



DEPARTMENT OF COMMUNITY DEVELOPMENT

ENGINEERING DIVISION

**FILLMORE STREET SEWER EXTENSION
BID AND CONTRACT DOCUMENTS**

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Advertisement for Bids
Staunton, Virginia

Sealed bids for the furnishing of all labor, materials, supervision, and equipment necessary to complete the **Fillmore Street Sewer Extension** will be received by the City of Staunton, Virginia, in the City Purchasing Agent's Office, Third Floor, City Hall, 116 W. Beverley Street until **2:00 p.m., September 07, 2018,** at which time they will be publicly opened and read aloud.

BIDS RECEIVED AFTER THE DATE AND TIME SPECIFIED WILL BE REJECTED. BIDS MUST BE SEALED, MARKED, AND DELIVERED TO:

Mail to:

**City of Staunton
Finance Business Manager
P.O. Box 58
Staunton, VA 24402-0058
Phone: (540) 332-3819**

Overnight To:

**City of Staunton
Finance Business Manager
116 W. Beverley St., 3rd Floor
Staunton, VA 24401
Phone: (540) 332-3819**

The work for which bids are to be submitted consists of approximately 975 LF of Sanitary Sewer and 5 new Sanitary Sewer Manholes. A more complete description of the work and full information for contract bidders is given in the Specifications and Contract Documents.

A mandatory pre-bid meeting will be held **August 22, 2018 at 2:00 p.m.** in the City's Community Development Conference Room.

The envelopes containing the bids must be sealed, addressed to the City of Staunton, City Purchasing Agent's Office, Staunton, Virginia 24401, and marked as Bid for the **Fillmore Street Sewer Extension.**

The Bid shall remain subject to acceptance for sixty (60) days.

The attention of bidders is invited to Title 2.2, Chapter 43 of the Code of Virginia. The procedure for withdrawal of bids shall conform to Procedure (A(i)), Section 2.2-4330 of the Code of Virginia.

The City of Staunton does not discriminate against small and minority businesses or faith based organizations.

City of Staunton

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The City of Staunton, Virginia, (hereinafter called the “OWNER”, or “Public Body”) invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner in the City Purchasing Agent’s office, Third Floor, City Hall, 116 W. Beverley Street, Staunton, Virginia until **2:00 p.m., September 7, 2018.**

**BIDS RECEIVED AFTER THE DATE AND TIME SPECIFIED WILL BE REJECTED.
BIDS MUST BE SEALED AND MARKED AS BID FOR:**

Fillmore Street Sewer Extension
--

BIDS MUST BE DELIVERED TO:

Mail to:

**City of Staunton
Finance Business Manager
P.O. Box 58
Staunton, VA 24402-0058
Phone: (540) 332-3819**

Overnight To:

**City of Staunton
Finance Business Manager
116 W. Beverley St., 3rd Floor
Staunton, VA 24401
Phone: (540) 332-3819**

The owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. Bid shall remain subject to acceptance for sixty (60) days.

2. PREPARATION OF BID

Each bid must be submitted on the prescribed form. All blank spaces for bid prices must be filled in, in ink or typewritten and the foregoing certification must be fully completed and executed when submitted.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid form. **BIDDER MUST WRITE ON OUTSIDE OF ENVELOPE: “REGISTERED CONTRACTOR, VIRGINIA CERTIFICATE NO.”**

3. SUBCONTRACTS

The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner.

4. METHOD OF BIDDING

This is a **unit price bid** for:

Fillmore Street Sewer Extension
--

(See Bid Schedule)

5. QUALIFICATIONS OF BIDDER

The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder indicates that the bidder is not properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

6. BID SECURITY

Each bid must be accompanied by a bid bond in the amount of five percent (5%) of the bid submitted, or a certified check of the Bidder in an amount not less than five percent (5%) of the amount of the bid, payable to the order of the City of Staunton, Virginia. Such bid bonds or checks will be returned to all, except the three bidders submitting the most favorable bids, within three (3) days after the formal opening of the bids. The remaining bid bonds or checks will be returned to the three most favorable bidders within forty-eight (48) hours after the Owner and the accepted Bidder have executed the Contract, or if no contract has been so executed, within sixty (60) days after the date of the opening of the bids.

7. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within 10 days after he has received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid.

8. TIME AND COMPLETION AND LIQUIDATED DAMAGES

Bidder must agree to commence work on or before a date to be specified on a written "Notice to Proceed" from the OWNER and to **fully complete the work within 80 working days.** Working days refer to Monday through Fridays, excepting weekends and City of Staunton holidays.

OWNER and CONTRACTOR stipulate that delay by the CONTRACTOR in completion would have significant adverse consequences for the PROJECT; that, however, the actual damages to OWNER from such delay are uncertain and would be impossible and not susceptible to reasonable determination; and that liquidated damages of such failure by CONTRACTOR to perform in a timely manner are a reasonable way and not a penalty to address such adverse consequences. CONTRACTOR also stipulates that it shall not challenge, either directly or indirectly, this liquidated damages provision. OWNER, therefore, may require CONTRACTOR

to pay liquidated damages of \$1,000 per day for the CONTRACTOR's failure to perform timely in strict accordance with the CONTRACT. OWNER may deduct any liquidated damages from amounts due to CONTRACTOR and, otherwise OWNER shall be entitled to receive interest at the rate of 5% until deducted or paid. Liquidated damages shall be, other than for delay, in addition to any other entitlement by OWNER to damages and other remedies for any other damage, loss, or injury for which CONTRACTOR may be responsible.

9. CONDITIONS OF WORK

Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of this obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible, the contractor, in carrying out his work, must employ such methods or needs as will not cause any interruption of or interference with the work of any other contractor.

10. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

Every request for such interpretation should be in writing or emailed, addressed to Attention: Nickie D. Mills, City Engineer, 116 W. Beverley St., P.O. Box 58, Staunton, Virginia 24402, millsnd@ci.staunton.va.us, and to be given consideration, must be received by **12:00 P.M. on August 24, 2018.** Any and all such interpretations and any supplemental instructions will be posted on the City website not later than close of business day on **August 27, 2018.** Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under this bid as submitted. All addenda so issued shall become part of the contract document.

11. SECURITY FOR FAITHFUL PERFORMANCE

Simultaneously with his delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under the contract and furnishing materials in connection with this contract. Both payment bond and performance bond shall be in the amount of 100% of the contract price.

All bonds shall be on forms provided in the Contract Documents and written by companies LICENSED TO DO BUSINESS IN VIRGINIA and shall be administered through agent(s) registered in Virginia.

12. POWER OF ATTORNEY

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

13. NOTICE OF SPECIAL CONDITIONS

Attention is particularly called to those parts of the contract documents and specifications, which deal with the following:

- a) Inspection and testing of materials
- b) Insurance requirements

14. LAWS AND REGULATIONS

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the contract will be deemed to be included in the contract as though herein written out in full.

15. METHOD OF AWARD - LOWEST QUALIFIED BIDDER

- 15.1 The contract will be awarded on the basis of the sum of the Base Bid and the accepted Alternates.
- 15.2 The award will be made to the lowest responsible bidder whose bid conforms to the invitation and whose qualifications indicate the award will be most advantageous to the City.
- 15.3 The City reserves the right to reject any or all offers and to waive informalities and minor irregularities in offers received.
- 15.4 The City will notify all bidders of the award and return bid sureties to all but the successful bidder.
- 15.5 After notice from the City, the successful bidder has ten (10) days to enter into a contract or forfeit as liquidated damages the security deposit. By executing the contract, the Contractor certifies that he has reviewed the Contract Documents and the project area and accepts the conditions of each.
- 15.6 Should the lowest bid for Base Bid exceed the City's budget, the City may proceed with negotiations with the lowest bidder for the Base Bid in accordance with section 2.2-4318 of the Code of Virginia to obtain a contract price within the funds available to the City. For the purpose of determining when such negotiations may take place, the term "available funds" shall mean those funds which were budgeted by the City for this contract (including all grant funding) prior to issuance of the written Invitation for Bids. Negotiations with the low bidder may include both modifications of the bid price and Scope of Work/Specifications to be performed. The City shall initiate such negotiations by written notice to the lowest responsive, responsible bidder that its bid exceeds the available funds and that the City wishes to negotiate a lower contract price. The times, places, and manner of negotiations shall be agreed to by the City and the lowest responsive bidder.

16. OBLIGATION TO BIDDER

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda).

The failure or omission of any bidder to examine any form instrument or document shall in no way relieve any bidder from any obligation in respect of his bid.

Under Section 2.2-4330, Procedure (A(i)) of the Code of Virginia, a bidder for a contract with the State or any department, institution or agency thereof, or with any county, city, town, school board, or any agency thereof for the construction, demolition, alteration, repair or improvement may withdraw his bid from consideration if the price bid was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor, or material made directly in the compilation of a bid, evidenced by the inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn. The bidder must give notice in writing of his claim of right to withdraw his bid within two (2) business days after the conclusion of the bid opening procedure.

SCC Requirement: Pursuant to Code of Virginia, §2.2-4311.2 subsection B, a bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 is required to include in its bid or proposal the identification number issued to it by the State Corporation Commission (SCC). Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law is required to include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized.

17. ADJUSTMENT OF CONTRACT

The Owner reserves the right to expand this contract to include work of the type defined in the project specifications, to other areas of the City. This expansion would be contingent upon the Contractor agreeing to perform the additional work at the same contract prices found in the proposal for the original contract.

The owner reserves the right to make, at any time during the progress of the work, such increases or decreases in quantities as deemed in the best interest of the Owner. Adjustments of contract unit prices will not be considered for overruns or underruns of the original bid quantities. Unit price adjustments will not be made in the event of the elimination of any other associated bid item.

18. MANDATORY PRE-BID MEETING

A mandatory pre-bid meeting will be held at **2:00 p.m., August 22, 2018,** in the City's Community Development Conference Room.

BID

Fillmore Street Sewer Extension
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TO: City of Staunton
City Hall
P.O. Box 58
Staunton, Virginia 24402

Gentlemen:

The undersigned, as Bidder, does hereby declare that the only person, persons, company or parties interested in this Bid are named herein; that this Bid is made and that the Contract will be executed without collusion with any other person or persons presenting any Bid for the same work, labor and materials; that this Bid is in all respects fair and just and that no person prohibited therefrom by law is directly or indirectly interested in this Bid, nor in the labor and materials to which it relates, nor in any portion of the profits thereof.

The undersigned does further declare that he has personally examined the site of the proposed work and made such investigation as is necessary to determine the general and local conditions and the character of the work to be encountered; that he has carefully examined each and every item of the annexed Contract Documents and the Plans and Specifications pertaining hereto, and that he fully understands the same, and will make no claim, other than as stated therein, because of any misunderstanding or misconception concerning the nature, charter or amount of work to be done.

The undersigned does hereby offer and agree to execute and perform the Contract attached hereto, and of which this Bid forms a part; and to furnish all of the labor, materials, tools, equipment, transportation and superintendence for the construction; in strict conformity with the drawings and specifications. The undersigned further proposes to perform the work at the prices set opposite each item, it being understood that the quantities given are estimates only and payment will be made on the basis of actual quantities as developed during the construction.

BID SCHEDULE

Fillmore Street Sewer Extension

BID NO.	ITEM	UNITS	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
1.	Mobilization	LS	1		
2.	Traffic Control	LS	1		
3.	8" PVC Sanitary Sewer	LF	975		
4.	4" PVC Sewer Laterals (Includes Cleanout)	LF	105		
5.	Connecting New Sewer to Existing Manhole	EA	2		
6.	48" Standard Manhole	VF	27		
7.	Heavy Duty Traffic Manhole Frame and Cover	EA	5		
8.	48" Doghouse Manhole	VF	5		
9.	Cut and Plug Existing Sanitary Sewer	EA	4		
10.	Abandon Existing Sanitary Sewer Manhole	EA	1		
11.	Solid Rock Excavation	CY	120		
12.	Trench Stabilization	TON	75		
13.	Reshape Bench and Invert	EA	1		
14.	Misc. Concrete Repair (Curb, Gutter, Sidewalk)	LS	1		
15.	Patch for Asphalt Pavement	SY	360		

TOTAL BASE BID

WORDS

FIGURES

AMOUNTS ARE TO BE SHOWN IN BOTH WORDS AND FIGURES. IN CASE OF DISCREPANCY, THE AMOUNT SHOWN IN WORDS WILL GOVERN.

The undersigned agrees to complete the work enumerated herein **in accordance with Paragraph 8 of Information for Bidders**. It is expressly understood and agreed that the time of beginning, rate of progress, and the date of completion are essential conditions, and that in the event of failure to complete the work within the above specified time, the Contractor will be liable for the payment of liquidated damages as provided in **Paragraph 8 of Information for Bidders**. Extensions may be granted, upon written request, for inclement weather and for any other cause not the fault of the Contractor. The City reserves the right to shut the project down for extended periods due to inclement weather. Deadline extensions will be made to equally compensate for periods of shut down.

The undersigned likewise agrees that he will execute and deliver the Contract hereto attached within ten (10) days, Sundays and City of Staunton holidays excepted, after notification of the acceptance of this Bid and award of the Contract; and will furnish a performance and a payment bond for the total amount of the accepted Bid on the forms provided in the Contract Documents, satisfactory to the Owner as surety for the faithful performance and completion of the Contract and the payment of all subcontractors, material dealers and labor.

The undersigned certifies that he understands that it is the intent of the drawings, and the Contract Documents, that the work be completed in every respect and that no additional compensation will be allowed for minor tasks necessary to completely perform the work.

The undersigned acknowledges Addenda:

Addenda No. _____
Addenda No. _____

Addenda _____
Addenda _____

The undersigned has checked carefully all the above figures and understands that the Owner will not be responsible for any errors or omissions in making up this Bid.

Contractor

By: _____

Printed Name: _____

Title: _____

Registered Virginia Contract Number

Address: _____

SCC Number

Telephone: _____

Contractor's IRS Number

Dates this ____ day of _____ 20____

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

_____ as Principal, and
_____ as Surety, are hereby held and
firmly bound unto _____ as Owner in the penal
sum of _____ for the payment of
which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs,
executors, administrators, successors and assigns.

Signed, this _____ day of _____, 20____

The condition of the above obligation is such that whereas the Principal has submitted to
_____ a certain bid attached
hereto and hereby made a part of hereof to enter into a contract in writing, for the _____

NOW THEREFORE,

- (a) If said Bid shall be rejected, or in the alternate
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid.

Then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The surety for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal (L.S.)

Surety

By: _____

Seal

CONTRACT

THIS AGREEMENT, dated this ____ day of _____, 20__, for identification, is made by and between the CITY OF STAUNTON, VIRGINIA (the "OWNER"), a municipal corporation of the Commonwealth of Virginia acting by and through its City Manager, and

(Name of CONTRACTOR) (The "CONTRACTOR"), a _____
(State)

Corporation licensed and registered to do business in the Commonwealth of Virginia.

WITNESSETH: That for and in consideration of the payments and agreement hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows:

FILLMORE STREET SEWER EXTENSION

Hereinafter called the PROJECT, for a sum not to exceed _____
_____ under the terms of the contract documents

For said price, the CONTRACTOR is to furnish all materials, labor, superintendence, equipment, tools, machinery, and other accessories and services necessary to complete the said PROJECT.

The Contract Documents, which comprise the entire AGREEMENT between OWNER and CONTRACTOR, consist of the following:

1. **This Agreement**
2. **Information for Bidders**
3. **Bid and Addenda**
4. **Performance and Payment Bonds**
5. **General Conditions**
6. **Special & Supplementary Conditions**
7. **Technical Specifications**
8. **Standard Details**
9. **Plan Sheets**

Said documents are those prepared by the City Engineering Department or its assigned representative for the specific PROJECT.

The OWNER agrees to make payment to the CONTRACTOR in accordance with the General Conditions and for the price specified in the bid for work completed as stated above as the sum to be paid.

OWNER and CONTRACTOR stipulate that delay by the CONTRACTOR in completion would have significant adverse consequences for the PROJECT; that, however, the actual damages to OWNER from such delay are uncertain and would be impossible and not susceptible to reasonable determination; and that liquidated damages of such failure by CONTRACTOR to perform in a timely manner are a reasonable way and not a penalty to address such adverse consequences. CONTRACTOR also stipulates that it shall not challenge, either directly or indirectly, this liquidated damages provision. OWNER, therefore, may require CONTRACTOR to pay liquidated damages of \$1,000 per day for the CONTRACTOR's failure to perform timely in strict accordance with the CONTRACT.

OWNER may deduct any liquidated damages from amounts due to CONTRACTOR and, otherwise OWNER shall be entitled to receive interest at the rate of 5% until deducted or paid. Liquidated damages shall be, other than for delay, in addition to any other entitlement by OWNER to damages and other remedies for any other damage, loss, or injury for which CONTRACTOR may be responsible.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions as provided in the Proposal and to make payments on account thereof as provided in the Supplement General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this contract in four (4) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

City Engineer's Initials

City Manager or Authorized Representative (Seal)

Director of Finance Initials

Approved as to Legality and Form:

City Attorney

Contractor (Seal)

Secretary

By: _____

Witness

Title

Address

Note: Secretary of the OWNER should attest. If CONTRACTOR is a corporation, Secretary should attest.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that _____

(Insert full name or legal title and address of Contractor)

as Principal, hereinafter called Contractor,

and _____

(Insert full name or legal title and address of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto _____

(Insert Name and Address of Owner)

as Oblige in the amount of: _____ dollars (\$ _____)
(Insert sum equal to contract price in both words and figures)

for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Contractor has by written agreement dated _____, 20____
entered into a Contract with Owner for:

FILLMORE STREET SEWER EXTENSION
Staunton, Virginia

in accordance with Drawings and Specifications as prepared by or for:

City of Staunton Engineering Department
116 West Beverley Street
Staunton, Virginia 24401

which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, in strict conformity with the Drawings, Specifications and Contract Documents, then this obligation shall be null and void. Otherwise, it shall remain in full force and effect for one (1) year after completion of all work:

- a. The Surety hereby waives notice of any alternation or extension of time made by the Owner.
- b. Any suit under this bond must be instituted, (1) before the expiration of one (1) year after completion of the Contract including the expiration of all warranties and guarantees, or (2) before the expiration of one (1) year after a defect or breach of warranty is discovered, if the action be for such.
- c. No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the successors or assigns of Owner and every action brought hereon shall be filed and maintained solely in the General District Court or the Circuit Court of the City of Staunton, Virginia.

SIGNED AND SEALED THIS _____ day of _____, 20____

In the presence of:

PRINCIPAL (SEAL)

WITNESS

BY TITLE

SURETY

WITNESS

BY TITLE

Surety: (Attach power of attorney)

CONTRACTOR'S PERFORMANCE BOND
Project: _____

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

that _____

(Insert full name or legal title and address of Contractor)

as Principal, hereinafter called Contractor,

and _____

(Insert full name or legal title and address of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto

(Insert full name or legal title and address of Owner)

as Oblige for the use and benefit of claimants as herein below defined in the amount of: _____
_____ (\$_____).
(Insert sum equal to contract price in both words and figures)

for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Contractor has by written agreement dated _____, 20____,
entered into a Contract with Owner for:

City of Staunton

(Fillmore Street Sewer Extension)

in accordance with Drawings and Specifications as prepared for: City of Staunton Engineering Department, 116 West Beverley Street, Staunton, Virginia 24401

(Insert full name or legal title and address)

which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Contractor shall promptly make payment to all claimants as hereinafter defined, for all labor and materials used or reasonably required for use in the performance of the Contract, then this obligation shall be void. Otherwise it shall remain in full force and effect, subject, however, to the following conditions:

- a. A Claimant is defined as one having a direct contract with the Contractor for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the Contract.
- b. The above named Contractor and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work of labor was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.
- c. Any suit or action hereunder by any claimant:
 1. Shall not be commenced after the expiration of one (1) year following the date on which the claimant last performed labor or last supplied materials.
 2. Shall be filed and maintained solely in the General District Court or the Circuit Court of the City of Staunton, Virginia.

SIGNED AND SEALED THIS _____ day of _____, 20____,
in the presence of:

PRINCIPAL (SEAL)

WITNESS

BY TITLE

SURETY (SEAL)

WITNESS

BY TITLE

Surety:
(Attach power of attorney)

CONTRACTOR'S LABOR AND MATERIAL
PAYMENT BOND
Project _____

**GENERAL CONDITIONS
CITY OF STAUNTON, VIRGINIA**

Article 1: Intent

- 1.1 The Contract Documents comprise the entire agreement between the City and Contractor concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.
- 1.2 It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning.
- 1.3 Plans and Specifications – All Work that may be called for in the Specifications and not shown on the Plans, or shown on the Plans and not called for in the Specifications, shall be executed and furnished by the Contractor as if described in both these ways; and should any work or materials be required which are not detailed in the Specifications or Plans, either directly or indirectly, but which are nevertheless necessary for the proper carrying out of the intent thereof, the Contractor is to understand the same to be implied and required, and shall perform all such work and furnish any such materials as fully as if they were particularly delineated and described. The Contractor shall keep one copy of all Plans and Specifications on the project at all times.
- 1.4 This procurement is being conducted on behalf of other public bodies, in accordance with § 2.2-4304 (A) of the Code of Virginia. If authorized by the bidder, the resultant contract may be extended to any public body in the Commonwealth of Virginia in accordance with contract terms.

Article 2: Insurance

- 2.1 The Contractor shall not commence Work under this contract until he has obtained all the insurance required under this paragraph and such insurance has been approved by the City, nor shall the Contractor allow any Subcontractor to commence Work on his subcontract until the insurance required of the Subcontractor has been so obtained and approved.

