BID PROPOSAL AND CONTRACT DOCUMENTS

GYPSY HILL PARK
STREAM RESTORATION

BID# A00224

Department of Public Works

JANUARY 10, 2024

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ADVERTISEMENT FOR BIDS

PROJECT: **GYPSY HILL PARK STREAM RESTORATION**
City of Staunton, Virginia
DATE DUE: February 9, 2024 2:00 P.M.
BID # A00224

The City of Staunton, Virginia, (hereinafter called the "**Owner**", or "**Public Body**") will receive sealed Bids for the furnishing of all labor, materials, supervision, and equipment necessary to complete above titled project at the City's Purchasing Agent's Office, located at 116 W. Beverley Street, City Hall, Third Floor, until **2:00 pm local time on February 9, 2024,** at which time the Bids will be publicly opened and read aloud.

A mandatory, virtual, pre-bid meeting will be held **January 23, 2024 at 2:00 p.m.** The link to the virtual meeting is:

Password: 831137
Phone one-tap: US: +16465588656,,96871772588# or +16469313860,,96871772588#
Meeting URL: https://timmons.zoom.us/j/96871772588?pwd=NWU1S2ZVVkRpWXRjdDJjblF2dmhtUT09

BIDS RECEIVED AFTER THE DATE AND TIME SPECIFIED WILL BE REJECTED.

BIDS MUST BE SEALED, MARKED, AND DELIVERED TO:

Mail to:	**Overnight To:**
City of Staunton	**City of Staunton**
Chad Horvat	**Chad Horvat**
Finance Business Manager	**Finance Business Manager**
P.O. Box 58	**116 W. Beverley St., 3rd Floor**
Staunton, VA 24402-0058	**Staunton, VA 24401-0058**
Phone: (540) 332-3819	**Phone: (540) 332-3819**

The work for which bids are to be submitted consists of restoring a stream within Gypsy Hill Park in Staunton Virginia as detailed in the Scope of Work and in accordance with the Technical Specifications and Special Provisions and the Design Plans prepared by Timmons Group for the City of Staunton which begin on page 66 of this document.

Bidder must agree to **fully complete the work within 200 working days**. Working days refer to Monday through Fridays, excepting weekends and City of Staunton holidays.

If any person contemplating submitting a bid for construction of the Work is in doubt as to the true meaning of any part of the proposed Contract Documents, or finds discrepancies on or omissions from any part of the proposed Contract Documents, he shall submit a written request. Every request for such interpretation should be emailed to Pete Kesecker at KeseckerPK@ci.staunton.va.us. All questions must be received no later than **January 26, 2024 by 1:00 P.M.**

Questions will be answered in Addendum format and posted at the City of Staunton website https://www.ci.staunton.va.us/departments/finance/procurement and at the Virginia State Procurement site (eVA) https://mvendor.cgieva.com/Vendor/public/AllOpportunities. It is the responsibility of all bidders to ensure that they have received all addenda and to include signed copies of any and all addenda with their bid submission. Any and all such interpretations and any supplemental instructions will be posted on the City's website not later than close of business on **January 30, 2024 by 5:00 P.M.**

Bid Security in the amount of five percent (5%) of the Bid shall be submitted with each Bid. Bid Bond must be in the form of a cashier's check or certified check payable to the City of Staunton.

Contractor registration in accordance with Title 2.2 Chapter 43, Code of Virginia is required.

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 **GYPSY HILL PARK STREAM RESTORATION.**

The bidder shall include in its Bid the following notation:

"Licensed Virginia Contractor No. _____" (issued to contractor by DPOR)

"State Corporation Commission Registration No. _____" (issued to contractor by the SCC)

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

The Owner reserves the right to reject any and all Bids and to waive any minor non-substantive errors in the Bid.

Withdrawal of Bids due to error shall be subject to and in accordance with Section 2.2-4330 of the Code of Virginia and the Contract Documents.

The City of Staunton does not discriminate in the solicitation or awarding of contracts on the basis of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state or federal law.

BID DEADLINES

Invitation to Bid Posted		**January 10, 2024**
Mandatory Virtual Pre-Bid Meeting		**January 23, 2024 at 2:00 p.m.**

Link to Meeting:

Password: 831137
Phone one-tap: US: +16465588656,,96871772588# or +16469313860,,96871772588#
Meeting URL: https://timmons.zoom.us/j/96871772588?pwd=NWU1S2ZVVkRpWXRjdDJjblF2dmhtUT09

Questions Submission Deadline		**January 26, 2024 by 1:00 p.m.**
Addenda and Questions & Answers Posted		**January 30, 2024 by 5:00 p.m.**
Bid Submission Deadline		**February 9, 2024 by 2:00 p.m.**

END OF ADVERTISEMENT FOR BIDS

INFORMATION FOR BIDDERS

1. SECURING DOCUMENTS

1.1. 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, as specified in the Advertisement for Bid.

1.2. Bid documents are available for viewing and downloading from at the City of Staunton website https://www.ci.staunton.va.us/departments/finance/procurement and at the Virginia State Procurement site (eVA) https://mvendor.cgieva.com/Vendor/public/AllOpportunities.

1.3. The envelopes containing the bids must be sealed, addressed to the City of Staunton at **City of Staunton, Attn: Chad Horvat, 116 West Beverley, 3rd Floor Finance, Staunton, Virginia 24401** and designated as bid for: **GYPSY HILL PARK STREAM RESTORATION**.

1.4. 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 scfheduled time for the opening of bids or authorized postponement thereof.

2. PREPARATION OF BID AND SUBMISSION

Each bid must be submitted on the prescribed form in accordance with the following:

2.1. Each bid must be properly signed and with all blank spaces filled out, in ink or typewritten. The foregoing certification must be fully completed and executed when submitted. Do not make any modifications, erasures, deletions, additions or changes to the bid form. Unauthorized conditions, limitations, or provisions attached to the bid may be cause for rejections of the bid. Submit only the original signed copy of the bid.

2.2. Address bids to the Owner, and deliver to the address specified in the Advertisement for Bid on or before the day and hour set for opening the bids. Enclose each bid in an opaque, sealed envelope or box bearing on the outside the following:

2.2.1. Project Title

2.2.2. Name of the Bidder

2.2.3. Bidder's address

2.2.4. Registered contractor's Virginia Certification Number

2.2.5. Date and hour of the bid opening.

2.3. The sealed envelope containing the bid must be enclosed in another envelope and mailed to the address as specified in the Advertisement for Bids. The City of Staunton is not responsible for delays in the delivery of the mail by the U.S. Postal Service, private couriers, or the inter-office mail system. It is the sole responsibility of the bidder to see that their bid is received on time. No faxed or emailed bid will be considered. No bids received after the time fixed for receiving them will be considered. Late or incomplete

bids may be returned to the bidder. All expenses for making bids to the City shall be borne by the bidder.

2.4. Indicate receipt of issued addenda on the Bid Form. All Bidders are advised to check the City of Staunton's website https://www.ci.staunton.va.us/departments/finance/procurement or the eVA website https://mvendor.cgieva.com/Vendor/public/AllOpportunities to assure that all Addenda have been received and that the cost consequences thereof have been included in the Bid. Addenda.

2.5. Any bid may be withdrawn prior to the above scheduled time for the opening of Bids or authorized postponement thereof.

2.6. Any bid received after the time and date specified shall not be considered.

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

2.8. The following documents fully completed and signed where appropriate are required for a responsive Bid:

2.8.1. Signed Bid Form which includes acknowledgement of Addenda

2.8.2. Bid Bond

2.8.3. State Corporation Commission Registration

2.8.4. Non-Collusion Affidavit

2.8.5. Reference List

3. SUBCONTRACTS

3.1. The bidder is specifically advised that any person, firm, or other party to whom is proposed to award a subcontract under this contract must be acceptable to the Owner. The bidder must name the subcontractor(s), and the City reserves the right to determine whether any named subcontractor is fit and capable to perform the required work.

4. METHOD OF BIDDING

4.1. This is a unit price bid for the GYPSY HILL PARK STREAM RESTORATION. (See Bid Schedule.)

4.2. Although the bid is based upon unit prices, many items are to be priced under lump sum designations. It is the bidder's responsibility to verify the exact scope of work for all items in order to establish the bid price.

5. QUALIFICATIONS OF BIDDER

5.1. 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.

5.2. Contractor must demonstrate experience with at least four (4) stream restoration projects. These projects must include a minimum of 1,000 linear feet of channel restored and the installation of the following stream restoration practices:

5.2.1. Toe Wood/Brush Toe

5.2.2. Reinforced Soil Lifts

5.2.3. Rock/Log Vanes

5.2.4. Rock/Log Sills

5.3. Contractor must provide a contact person for each referenced project that can verify the successful completion of the projects or documentation from the owner or regulatory agency staff attesting to the successful completion of the projects.

5.4. Bids will only be accepted from Contractors who are experienced in and actively engaged in the type of construction of the item(s) called for in the bid. No bid will be accepted from or contract awarded to any person, firm, or corporation that is in arrears or is in default to the City upon any debt or contract, or that is a defaulter, as surety or otherwise, upon any obligation to said City or had failed to perform faithfully any previous contract with the City.

5.5. Bidders must certify in the bid form that they are not currently barred from bidding on contracts by any agency of the Commonwealth of Virginia or any federal agency.

5.6. 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.

6. BID SECURITY

6.1. 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

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

8. TIME AND COMPLETION AND LIQUIDATED DAMAGES

8.1. Bidder must agree to commence work on or before a date to be specified on a written "Notice to Proceed" from the OWNER.

8.2. Bidder must agree to fully complete the work AS INDICATED IN THE ADVERTISEMENT FOR BID.

8.3. OWNER and CONTRACTOR stipulate that time is of the essence and 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 $500.00 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. EXAMINATION OF DOCUMENTS AND SITE OF WORK

9.1. Each bidder must inform themselves 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 the contract. Insofar as possible, the contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

9.2. Before submitting a bid, each bidder shall carefully examine and read the Bid Documents, Construction Plans, Project Manual, and all other proposed Contract Documents (including all addenda), and shall visit the site of the work. Each bidder shall fully inform himself prior to bidding as to existing conditions and limitations under which the work is to be performed, and shall include in the bid a sum to cover the cost of items necessary to perform the Work as set forth in the proposed contract documents. No allowance will be made to a bidder because of lack of such examination and knowledge. The submission of a bid will be considered as conclusive evidence that the bidder has made such examination.

