above: The Owner will permit laydown at any temperature below the maximum limits given in Section 211.08.
 - 2) When the mixture temperature is below 200°F: The Contractor will not be allowed to place the material.
- b) Asphalt Produced without Warm Mix Asphalt Additives or Processes:
 - 1) When the base temperature is above 80°F: The Owner will allow laydown of the mixture at any temperature conforming to the limits specified in VDOT Road and Bridge Specifications, Section 211.
 - 2) When the base temperature is between 40°F and 80°F: The Contractor shall use the Nomograph, Table III–2 located in the VDOT Road and Bridge Specifications, Section 315.05, to determine the minimum laydown temperature of the asphalt mixes. At no time should the minimum base and laydown temperatures be less than the following:

Mix Designation	Minimum Base Temperature	Minimum Laydown Temperature
A	40°F	250°F
D	50°F	270°F
E	50°F	290°F
M	50°F	290°F
S	50°F	290°F

- 3) When the laydown temperature is greater than 300° F, Section 315.04(c) of the VDOT Road and Bridge Specifications shall be followed.

Procedure

- a) The procedures set forth in the VDOT Road and Bridge Specifications Section 315.05 shall be followed for all paving operations unless explicitly approved by the Engineer.

D. PAVEMENT CUTTING FOR PIPELINE INSTALLATION

Procedure

- a) Cut and remove existing pavement as necessary for installing the new pipe lines and appurtenances, for making connections to existing pipe lines, and for making tie-ins between existing and new pavements.
- b) Pavements to be cut shall be marked neatly, paralleling pipe lines and street lines. Asphalt pavement shall be cut along the markings with a jackhammer, rotary saw, or other suitable tool. Asphaltic pavement on concrete base shall be scored to a depth approximately 2 inches below the surface of the concrete along the marked cuts. Scoring shall be done by use of a rotary saw, after which the pavement may be broken below the scoring with a jackhammer or other suitable equipment.
- c) No pavement shall be machine pulled until completely broken and separated along the marked cuts.

PAVEMENT REPAIR AND REPLACEMENT

Procedure

- a) All existing pavements cut or damaged by construction shall be repaired to match the original surface material and original grade unless otherwise specified or shown on the Drawings. Materials and con-

struction procedures for sub-base, base course, and pavement repair shall conform to VDOT standards.

- b) The width of all repairs shall extend at least 6 inches beyond the excavation or limits of any damaged section. The edge of the pavement to be left in place shall be saw cut to a true edge so as to provide a clean edge to abut the repair. The line of the repair shall be reasonably uniform with no unnecessary irregularities.
- c) After all repair and restoration or paving has been completed, all excess asphalt, dirt, rock, and other debris shall be removed from the roadways. All storm sewers and inlets shall be checked and cleaned of any construction debris.
- d) The pavement adjacent to pipeline trenches shall neither be disturbed nor damaged. If the adjacent pavement is disturbed or damaged, irrespective of cause, the damaged pavement shall be removed and replaced at no expense to the City.

PAVEMENT PATCHING

General

- a) Paved surfaces necessary to be removed or disturbed in order to perform the installation of water, sewer and storm pipelines and private utilities shall be restored in accordance with the requirements specified herein or shown in the Contract Documents.
- b) Compaction of the subgrade and placement of pavement shall be performed in a manner as to prevent settlement of restored surfaces. Irregularities, which develop in the restored pavement section as a result of improper placement or compaction, shall be corrected by the Contractor at no additional expense to the Owner.
- c) Any pavement undermined or otherwise disturbed shall be edged with a method acceptable to the Owner or sawed as straight as possible and removed so the patched pavement will be restored to a uniform surface conforming to the grade and section existing prior to commencement of Work without ragged edges, spalls or loose material. A backhoe cut will be acceptable if the entire roadway is to receive an overlay. If there has been settlement of the edge of pavement at the cut, the settled portion shall not be corrected by an overlap. The edges of the existing pavement shall receive a tack coat as described below before new asphalt is placed:

Tack and Prime Coat

- a) Equipment for heating and applying asphalt shall conform to the requirements of VDOT Road and Bridge Specifications Section 314.04(b). The maximum application temperature of liquid asphalt shall conform to the requirements of the following table.

Liquid Asphalt Application Temperature

<u>Grade</u>	<u>Max. Temperature (Deg. F)</u>
RC-70	180
RC-250	220
RC-800	225
RC-3000	290
MC-70	180
MC-250	220
MC-800	255
MC-3000	290
AC-20	300
PG64-22	300
RS-2	175
SS-1h	180
AE-4	150
CRS-2	175
CSS-1h	180
CMS-2	200
CRS-1h	175
CRS-1	175

