COUNTY OF SPOTSYLVANIA, VIRGINIA
INVITATION FOR BID (IFB) #20-09-EG
LAKE BOTTOM MUNICIPAL IMPROVEMENTS PROJECT
February 27, 2020

Name of Soliciting Public Body:
County of Spotsylvania, Procurement Division
P.O. Box 215
8800 Courthouse Road, 2nd Floor Room 414
Spotsylvania, VA 22553

NON-MANDATORY PRE-BID MEETING DATE AND TIME:
A non-mandatory pre-bid meeting will be held March 12, 2020 @ 11:00 AM, at the Spotsylvania County Utilities Department located at 600 Hudgins Road, Fredericksburg, VA 22408.

QUESTIONS DUE DATE AND TIME:
Questions from Bidders must be received by 12 noon, on March 20, 2020. The County is not responsible for verbal clarification of information provided by parties other than staff of the Procurement Division.

BIDS DUE DATE AND TIME:
Sealed Bids Will Be Received until April 2, 2020 at 2:00 PM for Furnishing the Services Described Herein.

Bids Shall Be Mailed Or Hand Delivered To:
Spotsylvania County Procurement Division
P.O. Box 215
8800 Courthouse Road, 2nd Floor Room 414
Spotsylvania, VA 22553

All Inquiries For Information Should Be Directed To:
Elaine Guinn, Procurement Officer I
Phone: (540)507-7599
Email: eguinn@spotsylvania.va.us

All updates are posted on the Spotsylvania County web site at http://www.spotsylvania.va.us/374/Solicitations
It is the responsibility of the vendor to check back for updates.
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I. PURPOSE

The County of Spotsylvania, VA is seeking bids from qualified Contractors to provide construction services and materials for the Lake Bottom Municipal Improvements Project. The successful Contractor shall perform all construction activities and provide all construction management, necessary tools, equipment, materials, fuel, insurance, personnel, and supervision to complete the Project as described herein. The successful Contractor shall fulfill the obligations of any Contract resulting from this IFB at the direction of the County and follow accordingly all federal, state and local regulations.

II. BASIS OF AWARD

The award of a contract resulting from this Invitation for Bid shall be based on the following criteria submitted from the lowest responsive and responsible bidder:

Price - The bids will be evaluated and contract award will be made to the lowest responsive and responsible bidder according to Spotsylvania County Procurement Policy. Contract award will be based on the Total Bid Price, as stated on Attachment D, Bid Form. In case of arithmetic errors, the unit price will govern.

The County reserves the right to reject any and all bids in whole or in part and to waive any informality prior to making an award.

III. INSTRUCTIONS TO BIDDERS

A. This competitive sealed bidding procurement shall be conducted in accordance with the Spotsylvania County Procurement Policy. The Procurement Policy is available at http://www.spotsylvania.va.us/377/Spotsylvania-County-Policies

B. Bids may be withdrawn at any time before the bid opening. A Bidder wishing to withdraw the bid after bid opening may do so in accordance with Spotsylvania Procurement Policy Section 2-24.

C. Bids must be made by utilizing, initialing and signing Attachment D, Bid Form. The Bid Form (all pages) of this IFB must be completed and returned for a bidder to be considered responsive. Specifications incorporated into this Invitation to Bid shall be followed accordingly.

The Response Statement of the Bid Form must be completed in a sufficient manner to allow for a detailed comparison of the IFB Specifications and the bidder’s proposed construction work to ascertain adherence to the Specifications. The bidder must explain in the Response Statement any deviations from the Specifications.

D. All inquiries for information regarding bid submission requirements or procurement procedures shall be directed to:
Questions must be e-mailed to Spotsylvania County. All responses to inquiries will be in writing in the form of an Addendum and will be posted on the Procurement Division website - http://www.spotsylvania.va.us/374/Solicitations. Questions from Bidders must be received by the time stated on Page 1 of this Invitation For Bid. The County is not responsible for verbal clarification of information provided by parties other than staff of the Procurement Division.

E. Bidders are responsible for familiarizing themselves with all of the requirements stated herein.

F. All bids must be in a sealed envelope and clearly marked in the lower left hand corner:
   
   Business/Contractor Name  
   Sealed Bid, Spotsylvania County IFB #20-09-EG, Lake Bottom Municipal Improvements Project  
   Bid Opening: (Insert Date and Time as stated on Page 1 of this IFB)  
   DO NOT OPEN

G. Bids will be accepted until the time stated on Page 1 of this IFB. Bids will be opened at the Spotsylvania County Procurement Division, 8800 Courthouse Road (the Marshall Center), 2nd Floor Room 414, Spotsylvania, VA 22553.

   The Bidder has the sole responsibility to have their bid received by the Spotsylvania County Procurement Division at the above address and by the above stated time and date. Please note that Federal Express and other overnight delivery services do not guarantee morning delivery to Spotsylvania, Virginia. Next day delivery usually arrives in mid-to-late afternoon. Also, please note that USPS deliveries require additional days from the post office to the Procurement Office. If you will be using one of these services for delivery of your bid, please take this information into consideration.

H. Late Bids shall not be considered and will be returned to bidder unopened if received by special carrier or not accepted if hand delivered by bidder. The time of receipt shall be determined by the time clock stamp in the Procurement Division, Room 414.

   Inclement weather: In the event that Spotsylvania County is closed during the scheduled times for a pre-bid (pre-proposal) conference or bid opening; the pre-bid conference or bid opening will occur in the next business day that Spotsylvania County is open at the appropriate times as stated in the IFB. No exceptions will be made in this situation. Please contact the procurement officer as stated in the IFB for information pertaining to this procurement.

I. Specifications incorporated into this Invitation to Bid should be followed accordingly. Bids must be made by utilizing and signing the Bid Forms. The bid form must include the total bid price, warranty
details and exceptions to the specification (if any), to be considered responsive. The Bid Form in its entirety must be completed and returned for a bidder to be considered responsive.

J. All warranties shall commence from the date of Spotsylvania County’s acceptance of the completed work. The contractor warrants that, unless otherwise specified, all materials and equipment incorporated in the work under the contract shall be new, first class condition, and in accordance with the contract documents. The contractor further warrants that all workmanship shall be of the highest quality and in accordance with contract documents and shall be performed by persons qualified at their respective trades. Work not conforming to these warranties shall be considered defective. This warranty of materials and workmanship separate and independent from and in addition to any of the contractor’s other guarantees or obligations in this contract.

The minimum warranty/maintenance period for the construction and related accessories shall be at least two years unless otherwise specified in the Specifications incorporated herein and made part of this IFB and shall start from the date of Spotsylvania County’s acceptance of the completed work.

K. **BID BOND:** All bids shall be accompanied by a Bid Bond from a surety company selected by the Bidder, which is legally authorized to do business in Virginia in the amount of five percent (5%) of the amount of the bid if the bid price is in an amount of or over $100,000. If the bid price is less than $100,000 the County may ask for a bid bond after the opening of the IFB and performance and payment bonds before work commences. In lieu of a Bid Bond, a Bidder may furnish a certified check or cash escrow in the face amount required for the bond. Such bid guarantee shall be submitted with the understanding of the following: It shall guarantee that the Bidder will not withdraw his bid during the period of 150 days following the opening of bids; if his bid is accepted, he will enter into a formal Contract with Spotsylvania County in accordance with the County Agreement or Purchase Order included as a part of the Contract Documents; and the Standard Performance Bond and the Standard Labor and Material Payment Bond shall be given. And further, in the event of the withdrawal of the said bid within said period, or failure to enter into said Contract and give said Bonds within ten (10) days after he has received Notice of Award, the Bidder shall be liable to the Spotsylvania County Board of Supervisors for the lesser of (i) the difference between the Bid for which the Bond was written and the next low Bid, or (ii) the face amount of the Bid Bond. This amount represents the damage to the Spotsylvania County Board of Supervisors on account of the default of the Bidder in any particular hereof.

L. As a guideline, Spotsylvania County anticipates the following timetable for selection of a Contractor.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity/Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 27, 2020</td>
<td>Invitation for Bid Issued</td>
</tr>
<tr>
<td>May – June 2020</td>
<td>Anticipated Award</td>
</tr>
</tbody>
</table>

M. Bid price will include freight to the specified delivery location in Spotsylvania County, Virginia, and associated insurance. It shall be the responsibility of the contractor to make all arrangements for
delivery, unloading, receiving and storing materials. The County will not assume any responsibility for receiving these shipments. Contractor shall check with owner and make necessary arrangements for security and storage.

N. Failure to manually sign the bid may disqualify it. The person signing bid shall show title or authority to bind his firm in a Contract.

O. Any quantities indicated in this IFB are for informational purposes only and are not guaranteed to be purchased.

P. The prices quoted on the Bid Form shall be firm for 150 days. Prices shall be submitted in the unit of measurement specified on the Bid Form. No separate line item charges shall be permitted for either bidding or invoicing purposes on the items appearing on the Bid Form, which would include but are not limited to equipment rental, detention, demurrage, drop ship charges, local freight, or any other extraneous charges. Insertion of delivery costs, disclaimers, or limitations of liability, and the like which are not expressly allowed in this IFB will be cause for rejection of the bid.

Q. Payment for the work included in this section will be in accordance with the unit prices set forth in the bid for the quantity of worked performed.

R. To perform public work in the Commonwealth of Virginia, the successful Bidder (Contractor) and any Subcontractor working for the Contractor shall hold a Contractor’s and Business License as required by state law and local ordinances. Bidders are required to be licensed Contractors in the Commonwealth of Virginia in compliance with Title 54.1 of the Virginia Code. The bidder shall show evidence of compliance with these licensing requirements as a condition of the Bid being considered. The Bidder’s Virginia Contractor’s License Number shall be listed on the Bid Form of this Invitation for Bid.

The successful Bidder (Contractor) shall have been engaged in construction of sanitary sewer line and water line work for a length of time sufficient to establish his competence for providing the required management, work, and expertise. A list of 3 References for which the Contractor has provided similar work over the last 5 years similar in Scope to that which is described herein shall be provided with the Bid Package. Spotsylvania County cannot be listed as a reference.

S. Any vendor transacting business with Spotsylvania County may be asked to provide proof of registration with the State Corporation Commission (SCC), as required by Sections 13.1 or Title 50 of the Code of Virginia.

IV. SCOPE OF WORK

Bids will be received for qualified contractors to provide construction services and materials for construction of a sanitary sewer line and water line from Jackson Trail East to Brock Road in Spotsylvania County, VA. in Spotsylvania County, VA. This project includes installation approximately 6,000 feet of sanitary sewer line, 6,500 feet of water line and all ancillary work necessary for the complete and proper construction of the

The Drawings are available for $75.00 per set (plus shipping), as non-refundable, from Sullivan, Donahoe and Ingalls, Attention: Rick Furnival, P.E., 10720 Columbia Drive, Fredericksburg, VA 22408 Phone 540-898-5878.

V. CONTRACT PERFORMANCE

A. Performance, Payment Bonds

Upon the award of a public construction Contract resulting from this IFB which exceeds $100,000 awarded to the successful Bidder(s) (Contractor(s), the Contractor shall furnish to Spotsylvania County Performance and Payment bonds. If a contract is under $100,000 the County may request the bonds in accordance with the Spotsylvania County Procurement Policy. The following bonds shall be furnished to Spotsylvania County:

1. A Performance Bond in the penal sum of 100 percent of the dollar value of the contract conditioned upon the faithful performance of the Contract in strict conformity with the Plans, Specifications, and Terms and Conditions of the Contract. Said bond for the faithful performance of the Contract shall remain in existence for the duration of the Contract performance time period until final acceptance of the project by Spotsylvania County.

2. Payment Bond in the sum of the Contract amount. Such bond shall be for the protection of Claimants who have and fulfill contracts to supply labor or materials to the Contractor to whom the Contract resulting from this IFB was awarded or to any Subcontractors, in the prosecution of the Work provided for in such Contract, and shall be conditioned upon the prompt payment for all such material furnished or labor supplied or performed in the prosecution of the Work. Labor or materials shall include public utility services and reasonable rentals of equipment, but only for periods when the equipment rented is actually used at the Work Site.

3. Each of the above bonds shall be executed by one or more surety companies, selected by the Contractor, which are legally authorized to do business in Virginia. Bonds shall be payable to Spotsylvania County. The Contractor shall present the Performance Bond and Payment Bond to the Spotsylvania County Procurement Division within 15 days after receipt of a fully executed Contract and prior to any Site Work. The Performance Bond shall remain in existence for the duration of the Contract performance time period, and the Payment Bond shall remain in existence for one year after final acceptance of the Work by Spotsylvania.
County. In lieu of payment or Performance Bonds, the Contractors may furnish a certified check or cash escrow in the face amount required for each of the bonds and which will be held for the statutory period as applicable for each bond.

B. Delivery and Installation Address

The Lake Bottom Municipal Improvements Project shall be performed as described in the Scope of Work indicated in Section IV.

C. Notice to Proceed

A written “Notice to Proceed” shall be issued by Spotsylvania County to the Contractor fixing the date on which the Contract time will commence to run and on which the Contractor shall be authorized to begin the Work.

D. Pre-Construction Meeting

Before construction services have started, a representative of the Contractor shall confer with representatives of the Spotsylvania County Utilities Department and shall provide such planning, measurements, schedules etc., as are required to ensure that the planned construction activities meet the requirements of the County. At this meeting, Limits of Authority, changes, and General Procedures shall be explained.

E. Period of Contract Performance and Completion Date

The Lake Bottom Municipal Improvements Project shall be completed by the Contractor within 365 calendar days as measured from the date of the Notice to Proceed. The date which is 300 calendar days past the Notice to Proceed shall be the Contract Substantial Completion date.

The Contractor, in submitting his bid, acknowledges that he has taken into consideration normal weather conditions. Normal weather does not mean statistically average weather, but rather means a range of weather patterns which might be anticipated based on weather data for the past ten (10) years, (i.e., conditions which are not extremely unusual). Normal weather conditions shall be determined from the public historical records available, including the U. S. Department of Commerce, Local Climatological Data Sheets, National Oceanic and Atmospheric Administration/Environmental Data and Information services, National Climatic Center and National Weather Service. The data sheets to be used shall be those for the locality closest to the site of the work.

F. Liquidated Damages

Should the contractor fail to complete the work and/or installation or any part thereof, in the time specified in the Contract Documents, the contractor shall reimburse Spotsylvania County for the additional expense and damage for each calendar day that substantial and final completion has not been achieved. The amount of such additional expense and damage incurred by reason of failure to
achieve substantial completion is the per diem rate of $500. The amount of such additional expense and damage incurred by reason of failure to achieve final completion is the per diem rate of $750. Such liquidated damages are in addition to any other ascertainable damage allowable by law, which Spotsylvania County sustains for the contractor’s breach of the contract. Spotsylvania County shall have the right to deduct liquidated damages or other such damages from any amount due, or that may become due the contractor, or the amount of such damages shall be due and collectable from the contractor or his surety. It is understood and agreed by the Contractor that any liquidated damages payable in accordance with this Agreement are not a penalty and that such sums are reasonable under the circumstances existing as of the date of execution and delivery of this Agreement. The Contractor further acknowledges and agrees that liquidated damages may be owed even though no default has occurred or been declared.

G. Work Site Damages:

Any damage to existing utilities, equipment or finished surfaces resulting from the performance of this contract shall be repaired to Spotsylvania County’s satisfaction at the contractor’s expense.

H. Permits

The Contractor shall be responsible for obtaining all permits as indicated in the Specifications detailed in the IFB, and Construction Drawings of this IFB.

The Contractor must provide all contractors licensing information as detailed in Section V, Paragraph I below.

I. Contractor and Sub-Contractor Licenses

Spotsylvania County requires a general contractor to provide copies of all its construction and business licenses to the County Code Compliance Department.

Upon award of a contract, and prior to work, the successful bidder (contractor) shall be responsible for providing the County’s Code Compliance Department with the names of all contractors and subcontractors involved with the project and copies of their Virginia Contractor’s Licenses, Virginia Tradesman Certificates and Spotsylvania County Business Licenses, where applicable.

In addition, the contractor shall complete a sub-contractor roster. This must be returned to the County Business License Office prior to final inspection of the completed work.