9.3. Attention is particularly called to those parts of the Contract Documents and Specifications, which deal with the following:

9.3.1. Inspection and testing of materials.

9.3.2. Insurance requirements (Section 2-Insurance of General Conditions)

9.4. 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 the bid.

10. ADDENDA AND INTERPRETATIONS OF CONTRACT DOCUMENTS PRIOR TO BIDDING

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

10.2. If any person contemplating submitting a bid for construction of the Work is in doubt as to the true meaning of any part of the proposed Contract Documents, or finds discrepancies on or omissions from any part of the proposed Contract Documents, they shall submit a written request. Every request for such interpretation should be emailed to Pete Kesecker at KeseckerPK@ci.staunton.va.us or mailed to address in the Advertisement for Bid. All questions must be received no later than 1:00 p.m. on January 26, 2024.

10.3. Questions will be answered in Addendum format and posted as outlined in the invitation to bid, at the City of Staunton website https://www.ci.staunton.va.us/departments/finance/procurement and at the eVA website https://mvendor.cgieva.com/Vendor/public/AllOpportunities It is the responsibility of all bidders to ensure that they have received all addenda and to include signed copies of any and all addenda with their bid submission. Any and all such interpretations and any supplemental instructions will be posted on the City website not later than close of business day on January 30, 2024.

10.4. 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 documents.

11. SECURITY AND FAITHFUL PERFORMANCE

11.1. Simultaneously with the 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.

11.2. Both payment bond and performance bond shall be in the amount of 100% of the contract price and shall list the Owner, City of Staunton, as beneficiary.

11.3. 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

12.1. 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. LAWS AND REGULATIONS

13.1. 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.

13.2. Contractor shall comply with Federal and State Requirements.

14. METHOD OF AWARD – LOWEST QUALIFIED BIDDER

14.1. The contract will be awarded on the basis of the sum of the Base Bid and the accepted Alternates.

14.2. The award will be made to the lowest responsible bidder whose bid conforms to the Advertisement, these Instructions and whose qualifications indicate the award will be most advantageous to the City.

14.3. The City reserves the right to reject any or all offers and to waive informalities and minor irregularities in offers received.

14.4. The City will notify all bidders of the award and return Bid Sureties to all but the successful bidder.

14.5. 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.

15. EXECUTION OF CONTRACT

15.1. The form of the Contract, which the successful bidder will be required to execute, is included in the Bid Documentation.

15.2. After notice from the City, the successful bidder has fourteen (14) business days to enter into a Contract or forfeit as liquidated damages the security deposit. By executing the Contract, the Contractor certifies that they have reviewed the Contract Documents and the project area and accepts the conditions of each.

15.3. At or prior to delivery of the signed Contract, the bidder to whom the Contract is awarded shall deliver to the Owner the following documents, as required by the Owner and the Contract Documents:

15.3.1. Certificates of Insurance and Endorsement

15.3.2. Labor and Materials Payment Bonds

15.3.3. Performance Bond

15.3.4. City Business License

15.3.5. Virginia State Contractor's License Number

15.4. Bonds and Certificates of Insurance shall be approved by the Owner before the successful bidder may proceed with the Work. Failure or refusal to provide Bonds or Certificates of Insurance and Endorsement in a form satisfactory to the Owner shall

subject the successful bidder to loss of time from the allowable construction period equal to the time of delay in furnishing the required material.

16. OBLIGATION OF BIDDER

16.1. 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).

16.2. 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 the bid.

16.3. 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 the 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 their claim of right to withdraw their bid within two (2) business days after the conclusion of the bid opening procedure.

16.4. 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

17.1. 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.

17.2. 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. PRE-BID MEETING

18.1. A mandatory pre-bid meeting will be held virtually on January 23, 2024 at 2:00 p.m. (See Advertisement for Bid for details.)

19. CITY BUSINESS LICENSE

19.1. City of Staunton Business License is required for successful award of this project. At or prior to delivery of the signed Contract, the bidder to whom the Contract is awarded shall deliver to the Owner a copy of their City Business License. The bidder shall ensure that the Business License indicates a basis amount equal to or greater than the awarded Contract value. For information on City Business Licenses contact the Staunton Commissioner of Revenue office at 540- 332-3829.

20. STANDARDS AND SPECIFICATIONS

20.1. Applicable work in this project shall conform to the current Virginia Department of Transportation (VDOT) Road and Bridge specifications, the current VDOT Road and Bridge Standards, the current Virginia Erosion and Sediment Control handbook, the current Virginia Erosion and Sediment Control regulations and the current City of Staunton Design and Construction Standards Manual.

21. CONSIDERATION OF PROJECT COMPLEXITIES

21.1. In preparing this bid, Contractor shall understand and account in their costs for the complexities involved in administering the construction required by this Contract. Contractor shall be aware that the project area receives regular traffic during the work day. Contractor shall accommodate such traffic through and around the work area in a safe and well-marked manner.

21.2. Submission of a bid shall be an affirmation that the Contractor understands these complexities and difficulties associated with this project, that they have included in their bid a sufficient dollar amount to compensate for the additional time and effort these complexities and difficulties will require on their part, and that they understand that the Owner will not accept any claim for time extension or additional costs associated with them.

22. INSURANCE REQUIREMENTS

22.1. By signing and submitting a bid or proposal the contractor certifies that if awarded the contract, they will have the insurance coverages as outlined in Section 2 - Insurance of the General Conditions at the time the contract is awarded. If any subcontractors are involved, the subcontractor will have the same insurance. The contractor further certifies that they or any subcontractor will maintain these coverages during the entire term of the contract.

SCOPE OF WORK

The Gypsy Hill Park Stream Restoration is located on one 135-acre city owned parcel. The site is located north of Thornrose Cemetery, south of Churchville Ave, and east of Shelburne Middle School. The site is bound by residential areas on all sides. The section of Peyton Branch being restored flows from north to south discharging into Lewis Creek which ultimately discharges to the south fork of the Shenandoah River.

The total drainage area to the site is approximately 1.34 square miles and is comprised of 24% impervious and 76% pervious surfaces. The existing Peyton Branch lies within an unconfined valley throughout most of the reach length. The streambed has downcut significantly creating an incised channel with bank heights ranging from 3.5 feet tall at the upstream end of the reach to 2.0 feet tall at the downstream end. The existing stream slope is an average of 2.5% in the main reach and an average of 3.5% in the tributary. According to the Rosgen Classification of Natural Rivers methodology, the stream in its existing state classified as a B4c in the main reach and a C in the tributary. Continuous land use changes within the watershed have contributed to the lateral and vertical channel instability. Due to the incised channel conditions, significant erosion has occurred.

Proposed restoration for the site will include an existing reach length of 1100 linear feet (LF) with a restoration length of approximately 1400 LF. Restoration efforts will consist of Natural Channel Design (NCD) techniques and will require a combination of Priority I and Priority II design methods. The slopes along the newly created flood bench will be graded between a 2:1 and 3:1 to create additional stability within the valley. A C4 channel has been designed for both the main reach and the tributary with several step-pool sequences interspersed throughout. This project involves a culvert daylight, spring box removal, pedestrian bridge installation, and maneuvering past several utility crossing along the main reach. Riffle cross sections were developed using a combination of Virginia Regional Curve data, reference reaches, onsite bankfull data collection, and stream gauge data. All denuded areas will be re-seeded, fertilized, matted, and planted with native woody stems and herbaceous cover. Large growth trees will be protected to the greatest extent practicable, allowing for increased seed dispersal and shade canopy for the newly planted seedlings.

Technical Specifications and Special Provisions

and

Design Plans

prepared by Timmons Group for the City of Staunton

begin on page 66 of this document.

END OF SCOPE OF WORK

BIDDER STATEMENT

We understand the Insurance Requirements of these specifications and will comply in full if awarded this contract.

Signature:_____ Date:_____

Name:_____ Title:_____

Name of Firm:_____

This document must be completed & returned with bid submission.

END OF INFORMATION FOR BIDDERS

BID FORMS

To: City of Staunton
City Purchasing Agent's Office
Third Floor, City Hall
P.O. Box 58
Staunton, Virginia 24402

Whom It May Concern:

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 they have carefully examined each and every item of the annexed Contract Documents and the Plans and Specifications pertaining hereto, and that they fully understand the same, and will make no claim, other than as stated therein, because of any misunderstanding or misconception concerning the nature, character 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 bidder understands that the quantities shown in the Bid Schedule are approximate only; and are subject to either increase or decrease based on the work shown on the Drawings and for changes in the work as directed by the Owner and that should the quantities of any of the items of work be increased, the undersigned proposes to do the additional work at the unit price set out herein, and should the quantities be decreased, they also understand that payment will be made on the actual quantities installed at the unit prices, and will make no claim for the anticipated profits for any decrease in the quantities. Actual quantities will be determined upon completion of the work. Lump sum bid items will not be adjusted.

This document must be completed & returned with bid submission.