Tack Coat

- a) The existing surface shall be patched, cleaned, and rendered free from irregularities to the extent necessary to provide a reasonably smooth and uniform surface. Unstable corrugated areas shall be removed and replaced with suitable patching materials. The edges of existing pavements that are to be adjacent to new pavement shall be cleaned to permit adhesion of asphalt.
- b) Tack material shall be uniformly applied with a pressure distributor conforming to the requirements of VDOT Road and Bridge Standard Specifications Section 314.04. (b). Hand spray equipment shall not be used except in areas inaccessible by a pressure distributor. Undiluted asphalt shall be applied at the rate of 0.05 to 0.10 gallons per square yard. Diluted asphalt shall be applied at the rate of 0.10 to 1.15 gallons per square yard
- c) The tack coat shall be applied in a manner to offer the least inconvenience to traffic and permit one-way traffic without pickup or tracking of the asphalt.
- d) The tack coat shall be allowed to cure prior to the next course being placed. The tack coat shall be applied in accordance with the same weather limitations that apply to the course being placed. The quantity, rate of application, temperature, and areas to be treated shall be approved prior to application.
- e) During the application of asphalt, care shall be taken to prevent spattering adjacent items. The distributor shall not be cleaned or discharged into ditches, onto shoulders, or along the right-of-way. When not in use, equipment shall be parked so that the spray bar or mechanism will not drip asphalt on the surface of the traveled way.
- f) When in the opinion of the Owner the Work is detrimental to the comfort and safety of the citizens and the Contractor fails to provide an immediate correction, the Owner will order that the necessary repairs be made at the expense of the Contractor.

Procedure

- a) All excavated paved areas shall be backfilled and compacted at the end of each day prior to opening to vehicular traffic. Backfill shall be in accordance with the appropriate pavement patch section indicated in the Contract Documents except that aggregate material shall be applied up to the surface of the roadway. This Work shall occur prior to the completion of Work on any day unless otherwise approved by the Owner. At the end of each work week, but no more than 6 Days after backfilling, aggregate material shall be removed to the depth shown on the pavement patch section, the in-situ aggregate shall be recompacted, and the trench patched with asphalt or cold mix.
- b) The base and sub-base materials must provide a smooth and uniform surface. Thickness of the base course shall be at the Contractor's option unless shown otherwise on the construction plans. In no case will the minimum base and sub-base depth be less than that shown on the construction plans.
- c) A temporary surface course may consist of asphalt cold-mix if an asphalt surface is unavailable due to temperature or if directed by the Owner due to high traffic volumes. This thickness shall be at the Contractor's option unless shown otherwise in the Contract Documents, and in no case shall the thickness of the temporary surface course be less than that resulting from the application of a "double surface treatment" that consists of two layers of CRS-2 or RC-250 at 0.30 gal/sy and No. 68 stone at 35 lbs/sy. All excavated areas shall be backfilled with base stone and asphalt prior to opening the roadway to traffic. Generally all roadway areas shall be opened to traffic at the end of the workday unless otherwise directed by the Owner.
- d) In order to minimize the duration and frequency of disruption to streets and pavements, the Contractor shall conduct his operations such that installation of laterals and services shall closely follow installation of mains. The intent of this requirement shall be to insure that disruption of the pavement and traffic on any given street or area shall, as much as possible, be limited to "one event" (i.e., disruption for installation of mains followed by a time delay and subsequent disruption for installation of laterals will not be tolerated or permitted). Installation of the temporary surface course over mains and laterals shall proceed orderly behind the installation and backfill of the improvements.
- e) The Contractor shall diligently and continuously maintain the base course prior to placement of the temporary surface course and the temporary surface course prior to the placement of the permanent surface course by grading, adding materials, removing and replacing components, or any other measures necessary to provide a smooth and passable surface free from pot holes, depressions and irregularities.
- f) Installation of the permanent surface course shall commence at the completion of the utility installation on each street, but not later than 60 calendar days after the initial cut has been made. If, in the opinion of the Owner, the pavement patch is of adequate quality, the 60- calendar day requirement may be extended.

Tolerances

- a) Riding quality of the finished surface is very important. The completed pavement will be checked longitudinally and transversely for smoothness with a (10') ten-foot straight edge. Surface tolerance will not vary more than 1/8-inch in 10-foot parallel to the centerline and not more than 1/4-inch in 10-foot at right angles to the centerline. All humps and/or depressions exceeding this specified tolerance shall be corrected or the defective Work removed and replaced with new material at no additional cost to the Owner.
- b) The pavement section shall be in accordance with that shown in the Contract Documents.