J. Inspection

a. All material and workmanship shall be subject to inspection, examination, and test by the owner and its project inspector at any and all times during construction. The project inspector shall have authority to reject defective material and workmanship and require its correction. Rejected workmanship shall be satisfactorily corrected and rejected material shall be satisfactorily replaced
with proper material without charge therefore, and the contractor shall promptly segregate and remove the rejected material from the premises. If the contractor fails to proceed at once with replacement of rejected material and/or the correction of defective workmanship, the owner may, by contract or otherwise, replace such material and/or correct such workmanship and charge the cost to the contractor, or may terminate the right of the contractor to proceed, the contractor and surety being liable for any damages.

b. Job-site inspections, tests conducted on site or tests of materials gathered on site, which the contract requires to be performed by independent testing entities, shall be contracted and paid for by the owner. Examples of such tests are the testing of cast in-place concrete, foundation materials, soil compaction, pile installations, caisson bearings, and steel framing connections. Although conducted by independent testing entities, the County will not contract and pay for tests or certifications of materials, manufactured products, or assemblies which the contract, codes, standards, etc. require to be tested and/or certified for compliance with industry standards such as Underwriters Laboratories, Factory Mutual, or ASTM. If there are any fees to be paid for such tests and certifications, they will be paid by the contractor. The contractor shall also pay for all inspections, tests, and certifications which the contract specifically requires him to perform or pay, together with any inspections and tests which he chooses to perform for his own quality control purposes. The contractor shall promptly furnish, without additional charge, all reasonable facilities, labor, and materials necessary and convenient for making such tests. Except as provided in (c) below, whenever such examination and testing finds defective materials, equipment, or workmanship, the contractor shall reimburse the owner for the cost of re-examination and retesting.

c. Should it be considered necessary or advisable by the County at any time before final acceptance of the entire work to make an examination of any part of the work already completed, by removing or tearing out portions of the work, the contractor shall on request promptly furnish all necessary facilities, labor and material to expose the work to be tested to the extent required. If such work is found to be defective in any respect, due to the fault of the contractor or his subcontractors, he shall defray all the expenses of uncovering the work, of examination and testing, and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the actual cost of the contractor’s labor and material necessarily involved in uncovering the work, the cost of examination and testing, and contractor’s cost of material and labor necessary for replacement shall be paid to the contractor and he shall, in addition, if completion of the work has been delayed thereby, be granted a suitable extension of time.

d. The contractor project inspector will recommend to the County that the work be suspended when in his judgment the drawings and specifications are not being followed. Any such suspension shall be continued only until the matter in question is resolved to the satisfaction of the owner. The cost of any such work stoppage shall be borne by the contractor unless it is later determined that no fault existed in the contractor’s work.

e. The Contractor’s Project Inspector has no authority to and shall not:

(1) Authorize deviations from the contract documents;
(2) Enter into the area of responsibility of the contractor’s superintendent;

(3) Issue directions relative to any aspect of construction means, methods, techniques, sequences or procedures, or in regard to safety precautions and programs in connection with the work;

(4) Authorize or suggest that the owner occupy the project, in whole or in part;

(5) Issue a certificate for payment.

K. Contractor’s Title to Materials

No materials or supplies for the work shall be purchased by the contractor or by any subcontractor subject to any security interest, installment or sales contract or any other agreement or lien by which an interest is retained by the seller or is given to a secured party. The contractor warrants that he has clear title to all materials and supplies which he uses in the work or for which he accepts payment in whole or in part.

L. Pipeline Locations and Miss Utility

The contractor shall be responsible for calling Miss Utility of Virginia at (800) 552-7001 prior to digging at the work site.

M. Modification of a Contract

Change orders shall be reviewed by the project manager, Engineer, if required, and state agency, if required, for accuracy. Change orders will require signature of all parties and a detailed summary of the change in scope of work. Once review is complete change order will be submitted to the Procurement Division for review and a modification to the contract amount, if needed, will be prepared and approved by the Procurement Manager.

N. Retainage

Retainage will be held in the amount of 5% of the contract price until final completion of project and is accepted by the County. Any payment made by the County to the Contractor shall be less a Five Percent (5%) retainage to assure faithful performance of the Work required under the Contract. All amounts retained under this provision shall be included in the Final Payment upon Final Completion.
VI. TERMS AND CONDITIONS: (Effective March 4, 2019)

A. Acceptance, Invoicing and Payment

Spotsylvania County will make payment to the Contractor, Net 30 days or in accordance with discount terms, if offered, after receipt of an acceptable invoice for services or goods rendered resulting from this IFB.

Pursuant to Virginia Code § 2.2-4354, (1950, as amended), the CONTRACTOR covenants and agrees to:

1. Within seven (7) days after receipt of any amounts paid to the CONTRACTOR under the Agreement, (i) pay any subcontractor for its proportionate share of the total payment received from the COUNTY attributable to the work under the Contract performed by such subcontractor, or (ii) notify the COUNTY and the subcontractor, in writing, of its intention to withhold all or part of the subcontractor’s payment and the reason therefore;

2. Provide its federal employer identification number or social security number, as applicable, before any payment is made to the CONTRACTOR under the Agreement;

3. Pay interest at the legal rate or such other rate as may be agreed to in writing by the subcontractor and the CONTRACTOR on all amounts owed by the CONTRACTOR that remain unpaid after seven (7) days following receipt by the CONTRACTOR of payment from the COUNTY for work performed by the subcontractor under the Agreement; and

4. Include in its contracts with any and all subcontractors the requirements of 1, 2, and 3 above.

B. Attorney’s Fees

In the event of any action brought by either party against the other to enforce any of the obligations hereunder or arising out of any dispute concerning the terms and conditions hereby created, each party shall pay their own attorney’s fees, costs and expenses, except in a case of default by the Contractor, the Contractor shall be responsible for any resulting additional purchase and administrative costs including, but not limited to fees and charges of engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs.

C. Audit

Contractor shall keep and require each of its Subcontractor, if any, to keep, at no additional cost to County, full and detailed accounts of costs chargeable to County, during the project, and for five (5) years following completion. County shall be afforded full access to accounts, records, and supporting documents for review, audit, copy (such copies will be the property of County), and verification of costs. Audit access to Contractor’s records in lump sum or unit price areas when applicable shall be sufficient to satisfy County that all quantities meet the payments to its subcontractor and suppliers, Contractor shall remit promptly to County the amount of any adjustment resulting from audit.

D. Availability of Funds
It is understood and agreed between the parties herein that the County shall be bound hereunder only to the extent of the funds available or which may hereafter become available for the purpose of this agreement.

E. Binding Effect

The terms, provisions, covenants and conditions contained in any resulting contract shall apply to, insure to the benefit of, and be binding upon the parties hereto and upon their respective heirs, legal representatives, successors, and permitted assigns except as otherwise expressly provided.

F. Compliance of Law

The Contractor providing materials and services to the County under any contract resulting from this IFB represents and warrants to the County that it is:

3. Complying with federal, state and local laws and regulation applicable to the performance of the services procured; and
4. In full compliance with the Virginia Conflict of Interest Act.

G. Contract Award

Spotsylvania County reserves the right to accept or reject any and/or all bids, and to waive informalities. Spotsylvania County reserves the right to award any contract resulting from this IFB to the lowest priced responsive and responsible bidder, resulting in a contract that is most advantageous and in the best interest of Spotsylvania County. Spotsylvania County shall be the sole judge of the bids and the resulting contract that best serves the public interest, and Spotsylvania County’s decision shall be final.

Negotiation with the Lowest Bidder: Unless all bids are cancelled or rejected, the County reserves the right granted by Virginia Code § 2.2-4318 to negotiate with the lowest responsive, responsible bidder to obtain a contract price within the funds available to the agency whenever such low bid exceeds the agency’s available funds. For the purpose of determining when such negotiations may take place, the term “available funds” shall mean those funds which were budgeted by the agency for this contract prior to the issuance of the written Invitation for Bids. Negotiations with the low bidder may include both modifications of the bid price and the Scope of Work/Specifications to be performed. The agency shall initiate such negotiations by notice to the lowest responsive, responsible bidder that its bid exceeds the available funds and that the agency wishes to negotiate a lower contract price. The times, places, and manner of negotiating shall be agreed to by the agency and the lowest responsive, responsible bidder.

H. Contract Changes

No verbal agreement or conversation with any officer, agent or employee of Spotsylvania County either before or after execution of the contract resulting from this Invitation for Bid (IFB), IFB Addendum or
follow-on negotiations, shall effect or modify any of the terms or obligations contained in the contract. No alterations to the terms and conditions of the contract shall be valid or binding upon Spotsylvania County unless made in writing and where Board approval is not required, by the county Administrator or his designee.

Contract Extension: This contract may be extended during the term of the existing contract for services allowed to complete any work undertaken but not completed during the original term of the contract.

I. Contract Documents

The contract entered into by Spotsylvania County and the Contractor shall consist of this Invitation For Bid, the Specification, any Addendum issued, the signed Bid Forms submitted by the Contractor, Spotsylvania County’s Standard Form Agreement, Purchase Order and any approved change orders issued, all of which shall be referred to collectively as the Contract Documents. Additional documents which the parties agree to include as contract documents may be set forth in the final contract.

J. Definitions:

1. Contractor:
The successful bidder who enters into a contract with Spotsylvania County to provide the goods or services as specified herein.

2. County/Owner:
Wherever the word "County or Owner" appears, it shall be understood to mean the Spotsylvania County Government.

3. Bidder:
One who submits a competitively priced offer in response to an Invitation for Bids (IFB).

4. Informality:
A minor defect of variation in a bid or proposal from the exact requirements of the Invitation to Bid, or the Request for Proposal, which does not affect the price, quality, quantity or delivery schedule for the goods, services or construction being procured.

K. Drug-Free Workplace

During the performance of this contract, the Contractor agrees to (i) provide a drug-free workplace for the Contractor’s employees; (ii) 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; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each subcontractor or vendor.
For the purposes of this section, “drug-free workplace” means any site at which the performance of work is done in connection with this contract awarded to the Contractor, 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.

L. Ethics in Public Contracting

The Contractor hereby certifies that it has familiarized itself with Article 6 of Title 2.2 of the Virginia Public Procurement Act, Section 2.2-4367 through 2.2-4377, Virginia Code Annotated, and that all amounts received by it, pursuant to a Contract resulting from this IFB, are proper and in accordance herewith. By submitting a response to this solicitation, bidder certifies that their bid is made without collusion or fraud that they have not offered or received any kickbacks or inducements from any other bidder, supplier, manufacturer or subcontractor in connection with their bid, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

M. Examination of Records

The Contractor agrees that Spotsylvania County or any duly authorized representative shall have access to and the right to examine any and copy any directly pertinent books, documents, papers and records of the Contractor involving transactions related to any Contract resulting from this IFB. The period of access provided in this paragraph for records, books, documents, and papers and software which may be related to any arbitration, litigation, or the settlement of claims arising out of the performance of any subsequent contract or any subsequent Contracts with vendors shall continue until disposition of any appeals, arbitration, litigation, or claims. Contractors agrees to keep all records in accordance with the state and local retention laws including but not limited to Virginia Code § 55-525.27.

N. Faith-Based Organizations

Pursuant to Section 2.2-4343.1 of the Code of Virginia of 1950, in all invitations to bid, requests for proposals, contracts, and purchase orders, the COUNTY does not discriminate against faith-based organizations.

“Faith-based Organization” means a religious organization that is or applies to be a contractor to provide goods or services for programs funded by the block grant provided pursuant to the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, P.L. 104-193.

If CONTRACTOR is a faith-based organization, then Contractor shall give to each individual who applies for or receives goods, services, or disbursements provided pursuant to this Agreement the following notice:

NOTICE
Pursuant to Section 2.2-4343.1 of the Code of Virginia of 1950, as an applicant for or recipient of goods, services, or disbursements provided pursuant to a contract between the COUNTY and a faith-based
organization, you are hereby notified as follows:

Neither the COUNTY’S selection of a charitable or faith-based provider of services nor the expenditure of funds under this contract is an endorsement of the provider’s charitable or religious character, practices, or expression. No provider of services may discriminate against you on the basis of religion, a religious belief, or your refusal to actively participate in a religious practice. If you object to a particular provider because of its religious character, you may request assignment to a different provider. If you believe that your rights have been violated, please discuss the complaint with your provider or notify the COUNTY Administrator.

O. Federal-Aid Provisions

When the U. S. government pays all or any portion of the cost of a project, the Contractor shall observe all federal laws, rules, and regulations made pursuant to such laws. The work shall be subject to inspection by the appropriate federal agency. Such inspection shall in no sense make the federal government a party of the contract and will in no way interfere with the rights of either party. Contractor shall require all subcontractors to observe all federal laws, rules, and regulations made pursuant to such laws. Reporting requirements that is part of the regulation shall be followed in accordance with the federal law, rules and/or regulation made pursuant to such laws. A Duns number will be provided by the Contractor and registration with the Central Contractor Registration (CCR) shall be followed according to the federal aid provisions.

P. Force Majeure

In any contract resulting from this IFB, neither party shall be liable hereunder by reason of any failure or delay in the performance of its obligations hereunder (except for the payment of money) on account of strikes, industry wide material shortages, riots, insurrection, fires, flood, storm, explosions, earthquakes, pandemic flu, acts of God, war, governmental action, and labor conditions. In the case of an industry wide material shortage the contractors shall provide to the County within 24 hours of Contractor’s determination that there exists an industry wide material shortage, the following: 1) a written description of the specific material alleged to be in short supply; 2) a written list of all manufacturers, wholesalers, suppliers and/or retailers from which Contractor has attempted to obtain, and/or contracted to obtain, said material; 3) a written description detailing all actions taken by Contractor to obtain said materials; 4) a written statement, signed by an authorized representative of Contractor, that Contractor has used due diligence to secure said materials in the most expeditious manner; 5) a written time frame in which Contractor anticipates that it will obtain said materials and; 6) the County, or its authorized representative, concurs that there is an industry wide shortage of the specific material so identified by contractor.

Q. Freedom of Information

All information submitted to the County in response to this IFB will constitute public information and pursuant to the Virginia Freedom of Information Act will be available to the public for inspection upon request. Pursuant to Virginia Code § 2.2-4342 and County Procurement Policy § 3-27, a Bidder may request an exception to disclosure for trade secrets or proprietary information as such is defined under Virginia Code § 59.1-336, part of the Uniform Trade Secrets Act. In order to claim this exemption, a Bidder must: (1) Submit a request in writing referencing their desire to invoke the protections of Virginia Code § 2.2-4342; (2) Specifically identify which data or materials they wish to have protected; and (3) Articulate the rationale
for why protection is necessary for the particular data or materials, to the satisfaction of the County. Failure to meet these requirements will result in the data or materials being open for inspection in response to a valid inquiry under the Virginia Freedom of Information Act and serve to waive any right of the Bidder to assert a claim against the County for disclosure of trade secrets or proprietary information.

R. Governing Law

In any contract resulting from this IFB, the parties agree that this agreement is governed by and shall be interpreted in accordance with the Spotsylvania County Procurement Policy and the laws of the Commonwealth of Virginia, including the Spotsylvania County Procurement Policy, and that proper venue, in the event of litigation concerning this matter, shall be in the Circuit Court of Spotsylvania County, Virginia. The parties agree that any litigation involving this Agreement shall be brought only in such court.

S. Grant Funds Provision

When a project is funded in part or all by grant funds, the Contractor shall observe all rules and regulations according to the grant fund award documentation. Contractor has the responsibility to comply with all grant fund reporting requirements and any or all award documentation terms and conditions.

T. Headings

Headings in the IFB and any resulting contract are informational only and the substance of each numbered or lettered provision shall prevail in the event of any ambiguity or inconsistency between a heading and its content.

U. IFB and Bid Clarification

Spotsylvania County reserves the right to request clarification of information submitted and to request additional information of one or more bidders. Each bidder shall examine the IFB and shall judge all matters relating to the adequacy and accuracy of such IFB. Any inquiries, suggestions or requests concerning interpretation, clarification or additional information pertaining to the IFB shall be submitted in writing to the Spotsylvania County Procurement contact listed on the first page of this IFB. Spotsylvania County shall not be responsible for oral interpretations given by an employee, representative, agent, or others. The issuance of a written IFB Addendum issued by the Spotsylvania County Procurement Division is the only official method whereby interpretation, clarification, or additional information can be issued.

V. Insurance

During the performance of any contract resulting from this IFB, the Contractor shall have and keep current insurance whichever is greater in scope or amount as follows:

(1) Worker’s Compensation Insurance in compliance with all states in which the Contractor does business, including coverage B Employer’s Liability in not less that the following amounts:
   a.   i Bodily Injury by accident, $100,000 for each accident;
b. ii Bodily Injury by disease, $500,000 policy limit;

c. iii Bodily Injury by disease, $100,000 for each employee;

(2) General Liability Insurance in amount not less than $1,000,000 for any occurrence involving bodily injury, and not less than $1,000,000 for any occurrence involving property damage. This coverage shall include contractual liability, broad form property damage, independent contractors, and personal injury;

(3) Automobile Liability Insurance in an amount not less than $1,000,000 combined single limit bodily injury and property damage. This coverage shall include liability for the use of hired and non-owned vehicle.

The General Liability and Automobile Liability insurance policies specified herein shall name Spotsylvania County as additional insured with regard to work performed under any contract resulting from this IFB. The Contractor shall provide Spotsylvania County with copies of certificates of insurance coverage and proof of payment of all premiums. These certificates shall have provisions for notifying Spotsylvania County if there is any change in liability insurance.