- a) The Contractor shall procure and maintain during the life of this contract Worker's Compensation Insurance as required by applicable Virginia law for all of his employees to be engaged in Work at the site of the Project under this contract and, in case of any such Work sublet, the Contractor shall require the Subcontractor similarly to provide Worker's Compensation Insurance for all of the latter's employees to be engaged in such Work unless such employees are covered by the protection afforded by the Contractor's Worker's Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this contract is not protected under the Worker's Compensation Statute, the Contractor shall provide and shall cause each Subcontractor to provide adequate employer's Liability Insurance for the protection of such of his employees as are not otherwise protected.
- b) Contractor's General Liability and Vehicle Liability Insurance: The Contractor shall procure and shall maintain during the life of the contract Contractor's General Liability Insurance and Vehicle Liability Insurance in the amounts specified in Section 2.3 below.
- c) Subcontractor's General Liability and Vehicle Liability Insurance: The Contractor shall either (1) require each of his Subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's General Liability and Vehicle Liability Insurance of the type and in the amounts specified in subparagraph (b) hereof or (2) insure the activities in his policy, specified in subparagraph (b) hereof.
- d) Fire, Extended Coverage, Vandalism, and Malicious Mischief (Completed Value Builder's Risk) Insurance: The Contractor shall purchase "All Risk" type Builder's Risk Insurance. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, water, flood, collapse, riot, aircraft, and smoke during the contract time, and until the work is accepted by the Owner. The Builder's Risk Insurance shall be for the benefit of the Owner, the Contractor, and the Subcontractors, as their interest may appear.
- e) Scope of Insurance and Special Hazards: The insurance required under subparagraphs (b) and (c) hereof shall provide adequate protection for the Contractor and his Subcontractors, respectively, against damage claims which may arise from operations under this contract, whether such operations be by the insured or by anyone directly or indirectly employed by him and, also against any of the special hazards which may be encountered in the performance of this contract.
- f) Proof of Carriage of Insurance: The Contractor shall furnish the City with certificates showing the type, amount, class of operations covered, effective dates, and date of expiration of policies.

2.2 Special Hazards – The Contractor's and his Subcontractor's Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards:

- 1) OWNER'S PROTECTIVE LIABILITY INSURANCE
- 2) CONTRACTOR'S COMPLETED OPERATIONS

All insurance coverages shall be written by companies licensed to do business in Virginia and shall be administered by a Virginia registered agent and shall list the City as an additional insured.

- 2.3 GENERAL LIABILITY, VEHICLE LIABILITY, AND WORKER'S COMPENSATION INSURANCE: The Contractor's General Liability Insurance, Vehicle Liability Insurance, and Worker's Compensation Insurance shall not be less than \$2,000,000, \$500,000, and \$500,000 respectively. BUILDERS RISK shall not be less than the contract amount.

The Contractor shall either (1) require each of his Subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's General Liability and Vehicle Liability Insurance of the type and in the same amounts as specified in the preceding paragraph, or (2) insure the activities of his Subcontractors in his own policy.

Article 3: Availability of Lands

- 3.1 City shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of Contractor. Upon reasonable written request, City shall furnish Contractor with a correct statement of record legal title and legal description of the lands upon which the Work is to be performed and City's interest therein as necessary for giving notice of or filing a mechanic's lien against such lands in accordance with applicable Laws and Regulations. City shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which Contractor will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by City, unless otherwise provided in the Contract Documents. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.
- 3.2 CONSTRUCTION IN PUBLIC RIGHTS-OF-WAY - The Contractor shall perform all his operations in a manner that will cause the minimal possible disruption to the normal vehicular and pedestrian traffic. The Contractor shall not block streets or highway to traffic without the prior consent of the City. Flagmen, lights, barricades, and construction signs shall be provided as directed by City. All barricades, signs, cones, etc. must conform to the guidelines established by the Manual of Uniform Traffic Control Devices (M.U.T.C.D.) and the Virginia Work Area Protection Manual. All flagmen must be Virginia Department of Transportation certified. Pavement, shoulders, ditches, drainage structures and all other facilities disturbed during the construction shall be restored to their original condition, at the Contractor's expense except for work specifically itemized

in the proposal. The Performance Bond shall cover all work on the City's rights-of-way and easements and the Contractor shall be responsible for the repair and maintenance of all areas disturbed within said rights-of-way and easements. No open ditches shall be permitted over night in public rights-of-way.

- 3.3 CONSTRUCTION ON PRIVATE AND PUBLIC PROPERTY - The area of the construction shall be left in the same condition as it was found. All private and public utilities pipes, wires, lines, fences, walls, walks, pavements, curb and gutter, graveled areas, driveways, drainage structures, trees, shrubs, mailboxes, guy wires, septic systems, etc., encountered during the work whether shown on the Plans or not, shall be protected from damage by the Contractor. Should any facilities be damaged, the Contractor shall repair, replace, or pay damages for same. The surface of the construction area shall be graded, stoned, paved, seeded, etc.; to fit original conditions encountered. Payment for this work shall be included in the Proposal price of the item under construction.

Article 4: Existing Utilities

- 4.1 The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to the City or by the owners of such Underground Facilities or by others, unless otherwise expressly provided in the Supplementary Conditions.
- 4.2 City shall not be responsible for the accuracy or completeness of any such information or data; and
- 4.3 The cost of all of the following will be included in the Contract Price and Contractor shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Utilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all Underground Facilities and repairing any damage thereto resulting from the Work.
- 4.4 EXISTING UTILITY LINES - The Contractor shall not disturb or damage any existing utility lines found above or below ground whether shown on the Plans or not. If during the course of the work any disturbance, or breakage should occur, the Contractor shall replace, at his own expense, the affected utility lines to the satisfaction of the City and the proper utility company. The Contractor shall bear full responsibility for any damage to life and/or property incurred as a result of such disturbance or damage to existing utility lines. Special attention should be paid to the Code of Virginia, Sections 59.1-406 - 59.1-414 - "Overhead High Voltage Line Safety Act".

Article 5: Schedule

- 5.1 SCHEDULE OF CONSTRUCTION – Commencement of construction shall begin by the date determined by the City. Prior to initiation of construction, the Contractor shall have submitted a detailed work schedule to the City and have received approval of same. The Contractor must proceed according to the approved schedule unless the changes are approved by the City.
- 5.2 Contractor shall submit to City for acceptance proposed adjustments in the progress schedule that will not change the Contract Times. Such adjustments will conform generally to the progress schedule.

Article 6: Shop Drawing, Material Data Sheets

- 6.1 Contractor shall submit Shop Drawings to City for review and approval. All submittals will be identified as City may require and in the number of copies specified. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show City the materials and equipment Contractor proposes to provide and to enable City to review the information.
- 6.2 Contractor shall also submit material Data Sheets to City for review and approval. Each submittal will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as City may require to enable City to review the submittal.
- 6.3 Before submitting each Shop Drawing or Material Data Sheet, Contractor shall have determined and verified:
 - 6.3.1 all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto,
 - 6.3.2 all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and
 - 6.3.3 all information relative to Contractor's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.
- 6.4 Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier,

the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or “or-equal” item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by City under the following circumstances:

- 6.5 “Or-Equal”: If in City’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by City as an “or-equal” item, in which case review and approval of the proposed item may, in City’s sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.
- 6.6 *Substitute Items*: If in City’s sole discretion an item of material or equipment proposed by Contractor does not qualify as an “or-equal” it will be considered a proposed substitute item. Contractor shall submit sufficient information as provided below to allow City to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall first make written application to City for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice Contractor’s achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other Contractors affected by the resulting change, all of which will be considered by City in evaluating the proposed substitute. City may require Contractor to furnish additional data about the proposed substitute.

Article 7: Contractor’s Responsibilities

- 7.1 It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and locations of the work, the conformation of the ground to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions and all other matters which in any way effect the work under this Contract. No verbal agreement or conversation

with any officer, agent or employee of the City either before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained.

- 7.2 The Contractor shall keep on the work during its progress, a competent superintendent, satisfactory to the City and any directions given to such superintendent shall be as binding as if given to the Contractor. If the Contractor, in the course of the work, finds any discrepancy between the drawings and the physical conditions of the locality or any errors or omissions in drawings or in the layout as given by Points and Instructions, it shall be his duty to immediately inform the City in writing, and the City shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.
- 7.3 Contractor shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. Contractor shall be responsible to see that the completed Work complies accurately with the Contract Documents.
- 7.4 Unless otherwise specified in the Contract Documents, Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.
- 7.5 All materials and equipment shall be good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of the City. If required Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.
- 7.6 Throughout the course of the construction, the Contractor shall maintain the project free from any conditions, which may result in danger or nuisance to the public, including but not limited to dust and street disrepair.
- 7.7 The Contractor shall be responsible for the condition of all excavations made by him. All slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.
The neglect, failure, or refusal of the City to order the use of bracing or sheeting, or a better quality, grade, or section, or larger sizes of steel or timber, or to order sheeting, bracing, struts, or shoring to be left in place, or the giving or failing to give orders or

directions as to the manner or methods of placing or driving sheeting, bracing, jacks, wales, rangers, etc., shall not in any way or to any extent relieve the Contractor of any responsibility concerning the condition of excavation or any of his obligations under the Contract; nor shall any delay, whether caused by any action or want of action on the part of the Contractor, or any acts of the City, or his agents, or employees, resulting in the keeping of an excavation open longer than would otherwise have been necessary, relieve the Contractor from the necessity of properly and adequately protecting the excavation from caving or slipping, nor from any of his obligations under the Contract relating to injury of persons or property, nor entitle him to any claim for extra compensation. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN PROPER AND SUFFICIENT SHEETING, SHORING AND BRACING TO PROTECT ALL PERSONS CONNECTED WITH THE WORK FROM INJURY.

- 7.8 Adequate sanitary conveniences for the use of persons employed on the work, properly secluded from public observation, shall be constructed and maintained by the Contractor in such a manner and at such points as shall be approved by the City. These conveniences shall be maintained at all times without nuisance and their use shall be strictly enforced; upon completion of the work they shall be removed leaving the area clean and free from nuisance.
- 7.9 The Contractor will be required to comply with the City's Erosion and Sediment Control Ordinance. Special care shall be taken to prevent siltation of existing sewer, streets, drainage ditches, and private property.
- 7.10 Contractor shall obtain and pay for all construction permits and licenses. City shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening Bids, or, if there are no Bids, on the Effective Date of the Agreement.
- 7.11 The Contractor shall provide all field engineering services necessary for laying out the Project. All such services shall be performed by a Professional Surveyor registered with the State of Virginia. Control points shall be established and maintained during the execution of the Project. All documentation and control points shall be made available to the City throughout the execution of the Project.
- 7.12 The Contractor shall provide at their cost an independent testing service, approved by the City, to perform all testing required by the Contract Documents. Written reports shall be provided to the City.
- 7.13 The Contractor shall provide "as built" plans within 30 days of project completion. Such plans shall be prepared by a Licensed Surveyor and shall show such items as final elevations, grades, structure locations, etc.

- 7.14 Representatives of the City, as well as representatives of Local, State and Federal agencies and parties having an interest in the project shall have access to the work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and review.
- 7.15 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 and 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 \$10,000.00, so that such provisions will be binding upon each Subcontractor or vendor.
- 7.16 Contractor certifies that it does not and will not during the performance of this Contract violate (i) the provisions of the Federal Immigration Reform and Control Act of 1986, as amended and §40.1-11.1, Code of Virginia, which prohibits the employment of illegal aliens and (ii) the provisions of Federal and State employment and wage hour laws. The Contractor shall include and enforce the language in the last sentence in every subcontract issued under this Contract and shall require the subcontractor to do the same.

Article 8: Subcontracts

- 8.1 Contractor shall not employ any Subcontractor, Supplier or other person or organization whether initially or as a substitute, against whom City may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom Contractor has reasonable objection.
- 8.2 Contractor shall be fully responsible to City for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between City and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of the City to pay or to see the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

- 8.3 Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor. Contractor shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the City through Contractor.
- 8.4 The Contractor shall, as directed by the Owner, remove from all public and private property, at his own expense, all temporary structures, rubbish and waste materials, resulting from his operations; and shall leave the site in a neat, orderly condition.

Article 9: Owner's Responsibility

- 9.1 The Owner through his designated representatives shall have general supervision and direction of the work. He has the authority to stop the work whenever such stoppage may be necessary to ensure the proper execution of the Contract. He shall also have authority to reject all work and materials which do not conform to the Contract, to direct the application of forces to any portion of the work as in his judgment is required, to order the force increased or diminished and to decide questions which arise in the execution of the work.
- 9.2 Wherever work being done by the City's forces or by other Contractors is contiguous to work covered by this Contract the respective rights of the various interests involved shall be established by the City to secure the completion of the various portions of the work in general harmony.
- 9.3 If the Contractor should neglect to execute the work properly or fail to perform any provision of this Contract, the City after three days written notice to the Contractor, may without prejudice to any other remedy make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.
- 9.4 City shall promptly furnish the data required under the Contract Documents and shall make payments to Contractor promptly when they are due.
- 9.5 City shall provide inspection of the Contractors Work.
- 9.6 The City shall have the right at any time, for reasons which appear good to them, to annul this Contract upon giving written notice to the Contractor, in which event the Contractor shall be entitled to the full amount of the estimate for the work done by him under this Contract up to the time of such annulment, including the retained percentage. The Contractor shall be reimbursed by the City for such expenditures that are not otherwise compensated for, and as are required in preparing for and moving to and from the work; the intent being that an equitable settlement shall be made with the Contractor.

Article 10: Changes in Work

- 10.1 Without invalidating the Agreement and without notice to any surety, City may, at any time or from time to time, order additions, deletions or revisions in the work. Any additions, deletions or revisions will be authorized by a Change Order. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents.
- 10.2 Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented.
- 10.3 City and Contractor shall execute appropriate Change Orders covering:
 - 10.3.1 changes in the Work which are ordered by City;
 - 10.3.2 changes in the Contract Price or Contract Times which are agreed to by the parties; and
 - 10.3.3 Changes in the Contract Price or Contract Times, which embody the substance of any written decision, rendered by City.

Article 11: Changes in Contract Price

- 11.1 The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change in Contract Price.
- 11.2 The Contract Price may only be changed by a Change Order. Any claim for an adjustment in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to City promptly after the start of the occurrence or event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within 20 days after the start of such occurrence or event and shall be accompanied by claimant's written statement that the adjustment claimed covers all known amounts to which the claimant is entitled as a result of said occurrence or event. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.
- 11.3 The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows:

11.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved.

11.3.2 Where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum.

Article 12: Changes in Contract Times

12.1 The Contract Times may only be changed by a Change Order except for inclement weather days as determined by the City. Such inclement weather days shall be maintained by the City and added to the number of days permitted for completion of the Project. Any claim for an adjustment of the Contract Times shall be based on written notice delivered by the party making the claim to the other party and to City promptly after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within 20 days after such occurrence and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Times shall be determined by City. No claim for an adjustment in the Contract Times will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2 Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a claim is made therefor as provided in paragraph 12.1. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by City, acts or neglect of utility owners, fires, floods, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within control of Contractor.

12.3 Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of both City and Contractor, an extension of the Contract Times in an amount equal to the time lost due to such delay shall be Contractor's sole and exclusive remedy for such delay. In no event shall City be liable to Contractor, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of Contractor, or (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners.

Article 13: Indemnification

- 13.1 The Contractor agrees to indemnify, defend and hold harmless the City, its members of Council, officers, directors, agent and employees, against any and all claims, liabilities, losses, damages, costs and expenses (including reasonable attorney fees) arising out of, or resulting from any and all injuries to persons or damage to property arising out of services performed hereunder or by reason of the intentional or negligence acts or omissions of the Contractor, its employees, agents or sub-consultants, including any independent contractors.

Article 14: SEPARATE CONTRACTS

- 14.1 The City reserves the right to let other contracts in connection with this work. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs.

Article 15: Payment

- 15.1 5% of the dollar amount of the estimate of work completed shall be withheld until the final acceptance of the project. Payment shall be made based on estimates of work completed in the preceding month submitted on, or before the 5th day of the month for the duration of the contract. Application for partial payments shall be submitted on Standard City form.
- 15.2 Material stored on site shall be paid for based on supplier invoice only.
- 15.3 Failure by the City to make payments at the time provided by this Contract shall give the Contractor the right to suspend work until payment is made, or, at his option, after thirty days written notice, should the City continue to default; to terminate this Contract and recover the price of all work done and materials provided and all damages sustained; and such failure to make payment at the time provided shall be a bar to any claim by the City against the Contractor for delay in completion of the work, due to such suspension or failure to pay.
- 15.4 Payments to Subcontractors: The Contractor shall take one of two actions within seven days after receipt of payment by the City.
- a) Pay the Subcontractor for the proportionate share of the total payment received from the City attributable to the work performed by the Subcontractor under that contract; or
 - b) Notify the City and Subcontractor, in writing, of his intention to withhold all or a part of the Subcontractor's payment with the reason for nonpayment.

The Contractor shall pay interest to any Subcontractor on all amounts owed by the Contractor that remain unpaid after seven days following receipt by the Contractor of payment by the City for work performed by the Subcontractor. Interest shall accrue at the rate of 1 percent per month.

- 15.5 Upon the completion of the work and its final acceptance by the City, the Contractor shall submit his final estimate over his signature, covering work provided for in this Contract, completed and accepted by the City under the terms and condition hereof, whereupon the balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor within 30 days of receipt of the final estimate by the City, provided that, before the payment of said final estimate the Contractor shall submit evidence satisfactory to the City that all payrolls, material bills and outstanding indebtedness in connection with the work have been paid and that the Maintenance Bond has been posted. The payment of the final estimate due under this Contract and any and all alterations of same, shall release the City and the officers and agents thereof, from any and all claims or liabilities on account of the work performed and materials furnished under this Contract or any alterations thereof.

Article 16: Discrimination

- 16.1 During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin, age, disability, or other basis prohibited by state law relating to discrimination in employment, except where there 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 applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

(b) 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.

(c) Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

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

Article 17: Claim Process

The OWNER and CONTRACTOR each hereby waive all right to trial by jury in any matter arising out of or in any way connected with this CONTRACT or their relationship, whether contractual or extra-contractual. They agree that prior to the assertion of any claim against the other, they will endeavor to resolve the claim through discussion, including the optional use of non-binding mediation. Absent agreed resolution, the process to assert a claim against the City is to present it in writing to the Appropriate City Department Director; and absent acceptance of the decision of the Director of Public Works, then appeal in turn to the City Manager or designee and ultimately to Council, with each such appeal to be submitted in writing within 10 calendar days of prior decision, identifying in writing on what specific basis, with citation to controlling and supporting documentation and legal authority, the appeal is sought and challenge made to the prior decision and the resolution or remedy which would be acceptable. With any claim that reaches City Council, the City Council shall decide the claim within 60 days of when it was submitted to the City Manager or designee.

SPECIAL & SUPPLEMENTARY CONDITIONS

These Special & Supplementary Conditions amend and/or supplement the General Conditions & Technical Specifications and other provisions of the Contract Documents as indicated. All provisions which are not so amended or supplemented remain in full force and effect.

- Sections 107.5.1 and 107.5.2 of the Technical Specifications are deleted and replaced by the following

107.5.1

Sewer Line – Pipe measurement shall be parallel to the pipe including the lengths occupied by appurtenances. The bid price is to include all excavation, bedding, and backfill as shown on the plans or standard drawings. The bid price shall also include reconnection of all existing sewer laterals using appropriately sized inline wyes. Payment shall be per linear foot for the size and type specified. When indicated on the Bid Schedule, payment will be per linear foot for the size and type specified.

107.5.2

Service Line – Pipe measurement shall be parallel to the pipe including the length occupied by appurtenances. The bid price is to include excavation, bedding, backfill, saddles, sleeves, and other appurtenances necessary for a complete service connection. The price shall also include any intermediate bends and cleanouts as well as a cleanout and fernco coupling to reconnect the private lateral at the property line. 4 inch cleanouts shall be installed for 4 inch service lines. For 6 inch and larger service lines a 6 inch cleanout shall be installed.

107.5.3

Service Connection – Shall not be applicable to this project. This is covered under Section 107.5.2.

- Section 111.4 and others as may apply of the Technical Specifications are revised. There will be no separate payment for any restoration items such as sidewalk, crosswalk, etc. Associated costs shall be included in related Bid Items.

SECTION 101 - MOBILIZATION

101.1 GENERAL

Work shall consist of performing preparatory operations, moving personnel and equipment to the job site, paying bonds and insurance premiums and establishing a Contractors field office.

101.2 MEASUREMENT & PAYMENT

When listed as a separate pay item, mobilization will be paid for at the rate of 50% with the first month's request for payment and 50% with the second month's request for payment. The mobilization bid shall not exceed 10% on projects with a value less than \$200,000 and 7.5% on projects over \$200,000. If mobilization is not listed as a separate pay item, it will be considered incidental to all other work and the cost distributed accordingly.

SECTION 102 - TRAFFIC CONTROL

102.1 GENERAL

All traffic control devices and traffic patterns shall conform to the standards in the Manual of Uniform Traffic Control Devices (MUTCD) and the Virginia Work Area Protection Manual unless shown otherwise on the plans.

102.1.1 Referenced Specifications are referred to by abbreviation as follows:

- A. Manual of Uniform Traffic Control Devices (MUTCD)
- B. Virginia Department of Transportation (VDOT)
- C. Virginia Work Area Protection Manual (VWAPM)

102.1.2 The contractor is responsible for providing the required signage and cones.

102.1.3 All signage and traffic control shall be subject to the City's approval. No rerouting of traffic or street closings will be done without prior approval from the City.

102.1.4 All traffic cones are to be 36" tall and clean.

102.1.5 When left unattended, any work zone adjacent to a City street shall have lighted barricades every 30'. No open excavations will be permitted overnight in a City right-of-way.