PAVEMENT MILLING

Procedure

- a) The Contractor shall conduct the Work in a manner and sequence that will ensure its expeditious completion with the least interference to traffic and shall have due regard for the location of detours and provisions for handling traffic. The Contractor shall not open any Work to the prejudice or detriment of Work already started. The Owner may require the Contractor to finish a section of Work before Work is started on any other section.
- b) The Contractor may perform either regular planing or performance planing at his option unless otherwise stated in the Contract Documents. The finished surface for regular pavement planing and performance planing shall have a tolerance of plus or minus 1/4 inch per foot between any two contacts of the resultant surface and the testing edge of a 10-foot straightedge unless the Owner directs otherwise.
- c) No application of pavement overlay shall decrease the vertical clearance under a bridge. In situations where the existing pavement under the overpass cannot be planed in direct proportion to the proposed overlay, the Contractor shall tie down the new pavement to the existing pavement under the overpass no less than 75 feet from the outer edges of the overpass in accordance with the VDOT Road and Bridge Standards for Asphalt Overlay Transition.
- d) The finished surface macrotexture for performance planing shall have a pavement macrotexture MTD (mean texture depth) of less than 2.0 millimeters. Testing for performance pavement planing shall be as described hereinafter.
- e) Irregularities and high spots of existing pavement shall be eliminated. The pavement surface shall be planed, milled or ground to the designated grade or gradient specified in the Contract Documents, or when not specified as a grade, shall parallel that of the existing roadway. Transversely, the cross slopes of tangent sections shall be planed to approximately 1/4 inch per foot or as directed by the Owner. Superelevated curves shall be planed as directed by the Owner. Where the pavement is to be resurfaced by means of the application of an overlay on curb and gutter roadways, a 1-inch deep shoulder shall be cut along the gutter line to eliminate the necessity of feathering the edge of the new surface. Payment for providing the 1-inch shoulder shall be based on the total square yards of removed material regardless of the variable depth of the pass.
- f) The finished planed surface shall be true to grade, free from gouges, grooves, ridges, fractures, soot, oil film, and other imperfections and shall have a uniformly textured appearance suitable for use as a temporary riding surface.
- g) Humps and depressions that exceed the specified tolerances and require additional planing or grinding shall be subject to correction or replacement as directed by the Owner at no additional cost to the Owner.
- h) The Contractor shall ensure positive drainage is provided for all planed surfaces. The Contractor shall endeavor to work with existing drainage and grades to maintain positive flow when planing in curb and gutter sections. The Owner may require the Contractor to erect signage to warn motorists, sweep the roadway to vacate the water, or in extreme cases, close the lane to traffic until proper drainage of the planed surface can be restored in the event of significant buildup of standing water.
- i) The Contractor shall construct temporary transverse pavement-wedge tie-ins where planed existing pavement is to remain temporarily without overlay to the extent allowed or required herein, elsewhere in the Contract Documents, or by the Owner. Each tie-in shall be constructed no less than 3 feet in length for every inch of depth of pavement planing performed and shall consist of a mix that is suitable as a riding surface to provide a smooth transition between planed existing pavement and undisturbed existing pavement or bridge decks. The Contractor shall construct such tie-ins prior to the planed surface being opened to traffic.
- j) Additional or other limitations and conditions to planing operations will be as specified and applicable to the Contract.

- k) All asphalt surface material cut from the road surface by the planer, shall be removed by the Contractor and shall become the property of the Contractor, unless cuttings are designated to be reused. Cuttings to be reused shall be stockpiled and kept in good condition until reused
- l) All areas showing excessive pavement or base fatigue or failure will be excavated to remove all unsuitable material and repaired as directed by the Owner.
- m) Road and adjacent areas are to be cleaned daily of all rubbish, trash and debris.
- n) Milled streets shall be resurfaced within five (5) consecutive calendar days of milling operation, unless otherwise directed by the Owner.
- o) Milling elevations must be completed as close to utility castings as possible, with remaining asphalt surface to be removed by appropriate equipment or cut out by conventional methods. The finished grade of the structure cover shall match the surrounding finished roadway surface. (See Section 510 for the adjustment of utility structures.)
- p) Restoration, landscaping and seeding will be done on all areas disturbed by the removal and replacement asphalt and will be considered incidental without separate payment.
- q) Asphalt Resurfacing shall be performed in accordance with asphalt application procedures.
- r) Transverse tie-ins on milled surfaces shall have a minimum taper of 12-inches.
- s) Completely remove and dispose of the existing manhole and replace a new structure in the same location.

Performance Pavement Planning Testing

- a) The Contractor shall perform mean texture depth (MTD) testing of the macrotexture surface on performance planed pavement in accordance with ASTM E965. Testing shall be accomplished by using a volumetric technique after planning operations have been completed and prior to opening a section of performance planed pavement to public traffic on roadways with posted speed limits of 55 mph or greater. The Contractor shall randomly select 10 locations at each section. Each location shall be tested and the average MTD of the 10 locations per section determined. The average MTD of the performance planed site shall be less than 2.0 millimeters and the upper limit for any one MTD measurement shall not exceed 3.1 millimeters prior to opening that section of roadway to traffic.

PART 4 - MEASUREMENT AND PAYMENT

E. Asphalt Pavement

Pavement preparation, materials, labor, tools, equipment, maintenance of traffic and all other incidentals necessary to complete the Work will not be measured and will not be paid for as such but will be included in other items of Work. Prices for asphalt shall also include heat stabilization additive(s), furnishing samples, and maintaining traffic.

Asphalt will be measured in tons and paid for at the contract unit price per ton. When paid in tons, net weight information shall be furnished with each load of material delivered in accordance with VDOT Road and Bridge Specifications, Section 211. Batch weights will not be permitted as a method of measurement unless the Contractor's plant is equipped in accordance with VDOT Road and Bridge Specifications, Section 211, in which case the cumulative weight of the batches will be used for payment.

Asphalt used in the mixtures, when a pay item, will be measured in tons except that transporting vehicles shall be tare weighed prior to each load. The weight will be adjusted in accordance with the percentage of asphalt indicated by laboratory extractions.

Tack coat, when not a pay item, shall be included in the price for other appropriate pay items. Asphalt sidewalks will be measured and paid in tons of asphalt mixture placed.

Liquid asphalt cement, when a pay item, will be measured in tons and will be paid for at the contract unit price per ton.

Material Transfer Vehicle (MTV), when required in the Contract, will not be measured for separate payment. The cost for furnishing and operating the MTV shall be included in the contract unit prices of other appropriate items.