The insurance required shall have been issued by a company rated “A” as reported in the current edition of Best’s Key Rating Guide, published by Alfred M. Best Company, Inc.

W. Interpretation

Words of any gender used in a resulting contract shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context otherwise requires.

X. Non-Collusion

The party submitting the foregoing IFB hereby certifies that such IFB is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly in indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person to fix the bid price or affiant or of any bidder, or to fix any overhead, profit or cost element of said IFB price, or of that of any other bidder, or to secure any advantage against the County or any person interested in the proposed contract; and that all statements in said IFB are true.

Y. Non-Discrimination

Any contract resulting from this IFB and every contract, sub-contract, or purchase order there under shall include the following provisions according to 2.2-4311Code of Virginia:

During the performance of a contract, the Contractor agrees as follows:
i. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, or national origin, except where religion, sex or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicant for employment, notices setting forth non-discrimination clause.

ii. The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such contractor is an equal opportunity employer.

iii. Notices, advertisements, and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirement.

The Contractor will include the provisions in the foregoing paragraphs a, b, and c in every contract, subcontract, or purchase order of over $10,000, so that the provisions will be binding upon each subcontractor or vendor associated with Spotsylvania County.

Z. Partial Invalidity

In the event any one or more of the provisions of a contract resulting from this IFB are found by a court of competent jurisdiction to be invalid or unenforceable, the remaining provisions of the contract shall remain in full force and effect.

AA. Release and Ownership of Information

Spotsylvania County shall make a good faith effort to identify and make available to the Contractor all non-confidential technical and administrative data in Spotsylvania County’s possession which Spotsylvania County may lawfully release including, but not limited to contract specifications, drawings, correspondence, and other information specified and required by the Contractor and relating to its work under this Contract. Spotsylvania County reserves its rights of ownership to all material given to the Contractor by Spotsylvania County and to all background information, documents, and computer software and documentation developed by the Contractor in performing any Contract resulting from this IFB.

No reports, information or data given to or prepared by the Contractor under the resulting Contract shall be made available to any individual or organization by the Contractor without the prior written approval of Spotsylvania County, which approval Spotsylvania County shall be under no obligation to grant.

As may be allowed by law, any information, ideas, or concepts that the County receives during the procurement process from any bidder’s IFB response, any discussion or interview with the bidder or as a result of any portion of the procurement process for the services described in this Invitation for Bid shall become the property of Spotsylvania County. Spotsylvania County may use this information for any purpose without compensation to the bidder from whom the information was received.

BB. Rights and Responsibilities of Contractor

The Contractor shall indemnify, defend and hold harmless the County and its representatives from any and
all claims, suits and actions for injury or damage sustained by any person or property from any act or omission by Contractor and/or its Contractors or employees, or anyone else for who Contractor is or may be responsible. This section shall survive the termination this agreement.

The Contractor in any contract resulting from this IFB shall pay all royalties and license fees necessary for performance of the contract. The Contractor shall defend all suits or claims for infringement of any patent rights or any other proprietary rights arising from or related to performance of the resulting contract and shall save Spotsylvania County harmless from any and all loss, including reasonable attorneys' fees, on account thereof.

CC. Subcontractor and Assignments

The Contractor shall not sublet or assign or transfer any interest in this Contract or any portion thereof without the prior written consent of Spotsylvania County of which Spotsylvania County shall be under no obligation to grant. In seeking consent for any subcontract or assignment, the Contractor shall furnish all information required by Spotsylvania County to permit Spotsylvania County to ascertain the qualifications of the proposed Subcontractor to perform the work, and the Contractor shall submit a copy of the subcontract to Spotsylvania County for approval. The subcontractor shall incorporate by reference all provisions and conditions of the contract resulting from this solicitation.

Spotsylvania County’s approval of a Subcontractor shall not relieve the Contractor of any of its responsibilities, duties or liabilities hereunder. The Contractor shall continue to be responsible to Spotsylvania County for performance of the Subcontractor and the Subcontractor, for all purposes, shall be deemed to be an agent or employee of the Contractor. Nothing in the Contract resulting from this RFP or any subcontract shall create any contractual relationship between any Subcontractor and Spotsylvania County.

DD. Tax Exemption

The County of Spotsylvania as a public body politic and corporate of the Commonwealth of Virginia, is exempt from any Federal excise tax and Virginia sales and use tax for purchases made by the County.

EE. Termination

Spotsylvania County shall have the right to terminate at Spotsylvania County’s convenience, with or without cause, any contract resulting from this IFB by specifying the date of termination in a written notice. In this event, the Contractor shall be entitled to just and equitable compensation for any authorized satisfactory work done or any items/materials accepted by Spotsylvania County.

GG. Testing and Inspection

Spotsylvania County reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications prior to award.

HH. Transportation and Packaging

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By submitting their bid, all bidders certify and warrant that the price offered for FOB destination includes only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped.
ATTACHMENT A

SPOTSYLVANIA COUNTY

TECHNICAL SPECIFICATIONS

FOR

LAKE BOTTOM MUNICIPAL IMPROVEMENTS PROJECT

INVITATION FOR BID (IFB #20-09-EG)

August 2019
SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Section, Spotsylvania County Department of Utilities Project Manual for the Lake Bottom Municipal Improvements, and the Virginia Work Protection Manual, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of the Contract.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Lake Bottom Municipal Improvements Project

1. Project Location: From Brock Road to Jackson Trail East, Spotsylvania County, Virginia.

B. Owner: Spotsylvania County Department of Utilities, 600 Hudgins Road, Fredericksburg, Virginia 22404

C. Engineer: Sullivan, Donahoe & Ingalls, PC

D. The Work consists of the following:

1. The Work includes installation of water and sanitary sewer lines within the Chancellor Magisterial District. Beginning immediately east of Jackson Trail West and west of Pump Station No. 24, parallel water and sewer lines shall be constructed in a westerly direction for a distance of approximately 6400 linear feet. Thereafter, the water line connects to an improvement to be built under a separate contract [Brock Road – Catlett Waterline Extension].


1.4 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract. The County is issuing separate contracts for improvements that would connect to the work proposed in this Contract.

END OF SECTION 01100
PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Construction work under this contract shall have the least amount of interferences with the operations of existing facilities. Existing facilities must be maintained in continuous operation at all times during the course of the work under this contract.

B. Operation of all valves required to perform the work shall be done by the Owner. The Owner, or his designated agent, shall be informed in writing at least 48 hours or longer where specified, in advance of the need to operate valves or other actions which could affect system operations.

C. To achieve reliable, continuous operation, new facilities shall be tested and in operating condition before final tie-ins are made which connect new equipment and facilities to the existing system.

D. The Contractor shall submit to the Engineer, drawings showing details of all temporary connections or facilities as required.

E. When removing a facility from service, the Contractor shall allow the facility to drain naturally or be pumped to its lowest level. All remaining fluids shall be removed by the Contractor at his expense. Solids shall be disposed of off-site by the Contractor at his expense. Disposal of these solids must be in accordance with federal, state and local codes.

F. No extra payment shall be made for any labor, materials, tools, equipment or temporary facilities required during the construction of facilities. All costs therefore shall be considered to have been included in the price bid of the Proposal.

1.2 SEQUENCE OF CONSTRUCTION

A. A plan for the sequence of construction and delivery dates is necessary to keep shutdowns and the construction to a minimum. The Contractor shall develop a sequence of construction and submit it to the Owner and Engineer for review and approval. The plan shall include all work to be performed and shall be broken down to allow coordination with “Requests for Payment”. The Sequence of Construction shall be such that all work under this contract shall be completed within the construction time stated in these specifications. Temporary pumping, if required, shall be at the Contractor’s expense.

B. Detailed sequencing of construction is required for all connection points.

1.3 FACILITY SHUTDOWNS

A. Temporary shutdown periods shall not extend more than 8 hours.
B. Scheduled shut downs shall be mutually agreed upon by the Owner and the Contractor, with the Engineer’s approval.

C. Contractor shall notify each resident, business and/or facility to be affected by the shutdown. Notification shall include the date of the shutdown and the expected duration of the shutdown. Notification shall be mailed or delivered at least seven (7) days prior to the shutdown.

D. In order to keep each shutdown period to a minimum, the Contractor shall, prior to each shutdown, expedite completion of the work to the fullest extent. The Contractor shall have completed all necessary preparatory work including testing and shall have adequate personnel available to keep each shutdown period to a minimum. All equipment and materials required to complete the work during a shutdown period shall be on the job site before the shutdown is commenced.

E. The Contractor shall carefully coordinate all work and schedules and shall provide the Owner and Engineer with 10 calendar days minimum written notice prior to each shutdown period, unless otherwise approved by the Owner.

F. Prior to a shutdown, the Contractor shall submit to the Engineer and Owner in writing, detailed descriptions and schedules of the proposed construction procedures during the shutdown period. Information submitted to the Engineer shall include a complete inventory of materials and equipment needed to perform the work. No shutdown of a facility or operation will be permitted until the Engineer has reviewed and approved, in writing, the proposed construction plans and procedures.

G. If, during any temporary shutdown periods, the work performed is not satisfactory, as planned, or not completed with the maximum time allocated, the Owner may order the Contractor to place the facility back in service and reschedule the work, or he may order the work required to place the facility or operation back in service to be performed with other forces.

H. During scheduled shut downs the Contractor shall be responsible for all damages and costs thereof due to negligence.

1.4 COORDINATION

A. Contractor, Subcontractors and Owner Personnel

1. The Contractor is responsible for the proper coordination of his work and his subcontractor’s work, to assure timely completion of the work and to assure that the Owner is made aware of proposed construction activities.

2. There will be no basis for claim for extra compensation or contract time extension due to delay caused by the Contractor’s failure to give proper notice for requested shutdowns or to advise the Owner of proposed construction activities that in the judgment of the Owner will interfere with operation of the distribution system.

3. Should an emergency condition arise, the Owner has the authority to require the Contractor and his subcontractors to suspend their operations temporarily until conditions return to normal, without claim for extra cost or contract time extension by the Contractor and his subcontractors.

B. Subcontractors
1. Where the work of any subcontractor will be installed in close proximity to work of other subcontractors, or where there is evidence that the work of any subcontractor will interfere with the work of other subcontractors, the Contractor shall work out space allocations to make a satisfactory adjustment. If so ordered by the Engineer, the Contractor shall prepare composite working drawings and sections at a suitable scale, not less than 1/4 inch equals 1 foot, clearly showing how work is to be installed in relation to the work of others. If the Contractor permits any work to be installed before coordinating with the various subcontractors; or so as to cause interference with work of other subcontractors, he shall make necessary changes in the work to correct the condition without extra cost to the Owner.

2. The Contractor shall arrange that each subcontractor determines the location, size and arrangement of all chases and openings and shall establish clearances in concealed spaces required for the proper installation of its work and shall see that such are provided.

1.5 PERMITS

A. Army Corps of Engineers (USACOE) Nationwide Permit

1. The owner has obtained a Nationwide 12 Permit for the construction activities and restoration activities in all wetland areas and stream crossings. The permit conditions are included in Appendix A as part of the Contract Documents. The contractor shall abide by the conditions and requirements stipulated in the permit conditions.

2. The contractor shall be responsible to obtain the necessary permit modification from the USACOE for additional access, stockpile, and/or storage locations impacting wetlands or Waters of the U.S., not included on the Contract Drawings at no additional expense to the owner.

B. Erosion and Sediment Control Permit

1. The Contractor will be responsible for obtaining and paying for the Spotsylvania County Erosion and Sediment Control Permit. A Spotsylvania County Business Permit will be required to obtain the Erosion and Sediment Control Permit.

C. Virginia Department of Conservation and Recreation (DCR) – Stormwater Management Program General Permit for Construction Activity

1. The Contractor is required to apply for and obtain a Stormwater Management Program General Permit for Construction Activity from the DCR. The contractor will be required to pay the permit fee, submit the permit application and sign the appropriate certification. The contractor is required to prepare and maintain a Stormwater Pollution Prevention Plan (SWPPP) as required by the permit.

D. Virginia Department of Transportation

1. The Contractor will be responsible for obtaining and paying for Land Use Permit.
END OF SECTION 01106
SECTION 01130 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

A. The Contractor shall receive and accept the compensation provided in the Proposal and the Contract as full payment for furnishing all labor, materials, tools, equipment and services for performing all operations necessary to complete the work under the Contract, and also in full payment for all loss or damages arising from the nature of the work, or from any discrepancy between the actual quantities of work and the quantities herein estimated by the Engineer, or from action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the Owner.

B. The lump sum and unit prices stated in the Proposal include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the work as shown on the Contract Drawings and specified herein. The basis of payment for a lump sum item shall be broken down and detailed in the Schedule of Values in accordance with the description of that item in this section.

C. The Contractor’s attention is called to the fact that the quotations for the various items of the work are intended to establish a total price for completing the work in its entirety. Should the Contractor feel that the cost for any item of work has not been defined by a Bid Form, he shall include the cost for that work in some other applicable bid item, so that his proposal for the work reflects his total price for completing the work in its entirety.

D. Items listed as CONTINGENT UNIT PRICE ITEMS or as ADD ALTERNATE in the proposal are to be used and will be paid for only at the written direction and authorization of the Engineer, if agreed to by the Owner. Payment under this section will be made for materials furnished and placed in addition to those shown or beyond the limits indicated or reasonably inferred by the Contract Documents. Measurement and payment will be in accordance with the proposal and will include, but not necessarily be limited to, furnishing, hauling, placing and installing of materials and the furnishing of such manpower and equipment as required to accomplish the work as directed in writing by the Engineer.

E. Alterations

1. The Owner reserves the right to change the alignment, grade, form, length, dimensions or material of the work under the contract, whenever conditions or obstructions are met that render the changes desirable or necessary. All such alterations shall be paid for under the total lump sum bid or at a unit price bid for these items of work, except as follows:

a. In the case that such alterations make the work less expensive to the Contractor, a proper deduction shall be made from the contract prices and the Contractor shall have no claim on this account for damages or for anticipated profits on the work that may be dispensed with.
b. In the case such alterations make the work more expensive to the Contractor, a proper addition shall be made to the contract prices.

c. Any additions or subtractions to the contract prices shall be proposed by the Contractor and then reviewed by the Engineer and approved by the Owner.

d. In case the quantity of work in individual unit price items of work increases or decreases greater than 25% of the bid quantity, unit prices may be renegotiated.

F. Engineer May Increase or Decrease Quantities

1. The Engineer reserves the right to increase or decrease the quantity of material to be furnished or work to be done under the Contract whenever he deems it advisable or necessary. Such increase or decrease shall in no way violate or invalidate the Contract.

2. For the unit price items included in the bid, the Contractor will be paid for the actual amount of the authorized work done or material furnished under each item of the proposal, at the unit price bid for that item. In case the quantity of any item is increased, the Contractor shall not be entitled to compensation over and above the unit bid for each item. In case the quantity is decreased, the Contractor shall have no claim for damages on account of loss of anticipated profits because of such decrease.

3. For the contingency items, the Contractor shall be paid for actual quantities installed, on written order of the Engineer.

G. Except as modified herein, measurement and payment shall be in accordance with the GENERAL CONDITIONS, Article 10 – Cost of the Work, Allowances, Unit Price Work and Article 15 – Payments and Completion.

1.2 MEASUREMENT

A. The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place and accepted by the Owner, in accordance with the General Conditions. A representative of the Contractor shall witness all field measurements.

1.3 PAYMENT

A. Payments during the course of the work for unit price items will be made on the basis of actual amount of the work item installed at the end of the pay period. Determination of the amount of the work item installed shall be made by the Contractor and reviewed and approve by the Engineer. Payments during the course of the work for lump sum items will be made on the basis of percentage of completion of the work items listed in the Schedule of Values for each lump sum item. The Schedule of Values shall be prepared by the Contractor and submitted to the Engineer within 15 days of the execution of the contract and shall serve as a breakdown of the lump sum bid for the purpose of arriving at a basis for the monthly estimate. The Schedule of Values shall be broken down into categories and each category further broken down into each applicable specification section. The schedule shall add up to 100% of the Lump Sum Bid.
1.4 ITEMS

A. Items 1 through 7: ___’ Dia. Pre-cast Concrete Manholes with Watertight Frame and Cover, ___’ to ____’ Height

1. Payment for Pre-cast concrete manholes of the specified diameter and height with watertight frame and cover shall be made at the unit price provided per manhole, actually installed, complete in place.