102.1.6 Rerouting of traffic shall be delineated with traffic cones.

102.1.7 Flagmen must be used when stopping traffic and for equipment entering and exiting a work zone.

102.1.8 All flagmen shall be certified by VDOT and be in possession of a valid flagging card.

102.2 MEASUREMENT AND PAYMENT

When listed as a separate bid item, Traffic Control will be paid for as a lump sum item. Payment will be made as a percentage of the associated items that are completed. When there is not a separate bid item for Traffic Control, it will be considered incidental to all other work and the cost distributed accordingly.

SECTION 103 - SITE CLEARING

103.1 GENERAL

This section provides for general site clearing operations, including trees and vegetation removal, protection of existing trees to be left standing, and clearing and grubbing.

103.1.1 Related requirements specified in other Sections of the Specifications.

A. Section 104 - Trenching & Backfilling

B. Section 106 - Seeding

103.1.2 Provide barricades, coverings, or other types of protection necessary to prevent damage to existing improvements not indicated to be removed, and improvements on adjoining properties.

103.1.3 Protect existing trees and other vegetation indicated to remain in place against cutting, breaking, or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary fences, barricades or guards as required to protect trees and vegetation to be left standing.

103.1.4 Burning where allowed by local ordinances will be allowed by permit only.

103.2 EXECUTION

103.2.1 Clearing

A. Remove from the site trees, brush, shrubs, down timber, rotten wood, rubbish, other vegetation, including stumps, as well as fences, and incidental structures necessary to allow for new construction.

B. Clearing work shall be restricted to area within rights-of-way or easements or within "Construction Limits" indicated on Drawings.

103.2.2 Existing Trees and Shrubs

A. Trees and shrubs that are to remain within "Construction Limits" shall be marked by the owner prior to clearing operations.

- B. Ownership of Trees: Unless otherwise noted, felled trees within the "Construction Limits" shall become the property of the Contractor and shall be removed from the site.
- C. Use only hand methods for grubblings inside the drip lines of trees which are to remain.

103.2.4 Clean up debris resulting from site clearing operations continuously with the progress of the work.

103.2.5 Remove all waste material from site.

103.2.6 Remove debris from site in such a manner as to prevent spillage. Keep pavement and area adjacent to site clean and free from mud, dirt and debris at all times.

103.3 MEASUREMENT AND PAYMENT

When listed as a separate bid item, Site Clearing shall be paid for as a lump sum. When not listed as a separate bid item, Site Clearing shall be considered incidental to associated work items.

SECTION 104 - TRENCHING & BACKFILLING FOR UTILITY LINES

104.1 GENERAL

Work included in this Section includes trenching and backfilling for underground pipelines and related structures only.

104.1.1 Related requirements specified in other Sections of the Specifications.

- A. Section 102 - Traffic Control
- B. Section 103 - Site Clearing
- C. Section 105 - Rock Excavation
- D. Section 106 - Seeding
- E. Section 107 - Sanitary Sewer System
- F. Section 108 – Storm Drainage System
- G. Section 109 - Water Distribution System

104.1.2 Reference Specifications are referred to by abbreviation as follows:

- A. American Society for Testing and Materials - ASTM
- B. American Assoc. of State Highway and Transportation Officials - AASHTO
- C. Virginia Department of Transportation - VDOT

104.1.3 The Contractor shall provide compaction testing as deemed necessary by the City.

104.1.4 Locate existing utilities, culverts and structures, above and/or below ground, before any excavation starts. Coordinate work with utility companies. Protect, maintain in service, and prevent damage to utilities not designated to be removed. When utilities are encountered and are not shown on Drawings or when locations differ from those shown on Drawings, notify Engineer for instructions before proceeding.

104.2 PRODUCTS

104.2.1 Pipe Bedding Fill

Granular fill shall meet requirements for VDOT #68 or #57 aggregate.

104.2.2 Select Backfill

- A. Aggregate fill shall be VDOT #21A.
- B. Clean earth fill shall be approved material free of debris, roots, frozen materials, organic matter, rock or gravel larger than 2 inches in any dimension or other harmful matter.
- C. Flowable Fill shall conform to VDOT Road and Bridge Standards and VDOT Special Provision for Flowable Fill

104.2.3 Concrete for bedding, backfill or encasement shall have at least 2,000 psi compressive strength.

104.2.4 Rip rap, where shown on the Drawings shall conform to VDOT Road and Bridge Specifications.

104.3 EXECUTION

104.3.1 Strip existing topsoil, leaf mold and organic materials, meeting topsoil requirements of Section 106 - "Seeding." Deposit in storage piles separate from other excavated material.

104.3.2 Unauthorized excavation consists of the removal of material beyond indicated subgrade elevations or side dimensions without specific approval of the City Engineer. Where unauthorized excavations occur, restore these areas to the elevations and dimensions shown on the Drawings with granular fill.

104.3.3 Where removal of unsatisfactory material is due to fault or negligence of the Contractor, by inadequate shoring or bracing, dewatering, material storage or other failure to meet specified requirements, any work deemed necessary by the City Engineer to correct the faulty condition shall be performed at no additional cost.

104.3.4 Excavation and Bedding

- A. Open trenches are limited to 100'.
- B. The width of the trench at and below the top of the pipe shall be the outside diameter of the pipe plus 24 inches.

- C. The trench width shall be of adequate width to allow for a mechanical compactor between the pipe and the trench wall.
- D. Pressure lines shall be installed with bedding as indicated in the Standard Drawings.
- E. Gravity sewer lines in good material shall be installed with a modified class B bedding as shown on standard drawing S-8.
- F. Dewater excavation as necessary to provide proper protection. If deemed necessary, the Engineer may require continuous dewatering 24 hours per day by adequate pumping or well-points until backfilling is completed. The method, and equipment used for dewatering shall be subject to the approval of the Engineer.
- G. Where unsuitable soil is encountered, excavate to depth determined by the City Engineer and replace with suitable material approved by the City Engineer.
- H. Where underground streams or springs are found, provide temporary drainage and notify City Engineer.
- I. Remove from the project site and dispose of material unsatisfactory for backfill, trash, and all excess material continuously with the progress of the work.
- J. Remove shoring and all form materials, unless otherwise directed.
- K. Where rock is encountered which will serve as a foundation for a manhole, vault, or other structure, it shall not be removed. Where only a part of the foundation would bear on rock, excavate to an even depth of 8 inches below the entire structure and backfill with aggregate fill and thoroughly compact. Provide a minimum of 8 inches between rock excavation and sides of structures.
- L. Compact pipe bedding by mechanical tamping to prevent settlement.

104.3.5 SHEETING

- A. Maintain trench walls in a safe condition at all times. The City Engineer reserves the right to require the use of sheeting and/or shoring at any time the Engineer deems it necessary.
- B. Sheeting and shoring left in place shall be cut off to a depth of not less than 18 inches below finish grade.

104.3.6 COMPACTION

Percentage of maximum density requirements:

Compact each layer of fill or backfill to not less than the following percentages of the maximum density at optimum moisture content as determined by ASTM D 698 (AASHTO T-99):

- A. 100 percent beneath and within 25 feet of buildings and structures, including those shown for future construction.
- B. 95 percent beneath pavements, walks, and road shoulders, including those shown for future construction.
- C. 90 percent in other unpaved areas.

104.3.7 BACKFILL

- A. Backfill trench to a compacted depth of 1 foot over the pipe with approved earth fill. Backfill shall be properly placed uniformly on each side of the pipe and compacted as required. Do not backfill on muddy or frozen soil, or with muddy or frozen soil.
- B. Backfill over any plastic or PVC pipe to 1' over the top of the pipe with VDOT #68 or #58 aggregate.
- C. Backfill trench from 1 foot above the pipe to grade with clean earth fill free of stones larger than 6 inches or 1/2 the layer thickness, whichever is smaller. Layers shall not exceed 12 inches, except that under road shoulders and under existing or future paved areas, layers shall not exceed 8 inches. Backfill shall be compacted to the density specified for the areas in which it is located except that minimum compaction in any area shall be to the density of the adjacent soil. Compaction shall be achieved by vibratory mechanical tamping.
- D. When specified the trench shall be backfilled full depth with VDOT 21A aggregate.
- E. When specified the trench shall be backfilled from 6" above the pipe to the bottom of the pavement repair detail with VDOT Flowable Fill.
- F. Excavation depressions caused by removal of stumps or other clearing operations to firm subgrade shall be filled with clean earth fill and compacted as specified.

- G. Place backfill materials adjacent to structures evenly. Take care to prevent wedging action of the backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each lift.
- H. Compact backfill materials using equipment suitable for the materials being compacted and the work area locations. Use power-driven hand tampers for compacting materials adjacent to structures.
- I. Compact aggregate fill placed under manholes or other structures to required density.

104.3.8 GRADING

- A. Uniformly grade all areas within the limits designated on the Drawings, including adjacent transition areas.
- B. Finish all surfaces to be free from irregular changes.
- C. Finish subgrade areas to receive topsoil to within 0.10 foot of required subgrade elevations.
- D. Shape subgrade under walks to line, grade, and cross-section to within 0.10 foot of required subgrade elevations.
- E. Shape subgrade under pavement to line, grade, and cross-section to required subgrade elevations.
- F. Protect newly graded areas from traffic and erosion. Repair and reestablish grade in settled, eroded, or rutted areas to the specified tolerances.
- G. Where compacted areas are disturbed by subsequent construction or adverse weather scarify the surface, reshape and compact to the required density. Use hand tamper for recompaction over underground utilities.

104.3.9 UTILITIES TO BE ABANDONED OR REMOVED

- A. When underground utilities are to be abandoned in place, plug, cap or seal with concrete at the "construction limits" or at points shown.

- B. Remove underground utilities indicated on the Drawings to be removed and backfill resulting excavation with suitable material compacted as specified. Plug, cap or seal utilities with concrete, at the construction limits or at points shown.

104.3.10 CLEAN UP

- A. Keep areas of work cleaned up at all times, and promptly remove all materials and debris not intended for incorporation in the work. Broom clean the surfaces of all paved areas immediately after backfilling operations.
- B. Maintain backfilled trenches from the nuisance of dust, mud or settling during the entire length of the Contract and for a period of one-year following Final Acceptance of the Work.
- C. In the event the Contractor fails to satisfy these requirements to the satisfaction of the City, or otherwise prosecute the Work in a reasonable or proper manner, and after a reasonable period of time has elapsed after notification by the City of unsatisfactory conditions, the City reserves the right to employ outside services to take such corrective action as deemed necessary by the City Engineer. The cost incurred in taking corrective actions will be deducted from any monies due the Contractor by the City or such other means of collection as may be available to the City.

104.3.11 PREPARATION FOR FINAL INSPECTION

Locate and adjust all manholes, valve boxes, etc. to final grade and flush out all gravity pipelines as necessary prior to final inspection by the City Engineer.

104.4 MEASUREMENT AND PAYMENT

- A. Excavation - Excavation for utility work is incidental to all other work. No separate payment is made.
- B. Rip Rap - When specified as a separate bid item, rip rap will be paid for by the ton or square yard for the Class specified.
- C. Backfill - When there is not enough suitable backfill material on site, VDOT 21A Aggregate shall be used and paid for by the ton. Otherwise there is no separate payment for backfill.

- D. Full Stone Backfill - When specified as a separate bid item, the entire trench depth will be backfilled with VDOT 21A Aggregate. Payment will be for the linear footage of trench backfilled with stone.
- E. Bedding Stone - The specified pipe bedding stone shall be incidental to the cost of the pipe.
- F. Trench Stabilization- Shall be #1 or #3 aggregate (as directed by the City Engineer) used to replace over excavation of unsuitable material below the typical bedding line. Placement shall be as directed by the City Engineer. Payment shall be by the TON and shall include the cost of removal and disposal of the unsuitable material.
- G. Flowable Fill Backfill - When specified as a separate bid item, the trench shall be backfilled from 6" above the pipe to the bottom of the pavement repair detail with VDOT Flowable Fill. Payment will be for the linear footage of trench backfilled with Flowable Fill.

SECTION 105 - ROCK EXCAVATION

105.1 DESCRIPTION OF WORK

105.1.1 Furnish all labor, material and equipment to excavate rock and dispose of rock as specified herein.

105.2 REQUIREMENTS OF REGULATORY AGENCIES

105.2.1 Observe all municipal ordinances and State and Federal laws relating to the transportation, storage, handling and use of explosives.

105.2.2 Blasters shall be duly licensed and shall have their license on the work site at all time during blasting activities.

105.3 DEFINITION

105.3.1 The word "rock," wherever used as the name of an excavated material or material to be excavated, shall mean solid ledge rock which, in the opinion of the City Engineer, requires, for its removal, drilling and blasting or mechanical hammer.

105.3.2 No soft or disintegrated ledge rock, no loose, shattered, or broken stone, regardless of size, in rock fills or elsewhere; no frozen earth or existing paving; and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation, will be measured or allowed for payment as rock excavation.

105.4 EXECUTION

105.4.1 Excavate rock to the lines and grades indicated on the drawings and as specified in 105.6 - Measurement and Payment. Dispose of excavated material not suitable for backfill in a location approved by the Owner.

105.4.2 Excavate rock in trenches to 6-inches below the bottom of the pipe to be installed.

105.4.3 Excavate rock in structure excavations to 6" below the bottom of the foundation.

105.4.4 Conduct operations involving explosives by experienced personnel only, with all possible care to avoid injury to persons and damage to property.

105.4.5 Blast only with such quantities and strengths of explosives and in such manner as to break the rock approximately to the intended lines and grades.

105.4.6 Care shall be taken to avoid excessive cracking of the rock upon or against which any pipe or structure will be built, and to prevent damage to existing pipes or other structures and property above or below ground.

- 105.4.7 Cover rock with blasting mats where required.
- 105.4.8 Give sufficient warning to all persons in the vicinity of the work before a charge is detonated. Employ flagmen to stop or direct traffic as required.
- 105.4.9 When required by the City, the contractor shall have a seismograph on site to monitor vibration.
- 105.5 EXCESS ROCK EXCAVATION
- 105.5.1 If rock is excavated beyond the limits of excavation indicated on the drawing, specifications, or not authorized in writing by the Engineer, the excess excavation, whether resulting from over breakage or other causes, shall be backfilled, by and at the expense of the Contractor, as specified below.
- 105.5.2 In pipe trenches, excess excavation below 6" from the bottom of the pipe shall be filled with material of the same type, placement and compaction as specified for the bedding.
- 105.5.3 In excavations for structures, excess excavation in the rock beneath foundations shall be filled with 3,000 psi concrete. Other excess excavation shall be filled with earth.
- 105.5.4 If rock below normal depth is shattered due to drilling or blasting operations and such shattered rock is unfit for foundations, the shattered rock shall be removed and the excavation shall be backfilled as described in "EXCESS ROCK EXCAVATION." All such removal and backfilling shall be classified as excess rock excavation.
- 105.5.5 Keep and submit to the Engineer an accurate record of each blast. The record shall show the general location of the blast, the depth and number of drill holes, the kind and quantity of explosive used, and other data required for a complete record.
- 105.6 MEASUREMENT AND PAYMENT
- 105.6.1 The contractor shall notify the owner when rock measurements can be performed. If backfill commences before measurement is made, the contractor will not be paid for that portion of the rock removed. Maximum measurement for rock excavation in pipe trenches shall be to six (6) inches below bottom of pipe with the width of trench at 2' 0" plus the interior diameter of pipe, regardless of the excess width excavated. Maximum measurement for precast and cast-in-place structures shall be structure width plus four (4) feet; structure length plus four (4) feet; and base of structure. Payment shall be the price bid per cubic yard and is to include aggregate fill to bring the ditch to plan grade.

SECTION 106 - SEEDING

106.1 GENERAL

106.1.1 Related requirements specified in other Sections of the Specifications:

Section 104 - Trenching & Backfilling

106.1.2 Reference Specifications are referred to by abbreviation as follows:

American Society for Testing and Materials - ASTM
Virginia Department of Transportation - VDOT

106.1.3 Submit two copies of the following:

- A. Seed Test Report
- B. Fertilizer Analysis

106.1.4 Materials shall be delivered in unbroken containers, clearly marked by the manufacturer as to contents. Seed, lime, and fertilizer shall be labeled as to proportions, analysis and quality. Store all materials in a manner affording protection from damage by weather or vandalism.

106.1.5 Seed only when wind velocity is less than 15 miles per hour.

106.2 PRODUCTS

106.2.1 Topsoil shall be the top 4 inches or original soil from the site, unless otherwise noted on the Drawings. Topsoil obtained off-site shall be fertile, friable loam or silt, containing not less than 2 pct., by weight, of finely divided, decomposed vegetable matter. Topsoil shall be free of subsoil, clay lumps, brush, weeds, roots larger than 1/2 inch diameter, stones larger than 1/2 inch diameter and other material toxic or harmful to growth.

106.2.2 Fertilizer shall be 5-10-5 applied at 1000 pounds per acre.

106.2.3 Seed mixture shall be 40% lawn fescue, 40% lawn bluegrass, 10% annual rye grass and 10% white Dutch clover applied at 5 pounds per 1000 square feet unless otherwise specified.

106.2.4 Lime shall be ground agricultural grade lime containing not less than 85 pct. calcium and magnesium carbonates. Fineness shall be such that 100 pct. will pass a No. 20 sieve, not less than 50 pct. will pass a No. 100 sieve. Burnt lime or hydrated lime may be substituted in equivalent carbonates, if requested.

106.2.5 Mulch shall be clean, seed free, loose, unweathered, unchopped small grain straw. Spray mulch of an approved wood cellulose fiber material that is in accordance with the Virginia Department of Transportation (VDOT) specifications shall be accepted.

106.2.6 Sod shall be composed of at least 70 pct. of Kentucky 31 tall fescue and be cut to provide a minimum thickness of 2 inches. Vegetation more than 5 inches in height shall be cut to 3 inches or less before sod is lifted.

106.3 EXECUTION

106.3.1 Prepare soil for permanent seeding by tilling of topsoil in place to loosen thoroughly and break up all clods to a depth of 6 inches. Remove all stumps and roots, coarse vegetation, stones larger than 1-1/2 inches and all construction debris. Soil shall be worked by suitable agricultural equipment to a depth of not less than 4 inches. Rake to a uniform, smooth and drainable surface.

Apply lime and fertilizer uniformly and mix well into top 4 inches of seed bed. Apply lime at the rate of 100 lbs. per 1000 sq. ft. Apply fertilizer at the rate of 50 lbs. of 5-10-5 per 1000 sq. ft.

106.3.2 Sow permanent grass seed between dates of March 15 and May 31 or August 15 and October 31st unless otherwise approved. Temporary seeding and/or mulching is required at all other times.

106.3.3 Sow seed by mechanical seeder as follows:

- A. Mix seed thoroughly with clean dry sawdust and broadcast at rate of 5 lbs. of seed per 1000 sq. ft. in cross directions to ensure uniform distribution. Rake surface lightly and roll with appropriate type of lawn roller weighing maximum of 150 lbs. per foot of width.
- B. Protect the complete seeded area against erosion by mulching with straw at a rate of one (1) bale per 1000 square feet or by spray mulching with a wood cellulose fiber material applied by hydro-jet method at a rate of 35 pounds (dry weight) per 1000 square feet, in accordance with the VDOT Standard method.
- C. Anchor mulch by the following methods.
 - (1) In residential areas, apply synthetic mulch binder at rate recommended by manufacturer.
 - (2) On slopes steeper than 4 horizontal to 1 vertical, fasten heavy jute mesh to wooden stakes.

106.3.4 Remove all soiling or staining of finished walks, drives and parking areas resulting from seeding work. Maintain paved areas in clean condition.

106.3.5 Turfgrass Maintenance

- A. Water as required to keep soil moist during germination period.
- B. Mowing
 - (1) When grass reaches height of 3-1/2 to 4 inches, mow to height to 2-1/2 inches.
 - (2) Maintain grass height between 2-1/2 and 4 inches.
 - (3) Do not remove more than 33 pct. of total height of grass in one mowing.
- C. Reseed and mulch spots larger than 1 square foot without uniform stand of grass.
- D. Mow and maintain all seeded areas until uniform stand of grass is acceptable to Engineer.
- E. In the event that growth is not established by final project inspection, continue the specified attention until stand is accepted by Engineer.
- F. Correct or repair all undue settling as evidence by complaints received within one year after final inspection.

106.4 HYDROSEEDING

- A. The Contractor may elect the use of approved hydraulic seeder (s) for the application of seed and mulch.
- B. Hydraulic applications shall not begin until the topsoil preparation and the lime application has been completed, as specified herein. The method shall be in accordance with VDOT specifications.
- C. Hydraulic Seeder(s) shall be equipped with an agitation system capable of maintaining all mixture solids in complete suspension and shall be equipped with spray nozzles that produce an even distribution.
- D. Wood Fiber Mulch shall consist of specially prepared wood cellulose fibers. Mulch shall not contain growth or germination inhibiting factors. Mulch shall be dyed an appropriate color to facilitate visual detection during application.

E. Slurry mix for hydro seeding shall supply the following rates per acre:

Kentucky 31 Tall Fescue (100%) or,	32 pounds
Kentucky 31 Tall Fescue (67%) and,	21.5 pounds
Red Creeping Fescue (33%)	10.5 pounds
Fertilizer 10-20-10	1,000 pounds
Wood Fiber Mulch, or	1,500 pounds
Straw tacked with,	3,000 pounds
Wood Fiber	750 pounds

106.5 INSPECTION AND ACCEPTANCE

106.5.1 At the beginning of the next planting season after that in which the permanent grass crop is sown, the seeded areas will be inspected. Any section not showing dense, vigorous growth at that time shall be promptly reseeded by the Contractor at his own expense. The lawns shall be watered, weeded, cut and otherwise maintained until the end of that planting season, when they will be accepted.