Warm Mix Asphalt (WMA) additive or process will not be measured for separate payment, the cost of which, shall be included in the contract unit prices of other appropriate items.

While no separate payment will be made for liquid binder in the asphalt mix, price adjustments may be made in accordance with the VDOT Method for Liquid Asphalt Adjustment.

Rumble strips will be measured in linear feet and will be paid for at the contract unit price per linear foot of mainline pavement or shoulder where the rumble strips are actually placed and accepted, excluding the test site. This distance will be measured longitudinally along the center line of pavement (mainline) or edge of pavement (shoulders) with deductions for bridge decks, acceleration/deceleration lanes, surface drainage structures, and other sections where the rumble strips were not installed. This price shall include installing, cleaning up debris and disposing of waste material. The test site will not be measured for payment but shall be included in the unit price for rumble strip.

Liquid asphalt coating (rumble strips) will be measured in square yards and will be paid for at the contract unit price per square yard as described herein. This price shall include cleaning rumble strips prior to application of the coating and furnishing and applying coating as specified herein.

Saw-cut asphalt pavement will be measured in linear feet for the depth specified and will be paid for at the contract unit price per linear foot, which price shall be full compensation for saw-cutting the asphalt pavement to the depth specified, cleaning up debris and disposal of waste material.

See Section 14 for measurement and payment for adjustments to existing structures.

Control strips and test lots are considered incidental to the cost of furnishing, placing and compacting the specified course and will not be measured for payment.

All cost for constructing tie-ins in the asphalt overlay shall be included in the price bid for asphalt.

Asphalt driveway replacement will be measured and paid per ton of the specified thickness (in inches) of base and asphaltic materials as identified in the Contract Documents; or, for each driveway replaced, as indicated on the Bid form.

F. Pavement Patching

Where the pipe centerline lies outside the paved surface no measurement shall be made for pavement patching.

The width of the patching or restoration will not be measured but shall be the maximum permissible trench width plus four feet minimum as indicated on Standard Detail P-01. It shall be the responsibility of the Contractor to minimize the width disturbed or removed.

The temporary surface course shall be in accordance with that shown in the Contract Documents and is to be measured along the centerline of the pipe where the centerline of the pipe lies within a paved surface. The lengths so determined will be paid for at the unit price bid per ton specified for temporary pavement patching as indicated on the Bid form, and shall include all labor, materials, and equipment necessary to furnish, install, and maintain the base course and temporary surface course (all materials above the trench backfill).

The permanent surface patch, if required and indicated on the Bid form, shall be in accordance with the permanent pavement section shown in the Contract Documents, and will be measured and paid for per Part 4.A, including the cost to remove the temporary surface course.

Standard patch for Asphalt Pavement will be paid for and measured for at the unit price per ton. The following shall be included in the contract price per square yard:

- a) Sawcut Base (2 Cuts)
- 6.5" Base asphalt (Width: $W + 2'$ Min.)
- Tack edges with liquid asphalt
- 1.5" Cold milling (Width: $W + 4'$ Min.)
- Surface asphalt as shown

The following are not included and shall have separate pay items or be included in other items unless otherwise noted:

- b) VDOT No. 21A Base aggregate as shown
- Utility
- Utility Embedment
- Labor/Materials for Utility Installation

Pavement Milling

Milling, hand work (where applicable), materials, labor, equipment and clean up, including the removal and delivery of the cut material as well as incidental expenses, will not be measured as a separate pay item and shall be included in the unit price for Asphalt Concrete Pavement, unless milling is specified as a separate item on the Bid form. When a separate item, milling shall be specified for rigid or flexible pavement.

The planed area is defined as the area resulting from actual length and width of the planed pavement surface visually verified and approved by the Owner for payment.

Flexible pavement planning will be measured in square yards of pavement surface area removed to the depth(s) specified in the Contract Documents.

If scabbing or laminations still exist and the Contractor has uniformly planed the pavement to the design depth, the Owner may direct the Contractor to perform additional passes to increase the depth to eliminate the scabbing or delamination. The area of additional passes or increased depth beyond the design depth will be measured and paid for in square yards as authorized by the Owner.

Flexible pavement tie-in planning used to tie into existing structures such as curbs, combination curb and gutters, and bridge terminal walls will be measured in square yards of surface area removed within the design depth designated. Measurement will be based on the full surface area (the actual length and width of the planed pavement surface visually verified and accepted by the Owner for payment) within the range of depths specified in the Contract Documents.

If scabbing or laminations still exist after the Contractor has uniformly planed the pavement to the design depth (+1/2 inch), the Owner may direct the Contractor to perform additional pass(es) to increase the depth to eliminate the scabbing or delamination. The area of additional pass(es) of increased depth beyond the design depth (+1/2 inch) will also be measured and paid for in square yards as authorized by the Owner.

Rigid pavement planning will be measured in square yards of pavement surface area removed to the design depth specified in the Contract Documents and will be paid for at the contract unit price per square yard for the design depth indicated on the Bid form.

Rigid pavement tie-in planning will be measured in square yards of pavement surface area removed to the design depth specified in the Contract Documents and will be paid for at the unit price per square yard as indicated on the Bid form.