2. No measurement shall be made for this item.

3. The unit price provided per each manhole shall include all labor, materials, tools, equipment and services for furnishing and installing the specified [4'-0" or 5'-0"] diameter Pre-cast concrete manholes of the specified [6’ to 8’, 8’ to 10’, 10’ to 12’, 12’ to 14’, 14’ to 16’, and 16’ to 20’] height [with internal drop connections and/or manhole lining where called for on the Plans], including, but not limited to; traffic control, unclassified excavation and pavement removal, excavation including rock if required, trench support, dewatering, handling and placing of manhole sections, watertight frames and covers, outside coating, flexible pipe connections, steps, making connections, temporary blocking, stone bedding (No. 57 stone per County Utilities Manual Standards), testing, cleanup, removal and disposal of all unsuitable and excess material, backfill and surface materials, including the replacement of gravel, asphalt, and concrete driveways, and seeding and mulching and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper operation of the manholes.

B. Items 8 through 10: ___” Dia. Ductile Iron Pipe Cl.52, Zinc-Coated With V-Bio Wrap Waterline [either Fully Restrained or Partially Restrained]

1. Payment for furnishing and installing Ductile Iron Pipe waterline, zinc-coated with V-Bio Wrap, at all depths of unclassified excavation, of the specified diameter [either 12-inch or 16-inch diameter], and of the specified Pressure Class [Class 52] shall be made at the unit price provided per linear foot for the lengths of pipe actually installed, complete in place. Lengths designated fully restrained shall be restrained throughout, while lengths that are designated partially restrained shall be restrained per County standards.

2. Measurement of lengths will be made horizontally, along the centerline of the pipe. No deductions will be made in the measured length for manholes, gates, bends, tees, and wyes.

3. The unit price provided per linear foot shall include all labor, materials, tools, equipment and services for furnishing and installing the specified diameter [either 12-inch or 16-inch] and specified pressure class [Class 52] zinc-coated with V-Bio Wrap ductile iron pipe waterline including, but not limited to; traffic control, pavement removal, excavation including rock if required, all tree removal and clearing, removal and disposal of the existing pipe, all temporary bypass pumping operations, laying of the pipe, including pipe bedding (No. 57 stone per County Utilities Manual Standards), restraints where indicated or required by County standards, trench support, dewatering, making of joint connections, temporary blocking, cleanup, removal and disposal of all unsuitable and excess material, backfill and surface materials, including the replacement of gravel, asphalt, and concrete driveways, and seeding and mulching, and all restoration required to restore disturbed areas.
Lake Bottom Municipal Improvements
Spotsylvania County, Virginia

MEASUREMENT AND PAYMENT

01130 November 2019

to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper operation of the waterline.

C. Items 11 through 14: ___” Dia. CIR. Gravity Sewer

1. Payment for furnishing and installing, at all depths of unclassified excavation, gravity sewer of the specified diameter and specified class of pipe shall be made at the unit price provided per linear foot for the lengths of pipe actually installed, complete in place.

2. Measurement of lengths will be made horizontally, along the centerline of the pipe. No deductions will be made in the measured length for manholes and wyes.

3. The unit price provided per linear foot shall include all labor, materials, tools, equipment and services for furnishing and installing gravity sewer of the specified diameter and specified class of pipe including, but not limited to; traffic control, pavement removal, excavation including rock if required, removal and disposal of the existing pipe, all temporary bypass pumping operations laying of the pipe, including pipe bedding (No. 57 stone per County Utilities Manual Standards), trench support, dewatering, making of joint connections, temporary blocking, cleanup, removal and disposal of all unsuitable and excess material, backfill and surface materials, including the replacement of gravel, asphalt, and concrete driveways, and seeding and mulching, and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper operation of the waterline.

D. Items 15 through 17: ___” Plugs

1. Payment for furnishing and placing permanent plugs will be made at the unit price provided per each for the various diameter plug. Payment for furnishing and placing and will be made at the unit price provided per each for the various plug items.

2. No measurement shall be made for these items.

3. The unit price provided per each plug shall include all labor, materials, tools, equipment and services for connection to the stub pipe including, but not limited to; traffic control, excavation, pavement removal, excavation including rock if required, testing, cleanup, removal and disposal of all unsuitable and excess material, replacement of grass, sod, shrubs, backfill and surface materials, including the replacement of gravel, asphalt, and concrete driveways, and seeding and mulching and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper operation of the waterline.

E. Item 18: 16” Butterfly Valve

1. Payment for furnishing and installing 16-inch butterfly valves box shall be made at the unit price provided per for each butterfly valve actually installed, complete in place.

2. No measurement shall be made for this item.

3. The unit price provided per each 16-inch butterfly valve shall include all labor, materials, tools, equipment and services for furnishing and installing butterfly valves including, but
not limited to; traffic control, pavement removal, excavation including rock if required, trench support, dewatering, making of joints connections, passive joint restraints, temporary blocking, testing, cleanup, removal and disposal of all unsuitable and excess material, replacement of grass, sod, shrubs, backfill and surface materials, including the replacement of gravel, asphalt, and concrete driveways, and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper operation of the waterline.

F. Item 19: Fire Hydrant Assemblies

1. Payment for furnishing and installing fire hydrant assemblies shall be made at the unit price provided per each fire hydrant assembly actually installed, complete in place.

2. No measurement shall be made for this item. Pipe from gate valve to fire hydrant shall be included in fire hydrant assembly

3. The unit price provided per each fire hydrant assembly shall include all labor, materials, tools, equipment and services for furnishing and installing fire hydrant assemblies including, but not limited to; traffic control, pavement removal, excavation including rock if required, laying of the pipe, bedding (No. 57 stone per County Utilities Manual Standards), trench support, dewatering, making of joints connections, passive joint restraints, 6-inch pipe from gate to hydrant, straps, temporary blocking, testing, cleanup, removal and disposal of all unsuitable and excess material, replacement of grass, sod, shrubs, backfill and surface materials, including the replacement of gravel, asphalt and concrete driveways, and seeding and mulching and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper operation of the waterline and hydrant.

G. Items 20 and 21: 12-inch and 6-inch Gate Valves and Boxes

1. Payment for furnishing and installing 12-inch and 6-inch gate valves and valve box shall be made at the unit price provided per for each gate valve actually installed, complete in place.

2. No measurement shall be made for this item.

3. The unit price provided per each 12-inch or 6-inch gate valve and valve box shall include all labor, materials, tools, equipment and services for furnishing and installing gate valves and boxes including, but not limited to; traffic control, pavement removal, excavation including rock if required, laying of the pipe, trench support, dewatering, making of joints connections, passive joint restraints, temporary blocking, testing, bedding (No. 57 stone per County Utilities Manual Standards), testing, cleanup, removal and disposal of all unsuitable and excess material, replacement of grass, sod, shrubs, backfill and surface materials, including the replacement of gravel, asphalt and concrete driveways, and seeding and mulching and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper operation of the waterline.

H. Items 22 through 26: Fittings (Various Types and Sizes)
1. Payment for furnishing and installing fittings shall be made at the unit price provided per each type of fitting actually installed, complete in place.

2. No measurement shall be made for this item.

3. The unit price provided per each type of fitting shall include all labor, materials, tools, equipment and services for furnishing and installing fittings including, but not limited to; traffic control, pavement removal, excavation including rock if required, including bedding (No. 57 stone per County Utilities Manual Standards), trench support, dewatering, making of joints connections, passive joint restraints, temporary blocking, testing, cleanup, removal and disposal of all unsuitable and excess material, replacement of grass, sod, shrubs, backfill and surface materials, including the replacement of gravel, asphalt, and concrete driveways, and seeding and mulching and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper installation waterline

I. Item 27: T-Lock Manhole Line

1. Payment for furnishing and installing T-Lock Manhole Liners in accordance with Spotsylvania County Water and Sewer Design and Construction Manual Section 4.4.6 of the specified diameter shall be made at the unit price provided per each liner actually installed.

2. No measurement shall be made for this item.

3. The unit price provided per each type of fitting shall include all labor, materials, tools, equipment and services for furnishing and installing fittings including, but not limited to; traffic control, pavement removal, excavation including rock if required, including bedding (No. 57 stone per County Utilities Manual Standards), trench support, dewatering, making of joints connections, passive joint restraints, temporary blocking, testing, cleanup, removal and disposal of all unsuitable and excess material, replacement of grass, sod, shrubs, backfill and surface materials, including the replacement of gravel, asphalt, and concrete driveways, and seeding and mulching and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper installation sewerline

J. Items 28 through 30: ___” RCP Culvert Pipe

1. Payment for furnishing and installing RCP Culvert Pipe of the specified diameter shall be made at the unit price provided per linear foot of culvert pipe actually installed.

2. Measurements of lengths will be made horizontally, along the centerline of the culvert pipe.

3. The unit price provided per linear foot shall include all labor, materials, tools, equipment and services for furnishing and installing the Reinforced Concrete Pipe of the specified diameter including, but not limited to; traffic control, pavement removal, excavation including rock if required, all tree removal and clearing, removal and disposal of the existing pipe, all temporary bypass pumping operations, laying of the pipe, including pipe bedding (Class C), trench support, dewatering, making of joint connections, temporary blocking, cleanup, removal and disposal of all unsuitable and excess material, backfill and surface materials, including the replacement of gravel, asphalt, and concrete roadways and
driveways, and seeding and mulching, and all restoration required to restore disturbed areas
to a condition equal to or better than pre-construction conditions, and other incidental items
required for the proper operation of the culvert pipe.

K. Items 31 and 32: 12” by 12” Tapping Sleeve and 12-inch Tapping Valve

1. Payment for furnishing and installing 12-inch by 12-inch tapping sleeves and 12-inch
tapping valves shall be made at the unit price provided per for each actually installed,
complete in place.

2. No measurement shall be made for these items.

3. The unit price provided per each 12-inch by 12-inch tapping sleeve and 12-inch tapping
valve shall include all labor, materials, tools, equipment and services, and other incidental
items required for the proper operation of the 12-inch connection; all tapping connections
shall be made under the inspection of the County.

L. Item 33: Air Release Valve

1. Payment for furnishing and installing air release valves shall be made at the unit price
provided per for each gate valve actually installed, complete in place.

2. No measurement shall be made for this item.

3. The unit price provided per each air release valve shall include all labor, materials, tools,
equipment and services for furnishing and installing valves including, but not limited to;
traffic control, pavement removal, excavation including rock if required, laying of the pipe,
trench support, dewatering, making of joints connections, passive joint restraints,
temporary blocking, bedding (No. 57 stone per County Utilities Manual Standards),
testing, cleanup, removal and disposal of all unsuitable and excess material, replacement
of grass, sod, shrubs, backfill and surface materials, including the replacement of gravel,
asphalt, and concrete driveways, including restoration required to restore disturbed areas
to a condition equal to or better than pre-construction conditions, and other incidental items
required for the proper operation of the waterline.

M. Items 34 and 35: ___-Inch Steel Casing Pipe by Jack and Bore or Microtunneling

1. Payment for furnishing and installing the specified diameter [either 24-inch or 30-inch
diameter] steel casing pipe by jack and bore or microtunneling shall be made at the unit
price provided per linear foot of steel casing pipe actually installed.

2. Measurements of lengths will be made horizontally, along the centerline of the encasement
pipe.

3. The unit price provided per linear foot shall include all labor, materials, tools, equipment
and services for furnishing and installing the specified diameter [either 20-inch or 30-inch]
steel casing pipe including, but not limited to; pavement removal and replacement if
required, excavation of jacking and receiving pits, storage and reuse of excavated
materials, offsite disposal of unsuitable and excess excavated material, installation of
carrier pipe within steel casing pipe, making of joints, temporary blocking, testing, backfill and surface materials, including the replacement of gravel, asphalt, and concrete driveways, and seeding and mulching and all restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and any other incidental items required for the proper operation of the casing pipe and carrier pipe.

N. Item 36: Construction Entrance

1. Payment for construction entrances shall be made at the unit price provided each of the construction entrances, complete in place.

2. No measurement shall be made for this item.

3. The unit price provided for construction entrances shall include all labor, materials, tools, equipment, and services for furnishing and installing the construction entrances including, but not limited to, maintenance and other incidental items required for proper operation of the construction entrance.

O. Item 37: Topsoil, Seeding, Fertilizing, and Mulch

1. Payment for furnishing and installing topsoil, seeding, fertilizing, and mulch shall be made at the unit price provided per acre of permanent seeding, fertilizing, and mulch installed, complete in place.

2. Measurement for acres of topsoil, seeding, fertilizing, and mulch shall be made along the centerline of the utility easement. The length shall then be multiplied by the combined widths of temporary and permanent sanitary sewer easements to obtain the area of topsoil shall be at unit price provided per acre of permanent seeding, fertilizing, and mulch installed, complete in place.

3. The unit price provided for each acre of topsoil, seeding, fertilizing, and mulch shall include all labor, materials, tools, equipment, and services for furnishing and installing topsoil, seeding, fertilizing, and mulch including, but not limited to; handling and placing of topsoil, fine grading, handling and placing of permanent seed, temporary seeding as required to stabilize disturbed areas, handling and placing of mulch and wetland seeding, handling and placing of fertilizer and lime, watering, testing and any other incidental items required for proper growth in the seeded area.

P. Items 38: Outlet Protection (OP)

1. Payment for outlet protection shall be made at the unit price provided per each outlet protection constructed, complete in place.

2. No measurement is anticipated for this item.

3. The unit price provided for each outlet protection shall include all labor, materials, tools, equipment, and services for furnishing and installing the outlet protection including, but not limited to, maintenance and other incidental items required for proper operation of the outlet protection.

Q. Item 39: Culvert Inlet Protection (CIP)
1. Payment for culvert inlet protection shall be made at the unit price provided each of the culvert inlet protection actually installed, complete in place.

2. No measurement shall be made for this item. Culvert Inlet Protection will be paid at 90% of the unit price provided, the remainder of the unit price (10%) will be paid upon removal and proper disposal of the culvert inlet protection measure.

3. The unit price provided for culvert inlet protection shall include all labor, materials, tools, equipment, and services for furnishing and installing and removal of the culvert inlet protection including, but not limited to, maintenance and other incidental items required for proper operation of the culvert inlet protection measure.

R. Items 40 and 41: Silt Fence and Safety Fence Complete, In-Place

1. Payment for furnishing, installing, maintaining and removing silt fencing and safety fencing shall be made at the respective unit price provided per linear foot for lengths of silt fencing and safety fencing actually installed and removed.

2. Measurement lengths shall be made horizontally, along the center of the fence. The actual length of the fence installed will be paid at 90% of the unit price provided, the remainder of the unit price (10%) will be paid upon removal and proper disposal of the fence.

3. The unit price provided per each linear foot of silt fence and safety fence shall include all labor, materials, tools, equipment, and services for installing, as well as removal and proper disposal of the fence including, but not limited to; excavation including rock if required, storage of excavated materials, backfill, installation of posts, installation of fence mesh, maintenance, replacement as required and any other incidental items required for the proper operation of the silt fencing and safety fencing.

S. Items 42 and 43: Stream Crossings

1. Payment for stream crossings shall be made at the respective unit price provided each of the stream crossings maintained, complete in place, and removed upon the completion of work.

2. No measurement shall be made for this item.

3. The unit price provided for stream crossing shall include all labor, materials, tools, equipment, and services for furnishing and installing the crossings including, but not limited to, maintenance and other incidental items required for proper operation of each stream crossing, actually placed and removed.

T. Item 44: Riprap

1. Payment for furnishing and installing the riprap in accordance with Virginia Soil and Erosion Control standards shall be made at the unit price provided per square yard of riprap actually installed, complete in place.

2. Measurements of the square yard area will be made in the field for this item.
3. The unit price provided per each square yard of riprap shall include all labor, materials, tools, equipment, and services for its proper installation including, but not limited to; excavation including rock if required, placement of fabric and stone, and other incidental items required for proper operation of the riprap protection.

U. Item 45: Mobilization

4. Payment for the cost to mobilize labor, materials, tools, and equipment to perform the work shown on the Contract Drawings and specified in the Specifications shall be made at the lump sum cost for the item Mobilization.

5. No measurement shall be made for this item.

6. Lump sum cost for mobilization shall include such items as bonds, insurance, construction stakeout, equipment and labor mobilization, field office, progress photographs, project sign, permits, shop drawings, Contractor’s test pits, and other incidental items required prior to commencement of construction. Mobilization shall not exceed 5.0% of the total price bid. Application for maximum 50% payment of mobilization may be made on the first “Request for Payment”.

V. Items 46 and 47: Traffic Control and Site Clearing

1. Payment for all labor, materials, tools, and equipment to perform traffic control work and site clearing work as shown on the Contract Drawings and specified in the Specifications shall be made at the lump sum cost for the respective items Traffic Control and Site Clearing.

2. No measurement shall be made for these items.

3. Lump sum cost for traffic control shall include such items as drums, cones, flagmen, and other incidental items required to provide traffic control in accordance with VDOT standards. Lump sum cost for Site Clearing shall include such items as removal and disposal of vegetation, abandonment of structures where called for on the Plans, and other incidental items required to prepare the site and allow for the proper construction of specified improvements.