106.6 MEASUREMENT AND PAYMENT

106.6.1 Topsoil and Seeding. Measurement and payment shall be per acre or lump sum as listed on the Bid Schedule. When there is no topsoil and seeding bid item the work is considered incidental to other associated work items.

106.6.2 Sod – when specified sod shall be paid for by square foot.

106.6.3 Maintenance – There shall be no separate payment for maintenance of seeded or sodded areas.

SECTION 107 - SANITARY SEWER SYSTEM

107.1 General

Work included in this Section consists of all gravity sanitary sewers, force mains, manholes, valves, air vents and all related equipment or material as indicated on the construction plans.

107.1.1 Related requirements specified in other Sections of the Specifications:

- A. Section 103 - Site Clearing
- B. Section 104 - Trenching & Backfilling
- C. Section 105 - Rock Excavation
- D. Section 106 - Seeding
- E. Section 109 - Water Distribution System

107.1.2 Reference Specifications are referred to by abbreviation as follows:

- A. American National Standards Institute - ANSI
- B. American Society for Testing and Materials - ASTM
- C. American Water Works Association - AWWA
- D. American Railway Engineering Association - AREA

107.2 Products

- A. Submit shop drawings on all products as required by City.
- B. Provide certified test results of pipe testing.

107.2.1 Nonreinforced concrete pipe, fittings and specials in sizes 6 in. through 10 in. shall meet requirements of ASTM C14 Class 2. Pipe ends shall have o-ring gasket groove provided during manufacturing process.

- A. Rubber gaskets and joints of concrete pipe shall meet requirements of ASTM C361.
- B. Pipe and joints shall be tested in accordance with Section 9 of ASTM C14 and ASTM C443 with test reports submitted to the Engineers.

- 107.2.2 Reinforced concrete pipe in sizes 12 in. and larger shall meet requirements of ASTM C76 for the class shown on the Drawings. Pipe end shall have o-ring gasket groove provided during manufacturing process.
- A. Rubber gaskets and joints of concrete pipe shall meet requirements of ASTM C361.
 - B. Pipe and joints shall be tested in accordance with Section 9 of ASTM C14 and ASTM C443 with test reports submitted to the Engineers.
- 107.2.3 Polyvinylchloride (PVC) nonpressure pipe and fittings shall meet requirements of ASTM D3034 type SDR-35 for 4" - 15" diameter pipe with elastometric gasket joints. PVC Pipe 18" and larger must have prior approval from the City. All PVC pipe shall have a smooth interior and exterior wall. Fittings and saddles shall be by the same manufacturer of the pipe.
- 107.2.4 Conduits of non-ferrous material buried underground shall have a detectable tracer buried in the trench approximately 18 inches above the conduit, but no less than 24 inches below grade. Detectable tape shall have a metallic core, 14 gage or larger, protected by a plastic jacket. The tape shall be continuously marked indicating that a sewer line is buried beneath the tape. Copper wire, 14 gage or larger.
- 107.2.5 Ductile iron pipe shall meet requirement of AWWA C151 for the pressure and thickness classes shown on the Drawings. Pipe shall have cement-mortar lining and a bituminous seal coat. Thickness shall meet requirements of AWWA C150.
- 107.2.6 Cast iron and ductile iron fittings shall meet requirements of AWWA C110 or AWWA C153 for the pressure ratings indicated on Drawings. Fittings shall have cement-mortar lining and a bituminous seal coat.
- 107.2.7 Mechanical joints and jointing materials shall meet requirements of AWWA C111.
- A. Mechanical joint retainer glands shall meet requirements of AWWA C111. Retainer gland shall be fitted with set screws.
 - B. Metal harness shall be galvanized rods and clamps as detailed on Drawings.
- 107.2.8 Push-on joint and rubber gasket shall meet requirements of AWWA C111.
- 107.2.9 Flanged joints for ductile iron pipe shall meet requirements of ANSI B16.1.

- 107.2.10 Flanged joint gaskets shall be full face, made of 1/16 in. thick rubber, and shall meet requirements of ANSI B16.21.
- 107.2.11 Cement mortar lining with bituminous seal coat for cast iron pipe and fittings or ductile iron pipe shall meet requirements of AWWA C104. Cement mortar lining shall be standard thickness.
- 107.2.12 Exterior, bituminous coating for cast iron and ductile fittings and ductile iron pipe shall meet requirements of AWWA C106 or AWWA C151 as applicable.
- 107.2.13 When specified, steel casing pipe for boring or jacking or open cutting under highways and railroads shall meet the requirements of ASTM A139, Grade B. Nominal pipe diameter shall be as indicated on the Drawings. Wall thickness shall be a minimum 0.375". No protective coating or lining will be required. The carrier pipe shall be supported by full diameter, mechanically adjusted spacers, 8" on center.
- 107.2.14 Manholes
- A. Precast reinforced concrete manholes shall be constructed in accordance with Standard Drawings for the type and size of manhole indicated on the Drawings.
 - B. Provide tongue and groove joints in manhole sections with a pre-formed groove in the tongue for placement of an O-ring type round, rubber gasket.
 - (1) Gasket shall comply with requirements of ASTM C443.
 - (2) Gasket shall provide the sole element in sealing the joint from either internal or external hydrostatic pressure.
 - C. Liners for acid-resistant manholes shall be of fiberglass reinforce polyester or polyvinylchloride construction and shall be installed to protect the precast manhole sections from the inside base of the manhole to the base of the manhole frame.
 - (1) FRP liners shall consist of 3/16 in. thick fiberglass reinforced polyester with a 15 mil gel coat interior surface. The polyester resin shall be similar to Dion No. 6694. Joints between sections of the liner shall be sealed with joint sealant.
 - (2) PVC liners shall consist of polyvinylchloride plates, not less than 0.060 in. thick, with integral bonding ribs and shall be similar to Amercoat "T-Lock Amer-Plate." Joints between sections of liner

shall be welded in accordance with the manufacturer's instructions.

- D. Manhole steps shall be corrosion-resistant and shall be one inch square cast iron, rubber-covered steel or aluminum. The steps shall conform to the dimensions shown in Standard Drawings.
- E. Manhole frames and covers shall be molded of gray cast iron conforming to ASTM A48, Class 30. Castings shall be coated with a coal tar pitch varnish, to which sufficient oil has been added to make a smooth coating, tough and tenacious when cold, but not tacky or brittle. Seating surfaces between frame and cover shall be machined. The dimensions and weights shall conform to the requirements shown in Standard Drawings. Frames and covers to be set in the street shall be set flush with the finished road surface.
- F. Flow Lines - The minimum depth of flow channel shall be equal to $\frac{3}{4}$ the diameter of the largest sewer in the manhole to which it connects. The channel shall be graded to give a smooth, uninterrupted flow through the manhole. Bench walls shall be pitched a minimum of 1 inch per foot from the inside periphery of the manhole to the edge of the flow channel.
- G. Connections to manholes shall be with boot type flexible connectors cast in the manhole. Any relocated or additional connections to a manhole will be by core drilling the manhole wall and installing the flexible boot by an approved expanding mechanism. The connector shall be the size specifically designed for the pipe material and the size being used on the project. Pipe connector shall be by Press Seal Gasket Corporation or approved equal.

107.2.15 Plug valves.

Plug valves shall be the nonlubricated eccentric type with resilient faced plugs. The port area shall be at least 80 percent of the full pipe area. Bodies shall be cast iron with welded in nickel, raised seats. Valves shall have permanently lubricated corrosion resistant bearings in the bonnet and body.

Packing and packing glands shall be accessible without having to disassemble valves. Packing shall be adjustable.

Valves shall have resilient plug facings suitable for the service intended and shall provide dead-tight shutoff. Opening the valve shall cause the plug to be raised off the seat without scraping the seat or body walls.

Plug valves shall be gear operated, unless otherwise shown or specified, and shall open counter-clockwise.

Plug valves located inside the pumping station shall be provided with hand wheel actuators complete with valve position indicators.

The maximum pull required on manual operators shall be 40 pounds.

Plug valves for direct buried service shall be provided with right angle worm gear operators. Buried valves shall be provided with adjustable cast-iron valve boxed and extension stems to grade.

A tee wrench shall be provided for operation of the buried valve.

Inside iron or steel surfaces of valves and exterior surfaces of valves which are to be buried in the ground shall be given two coats of asphalt varnish meeting the requirements of Fed. Spc. TT-V-51a. Exterior iron or steel surfaces of other valves shall be painted as specified for the pipelines in which they are installed.

Plug valves shall be Series 100 eccentric valves as manufactured by Dezurik, or equal.

107.2.16 Cleanout cover

Traffic bearing cleanout covers shall be 12" diameter, Neenah Foundry R-1791-A or equivalent.

107.3 EXECUTION

107.3.1 Take all precautions necessary to insure that pipe, valves, fittings, and related items are not damaged in unloading, handling and placing in the trench. Examine each piece of material just prior to installation to determine that no damage has occurred. Remove any damaged material from the site and replace with undamaged material.

A. Keep pipes clean. Exercise care to keep foreign material and dirt from entering pipes during storage, handling and placing in trench. Close ends of in-place pipe at the end of any work period to prevent entry of animals and foreign material.

B. Bed pipe as specified in Section 104 - Trenching & Backfilling.

C. Do not lay pipe when weather or trench conditions are unsuitable.

- D. Separation of sanitary sewer lines and water lines shall be in accordance with Virginia Department of Health Regulations.

107.3.2 Lay gravity sewers so as to maintain a true alignment and grade as indicated on Drawings. After completion, the pipe shall be video taped and recorded for its entire length using a self propelled camera specifically designed for this service. Reference Section 114 "Television Inspection For sewer Mains".

- A. Commence laying gravity sewers at the lowest point on a section of line and lay pipe with the bell ends uphill.
- B. Pipe Joint. Preparatory to making pipe joints on gravity sewer lines, clean and dry all surfaces of joint pipe and jointing material. Use lubricants, primers, adhesives and similar materials as recommended by the manufacturer. Place, fit, join and adjust the jointing materials or factory fabricated joints as recommended by the manufacturer to obtain the degree of water tightness required. As soon as possible after the joint is made, place sufficient backfill material, as specified under Section 104 - Trenching and Backfilling, along each side of the pipe to resist forces that might tend to move the pipe off line and grade.

Damaged joints or pipe shall be repaired with a solid nonflexible water tight coupling.

- C. Complete backfilling as specified under Section 104 - Trenching & Backfilling. Place backfill over the pipe immediately after the pipe has been laid.

107.3.3 Install force main with a minimum depth of cover of 42 in. over the top of the pipe, where no grades are shown on the Drawings.

- A. Where grades on the force main conflict with existing pipes or structures, lay force main to additional depth with a uniform vertical curve to provide proper clearance without the use of fittings. No additional payment will be allowed for additional excavation.
- B. Lay force main pipe with bell ends facing the direction of laying. Where grade is 10 percent or greater, pipe shall be laid uphill with bell ends upgrade.

107.3.4 Joining Pipe

- A. Joining Mechanical Joint Pipe

- (1) Thoroughly clean inside of the bell and 8 inches of the outside of the spigot end of the joining pipe to remove oil, grit, excess coating and other foreign matter from the joint. Paint the bell and spigot with a soap solution (half cup granulated soap dissolved in 1 gallon water). Slip the cast-iron gland on the spigot end with the lip extension of the gland toward the end of the pipe. Paint rubber gasket with or dip into the soap solution and place it on the spigot end with thick edge toward the gland.
- (2) Push the spigot end forward to seat in the bell. Then carefully press the gasket into the bell so that it is located evenly around the joint. The gland is moved into position, bolts are inserted and nuts screwed up finger tight; then tighten all nuts to torque listed below.

Bolts Size - Inches Torque Foot-Pounds

5/8	40-60
3/4	60-90
1	70-100
1 1/4	90-120

- (3) Tighten nuts on alternate sides of the gland until pressure on the gland is equally distributed.
- (4) Permissible deflection in mechanical joint pipe shall not be greater than listed in AWWA C600.

B. Joining push-on joint pipe as follows:

- (1) Thoroughly clean inside of the bell and 8 inches of the outside of the spigot end of the joining pipe to remove oil, grit, excess coating, and other foreign matter. Flex the rubber gasket and insert it in the gasket recess of the bell socket. Apply a thin film of gasket lubricant supplied by the pipe manufacturer, to either the gasket or the spigot end of the joining pipe.
- (2) Start the spigot end of the pipe into the socket with care. The joint shall then be completed by forcing the plain end to the bottom of the socket with a forked tool or jack type device. Field cut pipe shall have the end filed to match the manufactured spigot end.

(3) Permissible deflection in push-on joint pipe shall not be greater than $\frac{2}{3}$ of that allowed in AWWA C600.

C. Joint reinforced concrete pipe with rubber gaskets installed as recommended by the manufacturer.

107.3.5 Provide reaction anchors of concrete blocking, metal harness or retainer gland type at all changes in direction of pressure pipelines and as shown on the Drawings.

A. Concrete reaction anchors shall bear against undisturbed earth and shall be of the size and shape indicated on the Drawings.

B. Use metal harness restraints as indicated on Drawings.

107.3.6 When specified encase sewer pipe lines crossing under highways and railways in a larger pipe or conduit used as a casing pipe. Joining of steel casing pipe shall meet requirements of AWWA C206. Install casing pipe by jacking, boring or open cut if permitted. The carrier pipe shall be supported by full diameter, mechanically adjusted spacers, 8' on center.

The installation shall meet AREA requirements for installation of pipe lines carrying nonflammable substances under railway tracks. Brick up casing pipe ends so as to protect against foreign matter but do not tightly seal. Prior to beginning work, notify the Railroad or Street Department.

107.3.7 Construct service connections from sewer main to property line as follows:

A. Place a tee fitting with 4 or 6 inch outlet in the sewer where service connection is to be constructed. Lay pipe from the tee to the property line on a grade of not less than $\frac{1}{4}$ inch per foot. Close the service connection at the property line with a water-tight clean out plug left 2' above finished grade. Provide a water tight plug at the end of the service line.

B. Install service connections on existing sewer mains with a compression type cast iron saddle as manufactured by Romac or approved equal. Secure saddle to the pipe with a 24 gauge stainless steel strap and two nickel-bronze T bolts. Make connections of this type by machine tapping or cutting the pipe. Use mastic sealer type gasket to insure a water-tight connection.

C. Service connections from manholes shall be ductile iron or PVC pipe.

D. Determine the depth of service connection by the deepest of the following criteria:

- (1) Provide 5 foot cover at the edge of the road paving or 15 feet from the center line of the street.
- (2) Provide 12 inch cover at the bottom of highway ditches.
- (3) Provide 5 foot cover at the property line when property is above street.
- (4) Provide depth necessary for a 1 percent grade if required to provide service to a property.

107.3.8 Install detectable tracer wire in utility trench above all non-metallic pipes in accordance with manufacturer's recommendations. Install tape approximately 12 to 18 inches above the pipe, not less than 24 inches nor more than 54 inches deep along the side of the trench, in such a manner as not to be broken or otherwise damaged during backfilling or compacting operations. A 14 gauge copper wire shall be installed with all non-metallic pipe and attached to fittings in addition to metallic tape installed above the pipe,

107.4 TESTING

107.4.1 Testing gravity sewer lines and manholes:

- A. Sanitary sewer lines 24 inch diameter and smaller shall be tested after backfill using a low-pressure air test in accordance with ASTM C828. Sewer lines larger than 24 inch diameter shall be tested by infiltration or exfiltration as hereinafter detailed. All sewer lines and manholes shall also be tested for final acceptance, using either the infiltration or exfiltration method as directed by and in the presence of the City Engineer. Tests shall be conducted on short sections of sewer line, i.e., between manholes, and/or at the end of each day's work. Provide all labor, materials, tools and equipment necessary to make the tests. All equipment and methods used shall be acceptable to the Engineer. All monitoring gauges shall be subject to City calibration, if deemed necessary by the City Engineer.
- B. All main lines shall have a television inspection performed in accordance with section 114 of the City of Staunton Design and Construction Standards, and any applicable NASSCO standards.
- C. Low-pressure air test:

- (1) Summary of Method: Plug the sections of the sewer line to be tested. Introduce low-pressure air into the plugged line. Use the quantity and rate of air loss to determine the acceptability of the section being tested.
- (2) Preparation of the sewer line: Flush and clean the sewer line prior to testing, in order to wet the pipe surface as well as clean out any debris. A wetted interior pipe surface will produce more consistent results. Plug all pipe outlets using approved pneumatic plugs with a sealing length equal to or greater than the diameter of the line being tested to resist the test pressure. Give special attention to laterals.
- (3) Ground Water Determination: Install a 1/2 inch capped galvanized pipe nipple, approximately 12 inches long, through the manhole on top of the lowest sewer line in the manhole. Immediately prior to the line acceptance test, the ground water elevation shall be determined by removing the pipe cap and blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic hose to the pipe nipple. The hose shall be held vertically and a measurement of the height in feet of water over the invert of the pipe shall be taken after the water has stopped rising in the plastic hose.
- (4) Procedures: Determine the test duration for the section under test by computation from the applicable formulas shown in ASTM C828. The pressure-holding time is based on an average holding pressure of 3 psi gauge or a drop from 3.0 psi to 2.5 psi gauge.

Add air until the internal air pressure of the sewer line is raised to approximately 3.5 psi gauge. After an internal pressure of approximately 3.5 psig is obtained, allow time for the air pressure to stabilize. The pressure will normally show some drop until the temperature of the air in the test section stabilizes.

When the pressure has stabilized (5 minute minimum) and is at or above the starting test pressure of 3.0 psi gauge, commence the test. Before starting the test, the pressure may be allowed to drop to 3.0 psig. Record the drop in pressure for the test period. If the pressure has dropped more than 0.5 psi gauge during the test period, the line shall be presumed to have failed. The test may be discontinued when the prescribed test time has been completed even though the 0.5 psig drop has not occurred.

The test procedure may be used as a presumptive test which enables the installer to determine the acceptability of the line prior to backfill and subsequent construction activities.

If the pipe to be tested is submerged in ground water, the test pressure shall be increased to 1.0 psi for every 2.31 feet the ground water level is above the invert of the sewer.

- (5) Safety: The air test may be dangerous if, because of lack of understanding or carelessness, a line is improperly prepared. It is extremely important that the various plugs be installed and braced in such a way as to prevent blowouts.

As a safety precaution, pressurized equipment shall include a regulator or relief valve set at perhaps 10 psi or less to avoid over-pressurizing and damaging an otherwise acceptable line. No one shall be allowed in the manholes during testing.

D. Manhole Tests

- (1) Manholes shall be tested by vacuum test, after assembly but prior to backfilling. Test shall comply with ASTM standard C1244, latest revision. Manholes shall be tested by vacuum, only if constructed of precast concrete. Testing shall include the joint between the concrete cone and spacer ring.
- (2) Stubouts, manhole boots and pipe plugs shall be secured to prevent movement while vacuum test is drawn.
- (3) Installation and operation of vacuum equipment and indicating devices shall be in accordance with equipment specifications for which performance information has been provided by the manufacturer and approved by the Virginia State Department of Health.
- (4) A measured vacuum of 10 inches of mercury shall be established in the manhole. The time for the vacuum to drop to nine inches of mercury shall be recorded.
- (5) Acceptance standards for leakage shall be established from the elapsed time for a negative pressure change from 10 to 9 inches of mercury. The maximum allowable leakage rate for a four foot diameter manhole shall be in accordance with the following:

<u>Manhole Depth</u>	<u>Minimum Elapsed Time for a Pressure Change of 1 Inch Hg</u>
10ft. or less	60 seconds
>10ft. but <15ft.	75 seconds
>15ft. but <25ft.	90 seconds

For manholes five feet in diameter, add an additional 15 seconds and for manholes six feet in diameter, add an additional 30 seconds to the time requirements for four foot diameter manholes.

- (6) If the manhole fails the test, necessary repairs shall be made and the test repeated one time.
 - (7) If a manhole fails the second test or if the joint mastic is completely pulled out during the vacuum test, the manhole shall be disassembled and the mastic replaced
- E. Test for leakage of gravity sewers using either the infiltration or exfiltration test. Allowable leakage shall be 100 gallons per inch of pipe diameter per mile per 24 hours up to a maximum of 2,400 gallons per mile per 24 hours.
- (1) Use the infiltration test when ground water is at least 4 feet above pipe crown along entire length of line to be tested. Plug the pipe at the upper manhole. Install a suitable measuring device at the next lowest manhole. Measure the amount of water flowing through the outlet after flow has been stabilized.
 - (2) Ground water determination: Use same procedure as "low pressure air test" above.
 - (3) Use the exfiltration test when ground water is less than 4 feet above the pipe crown. Plug the pipe at the lower manhole. Fill the line and the manhole to 4 feet above pipe crown or top of the manhole whichever is less. Let the water stand until pipe has reached maximum absorption and until all trapped air has escaped, 4 hour minimum. After maximum absorption is reached, refill the manhole to original level. After 30 minutes, record difference in level and convert to gallons. Subtract the manhole loss to obtain pipe line loss. Manhole loss is found by plugging inlet and out let and filling manhole with water to 4 feet above pipe crown or top of manhole whichever is less. Let water stand one hour to reach maximum absorption. Refill to the original

level. After 30 minutes, check difference in the level and convert to gallons. Manhole leakage shall not exceed 1/2 gallon per hour.