END OF SECTION

SECTION 10 – NOT USED

SECTION 11 – NOT USED

SECTION 12 – NOT USED

SECTION 13 – NOT USED

SECTION 14 – WATER AND GAS VALVE BOX ADJUSTMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This work shall consist of locating water and gas valve boxes on each street prior to the start of the milling and paving operations; and, adjusting each box as necessary during the progression of the milling and paving work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Castings
 1. In most instances, reuse the same castings for these adjustments.
 2. When new valve boxes, extension pieces, collars, and covers are necessary, they shall be cast iron as manufactured by Bingham and Taylor or other approved equivalent.
 3. Valve box components shall conform to the City of Danville Standard Number R-2-6100 R or an approved equal.
 4. New valve box covers shall have the word "Gas", "Water", or "Test" embossed on the top. The covers shall be installed on the type of box it identifies.

PART 3 - EXECUTION

3.1 PROCEDURES

- A. Street preparation for milling and/or paving shall be accomplished prior to the start of either function by loosening the valve boxes and leaving them in place until time for actual milling or paving operations to commence.
- B. Milling
 1. Prepare each valve box by loosening and removing the top section of the metal boxes for the milling operation.
 2. Stuff rags in the boxes to keep loose millings from getting into the box.
 3. After the milling machine has passed over the valve box, remove the rags and clean out any residue millings and re-install the casting to match the milled surface.
- C. Paving
 1. Prepare the valve boxes by loosening and leaving them in place.
 2. Once loosened, reference them to a stationary point so they may be easily located in the new asphalt mat.
 3. After the paving operation passes over them, raised them so the top of the valve box matches the top of the new asphalt grade.
 4. Once the box is adjusted to the proper elevation, have the asphalt raker repair the disturbed area around the box and then compact the new asphalt mat.

PART 4 - MEASUREMENT AND PAYMENT

- 4.1 Valve box adjustments will be counted by each and will be paid for at the contract unit price per each.

END OF SECTION

SECTION 15 – NOT USED

SECTION 16 – NOT USED

SECTION 17 – LANDSCAPING

PART 1 - GENERAL

1.1 SUMMARY

A. Description:

1. This work shall consist of furnishing and installing all plant materials specified in the plans and information provided, in accordance with accepted horticultural practices as determined by the City's representative.
2. Also included is installation of landscape fabric, hardwood mulch, clean up and restoration of disturbed areas, and maintenance of all work until a written acceptance by the City is issued to the contractor.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL SELECTION

- ##### A.
- All plants and nursery stock shall conform to the plans and the standard specifications of The American Standard for Nursery Stock sponsored by the American Association of Nurserymen, Inc. All plants shall be grown under climatic conditions similar to the job site and substitutions are not permitted, either in kind or grade, without written authorization from the City's representative. Failure to meet the requirements of these specifications may result in rejection of the work. Rejected work shall be removed from the project and replaced by the contractor at their expense.

1. Plants shall be nursery grown and shall have the habit of growth that is normal for the species or cultivars; they shall be sound, healthy, vigorous, free from insects, plant diseases, and injuries or damage of any nature; they shall be of the grades specified, without deviation, unless so authorized in writing by the City's representative; they shall not be pruned, clipped, or trimmed prior to delivery without written authorization from the City's representative; they shall be State inspected and a copy of the "Certificate of Inspections" issued by the State Department of Agriculture at the point of origin must accompany shipments from each source.

2.2 MULCH

- ##### A.
- Mulch selected shall be made of quality hardwood.

2.3 LANDSCAPE FABRIC

- ##### A.
- Landscape fabric shall be a professional grade product of no less than a 3 ounce weight, such as Typar Professional or Polypro.

2.4 TREE STAKING

- ##### A.
- Stakes shall be made of the length and size necessary to restrict excessive movement by the tree. Tie materials shall be designed specifically for staking trees.

PART 3 - EXECUTION

3.1 SCHEDULING

- ##### A.
- The contractor shall coordinate with the City's representative and submit a proposed landscaping work schedule for approval prior to beginning operations. Upon approval of the work schedule, no modifications shall be made thereto without written authorization from the representative. All work shall take place during normal City of Danville weekday working hours.

3.2 PLANTING LAYOUT

- ##### A.
- All planting locations shall conform to the landscaping layout plan unless obstructions are encountered that prohibit it. In the event plants cannot be planted in the locations provided, the contractor shall immediately notify the City's representative to arrange a suitable adjustment and authorize the necessary change.

3.3 DELIVERY, INSPECTION, AND ACCEPTANCE

- ##### A.
- Plants shall be delivered to the site in accordance with the approved work schedule required above. Should circumstances require changes, the contractor shall notify the City's representative at least 48

hours prior to the plants arrival at the job site. The City's representative must be present at the plants' delivery to inspect and approve prior to their planting. Plants shall be under tarp, protected from weather and adequately packed to avoid damage or breakage, sunscald, windburn, desiccation during loading and shipment. Plants damaged in shipment or delivery is the contractor's responsibility and shall be replaced immediately upon discovery.

- B. No plants shall be planted until they have been inspected and approved by the City's representative. Legible tags shall be attached to each group. Plants that do not meet the requirements of the specifications will be rejected. Rejected plants shall be removed from the site by the contractor and shall not be planted.
- C. Acceptance of the plants will be given only after completion of the inspection at delivery by the City's representative.