W. Item 48: Allowance for Testing and Lab Testing Services

1. Payment for Testing and Lab Testing Services shall be made up to the $10,000 allowance for Testing and Lab Testing actually performed.

2. No measurement shall be made for this item.

3. The allowance for a third party inspection, field testing, and lab testing performed shall include all labor, materials, tools, equipment and services for performing field compaction test and associated lab testing including, but not limited to; testing, cleanup, removal and disposal of all unsuitable material, replacement of sod, shrubs, backfill and surface materials, including the replacement of gravel, asphalt and concrete driveways, including restoration required to restore disturbed areas to a condition equal to or better than pre-construction conditions, and other incidental items required for the proper function and maintenance of the waterline.
X. Contingency Item 49: Re-grade Gravel Road

1. Payment for the Contingency Item, Re-grade Gravel Road shall be made at the unit price bid per square foot of gravel road re-graded, complete in place, if and when authorized by the Engineer.

2. Measurement shall be made per square foot of re-graded gravel road installed, complete in-place.

3. The unit price bid for Re-grade Gravel Road shall include all labor, materials, tools, equipment, and services for furnishing and installing the 21-A Stone as shown on the plans to eliminate any holes and ridges and to provide a minimum 4” depth of stone within the stipulated area including, but not limited to, traffic control, clean up, maintenance, and other incidental items required for proper operation of the gravel road.

Y. Contingency Item 50: Over-excavation and Backfill with No. 57 Stone Aggregate

1. Payment for over-excavating and disposal of unsuitable material below the trench subgrade and furnishing and backfilling with additional VDOT No. 57 stone aggregate will be made at the unit price bid per ton. Measurement shall be made based upon approved (in writing by the Engineer or County) compacted material (in excess of normal requirements), in-place, actually installed, complete-in-place.

2. Measurement will be made in the field and witnessed by the Engineer; unwitnessed measurements will not be compensated.

3. The unit price bid per ton shall include all labor, materials, tools, equipment and services for over-excavation, furnishing and placing No. 57 Stone Aggregate including, but not limited to, disposal of unsuitable material, transportation, trench support, placing of select material, compaction, dewatering, and any other incidental item required for proper function and maintenance of the water and/or sewer lines.

1.5 PAYMENT FOR MATERIALS NOT INCORPORATED INTO THE WORK

A. Storage of Materials

1. Payment for equipment and materials stored on the site, or elsewhere as specified in the GENERAL CONDITIONS, and not actually incorporated in the work will be made on the basis of 90% of the amount of paid invoices submitted to the Engineer for incorporation in the monthly estimate.

B. Authorization for Payment

1. Payment will be authorized after the delivery to the construction site or other approved location and after being certified by the Engineer as being stored in conformation with the manufacturer’s recommendations and satisfactory evidence is provided that the items are as specified.

2. Title to all items of equipment and materials upon which payment has been made shall rest with the Owner and documents transferring title shall be executed by the Contractor.
Transfer of ownership shall not relieve the Contractor of continuing insurance coverage and of protecting stored items against damage, deterioration, theft or loss of any kind.

3. Should materials or equipment become damaged or be stored improperly or contrary to the manufacturer’s recommendations, being therefore subject to later damage, then the Engineer will reduce the next following monthly payment by an amount sufficient to repair or replace such units.

4. To initiate a request for partial payment the Contractor shall submit his request in writing to the Engineer with all necessary evidence.

5. Items of material or equipment to which partial payment applies includes and is limited to the following:
   a. Gravity Sanitary Sewer Pipe, Precast Concrete Manholes, Frames, and Covers
   b. Waterline Pipe, Tees, Bends, Butterfly Valves, and Gate Valves & Boxes
   c. Allowances as determined and directed by the engineer

END OF SECTION 01130
SECTION 01570 – TRAFFIC CONTROL

PART 1 - GENERAL

1.1 SCOPE

A. General Conditions, Supplementary General Conditions and other sections in Division 1 of these specifications govern all work hereunder.

B. Furnish labor, materials, and equipment necessary to maintaining a safe flow of traffic at all times during construction on or adjacent to public rights-of-way.

1.2 RELATED REQUIREMENTS AND WORK SPECIFIED ELSEWHERE

A. Virginia Department of Transportation (VDOT), “Road and Bridge Specifications”

B. VDOT permit for installation of water and sewer lines for “Lake Bottom Municipal Improvements”.

C. Virginia Department of Transportation (VDOT), “Virginia Work Area Protection Manual”

1.3 REFERENCE STANDARDS

A. Traffic control procedures and equipment shall conform to the standards and regulations of the Virginia Department of Transportation (VDOT), “Road and Bridge Specifications”, latest edition. Section numbers designated herein refer to sections in these Road and Bridge Specifications unless specified otherwise.

PART 2 - PRODUCTS TYPE OF CONTRACT

2.1 BARRICADES AND WARNING SIGNS

A. All warning signs, cones, barricades, flags, lights and other traffic control devices shall conform to the requirements of the “Manual of Uniform Traffic Control Devices for Streets and Highways”.

B. All orange construction signs shall be fabricated using encapsulated lens type reflective sheeting in accordance with Section 701.02 (e) 2.

C. Traffic cones shall be fluorescent red-orange, minimum 28” in height.

PART 3 - EXECUTION

3.1 MAINTENANCE DURING CONSTRUCTION

A. The Contractor shall maintain and protect traffic at all times during construction, in accordance with Section 104.04, and VDOT permit. All activities performed under the auspices of a VDOT Land Use Permit involving the installation, maintenance and removal of work zone traffic control
devices must have at least one (1) person on-site who, at a minimum, is verified by VDOT in Basic Work Zone Traffic Control. A person verified by VDOT in Intermediate Work Zone Traffic Control must be on-site to provide supervision during work zone adjustments or changes to traffic control due to field conditions. These persons must have their verification card with them on the project site.

B. The Contractor shall maintain two-way traffic flow at all times and shall not block or stop traffic without the approval of the Virginia Department of Transportation (VDOT).

C. When approved in advance by VDOT, the Contractor shall provide the necessary flagmen to direct one-way traffic.

D. The Contractor shall erect, move, maintain and be responsible for the security of traffic control devices as required during the project.

E. The Contractor shall comply with all requirements of the local police department, fire department and rescue squad for access and passage through construction zones by those agencies.

3.2 PUBLIC CONVENIENCE AND SAFETY

A. The Contractor shall at all times conduct the work as to insure the least possible obstruction to traffic. The safety and convenience of the general public and the residents along the adjacent roads and streets and the protection of persons and property shall be provided for by the Contractor.

END OF SECTION 01570
SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Protecting existing vegetation to remain.
   2. Removing existing vegetation.
   3. Clearing and grubbing.
   4. Stripping and stockpiling topsoil.
   5. Removing above- and below-grade site improvements.
   6. Disconnecting, capping, or sealing site utilities.
   7. Temporary erosion and sedimentation control.

1.2 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.3 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.4 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises as directed.

C. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."

    1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain have been flagged, verify that Waters of the US [WOUS] and wetlands have been flagged, and that protection zones have been identified and enclosed according to regulatory requirements.

C. Protect existing site improvements to remain from damage during construction.

    1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 EXISTING UTILITIES

A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.

    1. Arrange with utility companies to shut off indicated utilities.
B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify County not less than seven days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without County's written permission.

3.4 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Grind down stumps and remove roots larger than 3 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
2. Use only hand methods or air spade for grubbing within protection zones.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of four (4") inches in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store without intermixing with other materials, and transport them to recycling facilities.

END OF SECTION 311000
SECTION 02950 – EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, and Virginia Erosion and Sediment Control Handbook, 3rd Edition, including latest version, apply to this Section.

1.2 SUMMARY

A. Project Description: The project consists of replacing portions of water and sanitary sewer systems between Brock Road and Jackson Trail East.

B. Existing Site Conditions: The existing water and sewer systems are failing and need to be replaced. All water and sewer line replacements will occur within existing and proposed utility easements with access off of Brock Road.

C. Critical Areas: The critical areas within the project are the stream crossings. The construction activities within the wetlands shall comply with conditions of the nationwide permit. The Contractor shall take all necessary precautions to avoid erosion and sediment leaving the site.

PART 2 - PRODUCTS

2.1 EROSION AND SEDIMENT CONTROL MEASURES

A. All materials used in erosion control devices shall be in accordance with the Virginia Erosion and Sediment Control Handbook, latest edition.

PART 3 – EXECUTION

3.1 INSTALLATION SEDIMENT CONTROL MEASURES

A. Unless otherwise noted, all erosion and sediment control practices shall be constructed according to the standards and specifications of the “Virginia Erosion and Sediment Control Handbook”, 3rd Edition, including latest revisions and additions.

3.2 MAINTENANCE

A. In general all erosion and sediment control measures will be checked daily and after each significant rainfall event.
B. The Contractor shall inspect for deteriorated and damaged structured measures. Damaged structural measures shall be repaired or replaced. Temporary repair and protection from further drainage shall be completed by the close of the workday.

C. The Contractor shall install additional erosion and sediment control measures if site inspectors reveal problems.

3.3 REMOVAL SEDIMENT CONTROL DEVICES

A. All temporary sediment control devices shall be removed after disturbed areas have been restored to original grades or constructed to finish grades as shown on Contract Drawings, and an acceptable vegetative cover has been established.

3.4 LIABILITY

A. The Contractor agrees to hold the Owner or any of its agents harmless from any and all liability or damage that may arise out of a violation of the Erosion and Sediment Control Ordinance and/or the Wetland permit agrees to indemnify them against loss.

END OF SECTION 02950
SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary
      Conditions, apply to this Section.
   B. Spotsylvania County Water and Sewer Design Standards.

1.2 SUMMARY
   A. This Section includes the following:
      1. Excavating and backfilling for buildings and structures.
      2. Subbase and base course for asphalt paving.
      3. Excavating and backfilling for utility trenches.
      4. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits
         for buried utility structures.

1.3 DEFINITIONS
   A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
      1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to
         support sides of pipe.
      2. Final Backfill: Backfill placed over initial backfill to fill a trench.
   B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.
   C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
   D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
   E. Excavation: Removal of material encountered above subgrade elevations and to lines and
      dimensions indicated.
      1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond
         indicated lines and dimensions as directed by Engineer. Authorized additional excavation
         and replacement material will be paid for according to Contract provisions for unit prices.
      2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
      3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated
         lines and dimensions without direction by Engineer. Unauthorized excavation, as well as
         remedial work directed by Engineer, shall be without additional compensation.
   F. Fill: Soil materials used to raise existing grades.
G. Rock excavation shall be defined as: Rock excavation for trenches and pits includes removal and disposal of materials and obstructions encountered that cannot be excavated with a track-mounted power excavator, equivalent to a Caterpillar Model No. 215C LC, rated not less than 115 HP flywheel power and 32,000-pound drawbar pull equipped with a short stick and a 42-inch wide, short tip radius rock bucket rated at 0.81 cubic yard (heaped) capacity. Trenches in excess of 10 feet in width and pits in excess of 30 feet in either length or width are classified as open excavation. Rock excavation in open excavation includes removal and disposal of materials and obstructions that cannot be dislodged and excavated with modern, track-mounted, heavy-duty excavating equipment without drilling or blasting. Rock excavating equipment is defined as Caterpillar Model No. 973 or equivalent track-mounted loader, rated at not less than 210 flywheel power and developing minimum of 45,000-pound breakout force (measured in accordance with SAE J732). Typical materials classified as rock are boulders 1 cubic yard or more in volume, solid rock, rock in ledges, and rock-hard cementious deposits. Intermittent drilling or blasting to increase production and not necessary to permit excavation of material encountered will be classified as unclassified excavation.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Product Data: For the following:
   1. Each type of plastic warning tape.
   2. Geotextile.

B. Material Test Reports: From a qualified third party testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
   1. Classification according to ASTM D 2487 of each on-site soil material proposed for fill and backfill.

1.5 QUALITY ASSURANCE

A. Standard Specification and Details: Reference in this Section to STANDARD SPECIFICATIONS or STANDARD DETAILS shall mean the following, and are hereby made part of this specification:
Lake Bottom Municipal Improvements                           EARTHWORK
Spotsylvania County, Virginia

1. Virginia Department of Transportation “Road and Bridge Specifications” Latest Edition, and “Road and Bridge Standards” Latest Edition with the latest incorporated revisions.

B. Codes and Standards: The following American Association of State Highway and Transportation Officials (AASHTO) Standards in effect on the date bids are received form a part of this Specification to the extent indicated by the following references:

- M6 Fine Aggregate for Portland Cement Concrete
- M43 Standard Sizes of Coarse Aggregate for Highway Construction
- M145 Classification of Soils and Soil-Aggregate Mixtures
- T89 Determining the Liquid Limit of Soils
- T90 Determining the Plastic Limit and Plasticity Index of Soils
- T119 Slump of Portland Cement Concrete
- T180 Moisture-Density Relations of Soils Using a 10-lb. Ram and 18-inch Drop
- T191 Density of Soil In-Place by the Sand-Cone Method
- T206 Penetration Test and Split-Barrel Sampling of Soils
- T238 Density of Soils and Soil-Aggregate In Place by Nuclear Methods
- T239 Moisture Content of Soil-Aggregate In Place by Nuclear Methods
- T265 Laboratory Determination of Moisture Contents of Soils

All work shall comply with Occupational Safety and Health Regulations for Construction of the Code of Federal Regulations.

C. Supervision and Field Compaction Testing:

1. Construction of controlled fills shall be done under continuous supervision of a qualified third party testing agency. No controlled fills shall be constructed unless the qualified representative is on the site. The Contractor shall allow safe access for the qualified third party testing agency to all parts of the project at all times. The Contractor shall keep the Engineer informed of all construction activity of the project and the Contractor’s anticipated daily schedules.

2. Field compaction tests of the density and moisture content of fill will be performed by the a qualified third party testing agency. Upon completion of each layer of fill in a designated area, the Contractor shall be required to allow time for the qualified third party testing agency to perform the tests. When the tests indicate that the density or moisture of any layer of fill or portion thereof is below the specified dry density or outside the specified moisture range, the particular layer or portion shall be reworked by rolling or by scarifying, wetting or drying, and rerolling as required until the required dry density and moisture content have been obtained.

3. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density tests will be taken in the compacted material below the disturbed surface. In this case the Contractor shall be required to used his equipment (such as a bulldozer blade) to cut out a smooth surfaced spot at any point requested by the qualified third party testing agency on which to perform the test.
D. Laboratory Testing: All materials to be used in the work shall be tested by a certified laboratory prior to use to show conformance with the requirements of these specifications. Test reports or material certifications shall be submitted to the Engineer prior to use of any material in the work. Any change in the source or material shall require the Contractor to retest and resubmit for approval.

1.6 JOB CONDITIONS

A. Subsurface Investigations:
   1. No subsurface soil borings have been performed for this project.
   2. The Contractor shall determine to its satisfaction the ground water conditions and the character and type of soil, decomposed rock, rock and other material to be encountered in the work to be done under this Contract.
   3. The Bidder may make its own investigation and tests, at a time acceptable to the Owner. Bidder should contact the County Engineer, Mr. Scott Powell, at 540-507-7330 to coordinate dates and times.
   4. As a condition of submitting a bid, the Bidder acknowledges that the Owner has not provided any subsurface soil data and further acknowledges that a claim for changed conditions will not be allowed as a consideration for additional compensation.

B. Existing Utilities:
   1. The existing utilities shown on the Drawings are from available records and field surveys. The Contractor shall verify all information to its own satisfaction, and shall notify the Engineer of any impact to the work. The Contractor shall test pit existing utilities which impact construction. These test pits shall be performed two weeks in advance of excavation.
   2. Should uncharted piping or other utilities be encountered during excavation, the Contractor shall cooperate with the Engineer and the utility owners in keeping services and facilities in operation.
   3. Utilities designated to remain in place or which serve adjacent structures are to be protected and maintained at all times during construction. Active utility lines damaged in the course of construction operations shall be repaired or replaced immediately at no cost to the County, the Engineer, or utility owner.
   4. The Contractor shall demolish and completely remove from the site existing underground utilities which are designated to be removed. Where existing utilities interfere with placement of the work, the Contractor shall relocate utilities as a part of the work, as directed by the Engineer.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
2. Soil that is too wet to permit proper compaction as determined by inspector or not appropriate for the use intended as defined in these specifications.

D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.