107.4.2 Force Main tests shall be as follows:

- A. Supply the pumps, water, calibrated gauges and meters, and all the necessary apparatus. Notify the City Engineer at least 48 hours in advance of the test date and perform tests in presence of the City Engineer.
- B. Hydrostatic pressure test. After the line has been backfilled and at least seven days after the last concrete anchor block was poured, a hydrostatic pressure test shall be performed. Carefully fill the system with water at a velocity of approximately 1 foot per second while necessary measures are taken to eliminate all air. After the system has been filled, raise the pressure by pump to 50 psi above working pressure indicated on Drawings. Measure pressure at lowest point in system with gauge compensated for elevation maintain this pressure for at least two hours. If pressure cannot be maintained determine the cause; repair and repeat the test until successful.
- C. A leakage test shall be conducted concurrently with the pressure test. Leakage shall be determined with a calibrated test meter, furnished by the Contractor. Leakage is defined as the quantity of water required to maintain a pressure within 5 psi of the specified test pressure after air has been expelled and the pipe filled with water. Leakage shall not exceed 10 gallons per day per mile per inch of diameter. If leakage exceeds that specified, find and repair the leaks and repeat the test until successful.
- D. All visible leaks shall be repaired regardless of the amount of leakage.

107.5 MEASUREMENT AND PAYMENT

- 107.5.1 Sewer Line - Pipe measurement shall be parallel to the pipe including the lengths occupied by appurtenances. The bid price is to include all excavation, bedding and backfill as shown on the plans or standard drawings. Payment shall be per linear foot for the size and type specified. When indicated on the Bid Schedule, payment will be per linear foot for the size and type specified.

- 107.5.2 Service Line - Pipe measurement shall be parallel to the pipe including the length occupied by appurtenances. The bid price is to include excavation, bedding, backfill, and any intermediate bends and cleanouts. Payment shall be per linear foot for the size and type specified.
- 107.5.3 Service Connection - Service connections shall be paid per each for the size specified. The bid price is to include all excavation bedding, backfill, saddles, sleeves, coupling, cleanout and other appurtenances necessary for a complete service connection.
- 107.5.4 Manhole - Manhole measurement will be from the bottom of the frame and cover to the flow line. The bid price is to include the manhole, steps, invert, flexible boot and any excavation and backfill required to complete installation. Payment will be per vertical foot.
- 107.5.5 Manhole Frame and Cover - this will be measured and paid for per each for the type specified (Standard or Watertight).
- 107.5.6 Drop Manhole - Measurement and Payment will be by the vertical footage the pipe drops. This is in addition to the vertical foot cost of the manhole.

SECTION 110 - CURB & GUTTER, SIDEWALK, MISCELLANEOUS CONCRETE

110.1 GENERAL

Work included in this Section consists of all new and/or replacement/repair of curb and gutter, curb, sidewalk and other miscellaneous concrete work.

110.1.1 Referenced Specification by Abbreviation:

Virginia Department of Transportation-(VDOT)

110.1.2 All materials and workmanship associated with this Section will be in accordance with VDOT's Road and Bridge Standards and Specifications unless otherwise noted.

110.2 PRODUCTS

A. Submit shop drawings of all products as by the City.

B. Provide Certified test results and/or mix designs.

110.2.1 Concrete shall be VDOT A-3 unless otherwise noted.

110.2.3 Base aggregate shall be VDOT 21A unless otherwise noted.

110.2.3 Brick pavers shall be standard 4" x 8" x 2-3/8" Pine Hall Pathway or Lawrenceville I-875.

110.2.4 Concrete pavers shall be 4"x 8" Holland Stone Interlocking Paving Sstem.

110.3 EXECUTION

110.3.1 Regular excavation shall include removal and disposal of all existing concrete and asphalt, existing steps as required, as well as earth and all other materials associated with normal excavation to a depth to allow for the installation of the proposed project. All bituminous concrete paved surface immediately adjacent to the excavated areas must be saw cut in a straight line so that when excavation procedures are performed, existing paved surfaces will not be damaged. All concrete surfaces adjacent to the proposed project shall be saw cut in a neat straight line.

All areas beneath the proposed construction shall be excavated and/or graded to a smooth uniform surface and compacted prior to installation procedures. All excavation shall be disposed off the project by the Contractor. All excavation shall be considered incidental to the contract.

Unstable Subgrades and Fill - Concrete shall be placed on the earth subgrade if the said subgrade is stable. In unstable areas, the subgrade shall be undercut and replaced with approved material to provide a sound subbase. All

fill material required on this project shall be VDOT 21-A compacted to 95% modified proctor density.

- 110.3.2 Formwork shall be in accordance with VDOT Road and Bridge Specifications.
- 110.3.3 Protection and Curing shall be in accordance with VDOT Road and Bridge Specifications. Curing compound shall be white.
- 110.3.4 Sidewalks shall be the combination curb and walk type as shown on the detail drawing. Brick veneer sidewalks are to be constructed at locations designated by the Owner.
- 110.3.5 Sidewalks are to be installed so that the back of the walk is on the street right-of-way line, or as directed by the Owner.
- 110.3.6 All sidewalk slabs shall receive a steel trowel float and broom finish and all curbs shall receive a broom finish.
- 110.3.7 All concrete sidewalks shall receive a score line in finished surface every five feet (5'). Depth of the score line shall be a minimum of 5/8".
- 110.3.8 Expansion material shall be installed every 40' in sidewalks and between all existing and proposed concrete surfaces. Along areas where the new walk abuts against an existing uneven retaining wall expansion material shall be installed 4.5' behind and parallel to the face of curb or as directed by the Owner. Concrete shall then be poured behind the expansion material to fill the void area between the face of the walls and expansion. This is done to allow the expansion material to be installed in a smooth straight line. Expansion material shall be of a type equal to the asphalt impregnated fiberboard conforming to ASTM c 175 for exterior work. Expansion material shall extend full depth of slab, less 1/2" at top of slab.
- 110.3.9 After front forms have been removed along the edge of pavement, the contractor shall rub the face of newly installed curb to fill any voids and remove rough spots from the face of curb. In addition, the contractor shall place 21-A Aggregate in the void area between the face of curb and the edge of pavement to an elevation which will match the grade of the existing pavement.
- 110.3.10 All curb and gutter shall be CG-6 or "roll-top" when specified.
- 110.3.11 All curb shall be CG-2.
- 110.3.12 Expansion material shall be installed every 100' in curb and gutter. Expansion material shall be of a type equal to the asphalt impregnated fiberboard conforming to ASTM C 175 for exterior work. Expansion material shall extend full depth of curb and gutter, less 1/2" at top of concrete.
- 110.3.13 All properties which have existing entrance ways shall have new entrances installed at their present location. Entrances will vary in width depending upon field conditions but the standard width shall be 12' at the back. On all existing

concrete driveways, the contractor shall tie the driveway into the back of the new entrance using concrete to provide a smooth ride across the entrance onto the existing driveway. The contractor shall perform all asphalt driveway connections to the back of the new entrance. The contractor will be required to place stone behind the new entrance for all driveway connections, both concrete and asphalt, as a temporary measure to allow for the use of the entrance prior to its final completion. The exact number of entrances may vary from those shown on the proposal. Entrances may be added or deleted from those anticipated thus affecting the quantities for both entrances, sidewalks, and curb and gutter. The contractor shall schedule entrance construction to inconvenience property owners no more than necessary.

- 110.3.14 All existing walks and steps that serve private residences, businesses, etc., shall be tied to the back of the newly installed sidewalk. In performing this portion of the work, the Contractor will encounter a multiple of different situations due to grade problems, height and number of steps, etc. For bidding purposes, the contractor shall base his bid on the following breakdown:
- A. All existing sidewalk connections which are tied flush to the newly installed sidewalk shall be paid as miscellaneous concrete installation. Payment shall be based on field measurements.
 - B. All steps constructed to facilitate a connection to back of the new sidewalk shall be paid for on a per each basis. Steps for this project shall be defined as any step with a minimum rise of 4", a maximum width of 5' and a maximum tread of 2'. A change in elevation from the new sidewalk to an existing walk or step is not considered a step for payment purposes. All steps shall be constructed using the same type material as that of the existing walk. If no walk exists, steps shall be constructed using concrete.
- 110.3.15 All yard areas immediately behind newly installed sidewalks shall be topsoiled and seeded so as to provide a smooth tie in with the existing yard and back of the walk.
- 110.3.16 Brick sidewalks are to be installed per the Standard Drawing. Base stone shall be VDOT 21A.
- The bricks shall be set in a minimum 1/2" mixture of dry 1 part cement and 3 parts sand. Sand shall be swept between the brick joints. Brick pavers shall have a smooth surface that is flush with the curbing.
- 110.3.17 Detectable warning surface shall be constructed at each street intersection and/or as directed by the City. They shall be VDOT standard CG-12.
- 110.3.18 Existing limestone curb is to be adjusted for a straight alignment and raised to provide a 6" curb height. Thoroughly compact 21-A aggregate under all disturbed limestone curb.

- 110.3.19 When an entrance is required across a brick sidewalk, it shall be a haringbone design. The standard concrete entrance shall be modified to leave a depth equal in thickness to the brick paver and mortar bedding with a 4" wide lip on the back. The brick pavers shall tie in flush with the front curb, back lip and adjacent sidewalk.
- 110.3.20 The Contractor shall be responsible for both the adjustment and relocation of water meter boxes. Adjustment means the vertical and/or minimal horizontal adjustment of the meter box only. Relocated water meters will be any meter that will require cutting into the existing service lines. The City will provide the yoke assembly and box for relocations.
- 110.4 MEASUREMENT AND PAYMENT
- 110.4.1 Sidewalk - Measurement shall be the horizontal surface area (including curb on monolithic curb and sidewalk) of sidewalk. Work is to include excavation, backfill, and materials, etc. Payment shall be at the bid price per square yard.
- 110.4.2 Curb and Gutter - Measurement shall be parallel to the curb and gutter excluding entrances. There shall be no separation between straight and radial curb and gutter. Work is to include all excavation, backfill, and materials. Payment shall be at the bid price per linear foot.
- 110.4.3 Curb - Measurement includes entrances. There shall be no separation between straight and radial curb. Work is to include all excavation, backfill, and materials. Payment shall be at the bid price per linear foot.
- 110.4.4 Sidewalk Entrance - Measurement shall be the horizontal area (including curb on monolithic curb and sidewalk) of entrance. Work is to include all excavation, backfill and materials. Payment shall be the bid price per square yard.
- 110.4.5 Curb and Gutter Entrance - Measurement shall be parallel to the curb and gutter entrances. There shall be no separation between straight and radial curb and gutter entrances. Work is to include all excavation, backfill, and materials. Payment shall be at the bid price per linear foot.
- 110.4.6 Brick Sidewalk - Measurement shall be the horizontal surface of brick sidewalk. Work is to include all excavation, backfill and materials. Payment shall be the bid price per square yard.
- 110.4.7 Detectable Warning Surface - Measurement shall be per each in addition to payment for sidewalk. Payment shall be the bid price per each.
- 110.4.8 Steps - Measurement shall be per each 5' in width. Steps created by increasing the height of the sidewalk are not a pay item. Work is to include excavation, backfill, and all associated for concrete steps. Payment shall be per the bid price for each concrete step constructed.

- 110.4.9 Miscellaneous Concrete - Measurement shall be the horizontal surface area of concrete adjacent to the street sidewalk (private, walks, driveways, etc.) Work includes all excavation backfill, work and materials required. Payment shall be the bid price per square yard of miscellaneous concrete installed.
- 110.4.10 Stone Base - Measurement shall be by the ton of base stone placed under sidewalk, curb and gutter, gutter, miscellaneous concrete and street patch. Work is to include all excavation and incidental work. Payment shall be the bid price per ton.
- 110.4.11 Saw Cut - Measurement shall be parallel to the saw cut. Payment is for concrete saw cuts only as directed by the City and when identified as a separate pay item. Payment will be the bid price per linear foot.
- 110.4.12 Stone Curb - Measurement shall be per linear foot measured parallel to the sidewalk. Payment shall be the bid price per linear foot only for those curbs adjusted.
- 110.4.13 Concrete Entrance with Brick veneer - Measurement shall be the horizontal surface of brick veneer entrance. Payment shall be the bid price per square yard and shall include all excavation, backfill, concrete entrance and brick veneer. There shall be separate payment for linear footage of curb across the entrance. There shall be no separate payment for concrete entrance.

SECTION 111 - STREET CONSTRUCTION AND REPAIR/PATCHING

111.1 GENERAL

Work covered by this section includes all work associated with construction of a new street and the repair or patching of an existing street.

111.1.1 Referenced Specifications by Abbreviation:

Virginia Department of Transportation - (VDOT)

111.1.2 All materials and workmanship associated with this Section shall be in accordance with VDOT's Road and Bridge Standards and Specifications unless otherwise noted.

111.2 PRODUCTS

A. Submit shop drawings of all products as by the City.

B. Provide Certified test results and/or mix designs.

111.2.1 All materials shall meet the specifications of VDOT's Road and Bridge Specifications.

111.3 EXECUTION

111.3.1 All excavation, backfill, base stone, and plant mix for new streets shall be constructed in accordance with VDOT's Road and Bridge Specifications.

111.3.2 The typical street section shall be as shown on the plans.

111.3.3 The street shall be graded to the right-of-way line before beginning cut and fill slopes. Protection and Curing shall be in accordance with VDOT Road and Bridge Specifications.

111.3.4 Street repair/patching shall be in accordance with the Standard Drawing or Plans.

111.3.5 Make a neat saw cut on all sides of a street repair/patch. Square up all patches.

111.3.6 Maintain all street excavations to a smooth transition until final street repair/patch is complete.

111.3.7 A temporary repair/patch of prime and double seal is permitted when plant mix is not available.

111.4 MEASUREMENT AND PAYMENT

111.4.1 Excavation and Fill for new streets shall be in accordance with VDOT Standards.

111.4.2 Base Stone for new streets shall be in accordance with VDOT Standards.

111.4.3 Bituminous Concrete for new streets shall be in accordance with VDOT Standards.

111.4.4 Street Repair/Patch - Measurement shall be for the horizontal area of pavement not exceeding the pay limits. Work is to include all excavation, saw cut, stone base, and bituminous concrete required to complete the repair/patch. Payment shall be the bid price per square yard. There are no separate payments for stone, bituminous concrete or saw cut.

SECTION 114 – VIDEO INSPECTION FOR MAIN SEWERS

114.1 General

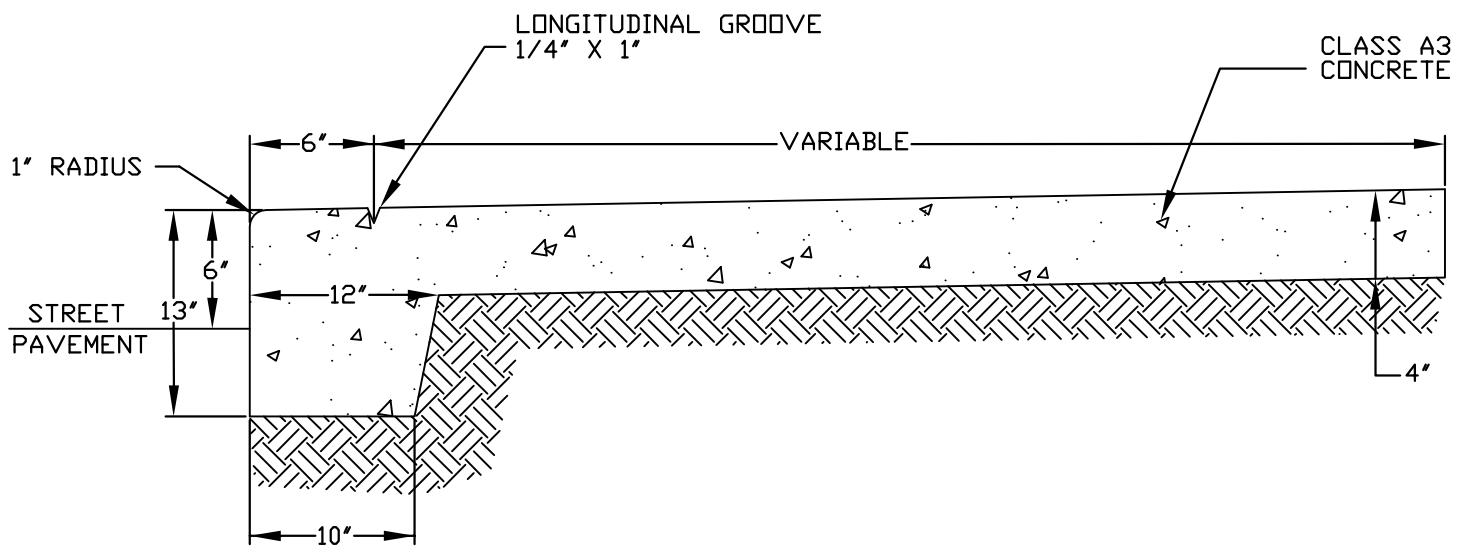
Work included in this Section consists of all work associated with television inspection for main sewer lines

- 114.1.1 After cleaning, the manhole sections shall be visually inspected by means of closed circuit television. The inspection will be done one manhole at a time and the flow in the section being inspected will be suitably controlled. (The upstream line segment shall be plugged while the downstream sections are being televised.)
- 114.1.2 The video camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions. The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Owner's representative; and if unsatisfactory, equipment shall be removed and no payment will be made for an unsatisfactory inspection.
- 114.1.3 The camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. In no case will the television camera be pulled at a speed greater than 30 feet per minute. Manual winches, power winches, TV cable, and power rewinds, or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. If, during the inspection operation, the video camera will not pass through the entire manhole section, the contractor shall set up his equipment so that the inspection can be performed from the opposite manhole. If, again the camera fails to pass through the entire manhole section, the inspection shall be considered complete and no additional inspection will be required.
- 114.1.4 When manually operated winches are used to pull the television camera through the line, telephones or other suitable means of communication shall be set up between the two manholes of the section being inspected to insure good communications between members of the crew.
- 114.1.5 The importance of accurate distance measurement is emphasized. Measurement for location of defects shall be above ground by means of a meter device. Marking on the cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Accuracy of the distance meter shall be checked by use of a walking meter, roll-a-tape, or

other suitable device, and the accuracy shall be satisfactory to the owner's representative.

114.1.6 Documentation of the television results shall be as follows:

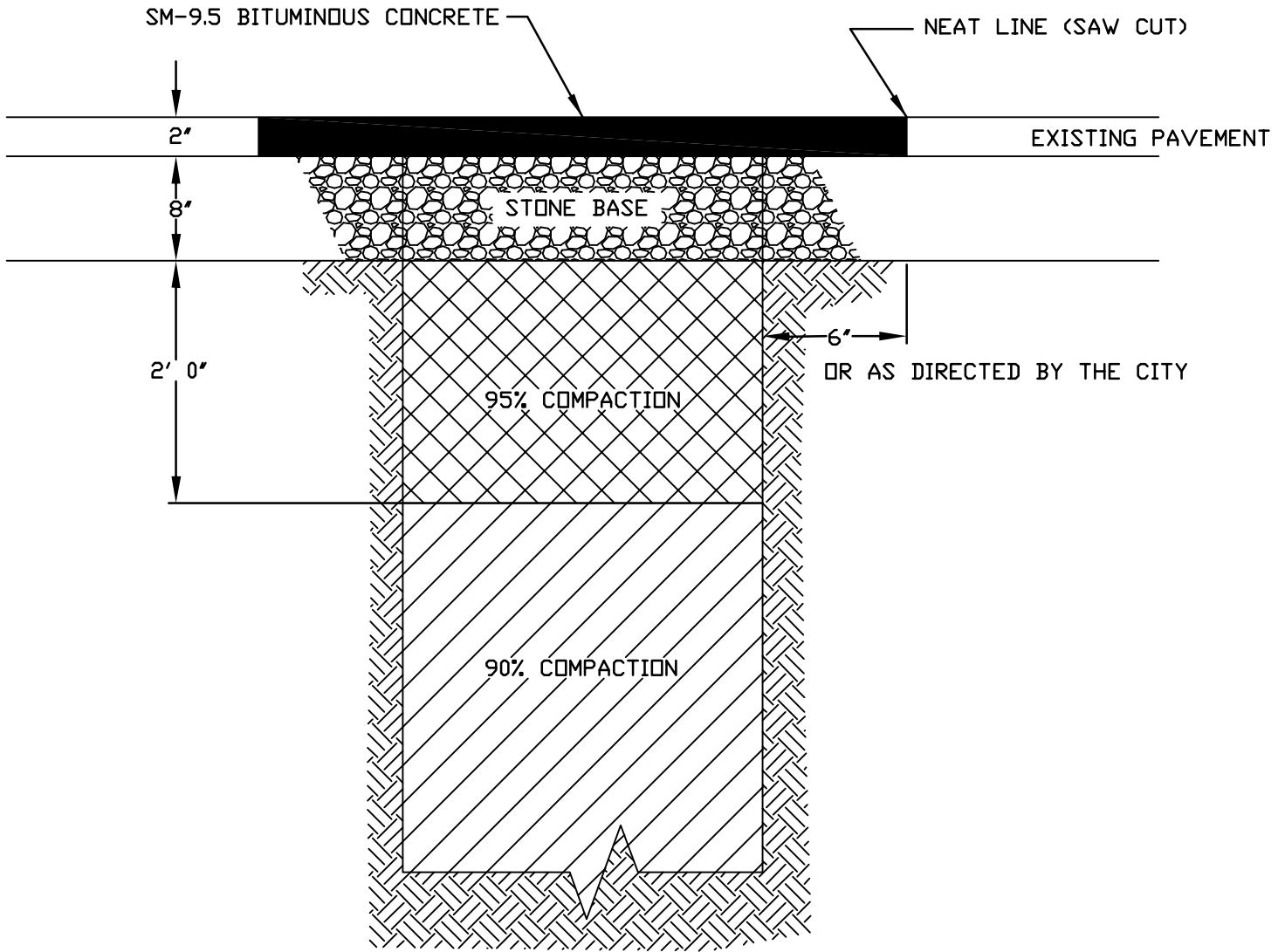
- A. Video Inspection Logs: Printed location records shall be kept by the contractor and will clearly show the location in relation to an adjacent manhole of each infiltration point observed during inspection. In addition other points of significance such as locations of building sewers, unusual conditions, roots, storm sewer connections, broken pipe, presence of scale or corrosion, and other discernable features will be recorded and a copy of such records will be supplied to the owner.
- B. Photographs: Instant developing, 35mm or other standard sized photographs of the television picture of problems shall be taken by the contractor upon request of the owner's representative, as long as such photographing does not interfere with the contractors operations.
- C. Video Recording: The purpose of video recording shall be to supply a visual and audio record of problem areas of the lines that may be replayed. Video recording playback shall be at the same speed that it was recorded. Slow motion or stop motion playback features may be supplied at the option of the contractor. The contractor shall have all DVD's and necessary playback equipment readily accessible for review by the owner during the project.