3.4 PLANTING

- A. Plants shall be protected upon arrival and shall be thoroughly watered and properly maintained until installed. Unless planted within four (4) hours of delivery, unplanted B&B and bare rootstock shall be "healed-in" by the contractor in a bed of material approved by the City's representative. All work shall be performed in the workmanlike methods customary in good horticultural practices.
- B. Planting holes shall be excavated in advance of planting operations. Each plant shall be planted in an individual hole and shall be set to ultimate finished grade so that they will bear the same relationship to finished grade as they bore to the natural grade before transplanting.
- C. All trees shall be staked and/or supported. Stakes shall be made of the length and size necessary to restrict excessive movement by the tree. Tie materials shall be designed specifically for staking trees.
- D. A quality, hardwood mulch shall be applied 3" deep on landscape fabric secured with staples. The fabric shall be installed over the entire area except where annuals, perennials and/or bulbs are proposed.
- E. Plants shall be thoroughly watered in after planting.

3.5 ACCEPTANCE

- A. When the planting is completed, the contractor shall request an inspection to determine the acceptability of the work. If the work is deemed to be accepted, a written notice shall be provided so stating. If the work is not accepted, an itemized list of deficiencies will be provided to the contractor for correction. The contractor shall make the corrections within ten (10) days and a re-inspection shall be made. This procedure will continue until the work is accepted. Upon acceptance, the contractor will be notified in writing by the City's representative.

3.6 WARRANTY

- A. The contractor shall provide a one-year warranty on all plants following the acceptance of the work. The contractor shall replace, according to original specifications, any plants that fail during the warranty period.

PART 4 - MEASUREMENT AND PAYMENT

- 4.1 Payment for this work will be on a lump sum basis and shall include all materials, equipment, tools and labor necessary to perform this work.

END OF SECTION

SECTION 18 – BYPASS PUMPING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This work shall consist of providing all materials, labor, equipment, power, maintenance, etc. to implement a temporary pumping system for the purpose of diverting the existing wastewater flow around the work area for the duration of the project.
- B. The design, installation, and operation of the temporary pumping system shall be the contractor's responsibility.

1.2 SUBMITTALS

- A. The contractor shall prepare a detailed description of the proposed pumping system and submit it to the Engineer prior to construction.
- B. The Contractor shall submit to the engineer detailed plans and descriptions outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing wastewater flow. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items necessary and/or required to insure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in these contract documents. No construction shall begin until all provisions and requirements have been reviewed by the engineer.
 - 1. The plan shall include but not limited to the details of the following:
 - a. Staging areas for pumps;
 - b. Sewer plugging method and types of plugs;
 - c. Number, size, material, location and method of installation of suction piping;
 - d. Number, size, material, method of installation and location of installation of discharge piping;
 - e. Bypass pump sizes, capacity, number of each size to be on site and power requirements;
 - f. Standby power generator size, location;
 - g. Downstream discharge plan;
 - h. Schedule for installation of and maintenance of bypass pumping lines;
 - i. Plan indicating selection location of bypass pumping line locations.

PART 2 - PRODUCTS

2.1 MATERIALS & EQUIPMENT

- A. All pumps used shall be centrifugal, end suction, fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. The pump may be electric or diesel powered. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows. The pumps shall not be hydraulic submersible type.
- B. The Contractor shall provide the necessary stop/start controls for each pump.
- C. The Contractor shall include one stand-by pump of each size to be maintained on site.
- D. Spare parts for pumps and piping shall be kept on site as required.
- E. Adequate hoisting equipment for each pump and accessories shall be maintained on site.

2.2 PUMPING SYSTEM

- A. Bypass pumping systems shall have sufficient capacity to pump a peak flow of the line size. The Contractor shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow of the main can be safely diverted around the section to be repaired. Bypass pumping system will be required to be operated 24 hours per day.

- B. The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown.
- C. Bypass pumping system shall be capable of bypassing the flow around the work area and of releasing any amount of flow up to full available flow into the work area as necessary for satisfactory performance of work.
- D. The Contractor shall make all arrangements for bypass pumping during the time when the main is shut down for any reason. System must overcome any existing force main pressure on discharge.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Contractor is responsible for locating any existing utilities in the area the Contractor selects to locate the bypass pipelines. The Contractor shall locate his bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from the City and the engineer. All costs associated with relocating utilities and obtaining all approvals shall be paid by the Contractor.
- B. During all bypass pumping operation, the Contractor shall protect the pumping station and main and all local sewer lines from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the pumping station and main and all local sewer lines caused by human or mechanical failure.

3.2 PROCEDURES

- A. It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the project. To this end, the Contractor shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with his work, carry it past his work and return it to the existing sewer downstream of his work.
- B. The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
- C. The Contractor shall provide all necessary means to safely convey the sewage past the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances.
- D. The Contractor shall maintain sewer flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers and that will protect public and private property from damage and flooding.
- E. The Contractor shall protect water resources, wetlands and other natural resources.