J. Sand: ASTM C 33; fine aggregate, natural, or manufactured sand.

K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep, tape shall be Catalog No. 2 WAT as manufactured by Seton Name Plat Corporation or approved equal; colored as follows:

2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

B. Wire Connectors

1. One connector, set screw pressure type for use with No. 10 stranded wire size. Holub Industries MA-2, Ideal Industries Model 30-222, or equal.
2. Two connector, C-Tap for two way splicing of tracer wire, for use with No. 10 stranded wire size. T&B #54705 or equal.
3. Three connector, split bolts, three wire type for splicing of tracer wire, for use with No. 10 stranded wire size. ILSCO Catalog #SEL-2S or equal.

C. Test Station Box: Plastic box for corrosion protection. Plastic shaft a minimum of 3” long with cast iron lid and collar. Collar shall be a minimum of 2” deep. Lid shall be bolted to collar with brass bolts. Lid shall be imprinted with the wording “TEST”. Lid shall be color coded blue for water and green for sewer.

D. Electric Tape: Vinyl electric tape.

E. Electrical Coating: Scotchkote 3M electrical coating Part No. 054007

F. Wire nut: non-conductive for No. 10 stranded wire size. Test Wire

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Prepare subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface.

C. Protect and maintain erosion and sedimentation controls, per jurisdictional standards.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
C. The Contractor shall provide and continuously operate and maintain all temporary dewatering, drainage and pumping systems required to satisfactorily perform all work under the Contract. Water shall be controlled to such an extent as may be necessary to keep excavations free from water during construction and to maintain a minimum of 12 inches below the bottom of pipes and structures. The Contractor will not necessarily be permitted to use any particular type of dewatering system it selects. The Contractor shall be entirely responsible for the design and adequacy of the dewatering system.

D. Should soil, ground water or local conditions require dewatering systems other than ditches, sumps, and pumps, such systems shall be provided, operated and maintained by the Contractor at no additional expense to the County.

E. The Contractor shall exercise every precaution to prevent flotation of any of the work constructed under this Contract, and the Contractor shall be responsible for all damage due to flotation.

F. Such grading shall be done as necessary to prevent surface water from flowing into trenches or other utility excavations, and any water accumulating therein shall be continuously removed and properly filtered to remove sediment.

G. The method of water disposal shall be in compliance with erosion and sediment control regulations and all other regulatory agencies.

H. Methods of dewatering excavations shall be at the Contractor’s discretion. Continuous investigations and checks shall be made by the Contractor to assure that the dewatering system employed is functioning properly, not causing damage or settlement to adjacent surfaces or structures. Temporary pipes or flumes shall be used to carry surface water across open and/or unstabilized construction areas. The system shall be modified as required and repairs for damage caused by the system shall be the responsibility of the Contractor.

I. Should the Contractor’s dewatering operations affect any existing private water supply well used as a potable water source, the Contractor shall, at no additional cost to the County, take whatever steps are necessary to provide uninterrupted water service, including the installation of temporary water lines or the installation of permanent wells with treatment systems, if required. Bottled water shall be provided immediately to residents whose private wells are damaged during construction.

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
3.5 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations in accordance with County standards.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: 12 inches each side of pipe or conduit.

C. Trench Bottoms: Generally, excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

2. Excavate trenches 2 inches deeper if pipe is 16 inches diameter or greater.

3.8 SUBGRADE INSPECTION

A. Notify Engineer when excavations have reached required subgrade.

B. If the Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed. Over-excavation that has not been authorized will not be compensated.

C. Proof-roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction.

2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill or fill as directed.

D. Reconstruct subgrages damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.
3.9 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
2. Stabilize soil stockpiles with temporary seeping as required.

B. Dispose of excess soil material and waste material.

3.10 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.11 UTILITY TRENCH BACKFILL

A. After the installation of the pipe has been field inspected, the trenches shall be backfilled per County standards. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Pipe shall have minimum bedding per County standards.

C. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit. The initial backfill shall be compacted by hand or pneumatic tamping methods.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
2. After the initial backfill has been placed, the remainder of the backfill may be done by hand or with mechanical equipment in lifts no greater than 8”.

D. Backfill voids with satisfactory soil while installing and removing shoring and bracing. Where, in opinion of the Engineer, damage is liable to result from withdrawal of shoring, it shall be left in place.
E. Place and compact final backfill of satisfactory soil to final subgrade elevation. Where settlement occurs, the trench shall be refilled and compacted to conform to the surface of the ground.

F. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.12 SOIL FILL
A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:
   1. Under grass and planted areas, use satisfactory soil material.
   2. Under walks and pavements, use satisfactory soil material.
   3. Under steps and ramps, use engineered fill.
   4. Under building slabs, use engineered fill.
   5. Under footings and foundations, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.13 SOIL MOISTURE CONTROL
A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
   1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.14 COMPACTION OF SOIL BACKFILLS AND FILLS
A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
   1. Under structures, building slabs, steps, pavements, and road shoulders, compact each layer of backfill or fill soil material at 95 percent.
   2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent.
3. Under lawn or unpaved areas, compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, under existing roadways and pavement and within VDOT right of way, trenches shall be compacted in accordance with the requirements specified or, if more stringent, the requirements of VDOT.

3.15 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
   1. Provide a smooth transition between adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
   1. Lawn or Unpaved Areas: Plus or minus 1 inch.
   2. Walks: Plus or minus 1 inch.
   3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.16 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.
3.17 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
   1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300
SECTION 02401 – PIPE BORING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This work consists of installing steel encasement pipe by either the microtunneling or the boring and jacking method in accordance with the Plans, these Special Provisions and as directed by the Engineer including furnishing all required labor, equipment and materials necessary to install the encasement pipe.

1.2 SURFACE DISRUPTION

A. Unless otherwise noted in the Contract Documents, settlement or heave at the ground surface during and after construction shall not exceed 13 mm. Over-cut shall not exceed 13 mm on the radius of the pipe being installed. The annular space created by any over-cut shall be filled with a lubricant material that will reduce the friction drag of the soil on the pipe and eliminate any voids around the pipe.

1.3 PRE-QUALIFICATION

A. The contractor shall submit proof of experience, financial stability and other qualifications noted herein of the firm chosen to perform the work. The Specialty Contractor and his superintendent shall be experienced in the selected method [microtunneling or boring and jacking] and have completed a minimum of 5 pipeline or conduit construction projects in similar ground and ground water conditions within the last three years. The Specialty Contractor shall furnish to the Engineer documentation of his qualifications, experience record, prior project referenced, and the availability of the equipment needed for the work. All references shall be currently available personnel who can verify the quality of the Specialty Contractor’s previous work and shall include current name, address, and telephone number. The Specialty Contractor shall furnish the name and experience record of the boring and jacking operation. Qualified work crew personnel shall have a minimum of 1,000 meters and/or 10 drives operating the equipment with similar equipment to that proposed for this particular work.

PART 2 - PRODUCTS

2.1 Micro-tunnel Boring Machine (MTBM) shall meet the following minimum capabilities and performance requirements.

A. Capable of providing positive face support.

B. Articulated to enable remotely controlled steering in both the vertical and horizontal directions to a tolerance of plus or minus 1 inch from design alignment over the entire length of the encasement.

C. Capable of controlling shield rotation by means of a bi-directional drive on the cutter head or by use of mechanical fins or grippers.

D. Capable of injecting lubricant around the exterior of the pipe being jacked.
E. Capable of controlling heave and settlement to acceptable tolerances.

F. The MTBM shall have a cutter face capable of supporting the full excavated area at all times and have the capability of measuring the earth pressure at the face and setting a calculated earth balancing pressure.

2.2 Automated Spoil Transportation

A. The MTBM shall include one of the following:

1. Slurry System. The system shall be capable of making the adjustments required to counterbalance the earth and ground water pressure to prevent loss of slurry or uncontrolled soil and ground water inflow.
   a. The slurry pressure at the excavation face shall be controlled by the use of slurry pumps.
   b. A slurry bypass method shall be included to allow for a change in direction of flow to be made.
   c. Provide a separation process, properly sized for the tunnel being constructed, the soil type being excavated, and the workspace available at each area. Separate the spoil from the slurry so that slurry may be returned to the cutting face for reuse.
   d. Monitor the composition of the slurry to maintain the slurry density and viscosity limits as approved in the submittal.

2. Cased Auger System. The system shall monitor and continuously balance the soil and ground water pressure. The system shall be capable of adjustments required to maintain face stability for the particular soil conditions to be encountered to prevent loss of soil or uncontrolled ground water inflow.
   a. Maintain the pressure at the excavation face by controlling the volume of spoil removal with respect to the advance rate. Monitor the speed of the rotation of the auger and the amount of water added.
   b. Submit an evaluation of equipment’s ability to balance earth and water pressure at the face, stability of the soils, and significance of the ground water present for the Engineer’s review.

2.3 Jacking System shall meet the following minimum capabilities and performance requirements:

A. The main jacking equipment installed shall have a jacking capacity that is at least 20% greater than the minimum calculated allowable jacking load required to install the encasement pipe.

B. The jacking system shall develop a uniform distribution of jacking forces on the end of the pipe by the use of thruster rings and cushioning material.

C. A pipe lubrication system shall be utilized when anticipated jacking forces on the pipe are expected to exceed the capacity of the main jacks, or exceed the pipe design strength. An approved lubricant shall be injected at the rear of the MTBM to lower the friction developed on the surface of the pipe during jacking.

D. The pipe lubrication system pressure shall be continuously monitored, recorded, and controlled to prevent pipe buckling and/or ground heave.
2.4 Thrust Blocks shall meet the following minimum capabilities and performance requirements:
   
   A. The thrust blocks shall be designed to transfer jacking loads into the soil and support the maximum pressure developed by the main jacking system.
   
   B. The thrust blocks shall be perpendicular to the encasement pipe alignment.
   
   C. Special care shall be taken when setting the pipe guide rails in the jacking shaft to ensure correctness of the alignment, grade, and stability. If concrete thrust blocks or a treated soil zone are utilized to transfer jacking loads into the soil, the MTBM shall not be jacked until the concrete or other materials have attained the required strength.

2.5 Excavation Controls shall meet the following requirements:

   A. The control equipment shall integrate the method of excavation and the removal of soil and its simultaneous replacement of the encasement pipe.

   B. The control system shall synchronize spoils removal, excavation and jacking speeds as each pipe section is jacked forward.

   C. Operations shall be stopped when they result in pipe damage or surface disruption. The Contractor should propose, for the review of the Engineer, immediate action to remedy the problem at no additional cost to the Department.

2.6 Steering Controls

   A. The remote control system shall be capable of providing the following information to the operator:
      
      1. Any deviation of the MTBM from the required line and grade of the encasement pipe, by reference to a laser beam.
      2. Grade and roll of the MTBM.
      3. Jacking load.
      4. Torque and RPM of the cutter head.
      5. Instantaneous jacking rate and total distance jacked.
      6. Indication of steering direction.

   B. For slurry systems, the following are also required:
      
      1. The volume of slurry flow in both the supply and return side of the slurry loop.
      2. Indication of slurry bypass valve position.
      3. Indication of pressure of the slurry in the slurry chamber.

2.7 Guidance and Monitoring Equipment shall be capable of meeting the following requirements:

   A. Display equipment shall show and record the position of the shield with respect to the design line and grade. Deviation from line and grade shall be no more than +/- 1 inch at any given point
along the alignment. A return to line and grade shall be 1 inch in 40 feet. Total deviation from line and grade shall be no more than +/- 1 inch between the shafts.

2.8 Encasement Pipe shall meet the following requirements:

A. The casing pipe shall be made of steel (min. ASTM A139, Grade B), shall be round with smooth, even interior and exterior surfaces and shall have joints that allow for easy butt-welded connections between pipes.

B. Pipe ends shall be square and smooth so that the jacking loads are evenly distributed around the entire pipe joint to minimize point loads when the pipe is jacked. The maximum tolerance on end squareness shall be +/- 0.12 inches.

C. Welding shall conform to Welding Section 407.04A of the VDOT Metric Road and Bridge Specifications.

D. The pipe shall be capable of withstanding the jacking forces that will be imposed by the process of installation. Pipe strength and wall thickness shall be as required by the jacking forces, the VDOT Metric Road and Bridge Specifications and these special provisions. However, under no conditions shall the wall thickness be less than that specified on the plans.

E. The driving ends of the pipe and intermediate joints shall be protected against damage.

F. The detailed method proposed to cushion and distribute the jacking forces shall be submitted to the Engineer for approval.

G. Any casing pipe showing signs of failure shall be jacked through to the reception shaft, removed and replaced at no additional cost to the County.

H. The pipe manufacturer’s design jacking loads shall not be exceeded during the installation process. The pipe shall be designed to withstand all temporary installation loads.

PART 3 – EXECUTION

3.1 ANNULAR SPACE GROUTING

A. The annular space created by the over cut of the MTBM in excess of 0.4 inches shall be filled with an approved material to prevent movement of the casing after installation.

B. If grouting is used, pressure-injected grout shall fill voids outside the limits of the excavation created by caving or collapse of earth cover over the excavation.

C. The Contractor shall furnish and operate suitable equipment for any required grouting operations depending on the condition of the application. The grouting operation shall not damage adjacent utilities or other properties. Grout shall be injected at a pressure that will not distort or imperil any portion of the work or existing installations or structures.

3.2 SHAFTS

A. Shafts shall be of a size commensurate with safe working practices and located as shown on the Plans. The Contractor may relocate shafts to better suit the capabilities of the micro-tunneling
equipment proposed, only with written approval of the Engineer. Any request for changes in the size or location of the shafts shall be submitted in writing.

B. The Contractor shall choose the excavation support system used and shall be responsible for the design of the system. Contractor shall submit design calculations, sealed by a Professional Engineer registered in the Commonwealth of Virginia, to the Engineer for review. The design of shafts shall ensure safe MTBM exit from the driving shaft and entry into the receiving shaft. The Contractor shall furnish and install equipment to keep the jacking shaft free of excess water. The Contractor shall also provide surface protection during the period of construction to ensure that surface runoff does not enter shafts.

C. An intermediate shaft may be used with written approval from the Engineer. The Contractor’s request shall include all necessary permits and approvals, minimize public inconvenience and minimize impacting existing facilities.

D. All shafts shall be backfilled in accordance with VDOT Road and Bridges Specifications, Section 303. All shoring materials, bracing, temporary supports, rubbish, and construction materials shall be removed from the job site and disposed of.

3.3 INSTALLATION OF CARRIER PIPE

A. Install carrier pipe as specified and as shown on the Drawings.

B. Provide pipe spacers or other approved devices as required to prevent damage to the pipe during placement.

3.4 SUBMITTALS

A. The Contractor shall submit 5 copies of the following material to the Engineer for review and approval 40 days prior to beginning micro-tunnel construction:

1. Documentation summarizing the Specialty Contractor’s proof of experience and the financial stability of the company.

2. Manufacturer’s literature describing, in detail, the micro-tunnel system to be used.

3. Proposed type and size of equipment, guidance systems and method of grade and alignment adjustments.

4. Descriptions of similar projects including names, addresses and phone numbers of owner’s representatives on which this similar system by the same manufacturer has been successfully used.

5. Description of method to remove and dispose of spoil.

6. Description of lubrication and grouting systems including Material Safety Data Sheets (MSDS), grout mix, proportions, slump, and design strength, as well as equipment and injection pressure.

7. Estimate of anticipated jacking loads.
8. Pit dimensions, locations, surface construction, profile, depth, method of excavation, shoring bracing and thrust block design.

9. Layout of equipment at shafts.

10. Schedule and sequence of construction.


12. Details of survey and guidance systems.

13. Method of controlling ground water by the MTBM and within shafts.

14. Verification that the pipe complies with specification.

15. Steel pipe specifications including the corrosion protection coating and joint welding procedure.

16. Complete construction procedure proposed for the work under this Contract.

17. A detailed plan for monitoring ground surface movement due to the micro-tunneling operation. The plan shall address the method and frequency of survey measurement. The plan shall include taking measurements of ground movements of all structures, roadways, and any other areas of concern within 8.0 meters on both sides of all micro-tunneling pipelines at a maximum spacing of 30.0 meters along the micro-tunneled route, or as required by the Engineer.

18. Contingency plans for approval for the following potential conditions: damage to the pipeline structural integrity and repair, loss and return to line and grade, and loss of ground.

19. Procedures to meet all applicable OSHA requirements. These procedures shall be submitted for record purposes only and will not be subject to approval by the Engineer. As a minimum, the following should be included: protection against soil instability and ground water inflow, safety for shaft access and exit, protection against mechanical and hydraulic equipment operations, and for lifting and hoisting equipment and material, ventilation and lighting, monitoring for hazardous gases, protection against flooding and means for emergency evacuation, protection of shaft, emergency protection equipment, and safety supervising responsibilities.

B. All Contractor submittals requiring structural design shall be signed and sealed by a Professional Engineer experienced in Micro-tunnel design and construction and registered in the Commonwealth of Virginia.
SECTION 02510 - WATER DISTRIBUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections and Spotsylvania County Water and Sewer Standards and Specifications, apply to this Section.