BID WORKSHEET

GYPSY HILL PARK STREAM RESTORATION

Item No.	Spec.	BASE BID Item Description	Qty	Unit	Unit Price	Extended Price
1	01	Mobilization	1	L.S.		$
2	01	Demobilization	1	L.S.		$
3	03	Dewatering	1	L.S.		$
4	03	Construction Entrance	3	EA.		$
5	03	Temporary Stream Crossing	4	EA.		$
6	03	Silt Fence	500	L.F.		$
7	03	Straw Bale Barrier	100	L.F.		$
8	03	Safety Fence	250	L.F.		$
9	03	Barricade Tape	5,100	L.F.		$
10	03	Temporary Tree Preservation and Protection	2,750	L. F.		$
11	03	Temporary Seeding (As Needed)	2.6	AC.		$
12	04	Erosion Control Matting, KoirMat 700 by Nedia Enterprises Inc. or Approved Equivalent	700	S.Y.		$
13	05	Erosion Control Matting, Curlex I FibreNet by American Excelsior Co. or Approved Equivalent	3,850	S.Y.		$
14	02	Select Tree Removal (Trunks and Brush to be Utilized On-Site)	1.0	L.S.		$
15	18	Remove & Dispose of Concrete Pedestrian Bridge	1	L.S.		$
16	PLANS	Remove and Dispose of Existing Dual 36" CMP	300	L.F.		$
17	PLANS	Remove & Dispose of Spring Box	1	L.S.		$
18	PLANS	Remove, Store & Reinstall Riprap	300	TON		$
19	PLANS	Remove and Dispose of Existing 6" Ductile Iron Pipes	100	L.F.		$

20	PLANS	Remove and Dispose of Existing 8" Ductile Iron Pipes	80	L.F.		$
21	PLANS	Remove & Replace 6' Chain Link Fence	50	L.F.		$
22	PLANS	Temporarily Remove, Store & Reinstall 4' Chain Link Fence	150	L.F.		$
23	PLANS	Temporarily Remove, Store & Reinstall Aluminum Bench	4	EA.		$
24	PLANS	Temporarily Remove, Store & Reinstall Aluminum Picnic Table	3	EA.		$
25	PLANS	Temporarily Remove, Store & Reinstall Light Pole	2	EA.		$
26	PLANS	Relocate Underground Power Line (Coordinate with Dominion)	450	L.F.		$
27	PLANS	Relocate Underground Fiber Optic Line (Coordinate with Lumos Networks)	40	L.F.		$
28	06	Earthwork	1	L.S.		$
29	06	Fine Grading (Near Select Trees, Bridge Crossings, Concrete Channel, Fences, Outfalls & Light Poles)	600	S.Y.		$
30	07	Streambed Substrate Mix (6" D50)	220	C.Y.		$
31	07	Streambed Substrate Mix (9" D50)	50	C.Y.		$
32	PLANS	VDOT EC-1 Class A1 RipRap	10	C.Y.		$
33	19	Concrete Utility Encasement (Class A3)	55	L.F.		$
34	19	Concrete Sidewalk (4" Depth, Class A3)	510	S.Y.		$
35	19	VDOT Aggregate Material No. 21B (For Sidewalk) [6" Depth]	180	TON		$
36	14	Imbricated Wall (1 Row - 12")	550	L.F.		$
37	14	Imbricated Wall (1 Row - 18" High)	200	L.F.		$
38	10	Clay Plug	14	C.Y.		$
39	09	Brush Toe	450	L.F.		$
40	08, 11	Triple Log Sill (Including Geotextile)	37	EA.		$
41	08, 12	Rock Sill (Including Geotextile)	12	EA.		$

42	08, 13	Rock Cross Vane (Including Geotextile)	3	EA.		$
43	20	Pedestrian Bridge	1	L.S.		$
44	PLANS	Pedestrian Boardwalk	1	L.S.		$
45	PLANS	Educational Signage	4	EA.		$
46	15	Lime & Fertilizer	2.6	AC.		$
47	03	Straw Mulch	1.8	AC.		$
48	03	Permanent Seeding (VA E&SC Spec 3.32-C)	1.6	AC.		$
49	16	Wildflower & Grass Seeding (ERNMX-156)	1.0	AC.		$
50	17	Streambank Herbaceous Plugs (Materials & Installation)	6,000	EA.		$
51	17	Relocate Shrub with Tree Spade	11	EA.		$
52	17	Relocate Tree with Tree Spade	5	EA.		$
53	17	Tree Mats (Materials & Installation)	16	EA.		$
54	21	Maintenance of Traffic	1	L.S.		$
55	PLANS	Construction Staking	1	L.S.		$
56	PLANS	As-Built Survey	1	L.S.		$
BASE BID Total Unit Price Bid Amount (Sum of Items 1 - 56)					$	

Abbreviations: EA – Each, LF – Linear Feet, LS – Lump Sum, SF – Square Feet

Subtotal _____

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 fourteen (14) business days, 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 _____

Addenda No. _____ 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

_____

Registered Virginia Contractor's License No.

_____

Classification Expiration

_____

SCC Number

_____

Contractor's IRS Number

Dates this ____day of _____2024_____

By: _____

Printed Name: _____

Title: _____

Address: _____

_____

_____

Telephone: _____

**This document must be completed & returned with bid submission. **

END OF BID FORMS & WORKSHEETS

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 _____

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 their 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.

_____ (L.S.)
Principal

_____
Surety

By: _____

Seal

This document must be completed & returned with bid submission.

END OF BID BOND

STATE CORPORATION COMMISSION FORM

Virginia State Corporation Commission ("SCC") registration information:

The undersigned Offeror:

- ☐ is a corporation or other business entity with the following SCC identification number: _____ **-OR-**
- ☐ is not a corporation, limited liability company, limited partnership, registered limited liability partnership, or business trust **-OR-**
- ☐ is an out-of-state business entity that does not regularly and continuously maintain as part of its ordinary and customary business any employees, agents, offices, facilities, or inventories in Virginia (not counting any employees or agents in Virginia who merely solicit orders that require acceptance outside Virginia before they become contracts, and not counting any incidental presence of the Offeror in Virginia that is needed in order to assemble, maintain, and repair goods in accordance with the contracts by which such goods were sold and shipped into Virginia from bidder's out-of-state location) **-OR-**
- ☐ is an out-of-state business entity that is including with this bid an opinion of legal counsel which accurately and completely discloses the undersigned Offeror's current contacts with Virginia and describes why those contacts do not constitute the transaction of business in Virginia within the meaning of § 13.1-757 or other similar provisions in Titles 13.1 or 50 of the Code of Virginia. **Attach opinion of legal counsel to this form.**

****NOTE**** >> Check the following box if you have not completed any of the foregoing options but currently have pending before the SCC an application for authority to transact business in the Commonwealth of Virginia and wish to be considered for a waiver to allow you to submit the SCC identification number after the due date for proposals (the Commonwealth reserves the right to determine in its sole discretion whether to allow such waiver):

Signature: _____ **Date:** _____

Name: _____
Print

Title: _____

Name of Firm: _____

This document must be completed & returned with bid submission.

END OF STATE CORPORATION COMMISSION FORM

NON-COLLUSION AFFIDAVIT

Under oath, I hereby affirm under penalty of perjury:

(1) That I am the bidder or a partner of the bidder, or an officer or employee of the bidding corporation with authority to sign on its behalf;

(2) That the attached bid or bids have been arrived at by the bidder and have been arrived at and submitted without collusion or any design to limit bidding or competition;

(3) That the contents of the bid or bids have not been communicated to any person not an employee or agent of the bidder on any bid furnished with the bid or bids, and will not be communicated to any such person prior to the official opening of the bid or bids; and

(4) That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Signed_____

Title_____

Firm Name _____

CITY / COUNTY OF _____

STATE OF _____, to wit:

I, _____, a Notary Public, do certify that

_____whose name is signed to the foregoing

has this date acknowledged the same before me in my City foresaid.

Given under my hand this _____ day of _____, 20___.

My Commission expired _____.

_____

Notary Public

This document must be completed & returned with bid submission.

END OF NON-COLLUSION AFFIDAVIT

REFERENCE LIST

Indicate below a listing of at least three (3) current or recent client references, either commercial or governmental, that your company is servicing, has serviced, or has provided similar goods or services.

Reference #1

Company: _____ Contact Person: _____

Phone #: _____ Email: _____

Project: _____ Dates of Service: _____

Reference #2

Company: _____ Contact Person: _____

Phone #: _____ Email: _____

Project: _____ Dates of Service: _____

Reference #3

Company: _____ Contact Person: _____

Phone #: _____ Email: _____

Project: _____ Dates of Service: _____

Indicate below a listing of at least one (1) current or recent client/account that has terminated your company's services within the last two (2) years. Account(s) are preferred to be government accounts of a similar size and nature.

Terminated Reference *(if Applicable)*

Reference #1

Company: _____ Contact Person: _____

Phone #: _____ Email: _____

Project: _____ Dates of Service: _____

Company Background *(Attach additional sheets if necessary.)*

Number of Years in Business: _____

Overview of Work History, Experience & Background of Company:

_____

_____

_____

This document must be completed & returned with bid submission.

END OF REFERENCE LIST

CONTRACT

THIS CONTRACT, dated this **_____** day of **_____, 2024**, 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 **_____** (the "CONTRACTOR"), a _____ Corporation licensed and registered to do business in the Commonwealth of Virginia, (SCC #_____).

WITNESSETH: That for and in consideration of the payments and contract 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:

PROJECT: GYPSY HILL PARK STREAM RESTORATION

Hereafter 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 CONTRACT between OWNER and CONTRACTOR, consist of the following:

1. **This Contract**
2. **Information for Bidders**
3. **Contract Provisions for Non-Federal Entity Contract Under Federal Awards**
4. **Bid and Addenda**
5. **Performance and Payment Bonds**
6. **General Conditions**
7. **Procurement Guidelines**
8. **Technical Specifications & Special Provisions**
9. **Final Design Plans**

Said documents are those prepared by the City Environmental Programs Division 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 **TIME IS OF THE ESSENCE** and 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 **$500.00** 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 General Conditions and the Special and Supplemental Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this contract, in the year and day first above mentioned.