3.3 INSTALLATION AND REMOVAL

- A. The Contractor shall remove manhole sections or make connections to the existing sewer and construct temporary bypass pumping structures only at the access location indicated on the drawings and as may be required to provide adequate suction conduit.
- B. Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance or work, it is to be removed in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.
- C. When working inside manholes or force mains, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.
- D. The installation of the bypass pipelines is prohibited in all salt marsh/wetland areas. The pipeline must be located off streets and sidewalks and on shoulders of the road. When the bypass pipeline crosses local streets and private driveways, the Contractor must place the bypass pipelines in trenches and cover with temporary pavement. Upon completion of the bypass pumping operations, and after the receipt of written permission from the engineer, the Contractor shall remove all the piping, restore all property to pre-construction condition and restore all pavement. The Contractor is responsible for obtaining any approvals for placement of the temporary pipeline within public ways from the City.

- E. The Contractor is required to temporarily reconnect to the existing sewer line at the end of each work day so that bypass pumping is not required when the active work is not in progress.

3.4 FIELD QUALITY CONTROL

A. Testing:

- 1. The Contractor shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to actual operation. The engineer will be given 24 hours notice prior to testing.

B. Inspection:

- 1. Contractor shall inspect bypass pumping system every two hours to ensure that the system is working correctly.

C. Maintenance:

- 1. The Contractor shall ensure that the temporary pumping system is properly maintained, and a responsible operator shall be on hand at all times when pumps are operating.

PART 4 - MEASUREMENT AND PAYMENT

- 4.1 The entire bypass pumping system as outlined in this specification shall be paid for at the contract lump sum price.

END OF SECTION

VOLUME II – APPENDICES AND CONTRACTOR’S BID PROPOSAL FORMS

DIVISION I – CONTRACTOR’S BID PROPOSAL FORMS

BID PROPOSAL

Apple Branch Sanitary Sewer Interceptor Reconstruction

IFB 21-22-083

The undersigned, as Bidder, hereby declares that he or she and their associates are the only person or persons interested in the proposal as principal or principals; that this proposal is made without connection with any other person, company, or parties making a bid or proposal; and that it is in all respects fair and good faith without collusion or fraud.

The Bidder further declares that they have examined the site of the work and informed themselves fully in regard to all conditions pertaining to the place where the work is to be done; that they have examined the specifications for the work and contractual documents relative thereto and have read all special provisions furnished prior to the bid opening; that they have satisfied themselves relative to the work to be performed, and materials and equipment to be furnished.

The Bidder proposes and agrees, if this proposal is accepted, to contract with the City of Danville, Virginia in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, and labor necessary to perform in full and complete the requirements of the specifications and contract documents, to the full and entire satisfaction of the City of Danville, Virginia with definite understanding that no money will be allowed for extra work except as set forth in the attached General Conditions and Contract Documents: set opposite the several items that follow:

Note: Bid Item List is provided for comparison purposes only and may not be all inclusive of the work depicted in the contract documents. The bidder is responsible for estimating all quantities associated with the bid.

A	B	C	D	E	F	G
ITEM NO.	SPEC NO.	DESCRIPTION OF WORK	SCHED QTY	UNIT	UNIT PRICE	TOTAL PRICE (D X F)
APPLE BRANCH SANITARY SEWER INTERCEPTOR RECONSTRUCTION						
01	3	Clearing and Grubbing Easements	0.9	AC		
02	3	Removal of Existing Trees	15	EA		
03	4	Concrete Piers at Stream Crossings	7	CY		
04	4	Inlet Protection	18	EA		
05	4	Permanent Seeding, Std. 3.32	10,430	SY		
06	4	Silt Fence	3,325	LF		
07	4	Stream Stabilization at Stream Crossings	1	LS		
08	4	Temporary Seeding, Std. 3.31	10,430	SY		
09	4	Utility Stream Crossings	4	EA		
10	7	10" DI Pipe (Class 52), 0-8'	80	LF		
11	7	10" DI Pipe (Class 52), 16-20'	70	LF		
12	7	10" DI Pipe (Class 52), 8-12'	164	LF		
13	7	10" PVC Pipe, 0-8'	17	LF		
14	7	10" Sewer Pipeline Abandonment	752	LF		
15	7	12" DI Pipe (Class 52), 0-8'	862	LF		
16	7	12" DI Pipe (Class 52), 16-20'	120	LF		
17	7	12" DI Pipe (Class 52), 20-24'	230	LF		
18	7	12" DI Pipe (Class 52), 8-12'	780	LF		
19	7	16" DI Pipe (Class 52), 0-8'	728	LF		
20	7	16" DI Pipe (Class 52), 8-12'	184	LF		
21	7	16" DI Rigid Restrained Joint (Mech-Lok) D.I. at Stream Crossing	80	LF		
22	7	4" DI Sanitary Lateral Pipe (Class 52)	525	LF		