1.2 SUMMARY

A. This Section includes water-distribution piping and related components, including piping related to a proposed Water Booster Pump Station for water service, fire-service mains, and combined water service and fire-service mains.

B. Construction as shown on the plans or stated herein shall be performed in accordance with current and applicable requirements as established by the County of Spotsylvania and the Virginia Department of Health or any other agencies having jurisdiction. Where conflicts arise between the construction documents and previously mentioned requirements, the more restrictive shall apply. If such requirements require a change in the work as stated herein or shown on the plans, the Contractor shall stop work and notify the County immediately for further direction.

1.3 DEFINITIONS

A. DI: Ductile iron

B. PVC: Polyvinyl chloride plastic

C. AWWA: American Water Works Association

D. ASTM: American Society for Testing Materials

E. ANSI: American National Standards Institute

F. VDOT: Virginia Department of Transportation

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Detail precast concrete vault assemblies and indicate dimensions, method of field assembly, and components.

C. Field quality-control test reports.

D. Operation and Maintenance Data: For water valves and specialties to include in emergency, operation, and maintenance manuals.
1.5 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Comply with requirements of County of Spotsylvania and the Virginia Department of Health or any other agencies having jurisdiction. Include tapping of water mains and backflow prevention.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.

E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

F. NSF Compliance:
   1. Comply with NSF 14 for plastic potable-water-service piping.
   2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:
   1. Ensure that valves are dry and internally protected against rust and corrosion.
   2. Protect valves against damage to threaded ends and flange faces.
   3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves, including fire hydrants, according to the following:
   1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
   2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

F. Protect flanges, fittings, and specialties from moisture and dirt.
G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions:

1. Contractor shall maintain water service to existing houses and notify houses of interruption of service for periods longer than one (1) hour.

2. If directed, the Contractor shall connect existing water meter(s) to the proposed 16-inch water line and install a Pressure Reducing Valve [PRV] inside the impacted dwelling.
   a. The County will obtain permission from the owner/occupant prior to starting this phase of the work;
   b. The Contractor shall obtain a Building permit for a licensed plumber to perform all work on the service side of the meter; and
   c. The PRV shall be Watts Model #3/4 LF25AUB-Z3 or approved equal.

1.8 COORDINATION

A. Coordinate connection to water main with County of Spotsylvania.

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

A. Soft Copper Tube: ASTM B 88, Type K, water tube, annealed temper.


2.2 DUCTILE-IRON PIPE AND FITTINGS

Pipe and fittings in paragraph and subparagraphs below are available in NPS 3 to NPS 24.

A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151 and AWWA C150, minimum pressure Class 52, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated. All pipe and fittings are to be polyethylene encased in accordance with ANSI/AWWA C105/A21.5 standards. Polyethylene encasement shall be V-Bio and consist of three layers of co-extruded linear low density polyethylene (LLDPE), fused into a single thickness of not less than 8 mils. The inside surface shall be infused with a blend of antimicrobial biocide and a volatile corrosion inhibitor.

1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, pressure Class 250, ductile or AWWA C153, ductile-iron compact pattern.
2. Glands, Gaskets, and Bolts: AWWA C111, ductile, rubber gaskets, and steel bolts.
3. Cement mortar lining with bituminous seal coat for ductile iron pipe and fittings or for cast iron fittings shall meet requirements of AWWA C104.
a. Cement mortar lining shall be standard thickness.

4. Exterior, bituminous coating for ductile iron pipe and fittings shall meet requirements of AWWA C151 or C153 as applicable.

B. Push-on-Joint, Ductile-Iron Pipe: AWWA C151 and AWWA C150, minimum pressure Class 52, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated. All pipe and fittings are to be polyethylene encased in accordance with ANSI/AWWA C105/A21.5 standards. Polyethylene encasement shall be V-Bio and consist of three layers of co-extruded linear low density polyethylene (LLDPE), fused into a single thickness of not less than 8 mils. The inside surface shall be infused with a blend of antimicrobial biocide and a volatile corrosion inhibitor.

1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, pressure Class 250, ductile or AWWA C153, ductile-iron compact pattern.
2. Gaskets: AWWA C111, rubber.
3. Cement mortar lining with bituminous seal coat for ductile iron pipe and fittings or for cast iron fittings shall meet requirements of AWWA C104.

   a. Cement mortar lining shall be standard thickness.

4. Exterior, bituminous coating for ductile iron pipe and fittings and cast iron fittings shall meet requirements of AWWA C106 or AWWA C151 as applicable.

2.3 PIPING SPECIALTIES

A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

B. Tubular-Sleeve Pipe Couplings:

   1. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.

      b. Center-Sleeve Material: Manufacturer's standard.
      c. Gasket Material: Natural or synthetic rubber.
      d. Pressure Rating: 200 psig (1380 kPa) minimum.
      e. Metal Component Finish: Corrosion-resistant coating or material.

C. Split-Sleeve Pipe Couplings:

   1. Description: Metal, bolted, split-sleeve-type, reducing or transition coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.

      b. Sleeve Material: Manufacturer's standard.
      c. Sleeve Dimensions: Of thickness and width required to provide pressure rating.
      d. Gasket Material: O-rings made of EPDM rubber, unless otherwise indicated.
      e. Pressure Rating: 200 psig (1380 kPa) minimum.
      f. Metal Component Finish: Corrosion-resistant coating or material.
D. Flexible Connectors:

1. Nonferrous-Metal Piping: Bronze hose covered with bronze wire braid; with copper-tube, pressure-type, solder-joint ends or bronze flanged ends brazed to hose.

2. Ferrous-Metal Piping: Stainless-steel hose covered with stainless-steel wire braid; with ASME B1.20.1, threaded steel pipe nipples or ASME B16.5, steel pipe flanges welded to hose.

E. Dielectric Fittings: Combination of copper alloy and ferrous; threaded, solder, or plain end types; and matching piping system materials.

1. Dielectric Unions: Factory-fabricated union assembly, designed for 250-psig (1725-kPa) minimum working pressure at 180 deg F (82 deg C). Include insulating material that isolates dissimilar metals and ends with inside threads according to ASME B1.20.1.

2. Dielectric Flanges: Factory-fabricated companion-flange assembly, for 150- or 300-psig (1035- or 2070-kPa) minimum working pressure to suit system pressures.

3. Dielectric-Flange Insulation Kits: Field-assembled companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.

   a. Provide separate companion flanges and steel bolts and nuts for 150- or 300-psig (1035- or 2070-kPa) minimum working pressure to suit system pressures.

4. Dielectric Couplings: Galvanized-steel couplings with inert and noncorrosive thermoplastic lining, with threaded ends and 300-psig (2070-kPa) minimum working pressure at 225 deg F (107 deg C).

5. Dielectric Nipples: Electroplated steel nipples with inert and noncorrosive thermoplastic lining, with combination of plain, threaded, or grooved end types, and 300-psig (2070-kPa) minimum working pressure at 225 deg F (107 deg C).

2.4 GATE AND BUTTERFLY VALVES

A. AWWA, Gate and Butterfly Valves:

1. Nonrising-Stem, Resilient-Seated Gate and Butterfly Valves: Valves shall meet Spotsylvania County Sewer and Water Standards and Specification.

   a. Description: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.

      1) Standard: AWWA C509.
      2) Minimum Pressure Rating: 200 ps, working and 400 ps, test pressure.
      3) End Connections: Mechanical joint.
      4) Interior Coating: Complying with AWWA C550.

2.5 VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies:

1. Description: Sleeve and valve compatible with drilling machine.
a. Standard: MSS SP-60.

b. Tapping Sleeve: Ductile-iron, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size pipe being tapped and with recessed flange for branch valve.

c. Valve: AWWA, cast-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.

B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches (125 mm) in diameter.

1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.6 CORPORATION VALVES

A. Corporation stop with corporation cock thread inlet Ford F600 or equal compression type.

B. Service-Saddle Assemblies: Comply with AWWA C800. Include saddle and valve compatible with tapping machine.

1. All saddle castings must be ductile iron and meet the requirements of ASTM A-536-80, protected with corrosion resistant paint or epoxy coating.

2. All saddles must have a minimum of two (2) 1 1/2" wide (including bolts) stainless steel straps type 304 (18-8) where welds are passivated for resistance to corrosion. Exception: Ford FS202 which has two (2) bolts and a single strap with a minimum width of 3 1/4".

3. Gaskets must be made of virgin NBR compound.

4. Service saddles are required on all taps made onto PVC pipe other than C-900 6” and larger and all taps made on ductile iron pressure class 350 pipe smaller than 6”. The maximum direct tap on 6” and 8” pressure class 350 ductile iron is 1” and 1.25” for 12”.

2.7 WATER METERS

A. Water meters will be furnished by utility company.

2.8 WATER METER BOXES

A. See County design standards and details for meter box requirements.

2.9 METER YOKES

A. Description: Meter yokes shall be 5/8” x 3/4” Ford 5020 or Mueller 502 or approved equal. Expanders shall be Ford EC23 or approved equal with epoxy coating.

2.10 FIRE HYDRANTS

A. Dry-Barrel Fire Hydrants:
1. Description: Freestanding, with one NPS 5-1/4 (DN 115) and two NPS 2-1/2 (DN 65) outlets, 5-1/4-inch (133-mm) main valve, drain valve, and NPS 6 (DN 150) mechanical-joint inlet. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure. Comply with AWWA Fire Hydrant Specification C-502 and the following.

a. Type: Compression – Dry Standpipe: Valve shall open against and close with the pressure. The design shall be such that all internal operating parts can be removed through the standpipe and main valve rod extended without excavating.

b. Size: Internal valve diameter shall be a minimum 5 1/2".

c. Inlet Size and Type: 6" mechanical joint end with accessories.

d. Hose Nozzles: Each hydrant shall be equipped with two 2 1/2" I.D. hose nozzles with National Standard threads, one quarter turn bayonet lock, or threaded in with O-ring seal and suitable locking arrangement.

e. Steamer Nozzle: Each hydrant shall be equipped with one 5 1/4" Steamer Nozzle having National Standards Threads, one quarter turn bayonet lock, or threaded in with O-ring seal and suitable locking arrangement.


g. Size and Shape of Operating Nut and Cap Nuts: to be 1 1/2” point to flat pentagon. Each hydrant shall be equipped with a weather cap.

h. Seal Plate: The hydrant shall be so constructed that a moisture-proof lubricant chamber is provided which encloses the operating threads, thereby automatically lubricating the threads each time the hydrant is operated. The lubricant chamber shall be enclosed with at least three O-rings. The two lower O-rings will serve as pressure seals; the third O-ring will serve as a combined dirt and moisture seal to prevent foreign matter from entering the lubricant chamber. The hydrant shall be equipped with either and anti-friction washer or bronze bushing to reduce operating torque. The bonnet will be secured to the hydrant using bolts and nuts.

i. Base-ground line safety construction: The standpipe section shall be connected at the ground line by a two part, bolted safety flange or breakable lugs. The main valve road sections shall be connected at the ground line by a frangible coupling. The standpipe and ground line safety construction shall be such that the hydrant nozzles can be rotated to any desired position without disassembling and removing the top operating components and the top section of the standpipe. The minimum inside diameter of the barrel shall be 6".

j. Main Valve, Stem Assembly: The main valve road assembly shall be so constructed to allow removal of all operating parts through the barrel regardless of depth of bury, using a removal wrench which does not extend below the ground line of the hydrant. The main valve seat ring shall be bronze and its assembly into the hydrant shall involve bronze to bronze thread engagement, and the valve assembly pressure seals shall be obtained without the employment of torque compressed gaskets. The design of the main valve rod shall be such that the operating threads at the top of the rod and the valve assembly threads at the bottom of the stem are isolated from contact with water in the standpipe or in the hydrant inlet shoe.

k. Drain Valve: The operation of the drain mechanism shall be correlated with the operation of the main valve and shall involve a momentary flushing of the drain ports each time the hydrant in opened. The drain ports shall be fully closed when the hydrant valve is more than 2 1/2 turns open and the drainage channel in the bronze valve seat ring shall connect to two or more outlet drain ports. No springs
may be employed in the hydrant valve or drain valve mechanism. The drain valve will be protected with at least 1/2 yard #57 stone protected with filter cloth.

l. Depth of Bury: Normally hydrants shall be suitable for installation in trenches 4 1/2’ deep. Required parts and materials to adjust fire hydrants to different depth of bury shall be provided by the manufacturer to meet actual field conditions as required.

m. Painting Instruction: Two prime coats and one Rustolum Safety Red #7564 finish coat shall be used, unless otherwise specified. Exposed area of fire hydrant shall receive one field coat of Rustolum Safety Red #7564 after installation. The wetted surface of the hydrant shoe shall be epoxy coated to prevent corrosion of the waterway. Coat of reflective 3M Scotchlite 7210 Silver paint is required around the bonnet.

n. Pressure Rating: Test pressure 300 psi, working pressure 150 psi.

B. If the standard hydrant provided by a manufacturer does not fully comply with these specifications, but compliance can be attained by providing optional features, then each hydrant must be permanently marked to indicate the option or options that have been provided. The method of marking hydrants to indicate that options are included must be approved by the Inspector.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Refer to Division 2 Section "Earthwork" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.

B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.

C. Do not use flanges or unions for underground piping.

D. Flanges, unions, grooved-end-pipe couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.

E. Underground water-service piping NPS 3/4 to NPS 1 shall be the following:

1. Soft copper tube, ASTM B 88, Type K.

F. Underground water-service piping NPS 1 1/2 to NPS 2 shall be the following:

1. Hard copper tube, ASTM B 88, Type K.

G. Water Meter Box Water-Service Piping NPS 3/4 to NPS 2 shall be same as underground water-service piping.
3.3 VALVE APPLICATIONS

A. General Application: Use mechanical-joint-end valves for NPS 3 (DN 80) and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 (DN 50) and smaller installation.

3.4 PIPING INSTALLATION

A. Water-Main Connection: Tap water main according to requirements of Spotsylvania County and of size and in location indicated.

B. Comply with NFPA 24 for fire-service-main piping materials and installation.

C. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.

D. Bury piping with depth of cover over top at least 42 inches.

E. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

F. Tracing wire:

1. Tracing wire shall be accessible for test hook-up at all fire hydrants, and test stations. The tracing wire must be continuous and completely insulated from ground. The tracing wire will be attached to the top of the pipe using duct tape at an interval no greater than 16 feet. Tracing wire within test stations and hydrants shall be stripped 3/4” from the end and capped with a wire nut to minimize electrical ground contact. Test stations shall be installed within 2 feet of all fire hydrants and at intervals no greater than 1000 feet. All connections at the main line must be electrically sound and physically secure with screw connections or clamps. All connections must be taped with electrical tape and sealed with an electrical coating sealant. Tracing wire for waterlines shall be color-coded blue.

2. Place underground warning tape directly above all water mains, 12” below finished grade. Tape shall be polyethylene tape with a metallic core, 2” in width, with the continuous printed message “Caution – Waterline Buried Below.” Tape shall be Catalog No. 2 WAT as manufactured by the Seton Name Plate Corp. or approved equal.

3.5 JOINT CONSTRUCTION

A. Make pipe joints according to the following:


4. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
3.6 ANCHORAGE INSTALLATION

A. Anchorage, General: Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following:

1. Locking mechanical joints.
2. Set-screw mechanical retainer glands.

B. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches, per Spotsylvania County standards.

C. Thrust protection as shown on plans in the standard details shall consist of pipe joints, fittings and appurtenances specially designed for thrust restraint. All restraint devices must be U.L. listed and F.M. approved.

1. Mechanical joint restraint shall be incorporated in the design of the follower gland and shall include a restraining mechanism which, when actuated, imparts multiple wedging action against the pipe, increasing its resistance as the pressure increases. Flexibility and minimal deflection of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A536-80. Twist-off nuts shall be used to ensure proper actuating of the restraining devices.
2. Restraining devices shall be of ductile iron, heat-treated to a minimum hardness of 370 BHN. There shall be no dissimilar metals allowed. Dimensions of the gland shall be such that it can be used with all AWWA approved standardized mechanical joint bell and tee-head bolts conforming to ANSI/AWWA A21.11 and ANSI/AWWA C153.53/A21.53 of latest revision. The mechanical joint restraint device shall have a working pressure of at least twice the working pressure of the pipe.
3. All existing bell and spigot end joints within the length of required restrained joint pipe shall be restrained with a clamping ring and an additional ring designed to fit behind the bell end of the ductile iron pipe. The rings shall be connected with T-head bolts or rods. Rods must be protected from corrosion either by rod material or coating.

D. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.7 VALVE INSTALLATION

A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44 and Spotsylvania County standards. Install each underground valve with stem pointing up and with valve box.