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STAUNTON, VA

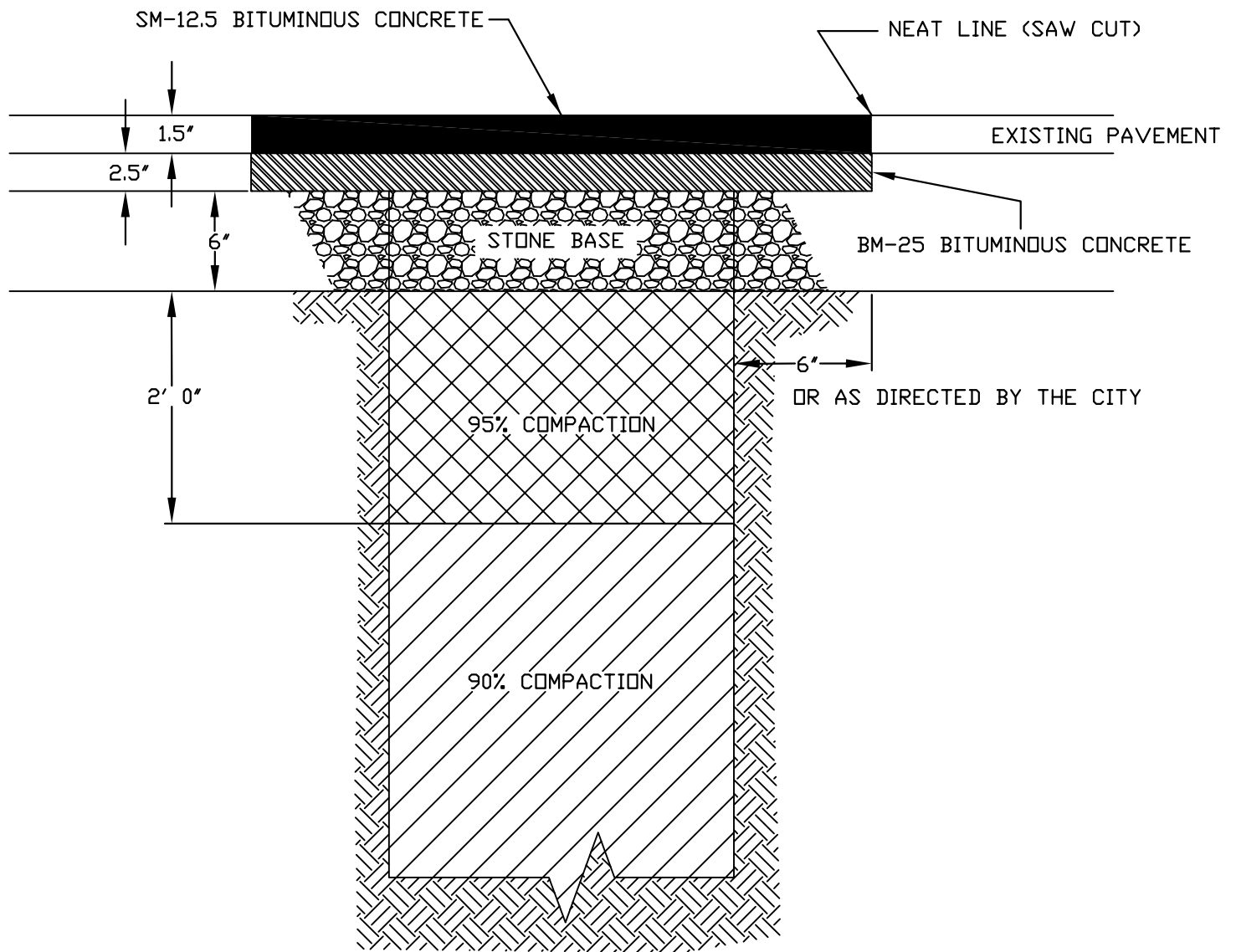
MONOLITHIC CONCRETE WALK

Draw No.
M-1



NOTE:

1. COMPLETED PATCH TO BE FLUSH WITH EXISTING PAVEMENT



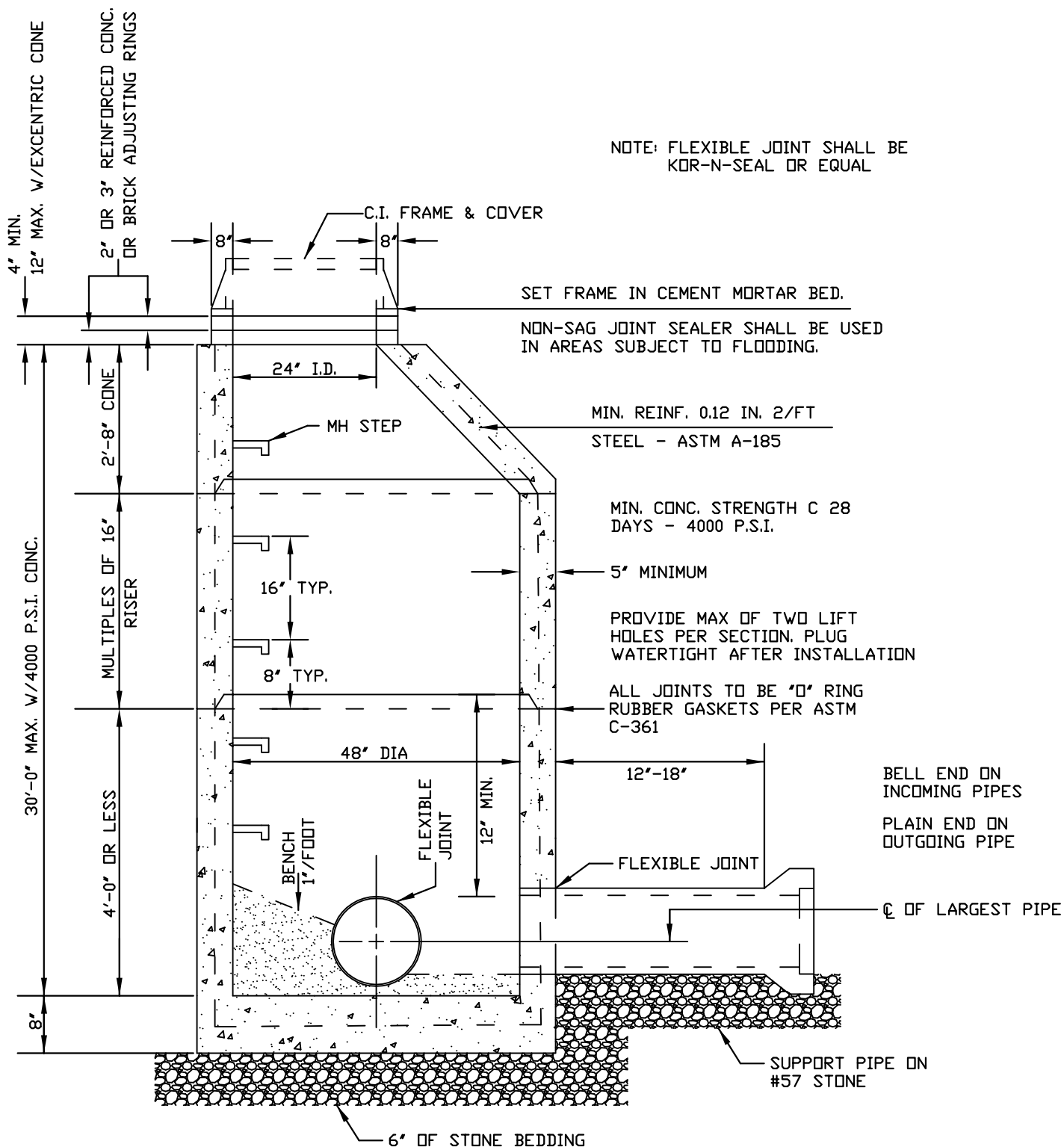
NOTE:

1. COMPLETED PATCH TO BE FLUSH WITH EXISTING PAVEMENT

CITY OF
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HEAVY DUTY PATCH FOR ASPHALT PAVEMENT

Draw No.
M-5(H)



NOTE: BENCH SHALL BE CONCRETE

MANHOLE CONSTRUCTION SHALL
CONFORM TO ASTM SPEC. C-478

NOTE: SEE DETAIL S-3 FOR
MANHOLE SIZING TABLE

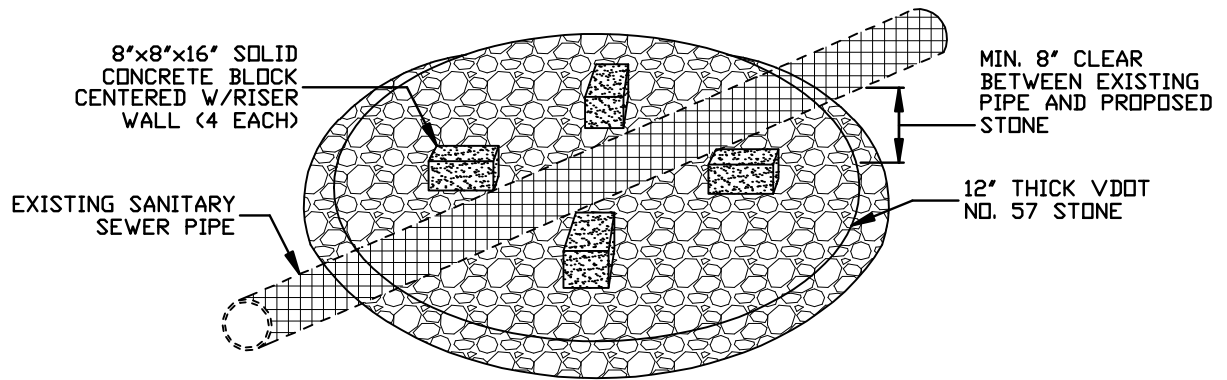
WHERE STUBS OR KNOCKOUTS ARE
PROVIDED FOR FUTURE CONNECTIONS
BENCH SHALL BE SO FORMED

CITY OF
STAUNTON, VA

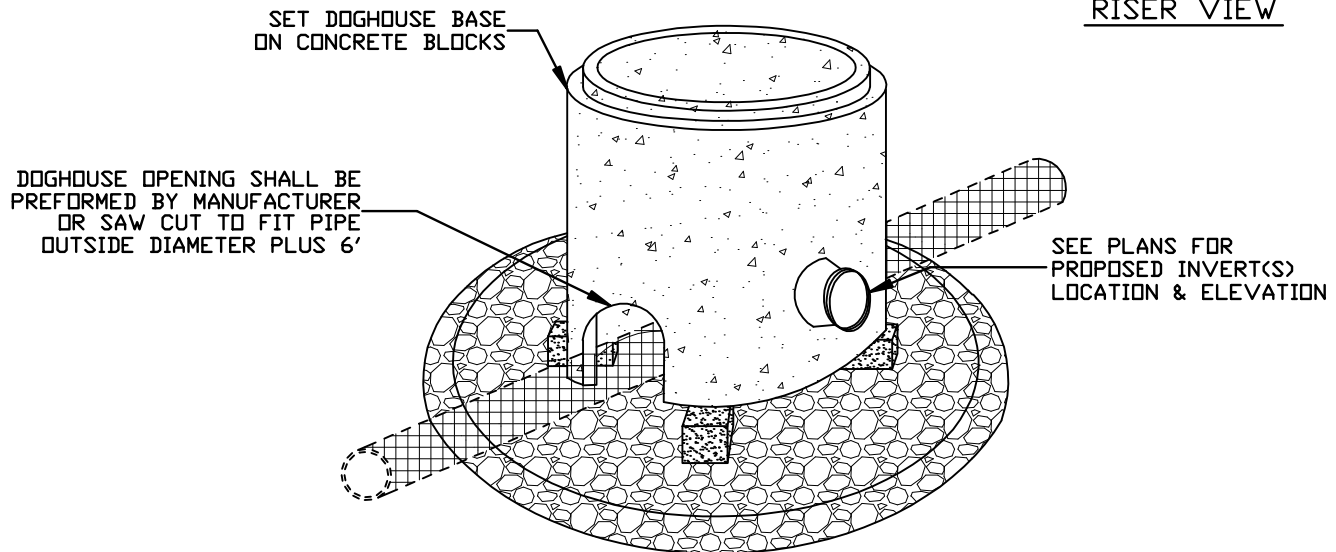
STANDARD PRECAST CONCRETE MANHOLE

Draw No.
S-1

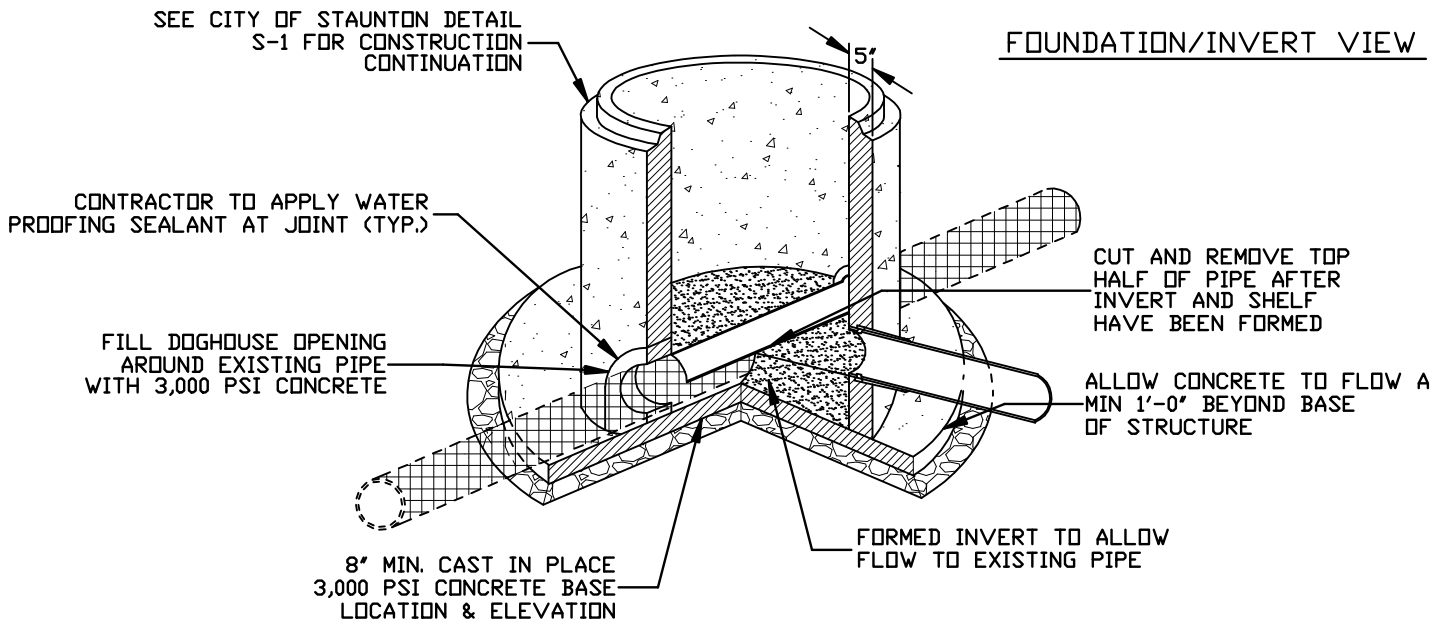
BASE VIEW



RISER VIEW



FOUNDATION/INVERT VIEW

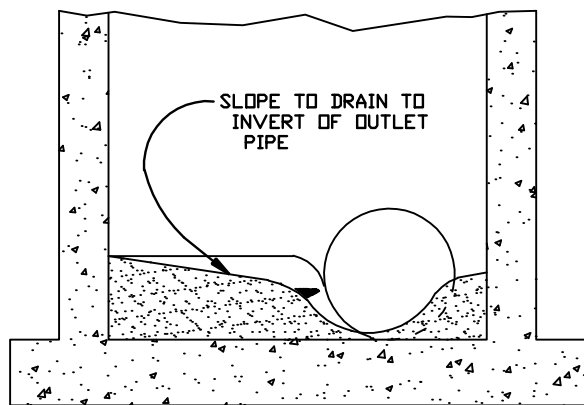


NOTE: SEE DETAIL S-3 FOR MANHOLE SIZING TABLE

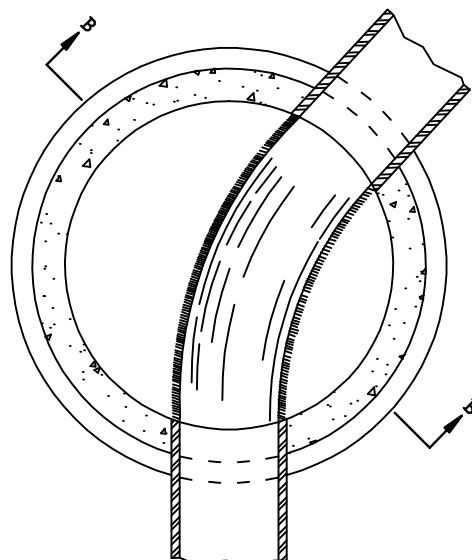
**CITY OF
STAUNTON, VA**

**STANDARD PRECAST
DOGHOUSE MANHOLE**

**Draw No.
S-1A**



SECTION B-B



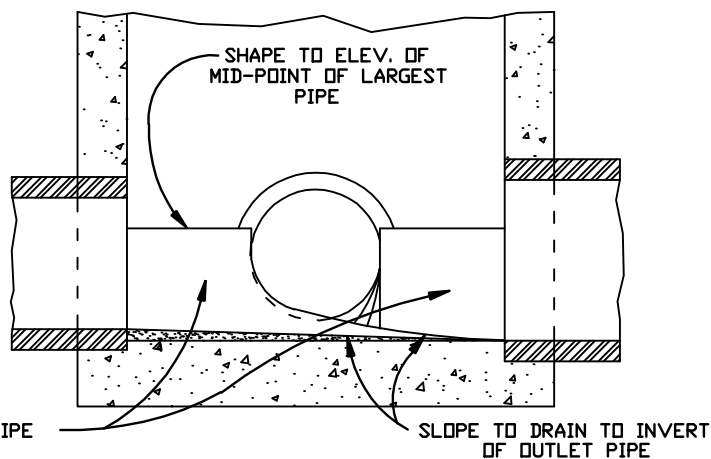
PLAN

NOTES

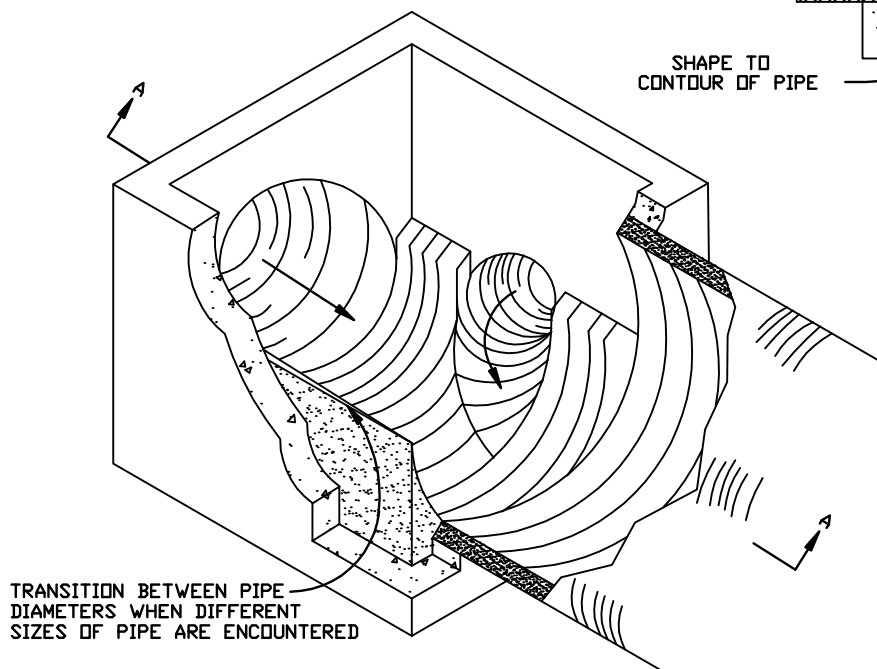
SHAPING OF MANHOLE & INVERTS IN ACCORDANCE WITH THIS DRAWING IS TO APPLY TO THOSE STRUCTURES SPECIFIED ON PLANS. THE COST OF FURNISHING AND PLACING ALL MATERIAL IS TO BE IN THE PRICE BID FOR THE PARTICULAR DROP INLET COMPLETE AND/OR LINEAR FOOT OF MANHOLE.