Environmental Program Administrator Initials

Director of Finance Initials

City Manager or Authorized Representative

Approved as to Legality and Form:

City Attorney

(Seal)

Contractor

By:

Secretary

Witness

Title

Address

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

END OF CONTRACT

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 Surity)

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

_____

_____

(Insert name and address of Owner)

As Obligee 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 _____
,entered into a Contract with Owner for:

_____

_____

_____

(Insert name or description and location of project)

in accordance with Drawings and Specifications as prepared by:

_____

_____

_____

_____

(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 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 _____ , _____

In the presence of:

_____ (SEAL)
PRINCIPAL

_____
WITNESS

_____
BY TITLE

_____
SURETY

_____
WITNESS

_____
BY TITLE

Surety: (Attach power of attorney)

CONTRACTOR'S PERFORMANCE BOND

Project: _____

_____(SEAL)

PRINCIPAL

_____BY TITLE

_____SURETY

_____BY TITLE

CONTRACTOR'S PERFORMANCE BOND

Project: _____

**This document must be completed & returned with bid submission. **

END OF PERFORMANCE BOND

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 Obligee 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
entered into a Contract with Owner for:

_____

_____

(Insert name or description and location of project)

in accordance with Drawings and Specifications as prepared by: _____

_____

_____

(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

reasonable 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 many 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 _____
in the presence of:

_____ (SEAL)
PRINCIPAL

_____ _____
WITNESS BY TITLE

_____ (SEAL)
SURETY

_____ _____
WITNESS TITLE
BY

Surety:
(Attach power of attorney)

CONTRACTOR'S LABOR AND MATERIAL PAYMENT BOND

Project _____

END OF PAYMENT BOND

GENERAL CONDITIONS

1. INTENT

1.1. The Contract Documents comprise the entire Contract 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.

2. INSURANCE

2.1. The Contractor shall not commence Work under this contract until they have 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 their subcontract until the insurance required of the Subcontractor has been so obtained and approved.

2.1.1. 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 their 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 their employees as are not otherwise protected.

2.1.2. 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.

2.1.3. Subcontractor's General Liability and Vehicle Liability Insurance: The Contractor shall either:

2.1.3.1. require each of their Subcontractors to procure and to maintain during the life of their subcontract, Subcontractor's General Liability and Vehicle Liability Insurance of the type and in the amounts specified in subparagraph (2.1.2) hereof; or

2.1.3.2. insure the activities in their policy, specified in subparagraph (2.1.2) hereof.

2.1.4. 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.

2.1.5. Scope of Insurance and Special Hazards: The insurance required under subparagraphs (2.1.2) and (2.1.3) hereof shall provide adequate protection for the Contractor and their 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.

2.1.6. 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 their Subcontractor's Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards:

2.2.1. Owner's Protective Liability Insurance

2.2.2. 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.

2.3.1. The Contractor shall either:

2.3.1.1. Require each of their Subcontractors to procure and to maintain during the life of their subcontract, Subcontractor's General Liability and Vehicle Liability

Insurance of the type and in the same amounts as specified in the preceding paragraph; or

2.3.1.2. Insure the activities of their Subcontractors in their own policy.

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 their 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 overnight 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.

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 Special and Supplemental 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:

4.3.1. reviewing and checking all such information and data;

4.3.2. locating all Underground Utilities shown or indicated in the Contract Documents

4.3.3. coordination of the Work with the owners of such Underground Facilities during construction;

4.3.4. 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 their 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".

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.

6. SHOP DRAWING, MATERIAL DATA SHEETS

6.1. Contractor shall submit Shop Drawings to Environmental Programs Administrator 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:

6.4.1. "***Or-Equal***": If in Environmental Programs Administrator'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 Environmental Programs Administrator as an "or-equal" item, in which case review and approval of the proposed item may, in Environmental Programs Administrator's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.

6.4.2. ***Substitute Items****:* If in Environmental Programs Administrator'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 Environmental Programs Administrator 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 Environmental Programs Administrator 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 Contact 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 Environmental Programs Administrator in evaluating the proposed substitute. Environmental Programs Administrator may require Contractor to furnish additional data about the proposed substitute.

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 their 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.

7.2.1. The contractor shall provide a superintendent and work force that is cooperative and friendly with the business community and general public. Abusive language and actions are prohibited.

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.

7.6.1. The Contractor shall take steps necessary to provide the safety necessary to protect the general public in the area.

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 their 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 their 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 their 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 Contract.

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 Environmental Programs Administrator, 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

7.15.1. provide a drug-free workplace for the Contractor’s employees

7.15.2. post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations and such prohibition

7.15.3. state in all solicitations or advertisements for employees placed by or on behalf of the Contractor that the Contractor maintains a drug free workplace; and

7.15.4. 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:

7.16.1. 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.

7.16.2. 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.

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 their own expense, all temporary structures, rubbish and waste materials, resulting from their operations; and shall leave the site in a neat, orderly condition.

9. OWNER'S RESPONSIBILITY

9.1. The Owner through their designated representatives shall have general supervision and direction of the work. They have 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 their 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.

10. CHANGES IN WORK

10.1. Without invalidating the Contract 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 the City.

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.

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:

12.3.1. delays caused by or within the control of Contractor, or

12.3.2. 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.

13. SEPARATE CONTRACTS

13.1. 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 their work with theirs.

14. PAYMENT

14.1. 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.

14.2. Material stored on site shall be paid for based on supplier invoice only.

14.3. 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 their 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.

14.4. Payments to Subcontractors: The Contractor shall take one of two actions within seven days after receipt of payment by the City:

14.4.1. 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

14.4.2. Notify the City and Subcontractor, in writing, of their intention to withhold all or 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.

14.5. Upon the completion of the work and its final acceptance by the City, the Contractor shall submit their final estimate over their 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. 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.

14.6. The General Contractor shall have the option to use an escrow account procedure for utilization of the City's retainage funds, when contracting directly with the City for contracts involving $200,000 or more of public funds, where portions of the contract price are to be retained, where such contracts are for: construction of highways, roads, streets, bridges, parking lots, demolition, clearing, grading, excavating, paving, pile driving, drainage structures and the installation of water, gas, sewer lines and pumping stations. In the event a Contractor elects to utilize the escrow account procedure, then any sub such public project which provides for progress payments shall be subject to the same escrow account procedures.

14.6.1. The Contractor shall indicate its election to use the escrow account procedure, by completing the escrow agreement form and contract included in the Bid Documents for this Project. The form and contract shall be submitted to the City within fifteen (15) calendar days after the Contractor is notified of the award of the contract. If the escrow agreement form and contract are not submitted within the 15-day period, then the Contractor shall forfeit its right to the use of the escrow account procedure.

14.6.2. In order to have retained funds paid to an escrow agent, the Contractor, the escrow agent, and the surety shall execute an escrow agreement form. The Contractor's escrow account shall be a trust company, bank or savings institution with its principal office located in the Commonwealth of Virginia.

14.6.3. This escrow account procedure shall not apply to public contracts for construction of railroads, public transit systems, runways, dams, foundations, installation or maintenance of power systems for the generation and primary and secondary distribution of electric current ahead of the customer's meter, the installation or maintenance of telephone, telegraph or signal systems for public utilities or the construction or maintenance of solid waste or recycling facilities and treatment plants.

15. CLAIM PROCESS

15.1. 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.

END OF GENERAL CONDITIONS

CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS

In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.

1. Contracts for more than the simplified acquisition threshold currently set at $250,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by *41 U.S.C. 1908*, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.
2. All contracts in excess of $10,000 must address termination for cause and for convenience by the non-federal entity including the manner by which it will be affected and the basis for settlement.
    a. **Termination for Convenience**. Contract is terminated due to reasons known to COS, i.e., program changes, changes in state-of-the art equipment or technology, insufficient funding, etc. Termination is utilized when the contractor is not in violation of the contract terms and conditions.
    b. **Termination for Cause**. Contract is terminated due to actions by the contractor, i.e., failure to perform, financial difficulty, slipped schedules, etc. In certain instances, termination settlement may include re-procurement costs to be paid by the contractor.
3. Equal Employment Opportunity. Except as otherwise provided under *41 CFR Part 60*, all contracts that meet the definition of "federally assisted construction contract" in *41 CFR Part 60-1.3* must include the equal opportunity clause provided under *41 CFR 60-1.4(b)*, in accordance with Executive Order 11246, "Equal Employment Opportunity" (*30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339*), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at *41 CFR part 60*, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."
4. Davis-Bacon Act, as amended (*40 U.S.C. 3141-3148*). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (*40 U.S.C. 3141-3144, and 3146-3148*) as supplemented by Department of Labor regulations (*29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"*). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (*40 U.S.C. 3145*), as supplemented by Department of Labor regulations (*29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in*

Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which they are otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

5. Contract Work Hours and Safety Standards Act (*40 U.S.C. 3701-3708*). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and *3704*, as supplemented by Department of Labor regulations (*29 CFR Part 5*). Under *40 U.S.C. 3702* of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of *40 U.S.C. 3704* are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

6. Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of "funding agreement" under *37 CFR § 401.2 (a)* and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of *37 CFR Part 401*, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

7. Clean Air Act *(42 U.S.C. 7401-7675*) and the Federal Water Pollution Control Act (*33 U.S.C. 1251-1388*), as amended - Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (*42 U.S.C. 7401-7675*) and the Federal Water Pollution Control Act as amended (*33 U.S.C. 1251-1388*). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

8. Debarment and Suspension (Executive Orders 12549 and 12689) - A contract award (*see 2 CFR 180.220*) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at *2 CFR 180* that implement Executive Orders 12549 (*3 CFR part 1986 Comp., p. 189*) and 12689 (*3 CFR part 1989 Comp., p. 235*), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

9. Byrd Anti-Lobbying Amendment (*31 U.S.C. 1352*) - Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of

Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by *31 U.S.C. 1352*. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

10. §200-323Procurement of recovered materials. A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at *40 CFR part 247* that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.
11. To the extent that a procurement award or transaction for goods or services under this purchase order or other contract is funded with federal funds under American Rescue Plan Act (ARPA), the successful bidder or proposer or awardee must comply with the federal domestic preference for procurements requirements of the federal regulations prescribed in Section 200.322 of Title 2 of the Code of Federal Regulations (CFR). The successful bidder or proposer or awardee certifies that any contracts, as well as any subcontracts, shall include this requirement, which mandates that to the greatest extent practicable there shall be a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). Definition of the terms "produced in the United States" and "manufactured products" may be found in the CFRS at: Electronic Code of Federal Regulations (eCFR) or successor url. And to the extent not in compliance with such requirements, the successful bidder or proposer or awardee shall indemnify, defend and hold harmless the City of Staunton, to the fullest extent permitted by law
12. § 200.216 Prohibition on certain telecommunications and video surveillance services or equipment.
    a. Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:
        1. Procure or obtain;
        2. Extend or renew a contract to procure or obtain; or
        3. Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
            i. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security

purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

ii. Telecommunications or video surveillance services provided by such entities or using such equipment.

iii. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

b. In implementing the prohibition under Public Law 115-232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

c. See Public Law 115-232, section 889 for additional information.

d. See also § 200.471.