1. General: Valves, fittings and hydrants shall be set and joined to the piping system as specified for cleaning, laying and joining pipe.
2. Valves and Valve Boxes: Cast iron valve boxes shall be firmly supported, centered and plumb over the operating unit of valve. Box cover shall be set flush with the surface of finished pavement or at such other level as may be directed by the Inspector. Valve rod extension with guide shall be required to maintain a maximum distance of 2’-4’ from operating nut to top of box. All valves shall be properly restrained.

B. AWWA Valves Other Than Gate Valves: Comply with AWWA C600 and AWWA M44 and Spotsylvania County standards.
C. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

3.8 WATER METER BOX INSTALLATION

A. Install water meter boxes in paved areas flush with surface in accordance with Spotsylvania County standards.

3.9 FIRE HYDRANT INSTALLATION

A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position, in accordance with Spotsylvania County standards.

1. Connection to Main: Each hydrant shall be restrained and connected to the main with a minimum 6” diameter branch, controlled by an independent 6” gate or resilient seat gate valve. All hydrant valves shall be restrained to the hydrant tee on the main line.

2. Setting of Hydrants: When hydrants are set, a drainage pit two feet in diameter and two feet below the bowl of the hydrant shall be excavated. The pit shall be filled with coarse gravel or #57 clean stone to a level of 6” above the weep hole. No hydrant drainage pit shall be connected to a sewer. The bowls of all hydrants shall be well braced against unexcavated earth with suitable concrete blocking, and when directed shall be restrained to the pipe with approved harnessing. All hydrants shall be thoroughly cleaned of dirt or foreign matter before setting.

3.10 CONNECTIONS

A. Connect water-distribution piping to existing water main.

3.11 FIELD QUALITY CONTROL

A. Pressure Tests: Each section of the piping system, including all water services, shall be subject to a pressure test of 150 psi or 1 1/2 times working pressure, whichever is greater. Use only potable water. Test shall be conducted in accordance with Spotsylvania County standards.

B. Disinfection Test: Prior to being placed in service, the pipe line and appurtenances shall be disinfected in general accordance with ANSI/AWWA C651, latest edition; AWWA Standard for Disinfecting Water Mains and the supplemental procedures as set forth by Spotsylvania County.

C. Bacteriological Test: After final flushing and before the water main is placed in service, samples shall be collected and tested for bacteriological quality per Spotsylvania County requirements.

3.12 IDENTIFICATION

A. Install continuous underground detectable warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping. Underground warning tapes are specified in Division 2 Section "Earthwork."
3.13 CLEANING

A. Clean and disinfect water-distribution piping as follows:

1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
2. Use purging and disinfecting procedure generally in accordance with ANSI/AWWA C651, AWWA Standard for Disinfecting Water Mains and Spotsylvania County standards.
3. Upon the completion of the installation of the water system and prior to the County acceptance, all restoration shall be complete. The work area shall be restored to its original condition and pavement replaced to the satisfaction of VDOT and/or the County. All trash and debris shall be removed and properly disposed of. Areas not otherwise stabilized shall be seeded and mulched and a good stand of grass established.

END OF SECTION 02510
SECTION 221313 - SANITARY SEWERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Nonpressure-type transition couplings.
   2. Pressure-type pipe couplings.
   3. Expansion joints and deflection fittings.
   4. PVC Pipe and Fittings.
   5. Manholes.
   6. Concrete.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Shop Drawings: For manholes. Include plans, elevations, sections, details, and frames and covers.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings:
   1. Show system piping in profile. Draw profiles to horizontal scale of not less than 1 inch equals 50 feet (1:500) and to vertical scale of not less than 1 inch equals 5 feet (1:50). Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.

B. Product Certificates: For each type of pipe and fitting.
C. Field quality-control reports.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS

A. PVC Type PSM Sewer Piping:
   1. Pipe:
      a. ASTM D 3034, SDR 35 or C-900, PVC Type PSM sewer pipe with bell-and-spigot ends for gasketed joints.
      b. ASTM F679, PS46 PVC sewer pipe.
      c. AWWA C 906 HDPE
   2. Fittings: ASTM D 3034, PVC with bell ends.
2.2 NONPRESSURE-TYPE TRANSITION COUPLINGS

A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling; for joining underground non-pressure piping. Include ends of same sizes as piping to be joined and include corrosion-resistant-metal tension band and tightening mechanism on each end.

B. Sleeve Materials:
   1. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
   2. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

C. Nonpressure-Type, Rigid Couplings:
   1. Description: ASTM C 1461, sleeve-type, reducing- or transition-type mechanical coupling; molded from ASTM C 1440, TPE material; with corrosion-resistant-metal tension band and tightening mechanism on each end.

2.3 MANHOLES

A. Standard Precast Concrete Manholes:
   1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
   2. Diameter: 48 inches minimum unless otherwise indicated.
   3. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.
   4. Base Section: 6-inch minimum thickness for floor slab and 4-inch (100-mm) minimum thickness for walls and base riser section; with separate base slab or base section with integral floor.
   5. Riser Sections: 4-inch minimum thickness, of length to provide depth indicated.
   6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated; with top of cone of size that matches grade rings.
   7. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
   8. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.
   9. Steps: Individual FRP steps or ASTM A 615/A 615M, deformed, 1/2-inch (13-mm) steel reinforcing rods enclosed in ASTM D 4101, PP wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 60 inches.
   10. Adjusting Rings: Interlocking HDPE rings, with level or sloped edge in thickness and diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope. Include sealant recommended by ring manufacturer.
11. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.

12. Manhole Lining: Where called for on the Plans, T-Lock PVC Lining or approved equal shall be used.

B. Manhole Frames and Covers:

1. Description: Ferrous; 24-inch ID by 7- to 9-inch riser, with 4-inch minimum-width flange and 26-inch diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "SANITARY SEWER."

2. Material: ASTM A 536, Grade 60-40-18 ductile iron unless otherwise indicated.

2.4 CONCRETE

A. General: Cast-in-place concrete complying with ACI 318, ACI 350, and the following:

1. Cement: ASTM C 150/C 150M, Type II.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.

2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 deformed steel.

C. Manhole Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.

1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.
   a. Invert Slope: 2 percent through manhole.

2. Benches: Concrete, sloped to drain into channel.
   a. Slope: 8 percent.

D. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.

2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 deformed steel.
PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details to indicate general location and arrangement of underground sanitary sewer piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.

C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.

D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.

F. Install gravity-flow, non-pressure, drainage piping according to the following:

1. Install piping pitched down in direction of flow, at minimum slope of 2 percent unless otherwise indicated.
2. Install piping NPS 6 and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place-concrete supports or anchors.
3. Install piping with 36-inch minimum cover.
4. Install PVC Type PSM sewer piping according to ASTM D 2321 and ASTM F 1668.

G. Clear interior of piping and manholes of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, non-pressure, drainage piping according to the following:

1. Join PVC Type PSM sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasket joints.
2. Join dissimilar pipe materials with non-pressure-type, flexible or rigid couplings.
B. Pipe couplings, expansion joints, and deflection fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

1. Use non-pressure flexible couplings where required to join gravity-flow, non-pressure sewer piping unless otherwise indicated.

3.4 MANHOLE INSTALLATION

A. General: Install manholes complete with appurtenances and accessories indicated.

B. Install precast concrete manhole sections with sealants according to ASTM C 891.

C. Form continuous concrete channels and benches between inlets and outlet.

D. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 24 inches above finished surface elsewhere unless otherwise indicated.

3.5 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318.

3.6 IDENTIFICATION

A. Comply with requirements in Section 312000 "Earth Moving" for underground utility identification devices. Arrange for installation of green warning tapes directly over piping and at outside edges of underground manholes.

1. Use detectable warning tape over nonferrous piping and over edges of underground manholes.

3.7 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate report for each system inspection.
2. Defects requiring correction include the following:
   a. Alignment: Less than full diameter of inside of pipe is visible between structures.
   b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
   c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
   d. Infiltration: Water leakage into piping.
   e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Re-inspect and repeat procedure until results are satisfactory.
B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems according to requirements of authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Submit separate report for each test.
5. Hydrostatic Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction and the following:
   a. Fill sewer piping with water. Test with pressure of at least 10-foot head of water, and maintain such pressure without leakage for at least 15 minutes.
   b. Close openings in system and fill with water.
   c. Purge air and refill with water.
   d. Disconnect water supply.
   e. Test and inspect joints for leaks.

6. Manholes: Perform hydraulic test according to ASTM C 969.

C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 221313
SECTION 334100 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pipe and fittings.
   2. Channel drainage systems.
   3. Pipe outlets.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

B. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.

C. Field quality-control reports.

PART 2 - PRODUCTS

2.1 CONCRETE PIPE AND FITTINGS

A. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76.
   1. Bell-and-spigot or tongue-and-groove ends and gasketed joints with ASTM C 443 rubber gaskets.
   2. Class III

2.2 PIPE OUTLETS

A. Riprap: Broken, irregularly sized and shaped, graded stone according to NSSGA's "Quarried Stone for Erosion and Sediment Control."

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

D. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.

E. Install gravity-flow, nonpressure drainage piping according to the following:

1. Install piping pitched down in direction of flow.

2. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:


2. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
1. Submit separate reports for each system inspection.

2. Defects requiring correction include the following:
   a. Alignment: Less than full diameter of inside of pipe is visible between structures.
   b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
   c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
   d. Infiltration: Water leakage into piping.
   e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.

4. Reinspect and repeat procedure until results are satisfactory.

B. Leaks constitute defects that must be repaired.

C. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 334100
I. SUMMARY

The project consists of furnishing and installing approximately 6,000 linear feet of 18-inch diameter sanitary sewer line and approximately 6,500 linear feet of 16-inch water line, and all necessary appurtenances. This project will occur between Jackson Trail East and Brock Road in Spotsylvania County, VA.

II. WORK COVERED BY THE CONTRACT DOCUMENTS

A. Work under this contract includes furnishing and installing sewer line, water line and associated appurtenances as follows:

   i. Furnish, erect, maintain and remove erosion and sediment control measures including silt fencing, construction entrances, and other items as required.

   ii. Clear and grub the area of construction of the new sewer and water lines.

   iii. Furnish and install sanitary sewer mains, manholes, and service lateral connections at locations and grades shown on the plans.

   iv. Furnish and install water lines, hydrants, valves, service connections and meter barrels at locations and grades shown on the plans.

   v. Furnish and install all other appurtenances shown or required to complete the sanitary sewer and water line work.

B. Contingent Items – If contingent items are included in the project, they shall not be performed without written direction and authorization by ENGINEER, if agreed to by the OWNER.

C. Work consists of providing labor, materials, equipment, services and administration required in conjunction with or properly incidental to
construction of the project. All work shall be performed in accordance with Federal, State and Local regulations and OSHA requirements.

III. SPOTSYLVANIA COUNTY SPECIFICATIONS – General information


B. All excavation is considered Unclassified. Spotsylvania County has not conducted an underground investigation of the site.

C. The Contractor shall provide initial stakeout of water and sewer line project and will be the responsible for any further stakeout.

D. The County will perform the as-built survey plans for the project. The contractor shall provide the County with the construction plans with redline mark ups.

E. Spotsylvania County Land Disturbance permit to be obtained by the Contractor.

F. Wetland restoration shall be performed per requirements on the plans and within the permits.
ATTACHMENT C

DRAWINGS

LAKE BOTTOM MUNICIPAL IMPROVEMENTS PROJECT

INVITATION FOR BID (IFB #20-09-EG)

November 12, 2019
N.I.C.
SEE LAKE BOTTOM SEWER INTERCEPTOR WETLAND JURISDICTIONAL AND IMPACT MAP, DATED JUNE 9, 2010 BY DEMPSEY & DAVIS, LLC. ALL WETLAND IMPACTS ASSOCIATED WITH UNDERGROUND SANITARY SEWER SHOWN, AUTHORIZED BY NAO 2008-2898.
ATTACHMENT D
Bid Form
IFB #20-09-EG
Lake Bottom Municipal Improvements Project

In compliance with this Invitation for Bid, Addenda and to all the Terms and Conditions imposed therein and hereby incorporated by reference, the authorized undersigned offers and agrees to furnish the goods/services at the price(s) indicated on the Bid Form, in accordance with this Signed Bid Form.

The signer of this bid form must be an authorized officer of the company.
(Please include any documentation of authority. For example, resolution of the board of directors, articles of incorporation, etc.)

Name and Address of Firm: _____________________________ Date: _____________________________________________
___________________________________________ By: _____________________________________________
                                                                                              (Signature In Ink)
___________________________________________ Name: _____________________________________________
                                                                                              (Please Print)
___________________________________________ Zip Code: _____________________________ Title: _____________________________________________
EIN: _____________________________________________ E-mail: _____________________________________________
Phone: (_____)_________________________ Fax: (_____)________________________________________
If Corporation or LLC, list State of Incorporation or Corporation: _____________________________________________
Contractors License Number: _____________________________
Commonwealth of Virginia State Corporation Commission Number: _____________________________________________
   (ATTACH A COPY OF YOUR STATE CORPORATION COMMISSION CERTIFICATE AND A LIST OF OFFICERS)
D-U-N-S Number: _______________________________________

The named party hereby submits a bid in response to this Spotsylvania County IFB to furnish construction services and materials as described in the Specification and bid form to this IFB. The entire Bid form, including Response Statement, license certifications, and any supplemental materials required to be provided by the bidder pursuant to the terms and conditions of the IFB, constitute the entire bid submission.

The party hereby certifies that such bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion or communication or conference, with any person to fix the bid price or affiant or any bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against Spotsylvania County or any person interested in the proposed contract.

The party submitting the forgoing bid acknowledges the provisions, terms and conditions of this IFB including all attachments and addenda, and agrees to be bound by those provisions, terms and conditions. Further, the party certifies that all information submitted in response to this IFB is correct and true.

Receipt of the following Addenda are acknowledged:
Addendum No. ____________, dated ____________ Addendum No. ____________, dated ____________
Addendum No. ____________, dated ____________ Addendum No. ____________, dated ____________
Addendum No. ____________, dated ____________ Addendum No. ____________, dated ____________

(RETURN THIS FORM)
ATTACHMENT D
Bid Form
IFB #20-09-EG
Lake Bottom Municipal Improvements Project

Response Statement

This Response Form is to be completed by the Bidder to more specifically describe and define the proposed services. Any deviations from the IFB specifications shall be stated on this form or attached to this form.

1. Item Description

   Lake Bottom Municipal Improvements Project

2. Deviations from IFB Specifications

Sign here to confirm accuracy of Bid Form and conformity with provisions of IFB #20-09-EG

Signature:__________________________ Name of Firm:__________________________________

(RETURN THIS FORM)
A list of 3 References for which the Contractor has provided similar work over the last 5 years similar in Scope to that which is described herein shall be provided with the Bid Package. **Spotsylvania County cannot be listed as a reference.**

**Please list references below:**

Company Name: ___________________________________________________________________
Address: _____________________________________________________________________

Phone Number: ___________________________________________________________________
Email Contact: ___________________________________________________________________
Project Name: ___________________________________________________________________
Location Address: ___________________________________________________________________

Additional Information: ___________________________________________________________________

Company Name: ___________________________________________________________________
Address: _____________________________________________________________________

Phone Number: ___________________________________________________________________
Email Contact: ___________________________________________________________________
Project Name: ___________________________________________________________________
Location Address: ___________________________________________________________________

Additional Information: ___________________________________________________________________

Company Name: ___________________________________________________________________
Address: _____________________________________________________________________

Phone Number: ___________________________________________________________________
Email Contact: ___________________________________________________________________
Project Name: ___________________________________________________________________
Location Address: ___________________________________________________________________

Additional Information: ___________________________________________________________________

**Sign here to confirm accuracy of Bid Form and conformity with provisions of IFB #20-09-EG**

Signature: ____________________________ Name of Firm: ____________________________

(RETURN THIS FORM)
ATTACHMENT D
Bid Form
IFB #20-09-EG
Lake Bottom Municipal Improvements Project

Provide construction services and materials to complete the Lake Bottom Municipal Improvements Project as described in the Spotsylvania County IFB #20-09-EG Specifications, and Construction Drawings.

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<th>TOTAL PRICE</th>
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<td>Mobilization</td>
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<td>Site Clearing</td>
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<td>Traffic Control</td>
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<td>Allowance - Testing and Inspecting</td>
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<td>CONTINGENCY Re-grade Gravel Road</td>
<td>SF</td>
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<td>50</td>
<td>CONTINGENCY Over-excavation and backfill w/No. 57 Stone Aggregate</td>
<td>Ton</td>
<td>2000</td>
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</tbody>
</table>

TOTAL BID PRICE = Items 1 through 50

Sign here to confirm accuracy of Bid Form and conformity with provisions of IFB #20-09-EG

Signature: ______________________________ Name of Firm: ______________________________

(RETURN THIS FORM)