A	B	C	D	E	F	G
ITEM NO.	SPEC NO.	DESCRIPTION OF WORK	SCHED QTY	UNIT	UNIT PRICE	TOTAL PRICE (D X F)
APPLE BRANCH SANITARY SEWER INTERCEPTOR RECONSTRUCTION						
23	7	8" DI Pipe (Class 52), 0-8'	31	LF		
24	7	8" Sewer Pipeline Abandonment	566	LF		
25	7	Concrete Encasement at Stream Crossings	10	LF		
26	7	Connect to Existing Manhole	2	EA		
27	7	DI Wye, 12-inch x 4-inch	22	EA		
28	7	DI Wye, 16-inch x 4-inch	4	EA		
29	7	Doghouse Manhole, 4' I.D.	1	EA		
30	7	Excavation of Rock	250	CY		
31	7	Extra Depth in 4' I.D. Manholes Beyond 8'	5	VF		
32	7	Extra Depth in 5' I.D. Inside Drop Manholes Beyond 8'	26	VF		
33	7	Extra Depth in 5' I.D. Manholes Beyond 8'	23	VF		
34	7	Foundation Stone, VDOT No. 5	60	TNS		
35	7	Inside Drop Manhole, 5' I.D. 0-8'	4	EA		
36	7	Manhole Abandonment	5	EA		
37	7	Manhole Rehabilitation	8	VF		
38	7	Manhole Removal and Disposal	4	EA		
39	7	Sanitary Cleanout Assembly	33	EA		
40	7	Slipline 10" Sewer w/ 6" HDPE and Grout Annual Space	95	LF		
41	7	Standard Manhole, 4' I.D.	16	EA		
42	7	Standard Manhole, 5' I.D.	6	EA		
43	7	Stone Backfill, VDOT No. 21B	6,300	TNS		
44	7	Undercut/Disposal/Backfill Unsuitable Material	600	CY		

A	B	C	D	E	F	G
ITEM NO.	SPEC NO.	DESCRIPTION OF WORK	SCHED QTY	UNIT	UNIT PRICE	TOTAL PRICE (D X F)
APPLE BRANCH SANITARY SEWER INTERCEPTOR RECONSTRUCTION						
45	8	Repair of Existing Paved Concrete Driveways	4	TNS		
46	8	Replacement of Concrete Curb & Gutter	50	LF		
47	9	Asphalt Pavement Flush Patching	30	TNS		
48	9	Full Width Asphalt Overlay	515	TNS		
49	9	Pavement Milling	5,800	SY		
50	9	Saw Cut Existing Asphalt Pavement	3,200	LF		
51	9	Temporary Asphalt Pavement Patch (BM-25.0)	320	TNS		
52	10	Adjust Existing Water/Gas Valve Box to Grade	18	EA		
53	11	Mobilization/Demobilization	1	LS		
54	11	Survey Stakeout	1	LS		
55	12	Temporary Shed Relocations	2	EA		
56	13	Residential Traffic Control	1	LS		
57	17	Tree Protection	13	EA		
58	18	Sanitary Sewer Bypass Pumping	1	LS		
					TOTAL BID =	

1

The Bidder further agrees that:

1. The City, in protecting its best interest, reserves the right to reject any or all bids or waive any defects in favor of the City. Any changes, erasures, deletions in the unit or lump sum prices above, modifications in the bid form, or alternate proposals not specified in the bid proposal shall make the proposal irregular and subject to rejection.
2. All quantities listed are estimates only and the City reserves the right to raise, lower, or eliminate any quantity or item and in any case the unit or lump sum prices shall be used in determining partial or final payment.
3. If awarded the contract, to execute and deliver to the City within ten (10) consecutive calendar days after their receipt of the contract documents, a satisfactory Performance Bond and Labor & Material Bond, as required, in the amount of one hundred percent (100%) of the contract amount along with the signed agreement.
4. In case of failure on their part to execute the said agreement within ten (10) consecutive calendar days after receipt of the contract documents, the monies payable by the Security accompanying this bid shall be paid to the City of Danville, Virginia, as liquidated damages for such failure; otherwise, the Security accompanying this bid shall be returned to the Bidder.
5. The work under this contract shall commence not later than five (5) consecutive calendar days after the date of a written Notice To Proceed is given by the City to the Contractor and shall be completed within the number of days or by the fixed date stipulated in the contract for each phase of the work.
6. The Contractor shall be subject to liquidated damages to be assessed in accordance with the Specifications for each day the work is incomplete past the contract number of days or fixed date of completion for each phase of work. The Bidder, if awarded the Contract, waives any defense as to the validity of liquidated damages stated in the Contract on the grounds that such liquidated damages are void as penalties or are not reasonably related to actual damages.
7. This bid is subject to acceptance within a period of thirty (30) days from this date.

Enclosed herewith is the following Security, offered as evidence that the undersigned will enter into agreement for the execution and completion of the work in accordance with the drawings and specifications.

Bidder's Bond or Certified Check in the amount of

\$ _____

If Bond, Name of Surety:

If Check, Name of Bank:

The undersigned Bidder acknowledges receipt of the following Addenda, which have been considered in the preparation of this Bid:

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

(SIGNATURES FOLLOW ON THE NEXT PAGE)

CONTRACTOR: _____

DATE: _____

ADDRESS: _____

PHONE: _____ FAX #: _____

City of Danville Business License# : _____

Federal Tax#: _____

E-Mail Address _____

Signature: _____ Signature: _____
(Printed or Typed) (Signed)

Title: _____

Attest:

Signature: _____ Signature: _____
(Printed or Typed) (Signed)

Title: _____

Registered as a contractor under Chapter 175E, Section 4539(117), Code of Virginia as amended by Chapter 404, Act of Assembly, 1944,

Certificate No. _____

Registered As _____

Commonwealth of Virginia State Corporation Identification No. _____