NOTE: As this Project is a recipient of Federal funding, all bids shall be subject to both the Procurement Guidelines and the Contract Provisions for Non-Federal Entity Contracts Under Federal Awards included in this Invitation for Bid. It is the bidder's responsibility to be registered on the Federal Government's SAM.gov website (https://sam.gov/content/home) prior to submitting a bid.

ESCROW ACCOUNT ELECTION FORM

ELECTION OF ESCROW ACCOUNT PROCEDURE FOR RETAINAGE

If determined to be the successful low bidder(s), the below signed elects to use the Escrow Account Procedure for retainage.

_____

Write "Yes" or "No" on above line

If the successful bidder elects ("Yes") to use the Escrow Account Procedure for Retainage, the following "Escrow Agreement" form provided below shall be executed and submitted to the City within fifteen (15) calendar days after notification. If the "Escrow Agreement" form is not submitted within the fifteen (15) day period, the Contractor shall forfeit their rights to the use of the Escrow Account Procedure.

Company: _____

Authorized Signature: _____

SIGNATURE PAGE TO FOLLOW

ESCROW AGREEMENT

CITY OF STAUNTON, VIRGINIA

THIS AGREEMENT ("Agreement"), made and entered into this _____ day of _____, 2024 by, between and among the City of Staunton, Virginia ("City" or Owner"),

_____("Contractor"),

_____(Name of Escrow Agent)

_____(Address of Escrow Agent)

a trust company, bank, or savings and loan institution (hereinafter referred to collectively as "Escrow Agent") with its principal office located in the Commonwealth of Virginia ("Commonwealth") and _____("Surety") provides:

I.

The City and the Contractor have entered into a contract dated _____

with respect to City of Staunton ITB No. _____, for_____

_____("Contract"). This Agreement is pursuant to, but in no way amends or modifies, the Contract. Payments made hereunder or the release of funds from escrow shall not be deemed approval or acceptance of performance by the Contractor. Payments should be made to _____ and mailed to

_____(Name and Address of Escrow Agent).

II.

In order to assure full and satisfactory performance by the Contractor of its obligations under the Contract, the City is required thereby to retain certain amounts otherwise due the Contractor. The Contractor has, with the approval of the City, elected to have these retained amounts held in escrow by the Escrow Agent. This agreement sets forth the terms of the escrow. The Escrow Agent shall not be deemed a party to, bound by, or required to inquire into the terms of the Contract or any other instrument or agreement between the City and the Contractor.

III.

The City shall from time to time pursuant to the Contract pay to the Escrow Agent amounts retained by it under the Contract. Except as to amounts actually withdrawn from escrow by the City, the Contractor shall look solely to the Escrow Agent for the payment of funds retained under the Contract and paid by the City to the Escrow Agent.

The risk of loss by diminution of the principal of any funds invested under the terms of the Contract shall be solely upon the Contractor.

Funds and securities held by the Escrow Agent pursuant to this Escrow Agreement shall not be subject to levy, garnishment, attachment, lien, or other process whatsoever. Contractor agrees not to assign, pledge, discount, sell or otherwise transfer or dispose of their interest in the escrow account or any part thereof, except to the Surety.

IV.

Upon receipt of checks drawn by the City and made payable to the Escrow Agent under this agreement, the Escrow Agent shall promptly notify the Contractor, negotiate the same and deposit or invest and reinvest the proceeds in approved securities in accordance with the written instructions of the Contractor. In no event shall the Escrow Agent invest the escrowed funds in any security not approved, as set forth in Section V. below.

V.

The following securities, and none other, are approved securities for all purposes of this Agreement:

(1) United States Treasury Bonds, United States Treasury Notes, United States Treasury Certificates of Indebtedness or United States Treasury Bills,

(2) Bonds, notes and other evidences of indebtedness unconditionally guaranteed as to the payment of principal and interest by the United States,

(3) Bonds or notes of the Commonwealth of Virginia,

(4) Bonds of any political subdivision of the Commonwealth of Virginia, if such bonds carried, at the time of purchase by the Escrow Agent or deposit by the Contractor, a Standard and Poor's or Moody's Investor Service rating of at least "A", and

(5) Certificates of deposit issued by commercial Banks located within the Commonwealth of Virginia, including, but not limited to, those insured by the Escrow Agent and its affiliates.

(6) Any bonds, notes, or other evidences of indebtedness listed in Sections (1) through (3) may be purchased pursuant to a repurchase agreement with a bank, within or without the Commonwealth of Virginia having a combined capital, surplus and undivided profit of not less than $25,000,000, provided the obligation of the bank to repurchase is within the time limitations established for investments as set forth herein. The repurchase agreement shall be considered a purchase of such securities even if title, and/or possession of such securities is not transferred to the Escrow Agent, so long as the repurchase obligation of the bank is collateralized by the securities themselves, and the securities have on the date of the repurchase agreement a fair market value equal to at least 100% of the amount of the repurchase obligation of the bank, and the securities are held by a third party, and segregated from other securities owned by the bank.

(7) No security is approved hereunder which matures more than five (5) years after the date of its purchase by the Escrow Agent or deposit by the Contractor.

VI.

The Contractor may from time to time withdraw the whole or any portion of the escrowed funds by depositing with the Escrow Agent approved securities as set forth in Section V. above in an amount equal to, or in excess of, the amount so withdrawn. Any securities so deposited or withdrawn shall be valued at such time of deposit or withdrawal at the lower of par or market value, the latter as determined by the Escrow Agent. Any securities so deposited shall thereupon become a part of the escrowed fund.

Upon receipt of a direction signed by the City of Staunton Director of Finance or designee, the Escrow Agent shall pay the principal of the fund, or any specified amount thereof, to the City or the Contractor as the City may direct. If payment is to be made to the Staunton City Treasurer, it shall be made in cash or c ash equivalent. However, if payment has been authorized to be made to the Contractor, the Contractor

may specify to the Escrow Agent if payment is to be made in cash or in kind. Any such payment and delivery required hereunder shall be made as soon as is practicable after receipt of the direction.

VII.

For its services hereunder, the Escrow Agent shall be entitled to a reasonable fee in accordance with its published schedule of fees or as may be agreed upon by the Escrow Agent and the Contractor. Such fee and any other costs of administration of this Agreement shall be paid from the income earned upon the escrowed fund and, if such income is not sufficient to pay the same, by the Contractor.

VIII.

The net income earned and received upon the principal of the escrowed fund shall be paid over to the Contractor in quarterly or more frequent installments. Until so paid or applied to pay the Escrow Agent's fee or any other costs of administration, such income shall be deemed a part of the principal of the fund.

IX.

The Surety undertakes no obligation hereby but joins in this Agreement for the sole purpose of acknowledging that its obligations as surety for the Contractor's performance of the contract are not affected hereby.

X.

This Escrow Agreement shall be governed by, and construed in accordance with, the laws of the Commonwealth of Virginia, without application of Virginia’s conflict of law provisions. Venue and any actions for any litigation, suits, and claims arising from or connected with this Escrow Agreement and/or Contract referred to herein shall only be proper in the City of Staunton Circuit Court, or in the Staunton General District Court if the amount in controversy is within the jurisdictional limit of such court, and all parties to this Escrow Agreement and/or such Contract voluntarily submit themselves to the jurisdiction and venue of such courts, regardless of the actual location of such parties.

IN WITNESS WHEREOF, the parties hereto have signed this Escrow Agreement by their authorized representatives.

Attest: (if corporation)

Witness: (if individual)

Typed Name of Contractor

President/Vice-President

Partner or Owner (Seal)

Attest:

Typed Name of Escrow Agent

Bank Officer

Vice President

Witness:

Typed Name of Surety Company

By:

Attorney-In-Fact

Attest:

City of Staunton, Virginia

City Clerk

City Manager

Approved as to form:

City Attorney

Approved as to execution:

City Attorney

PROCUREMENT GUIDELINES

A. CHARGES AND PAYMENTS

1. To Prime Contractor:

a. Invoices for items ordered, delivered and accepted shall be submitted by the contractor directly to the payment address shown on the purchase order/contract. All invoices shall show the purchase order number.

b. Any payment terms requiring payment in less than 30 days will be regarded as requiring payment 30 days after satisfactory invoice or delivery, whichever occurs last. This shall not affect offers of discounts for payment in less than 30 days, however.

c. All goods or services provided under the contract, which are to be paid for with public funds, shall be billed by the contractor at the contract price, regardless of which public agency is being billed.

d. The following shall be deemed to be the date of payment: the date of postmark in all cases where payment is made by mail, or the date of offset when offset proceedings have been instituted as authorized under the Virginia Debt Collection Act.

e. Unreasonable Charges. Under certain emergency procurements and for most time and material purchases, final job costs cannot be accurately determined at the time orders are placed. In such cases, contractors should be put on notice that final payment in full is contingent on a determination of reasonableness with respect to all invoiced charges. Charges which appear to be unreasonable will be researched and challenged, and that portion of the invoice held in abeyance until a settlement can be reached. Upon determining that invoiced charges are not reasonable, the City of Staunton shall promptly notify the contractor, in writing, as to those charges which it considers unreasonable and the basis for the determination. A contractor may not institute legal action unless a settlement cannot be reached within thirty (30) days of notification. The provisions of this section do not relieve City of Staunton of its prompt payment obligations with respect to those charges which are not in dispute (Code of Virginia, § 2.2-4363).