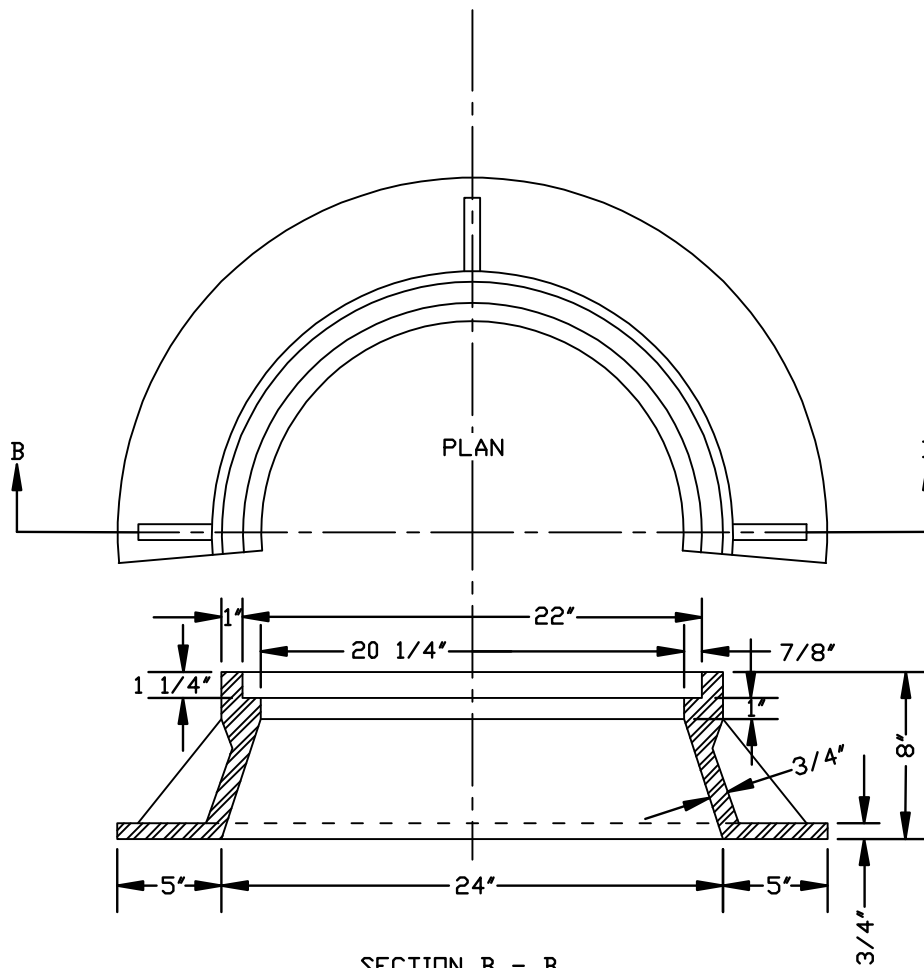
MANHOLE OR DROP INLET IS TO BE FORMED AND CONSTRUCTED IN ACCORDANCE WITH APPLICABLE STANDARD DRAWING. THE INVERT SHAPING AS DETAILED HEREON IS TO CONSIST OF A PORTLAND CEMENT CONCRETE MIX CONFORMING TO CLASS A3 OR CLASS C1, EXCEPT THAT 25% OF COARSE AGGREGATE MAY BE UP TO 4" IN DIAMETER AND CONSIST OF STONE, BROKEN BRICK, BROKEN CONCRETE, OR BROKEN CONCRETE BLOCK. THE SURFACE SHALL BE LEFT SMOOTH BY MEANS OF HAND TROWELLING. NONE OF THE COARSE AGGREGATE SHALL REMAINED EXPOSED.

DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE OR DROP INLET IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OUTLET CONFIGURATION AND FLOW LINES.



SECTION A-A



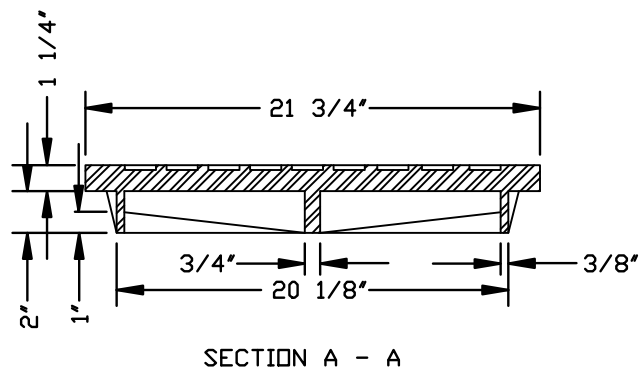
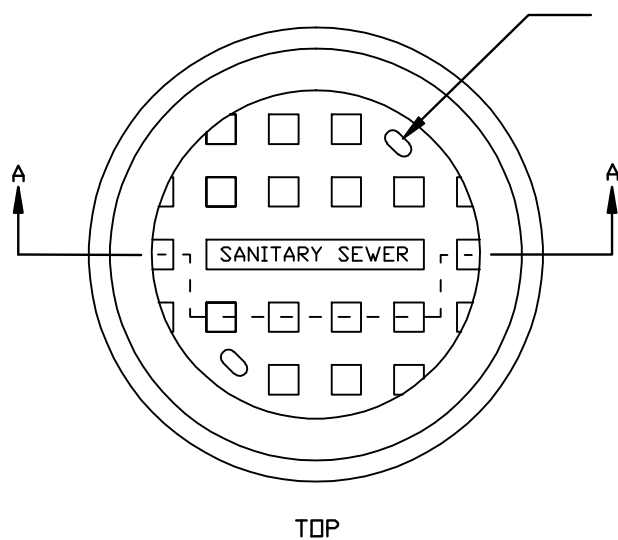


NOTES:

DETAIL MH-2 IS IDENTICAL TO TO V.D.H.&T MH-1 STANDARD

MATERIAL - CAST IRON

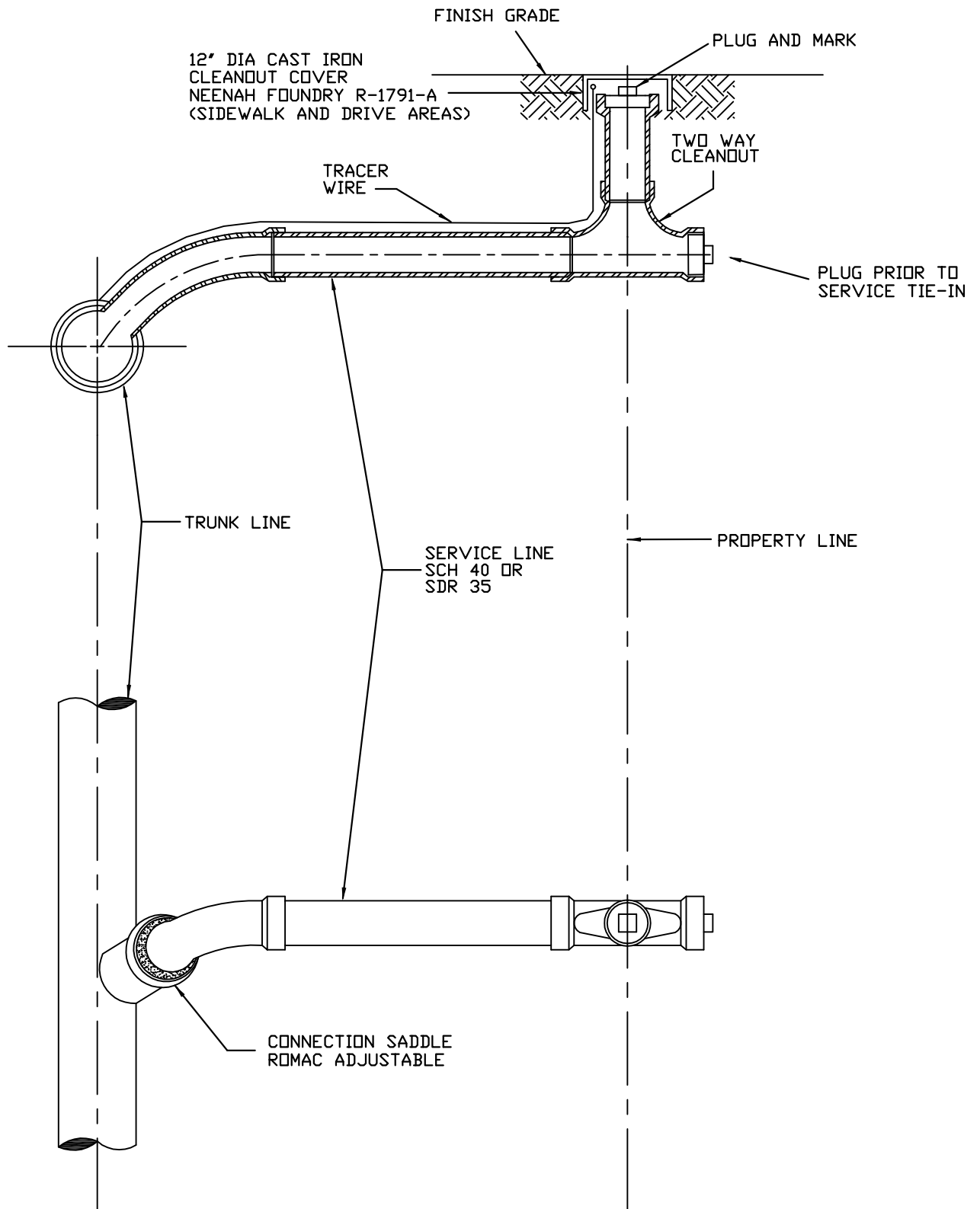
WEIGHT - 376 LBS ±



**CITY OF
STAUNTON, VA**

**STANDARD HEAVY TRAFFIC
MANHOLE FRAME & COVER**

**Draw No.
S-5**

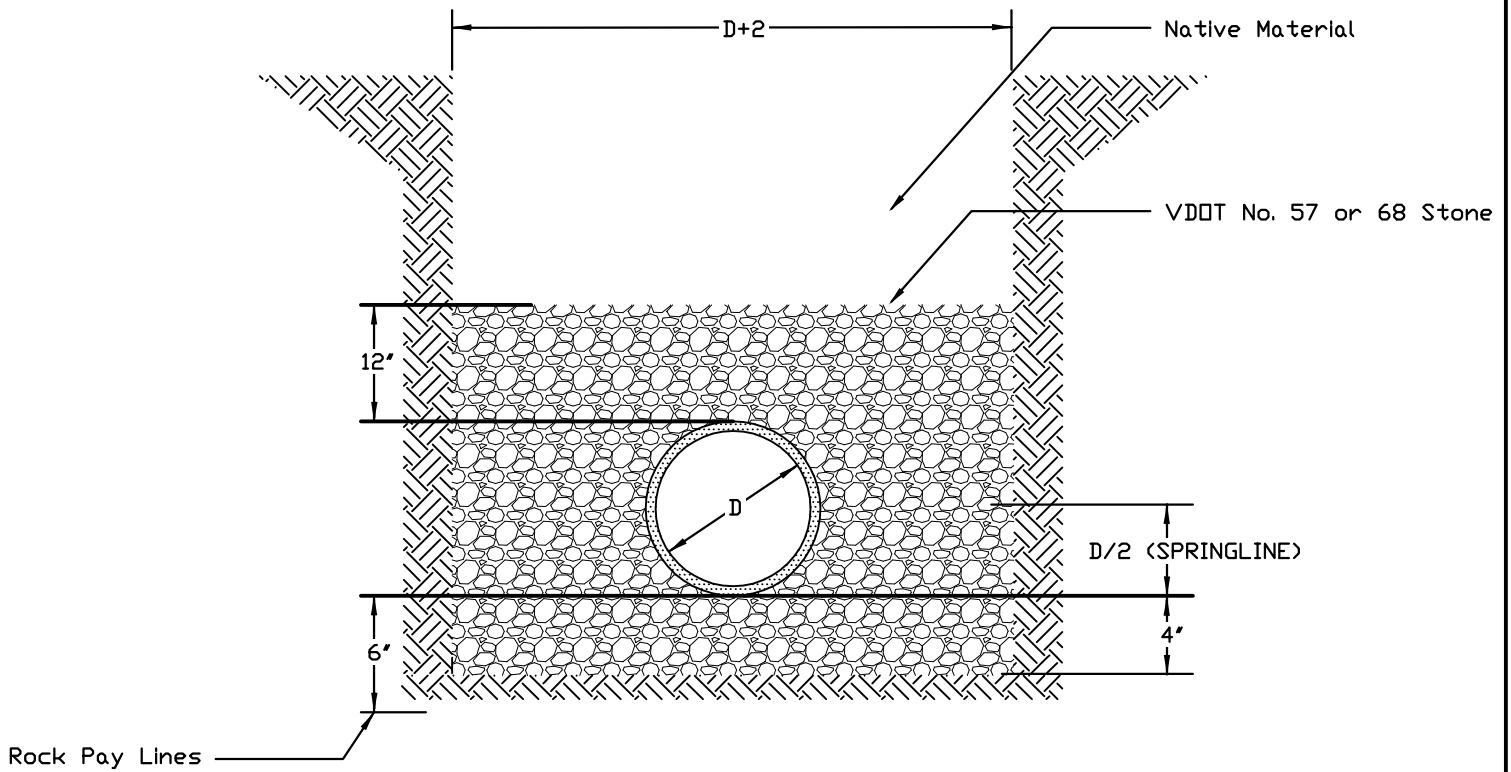


NOTE: CLEANOUT TOP SHALL BE LEFT VISIBLE ABOVE GRADE

CITY OF
STAUNTON, VA

SEWER SERVICE CONNECTION

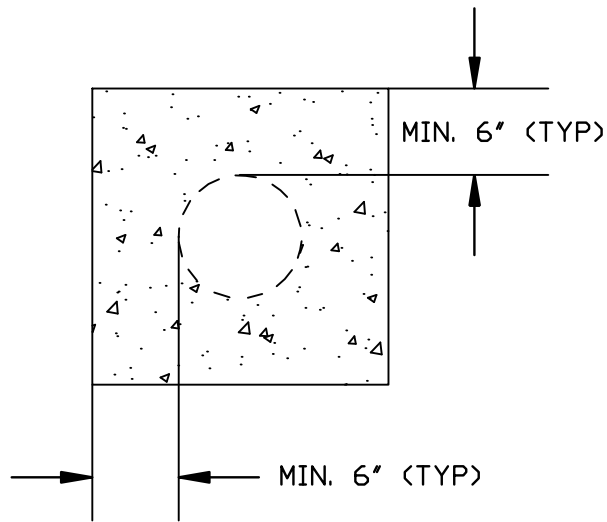
Draw No.
S-7



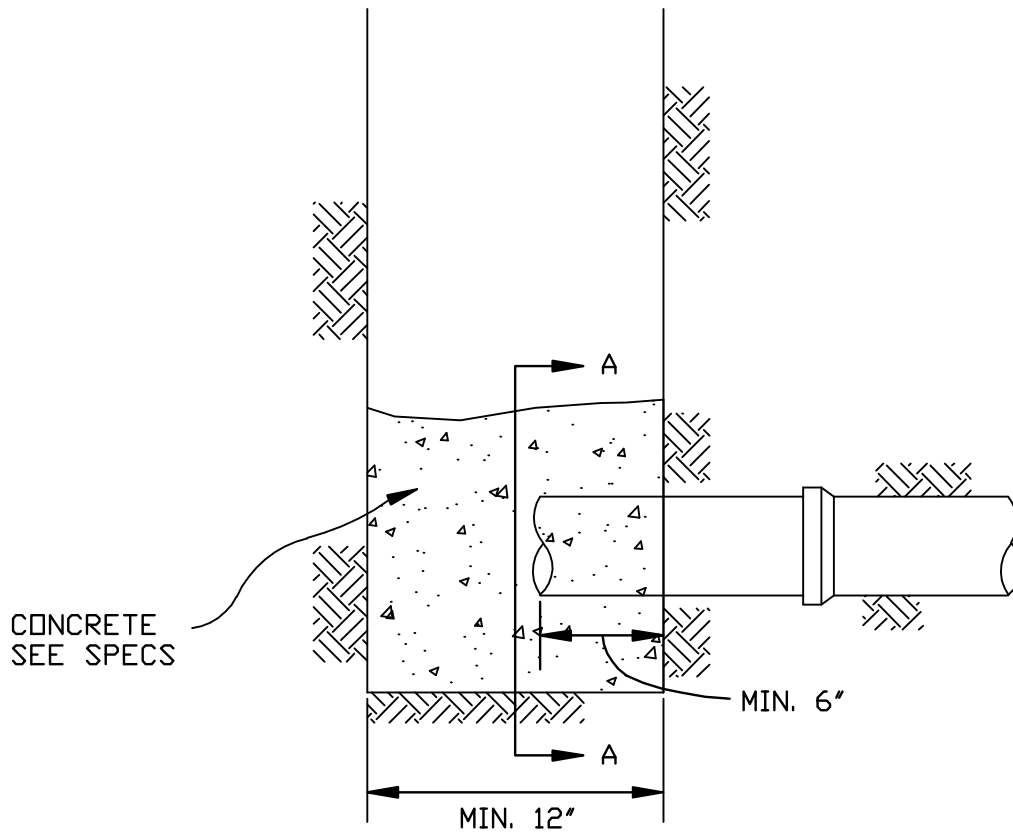
BACKFILL SHALL BE PLACED IN 6' LAYERS FROM THE BOTTOM OF THE TRENCH TO A POINT AT LEAST 6' ABOVE THE PIPE AND THOROUGHLY TAMPED BY HAND OR PNEUMATIC TAMPER, HOWEVER DO NOT TAMP DIRECTLY OVER THE PIPE

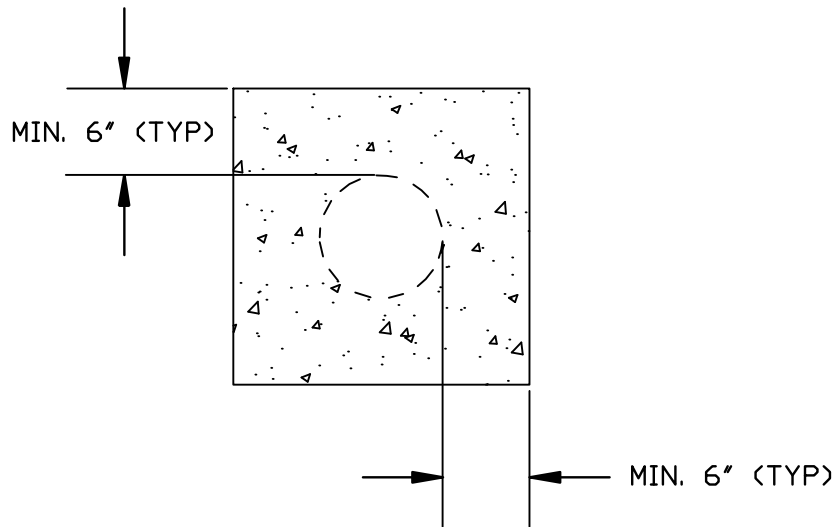
FINAL BACKFILL MAY BE PLACED IN LAYER THICKNESSES WHICH WILL PERMIT COMPACTION TO A DENSITY OF AT LEAST 95%

REINFORCED CONCRETE AND DUCTILE IRON PIPE SHALL BE BACKFILLED W/57 OR 68 TO SPRINGLINE ONLY

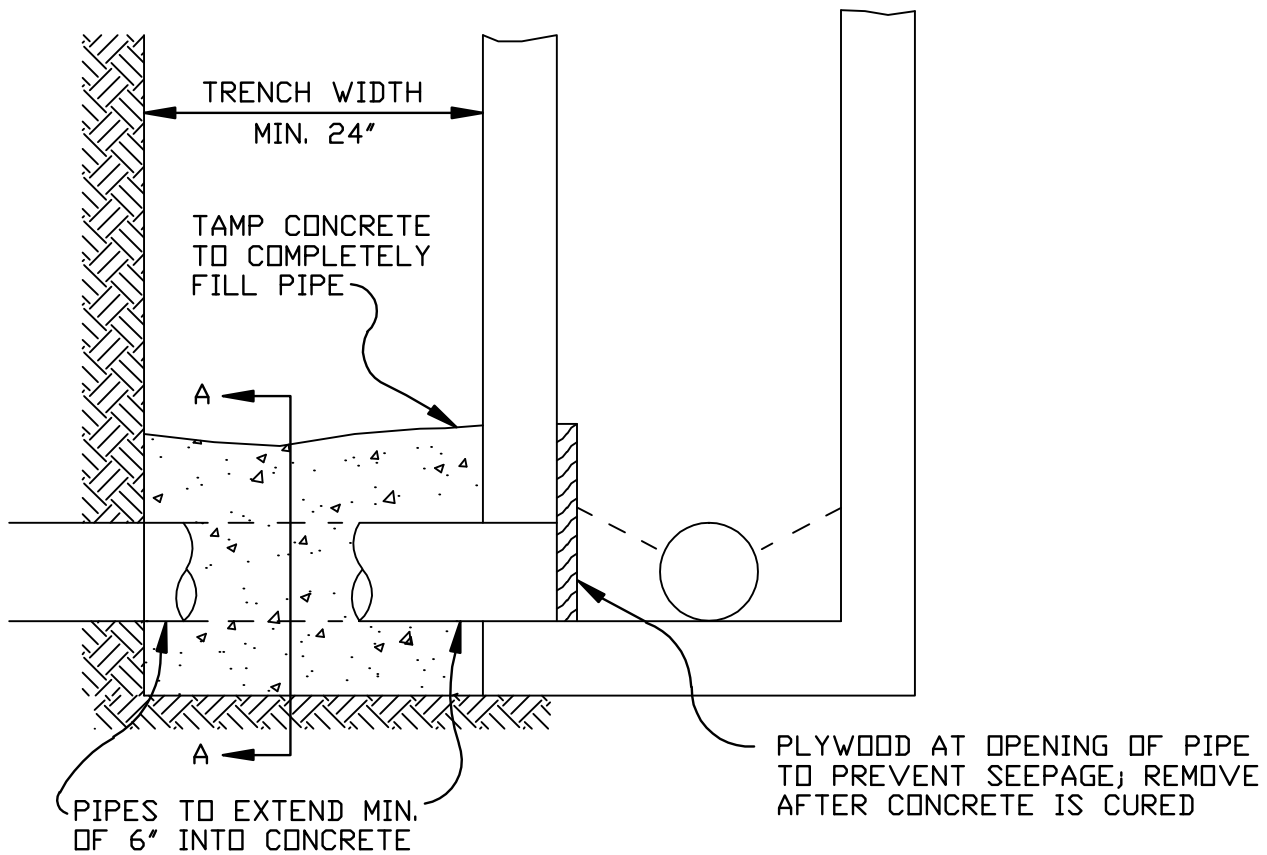


SECTION A-A

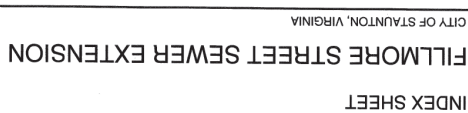
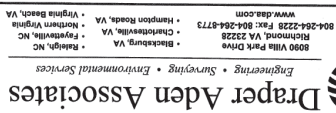