2. Payment to Subcontractors:

a. An offeror awarded a contract under this solicitation is hereby obligated:

b. To pay the subcontractor(s) within thirty (30) days of the offeror's receipt of payment from the City of Staunton for the proportionate share of the payment received for work performed by the subcontractor(s) under the contract; or

c. To notify the agency and the subcontractor(s), in writing, of the offeror's intention to withhold payment and the reason.

d. The offeror is obligated to pay the subcontractor(s) interest at the rate of one percent per month (unless otherwise provided under the terms of the contract) on all amounts owed by the offeror that remain unpaid thirty (30) days following receipt of payment from the City of Staunton, except for amounts withheld as stated in (2) above. The date of mailing of any payment by U.S. Mail is deemed to be payment to the addressee. These provisions apply to each sub-tier contractor performing under the primary contract. An offeror's obligation to

pay an interest charge to a subcontractor may not be construed to be an obligation of the City of Staunton.

B. TESTING AND INSPECTION

The City of Staunton reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications.

C. ASSIGNMENT OF CONTRACT

A contract shall not be assignable by the offeror in whole or in part without the written consent of the City of Staunton.

D. DEFAULT

In case of failure to deliver goods or services in accordance with the contract terms and conditions, the City of Staunton, after due oral or written notice, may procure them from other sources and hold the offeror responsible for any resulting additional purchase and administrative costs. This remedy shall be in addition to any other remedies which the City of Staunton may have.

E. TAXES

Sales to the City of Staunton are exempt from State sales tax. State sales and use tax certificates of exemption, Form ST-12, will be issued upon request, as the City of Staunton determines appropriate. Any deliveries under this contract shall be free of Federal excise and transportation taxes.

F. INDEMNIFICATION

The Offeror agrees to indemnify, defend, and hold harmless the City of Staunton and it's Council members, officers, directors, agents 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 or intellectual infringement claim arising out of services performed hereunder or by reason of the intentional or negligent acts or omissions of the Offeror, its employees, agents or sub-contractors, including any independent contractors. The provisions of this section of shall survive the completion, terminations or expiration of the contract.

G. LIABILITY AND LITIGATION

The City shall not indemnify or hold harmless any contractor or other third party. The City does not waive any right or release any party from liability, whether on its own behalf or on behalf of any boards, employees or agents. The City does not waive the right to trial by jury for any cause of action arising from the Contract and shall not submit any Contract claim to binding arbitration or mediation. The City shall not be liable to contractor for any special, punitive or exemplary damages arising from the performance of the contract, including, but not limited to, incidental damages, and lost profit and lost wages, even if such special damages are reasonably foreseeable. Any provision(s) in the Contract contrary to these statements is/are hereby deleted and rendered void.

H. COPYRIGHTS

The Offeror hired pursuant to this contract is prohibited from copyrighting any papers, interim reports, forms, or other materials resulting from performance under this agreement, without the written permission of the Purchasing Agency. Data and their analysis, forms, and images gathered or developed during fulfillment of this contract may be used by the Offeror in subsequent copyrighted publications, provided

the copyrights do not in any way restrict or limit the Purchasing Agency's ownership, use, or distribution of said information, forms, or images.

I. AWARDING THE CONTRACT

The award of a contract shall be determined in the sole discretion of the City based upon evaluation of all information as the City may request. The City reserves the right to waive any informality in bids submitted in response to this Invitation to Bid when such waiver is in the best interest of the City.
The City of Staunton shall endeavor to award the contract within thirty (30) days from receipt of bids. Notice of award will be posted on the City Web Site at http://www.staunton.va.us/solicitation-results

J. PUBLIC INSPECTION OF PROCUREMENT RECORDS

1. Bids submitted shall be subject to public inspection only in accordance with Section 2.2-4342 of the Code of Virginia, which reads, in essence, as follows:

2. Public inspection of certain records:

a. Except as provided in this section, all proceedings, records, contracts, and other public records relating to procurement transactions shall be open to the inspection of any citizen, or any interested person, firm or corporation, in accordance with the Virginia Freedom of Information Act.

b. Cost estimates relating to a proposed procurement transaction prepared by or for a public body shall not be open to public inspection.

c. Any competitive negotiation offeror, upon request, shall be afforded the opportunity to inspect bid records within a reasonable time after the evaluation and negotiations of bids are completed but prior to award, except in the event that the City decides not to accept any of the bids and to reopen the contract. Otherwise, bid records shall be open to public inspection only after award of the contract.

d. Any inspection of procurement transaction records under this section shall be subject to reasonable restrictions to ensure the security and integrity of the records.

e. Trade secrets or proprietary information submitted by a bidder, offeror or contractor in connection with a procurement transaction shall not be subject to the Virginia Freedom of Information Act; however, the bidder, offeror or contractor shall

i) invoke the protections of this section prior to or upon submission of the data or other materials,

ii) identify the data or other materials to be protected, and

iii)state the reasons why protection is necessary.

Bidder may not invoke this protection on the entire bid – only on those sections or data which are considered trade secrets or proprietary.

K. ETHICS IN PUBLIC CONTRACTING

By submitting their bid, all offerors certify that their bid is made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other offeror, supplier, manufacturer or sub-contractor in connection with their bid, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance,

deposit of money, services or anything of more than nominal value, present or promised unless consideration of substantially equal or greater value was exchanged.

L. FORUM SELECTION

This solicitation and any resulting contract shall be governed in all respects by the laws of the Commonwealth of Virginia, without reference to conflict of laws principles or rules of construction. Any action, proceeding, or claim in any way related to this agreement or the relationship between the parties shall be filed and maintained solely in the General District Court or the Circuit Court of the City of Staunton, Virginia.

M. PROMPT PAYMENT ACT

Any contract awarded as a result of this Invitation to Bid shall incorporate the terms and conditions of Article 4 of the Virginia Public Procurement Act with respect to Prompt Payment.

N. REJECTION OF BIDS

The City reserves the right, at any time prior to award of the contract, to reject any and all bids, or any part thereof, to make no award, and/or to issue a new Invitation to Bid, or make modifications, corrections of additions to the information contained herein.
Offerors are cautioned this is an Invitation to Bid, NOT a request to contract.

O. COSTS FOR BID PREPARATION

Any costs incurred by offerors in preparing or submitting bids are the offeror’s sole responsibility; the City will not reimburse any offeror for any costs incurred as a result of the preparation of this Invitation to Bid.

P. APPROPRIATIONS

The obligations of the City of Staunton are subject to and contingent upon annual appropriation by City Council of sufficient funds for the purposes of this contract. In the absence of such annual appropriation, either the City of Staunton or offeror may terminate the contract by giving not less than ten (10) days prior notice to the other, specifying this reason for the termination, and upon effective termination pursuant to this provision, any compensation due shall be equitably adjusted by mutual agreement.

Q. CONTRACTOR REGISTRATION

If a contract is for construction, removal, repair, or improvement of a building or other real property, bidders, whether residents or nonresidents of Virginia, will be required to show evidence of a certificate or registration as required by Chapter 7 of Title 54 of the Code of Virginia before their Bids will be considered. If a Bid is $120,000 or more, or if the Contractor's annual volume is $750,000 or more, the Contractor must be licensed as a "Class A Contractor." If a Bid is $7,500 or more but less than $120,000, the Contractor must be licensed as at least a "Class B Contractor". If a Bid is $1,000 or more but less than $7,500, the Contractor must be licensed as at least a "Class C Contractor". The Bidder shall place license on the outside of the envelope containing the Bid and shall place license in the Bid, at the place provided, whichever of the following notations is appropriate:

Licensed Class A Virginia Contractor No. _____

Licensed Class B Virginia Contractor No. _____

Licensed Class C Virginia Contractor No. _____
Contract is less than $1,000 therefore licensure is not required.

R. STATE CORPORATION COMMISSION IDENTIFICATION NUMBER

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 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 a statement describing why the bidder or offeror is not required to be so authorized. Link to the Virginia State Corporation Commission site: (http://www.scc.virginia.gov)/.

S. ANTITRUST

By entering into a contract, the contractor conveys, sells, assigns, and transfers to the City all rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or acquired by the City under said contract.

T. QUALIFICATIONS OF (BIDDERS/OFFERORS)

The City may make such reasonable investigations as deemed proper and necessary to determine the ability of the (bidder/offeror) to perform the services/furnish the goods and the (bidder/offeror) shall furnish to the City all such information and data for this purpose as may be requested. The City reserves the right to inspect (bidder's/offeror's) physical facilities prior to award to satisfy questions regarding the (bidder's/offeror's) capabilities.

The City further reserves the right to reject any (bid/proposal) if the evidence submitted by, or investigations of, such (bidder/offeror) fails to satisfy the City that such (bidder/offeror) is properly qualified to carry out the obligations of the contract and to provide the services and/or furnish the goods contemplated therein.

U. CANCELLATION OF THE CONTRACT

The City may terminate any agreement resulting from this solicitation at any time, for any reason or for no reason, upon thirty days advance written notice to the contractor. In the event of such termination the contractor shall be compensated for services and work performed prior to termination.

V. AVAILABILITY OF FUNDS

Agreements are made subject to the appropriation of funds by the Staunton City Council and are null and void in the event of non-appropriation by the City Council. Non-appropriation of funds shall not be deemed a cancellation and shall terminate this agreement without recourse and with no liability on the part of the City.

W. SELECTION PROCESS/AWARD

Upon the award or the announcement of the decision to award a contract as a result of this solicitation, the department will publicly post such notice for a minimum of ten (10) days, or will notify all responsive bidders/offerors.

X. SAFETY AND OSHA STANDARDS

All parties performing services for the City shall comply with all Occupational Safety and Health Administration (OSHA), State Occupational Health Standards, and any other applicable rules and regulations. All parties shall be held responsible for the training, supervision, and safety of their employees. Any unsafe acts or hazardous conditions that may cause injury or damage to any persons or property within and around the work site areas under this contract shall be remedied per the regulatory agency's guidelines.

Y. MODIFICATION & WITHDRAWAL OF BID

An offeror may modify or withdraw their bid, either personally or by written request, at any time prior to the scheduled time for opening of bids. After bid opening, Code of Virginia 2.2-4330 B. 1. shall apply: "The bidder shall give notice in writing of his claim of right to withdraw his bid within two business days after the conclusion of the bid opening procedure and shall submit original work papers with such notice."

Z. CONTRACT TERM

The Offeror whose Bid is found to be the most advantageous to the City will be offered the opportunity to enter into an Agreement with the City. The scope, terms, and conditions of that Agreement shall be in substantial conformance with the terms, conditions, and specifications described in this Invitation to Bid. If, through any cause, the contractor shall fail to fulfill in a timely and proper manner the obligations agreed to, the City shall have the right to terminate the contract by specifying the date of termination in a written notice to the contractor at least thirty (30) days prior to the termination date. The City may terminate this contract without cause in the event funds are not appropriated the City of Staunton.

Part of the consideration will be the capability of the Offeror to immediately begin work and meet the proposed timetable above.

The City reserves the right to negotiate the Agreement, to include any portion or portions of the services covered by this Invitation to Bid, and to reject any and all Bids in total or by components.

The contractor shall not assign or transfer any interest in the contract without prior written consent of the City.

AA. COMPENSATION AND RECORD KEEPING

Total compensation for services will be negotiated between the City and the successful Offeror. The City retains the right to terminate contract negotiations if insufficient progress is being made to establish contract terms. The Offeror selected will be paid on a percentage of progress completed basis, as provided for in the contract or lump sum at completion or project. The contract will be written on a "cost not to exceed" basis. Records are to be kept by the Offeror in such detail as to properly reflect all direct or indirect costs of labor and material for which payment will be claimed.

BB. PAYMENT

Appropriate personnel will make payment for all completed work only after final approval and acceptability of the work completed.

CC. BID BOND

If required, the Bid Bond shall be in the amount of 5% and shall be submitted on the City of Staunton's Bid Bond form provided in this bid package.

DD. PERFORMANCE AND PAYMENT BONDS

If required, successful contractor agrees to provide a performance bond and a payment bond for any contract signed which exceeds $50,000. When required, performance bonds and payment bonds shall be submitted on the City of Staunton's bond forms provided in this bid package.

EE. BID ADDENDA

Prior to submitting their bid, it is the bidder's responsibility to check the City web-site for any addenda associated with this Invitation for Bid.

FF. INSURANCE REQUIREMENTS

Prior to contract award, the Contractor shall furnish certificates of General Liability, Vehicle Liability, and Worker's Compensation Insurance in amounts not less than $2,000,000, $1,000,000, and $1,000,000 respectively, to the City. All insurance coverages shall be written by companies licensed to do business in Virginia and shall be administered by a Virginia registered agent. Such certificates shall also contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered, except after ten (10) days written notice has been received by the City."

GG. CONTRACT TERMINATION

This contract will not be awarded to any vendor who has had a previous contract with the City of Staunton terminated for substantial non-compliance within the last three (3) years.

HH. DEBARMENT STATUS

By submitting their bids/proposals, all bidders or offerors certify that they are not currently debarred from submitting bids or proposals on contracts by any public body of the Commonwealth of Virginia, nor are they an agent of any person or entity that is currently debarred from submitting bids on contracts by any public body of the Commonwealth of Virginia.

II. CONTRACTOR UNDERSTANDING

It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and locations of the work, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions and all other mattes 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.

JJ. DRUG-FREE WORKPLACE

During the performance of this contract, the contractor agrees to:

1. provide a drug-free workplace for the contractor's employees;
2. post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;
3. state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and include the provisions of

the foregoing clauses in every subcontract or purchase order of over $10,000.00, so that the provisions will be binding upon each subcontractor or vendor.

KK. NONDISCRIMINATION OF CONTRACTORS:

A bidder, offeror, or contractor shall not be discriminated against in the solicitation or award of this contract because of race, religion, color, sex, sexual orientation, gender identity, national origin, age, disability, faith-based organizational status, any other basis prohibited by state law relating to discrimination in employment or because the bidder or offeror employs ex-offenders unless the state agency, department or institution has made a written determination that employing ex-offenders on the specific contract is not in its best interest. If the award of this contract is made to a faith-based organization and an individual, who applies for or receives goods, services, or disbursements provided pursuant to this contract objects to the religious character of the faith-based organization from which the individual receives or would receive the goods, services, or disbursements, the public body shall offer the individual, within a reasonable period of time after the date of their objection, access to equivalent goods, services, or disbursements from an alternative provider.

LL. ANTI-DISCRIMINATION:

By submitting their (bids/proposals), (bidders/offerors) certify to the City of Staunton that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and § 2.2-4311 of the Virginia Public Procurement Act (VPPA). If the award is made to a faith based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender sexual orientation, gender identity, or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body. (Code of Virginia, § 2.2-4343.1E). In every contract over $10,000 the provisions in 1. and 2. below apply:

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, sexual orientation, gender identity, national origin, age, disability, or any 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.

d. If the contractor employs more than five employees, the contractor shall (i) provide annual training on the contractor's sexual harassment policy to all supervisors and employees

providing services in the Commonwealth, except such supervisors or employees that are required to complete sexual harassment training provided by the Department of Human Resource Management, and (ii) post the contractor's sexual harassment policy in (a) a conspicuous public place in each building located in the Commonwealth that the contractor owns or leases for business purposes and (b) the contractor's employee handbook.

e. The requirements of these provisions 1. and 2. are a material part of the contract. If the Contractor violates one of these provisions, the Commonwealth may terminate the affected part of this contract for breach, or at its option, the whole contract. Violation of one of these provisions may also result in debarment from State contracting regardless of whether the specific contract is terminated.

f. In accordance with Executive Order 61 (2017), a prohibition on discrimination by the contractor, in its employment practices, subcontracting practices, and delivery of goods or services, on the basis of race, sex, color, national origin, religion, sexual orientation, gender identity, age, political affiliation, disability, or veteran status, is hereby incorporated in this contract.

2. The contractor will include the provisions of 1. above in every subcontract or purchase order over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

a. 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.

b. 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 1 and 2 in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

MM. PERMITS AND LICENSES

Any required City permits must be obtained by the contractor but will be provided at no cost. The successful contractor must obtain at their own expense, the required business license from the City of Staunton, Commissioner of Revenue's Office prior to beginning work. All equipment and/or installation must meet all applicable local, State, and Federal codes.

NN. NEGOTIATION WITH SUCCESSFUL BIDDER

The City reserves the right to negotiate contract terms with the successful offeror for items/services other than those specifically stated in this IFB in the best interest of the City and agreed to by the contractor, in accordance with § 2.2-4318 of the Code of Virginia. Additional work of reasonable scale shall be priced consistent with bid to allow for additions and future expansions.

OO. COOPERATIVE PROCUREMENT

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.

PP. IMMIGRATION REFORM AND CONTROL ACT OF 1986

During the performance of this contract, contractor agrees that they will not, and shall not knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986. (per 2.2-4311.1)

QQ. CERTIFICATION OF INTEREST & RELATIONSHIPS WITH CITY OF STAUNTON, STAUNTON CITY COUNCIL, SCHOOL BOARD, AND STAUNTON PUBLIC SCHOOL EMPLOYEES

The extent that either Contractor or any of Contractor's officers, directors, or executive employees, maintains a financial or familial relationship with any person acting for, or employed by, the City of Staunton, Staunton City Council, School Board or Staunton Public Schools, Contractor shall reveal such relationships. In accordance with this paragraph, Contractor shall execute the certification attached hereto as and submit the certification contemporaneously with the executed Contract.

END OF PROCUREMENT GUIDELINES

TIMMONS GROUP SPECIFICATIONS & TECHNICAL DRAWINGS

Follow This Page

GYPSY HILL PARK STREAM RESTORATION
STAUNTON, VIRGINIA

TECHNICAL SPECIFICATIONS & SPECIAL PROVISIONS

January 5, 2024

Prepared for:

CITY OF STAUNTON, VIRGINIA

Prepared by:

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

1001 Boulders Parkway, Suite 300
Richmond, Virginia 23225
Phone (804) 200-6500

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PROJECT SITE CONDITIONS

1. The project site is located between Churchville Ave and W Beverley St at Gypsy Hill Park, as shown on the Plan Set cover sheet vicinity map. The site is bound by residential areas and Churchville Ave to the North, Gypsy Hill Golf Course to the west, and residential areas to the east and to the south. The project is located entirely within one parcel (9115) owned by the City of Staunton. The site can be accessed via Constitution Dr.

2. The project site boundaries are shown on the plans as the Limits of Disturbance (LOD). The Contractor shall perform all activities related to this contract within the Limits of Disturbance. The project site shall be accessed through the designated access points shown on the Plans. The Contractor is responsible for maintaining vehicular and pedestrian access throughout all construction activities. Upon completion of all construction activities, the area, including, but not limited to curb and gutter and roadway, is to be restored to a condition equal to or better than found prior to undertaking work. The Contractor is responsible for repairing any damage to any property.

3. The existing elevations and contours shown on the plans were originally surveyed by Timmons Group dated January 2020. Existing elevations and grades may have changed since the original survey was completed due to erosion, sediment accretion, or fill. It is the Contractor's responsibility to confirm existing grades and adjust quantities, earthwork, and work efforts as necessary at no additional cost to The City of Staunton. If the existing elevations (especially stream inverts) shown on the Plans are found to differ significantly from the elevations in the field, the Contractor must notify the City of Staunton and the Environmental Programs Administrator immediately for an adjustment in elevations.

4. The Contractor shall be responsible for conducting a visit to the project site at their convenience prior to submittal of their bid. At that time, the Contractor shall thoroughly familiarize themselves with all existing conditions above and below ground. The Contractor shall satisfy themselves as to the accuracy and completeness of these Specifications and Plans regarding the nature and extent of the work described.

5. The Contractor shall make all field measurements necessary to lay out the lines and grades as called for in the Plans. The Contractor shall use the horizontal and vertical survey control points shown on the Contract Documents to lay out the lines of work, limits of grading, design elevations, and locations of specific items of work. The Environmental Programs Administrator may furnish digital copies of the Plans upon request in AutoCad format. All structures shall be installed within 0.05’ in areas less than 2% stream channel slope and 0.10’ in all other areas greater than 2% stream channel slope of design elevation. All grades outside top of bank must meet a minimum tolerance of 0.25.’

6. Should there be any discrepancies between the Plans, Specifications and/or field conditions after bidding and prior to beginning work, the Contractor shall bring such discrepancies to the attention of the City of Staunton and the Environmental Programs Administrator before construction begins.