SECTION A-A

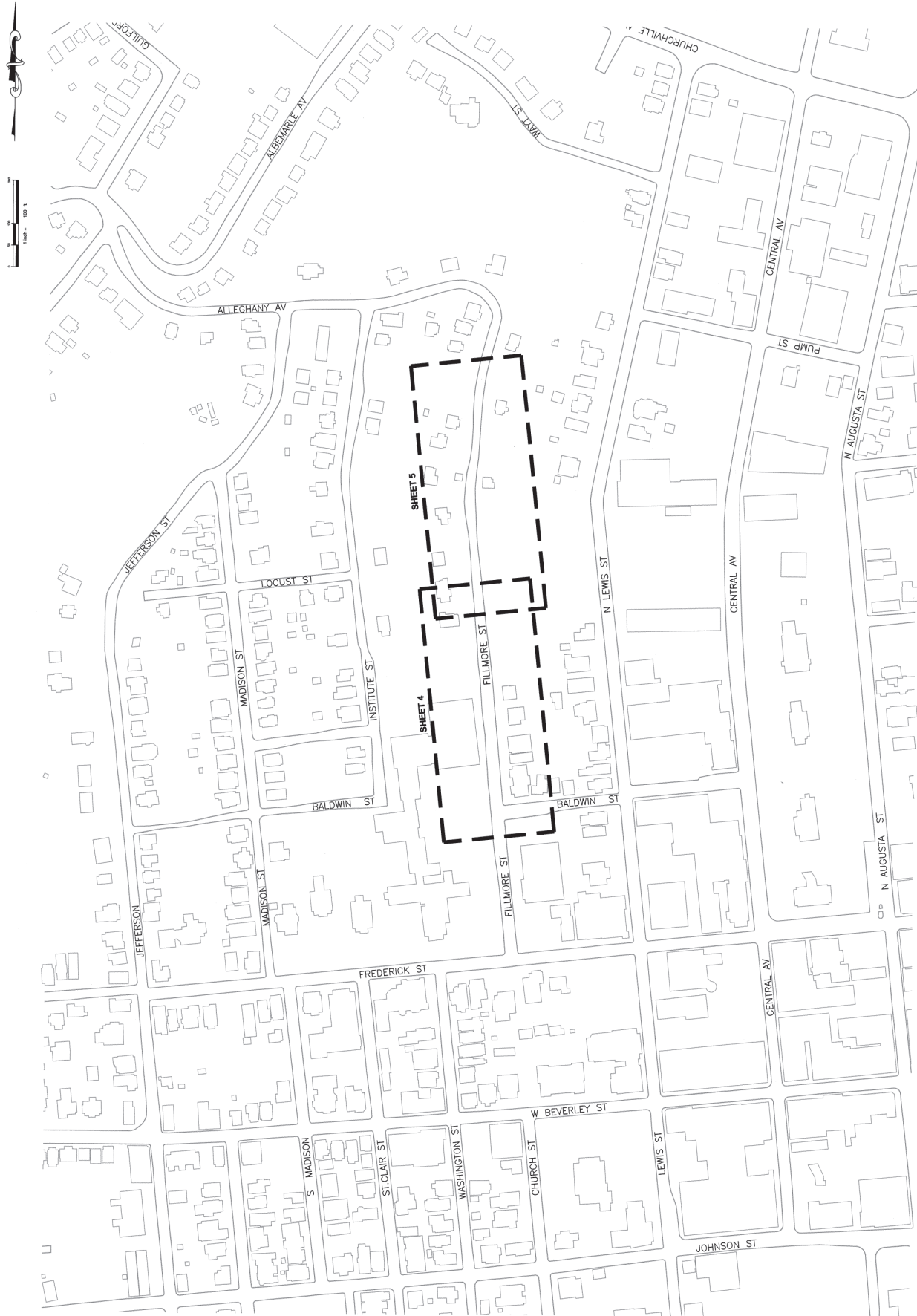


REMOVE MIN. 12" SECT. OF PIPE



REVISED
15/18
R/R CITY COMMENTS
NAMED BY: MSH
DRAWN BY: JYG
CHECKED BY: EEB
S.E.: 1"=100'
E: 3-29-2016
SHEET NUMBER
7020930-010303

3 OF 9





Draper Aden Associates
Engineering • Surveying • Environmental Services
8090 Villa Park Drive
Richmond, VA 23228
804-264-2228 FAX 804-264-8773
www.daa.com

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• Christiansburg, VA
• Hampton Roads, VA
• Northern Virginia
• Virginia Beach, VA



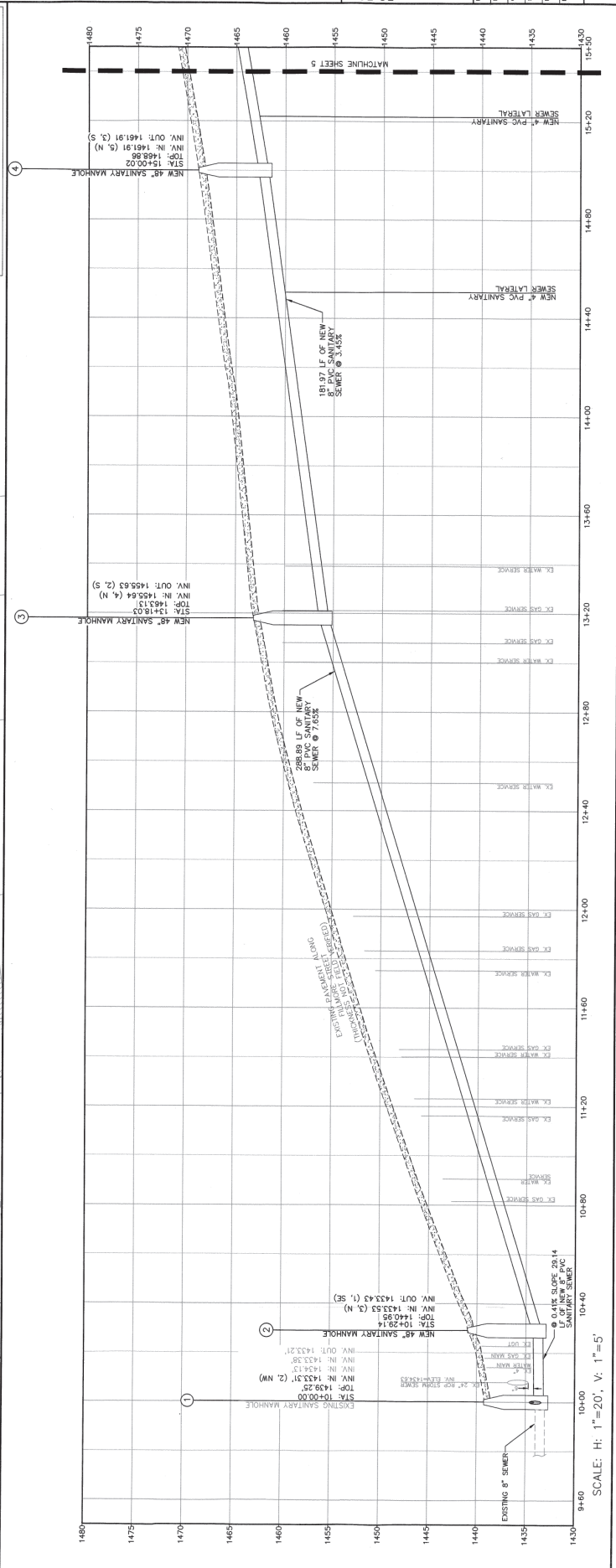
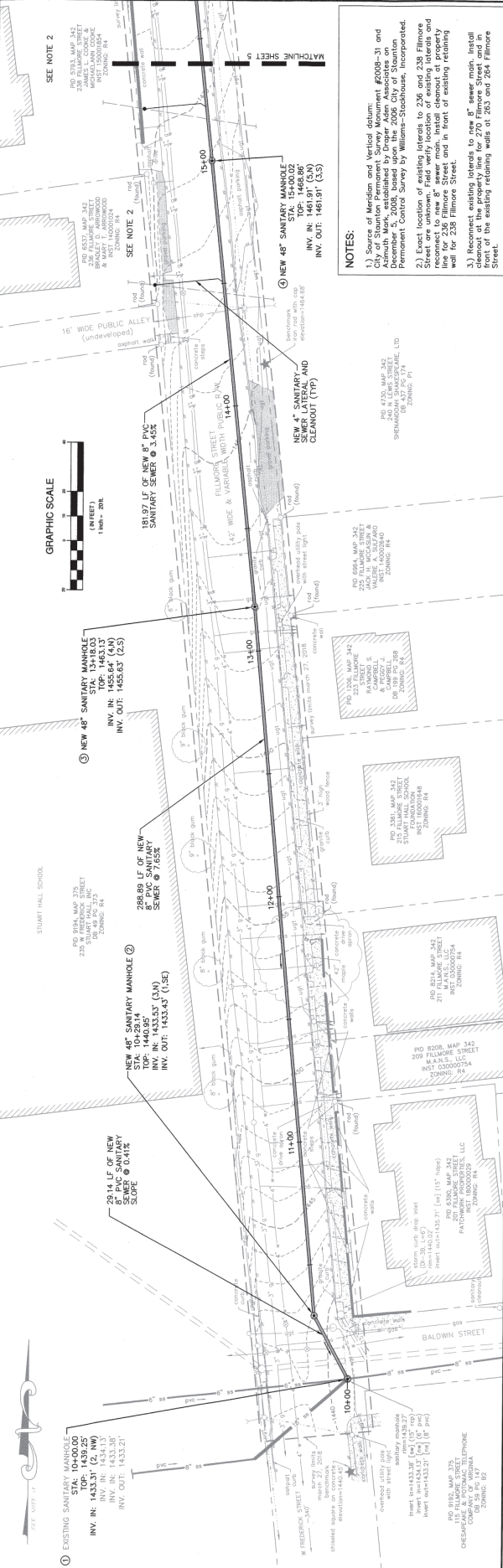
FILLMORE STREET SEWER EXTENSION

PLAN AND PROFILE

REVISIONS
05/01/18
PER CITY COMMENTS
05/02/18
PER CITY COMMENTS

DESIGNED BY	MS1
DRAWN BY	ATD
CHECKED BY	EEB
SCALE	PLAN: 1"=20' V: 1"=5'
DATE	05-20-2018

PROJECT	17020030-010303
DATE	05-20-2018





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Richmond, VA 23228
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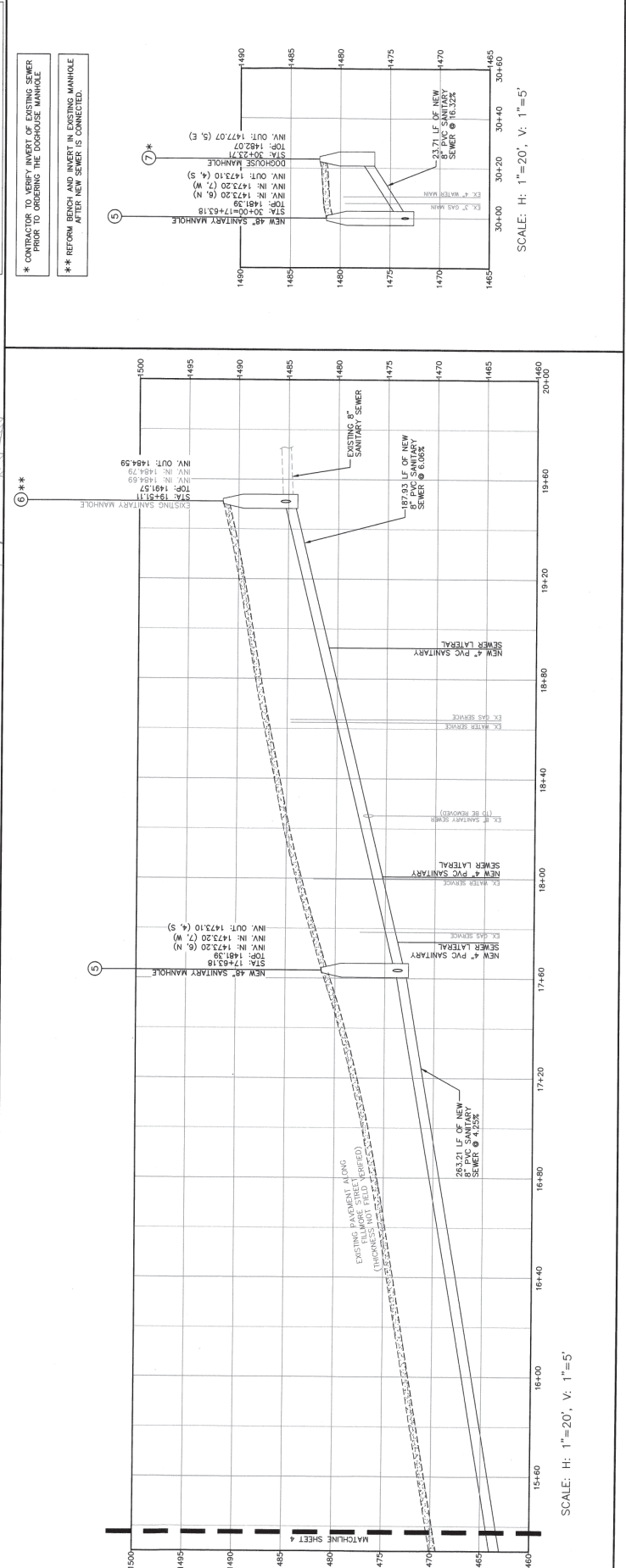
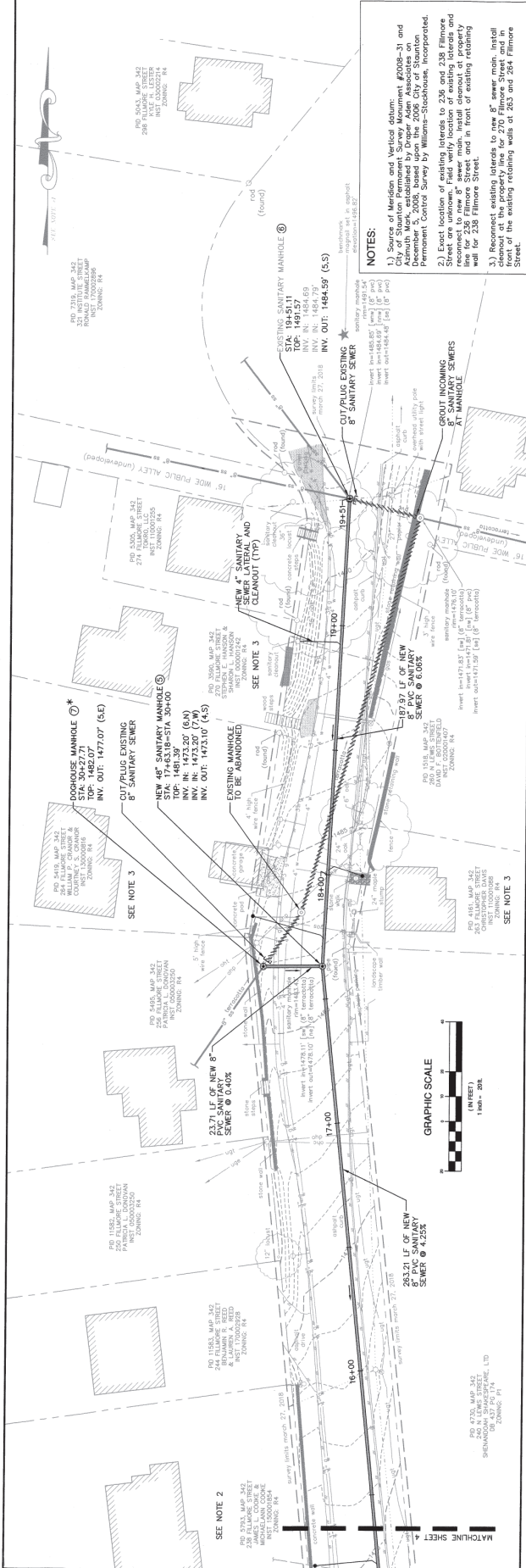
• Blakely, VA
• Charlottesville, VA
• Fryingwood, VA
• Raleigh, NC
• Virginia Beach, VA
• Northern Virginia
• Hampton Roads, VA

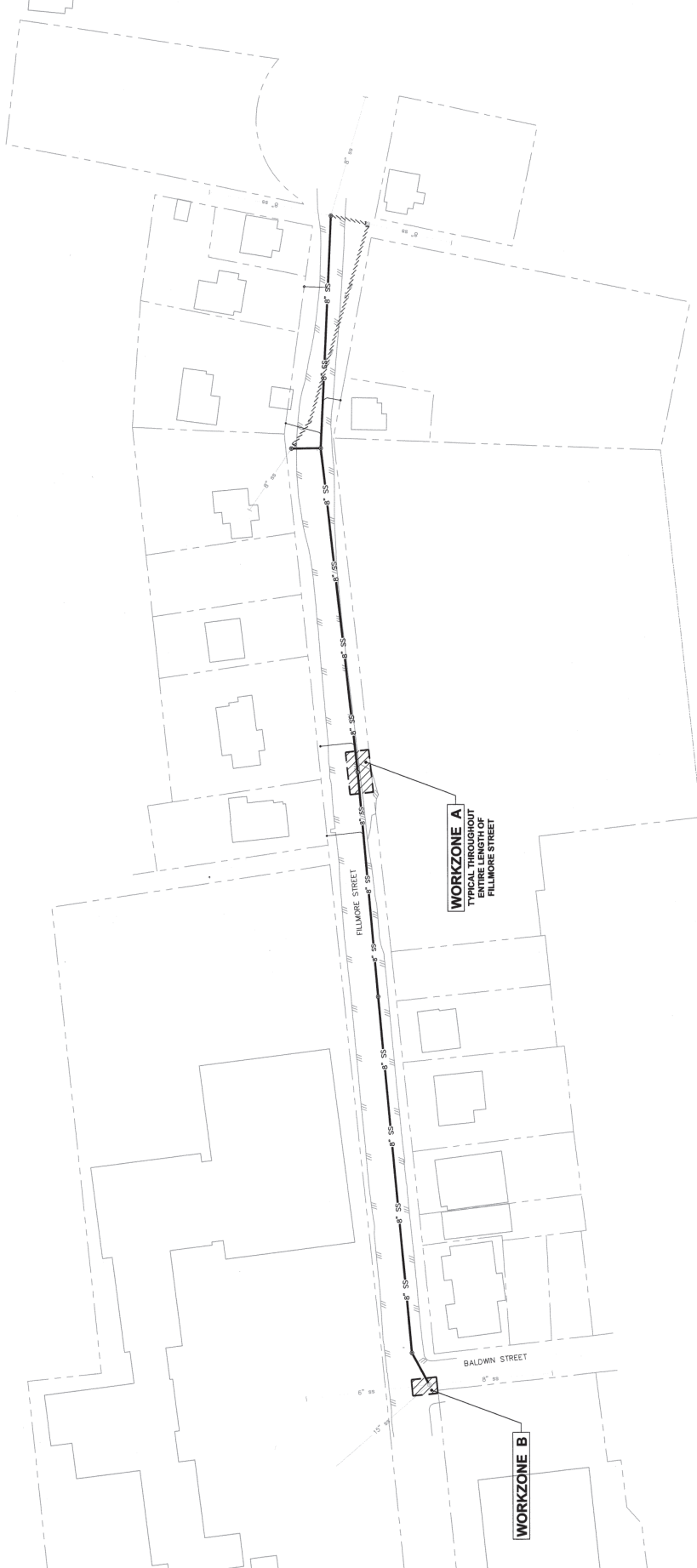


FILLMORE STREET SEWER EXTENSION

CITY OF STAUNTON, VIRGINIA

REVISIONS	
06/16/18	PER CITY COMMENTS
05/29/18	PER CITY COMMENTS
17020950-010303	
3-29-2018	
17020950-010303	
5	
5 OF 9	





TRAFFIC CONTROL NOTES

1. ALL TRAFFIC CONTROL MEASURES SHALL COMPLY WITH THE LATEST EDITIONS OF THE VIRGINIA WORK PROTECTION MANUAL (VWPWM), THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND THE CITY SPECIFICATION SECTION 102 - TRAFFIC CONTROL.
2. CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC THROUGHOUT THE PROJECT AREA.
3. CONTRACTOR SHALL STAGE WORK TO MINIMIZE THE CLOSURE OF DRIVEWAYS.
4. ALL SIGNAGE AND TRAFFIC CONTROL SHALL BE SUBJECT TO THE CITY'S APPROVAL.



DETAILS FILLMORE STREET SEWER EXTENSION CITY OF STAUNTON, VIRGINIA

REVISIONS	DESIGNED BY: MSH
05/15/18	DRAWN BY: JYG
PER CITY COMMENTS	CHECKED BY: EEB
	SCALE: NOT TO SCALE
	DATE: 3/29/2018
	PROJECT NUMBER:
	17020930-010303
	8
	8 OF 9