7. Disturbance of existing mature trees shall be minimized to the greatest extent possible. There shall be no clearing or removal of any trees, other than those indicated on the plans or as directed by the City of Staunton.

8. The Contractor shall exercise care during grading activities in the vicinity of trees at the construction site. All grading in the vicinity of trees not identified for removal shall be made in a manner that does not disturb the root system within the drip line of the tree.

9. The Contractor shall be responsible for determining the location of all existing utilities and services within the project limits prior to commencing construction operations and must call "Miss Utility" (1-800-552-7001) at least 72 hours prior to any construction work and before excavation begins. Any utilities and easements shown on the Plans are considered approximate and the Contractor shall notify the Environmental Programs Administrator with any plan discrepancies. The Contractor shall determine the exact location of all utilities before commencing work and agrees to be fully responsible for any and all damages which might be occasioned by the Contractor's failure to exactly locate and preserve any and all underground utilities. Relocations of existing utilities for the convenience of the Contractor shall be at no additional cost to the Owner. The Contractor shall be responsible for filing all requests with public utility corporations, jurisdictional agencies, or other Owners to make all adjustments to public utility fixtures. Damage caused to utilities by the Contractor shall be repaired and the facilities restored to their original condition at no additional cost to the Owner. For additional utilities information, contact the City of Staunton Public Works Department. If a water or sanitary sewer line break occurs, the contractor must also immediately notify the City of Staunton Public Works Department at 540-332-3896.

10. The Contractor shall take all necessary precautions and measures to protect all properties from damage in accordance with Section 107.08 of the Virginia Department of Transportation, *Road and Bridge Specifications*, and dated 2020. The Contractor shall repair all damage caused by his/her operations to all public and private property and leave the property in good condition and/or at least equivalent to the conditions found.

11. The Contractor shall provide and maintain a sanitary condition and accommodations for the use of his/her employees as may be necessary to comply with requirements and regulations of the City of Staunton or other authorities having jurisdiction and shall commit no public nuisance.

12. Work is being performed as an environmental restoration plan near private residences. The Contractor shall make all reasonable efforts to reduce sediment loss, protect public safety, and minimize disturbance of the site while performing the construction work. All areas shall be kept neat, clean, and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing vegetation, turf, structures, and private property.

13. The work under this Contract includes all necessary temporary items required for good, safe, and sanitary construction practice and administration of the project. These

requirements are subject to the approval of the City of Staunton.

14. All incidental work required by the Contract Documents for which no payment is specifically provided, and any work or materials not specified therein which are required to complete the work, and which may fairly be implied as included in the Contract, and which the City of Staunton shall judge to be so included, shall be performed and furnished by the Contractor without additional compensation from the City of Staunton.

15. Prior to start of work, the Contractor shall submit the source of materials, including aggregates, matting, and planting material to the City of Staunton and the Environmental Programs Administrator for review. No work shall be performed until the source of material is approved by the City of Staunton.

16. When any article is specified by proprietary name, trade name, or name of manufacturer, with or without the addition of such expressions as "or equal", it is to be understood that the article named or the equal thereof is intended, subject to the approval of the City of Staunton as to the quality thereof, and it is distinctly understood: (1) that the City of Staunton is to use their own judgment in determining, from time to time, whether or not any article proposed to be substituted is the equal of any article so specified; (2) that the decision on all such questions of equality shall be final; (3) that, in the event of any adverse decisions, no claim of any sort shall be made or allowed against the City of Staunton or because of such decision; and, (4) that no article submitted for approval will be approved which requires re-design of project facilities unless the submittal of said article was requested in writing by the City of Staunton.

17. It is the Contractor's responsibility to thoroughly familiarize themselves with all existing soil conditions. No additional compensation will be paid to the Contractor as a result of poor soil conditions.

18. The Contractor shall be held solely responsible for any necessary coordination between the various City, State or Federal agencies, utility companies, his sub-contractors, and the City of Staunton for the duration of this Contract.

19. Prior to start of work, the Contractor shall submit their detailed planting schedule to the City of Staunton for review. No work shall be performed until this schedule is approved by the City of Staunton. This detailed planting schedule shall conform to the Planting Plan and shall include a timing sequence.

GENERAL SCOPE OF WORK

1. The work to be performed under this Contract includes, but is not limited to, furnishing all materials, labor, equipment, tools, plants, seed, superintendence, transportation and performing all work in strict accordance with these Specifications and Plans.

2. The term Contract Documents refers to all components of the contract including Construction Specifications (Specs) and Contract Documents (Plans).

3. The Contract Documents are intended to cover a complete project. It should be distinctly understood that failure to mention any work which would normally be required to complete the project shall not relieve the Contractor of their responsibility to perform such work.

4. The restoration work consists of in-stream structure installation and floodplain bench grading, stream bank and outfall stabilization, seeding, planting, and all of the necessary incidentals described and illustrated in the Contract Documents.

5. The work shall be performed under contract and the supervision of the City of Staunton or the City's assignee. The term " City of Staunton " throughout these Special Provisions shall be intended to include the City of Staunton’s assignee.

6. The work shall be completed in all its parts and ready for use in the working days specified and in strict accordance with the terms and conditions of the Contract Documents. Any deviation shall be subject to the approval of the City of Staunton.

7. The Contractor shall adhere to the terms of the various permits issued to this project. This shall include permits from the U.S. Army Corps of Engineers, Virginia Department of Environmental Quality and any other applicable permits.

8. The Contractor shall assume all responsibility for the project and construction site until accepted by the City of Staunton.

9. The Contractor shall be prepared to execute a finished project in every particular without any extra charge, unless specifically provided for within the Contract.

10. The contractor must provide for the safe and continuous maintenance of both vehicular and pedestrian traffic around the project site, to minimize accidents and accident severity, while at the same time minimizing inconvenience to the traveling public and the Contractor.

PROGRESS SCHEDULE

1. The Contractor shall submit to the City of Staunton for review and acceptance, a construction progress schedule for the complete project. The progress schedule shall be submitted prior to or at the pre-construction meeting. No work shall be undertaken on the contract until the progress schedule has been reviewed and accepted by the City of Staunton.

2. The progress schedule shall be complete, realistic and thoroughly detailed (including inclement weather days), and as a minimum requirement, shall incorporate the use of a critical path method chart, or a bar chart, graphs and drawing or schematics which indicate the sequence of construction and the estimated starting and completion dates of the various states of the work, delivery dates for specific items of material and equipment, number of crews to be utilized, a preliminary schedule of values of the work and all other pertinent information that may be requested by the City of Staunton.

3. The approved progress schedules shall be completely updated by the Contractor each month, adjusting for work that is ahead or behind schedule, as the case may be, and resubmitted to the City of Staunton for approval. Should construction fall behind the schedule, the Contractor shall provide the City of Staunton with a detailed written explanation as to why the project is behind schedule and at what anticipated date each phase of the work will return to the original scheduling. If the Contractor fails to provide updated schedules and explanations, or if in the opinion of the City of Staunton, the updated schedules and explanations are unrealistic or inadequate, monthly invoices shall not be processed until complete and adequate information is received by the City of Staunton. The Contractor or his representative shall attend monthly progress meetings.

4. Request for extension of time shall be made in writing within twenty (20) days following cause of delay. In case of continuing cause for delay, the Contractor shall notify the City and Environmental Programs Administrator of the delay within 20 days of the beginning of the delay and only one claim is necessary. Time extensions shall not be granted for precipitation events or other natural acts of normal intensity for the areas where work is being performed.

SECTION-01 MOBILIZATION

1. DESCRIPTION

Mobilization shall be in accordance with Section 513 of the Virginia Department of Transportation, *Road and Bridge Specifications*, dated 2020. This work consists of preparatory work and operations, including but not limited to movement of personnel, equipment, supplies, and incidentals to the project site; for establishment of facilities necessary for work on the project; the removal and disbandment of those personnel, equipment, supplies, or incidentals, or other facilities that were established for the prosecution of work on the project; and for all other work or operations which must be performed for costs prior to beginning work on the various items on the project site. As part of mobilization, an inspection box must be placed on the site to include project plans, specs, copies of permits, and other related construction documents.

The Contractor is required to properly and safely identify and secure the construction accesses, staging areas, and material handling areas. Prior to construction activities, the Contractor shall identify and mark boundaries of the staging areas. Acceptable materials for identifying the construction areas include highly visible tape, road signs, barricades, and cables. Stockpile all construction materials, including rock boulders, logs, riprap, gravel, erosion control devices, etc. in the staging area. Any soil materials that are stockpiled shall have a silt fence properly installed to ensure materials are contained. Silt fence installation specifications are provided in the EROSION AND SEDIMENT CONTROL specifications and will not be bid under this section.

To limit the disturbance of soils on site, the Contractor shall restrict the movement of all construction equipment within sensitive areas. Prior to construction activities, the Contractor shall identify the boundaries of all sensitive areas by using a highly visible tape or orange boundary fencing, and will stake the limits of where construction equipment is permitted to travel.

The Contractor shall protect roads and structures within the project limits and between access points to the site. Any damage caused to roads or structures resulting from the Contractor's actions shall be repaired to a state which is equal to or greater than their previous standards. The Contractor is also responsible for any necessary traffic coordination while entering and exiting the construction site. In order to not inconvenience the adjoining landowners, the contractor must coordinate access times and locations with the City.

The Contractor will provide the necessary pollution prevention measures shown on the Contract Documents.

The Contractor will identify all underground and aboveground utilities and is responsible for ensuring that these utilities are not damaged during construction. The Contractor will promptly notify the Environmental Programs Administrator if there are conflicts between the utilities and the design.

2. MATERIALS

Mobilization shall include all activities and costs for transportation of personnel, equipment, and operating supplies to the site; establishment of offices, and other necessary facilities for the Contractor's operations at the site.

Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not included in the contract from the site; including the disassembly, removal and site clean-up and repair of any facilities assembled on the site for this contract.

This work includes mobilization and demobilization required by the contract at the time of the award. If additional mobilization and demobilization activities and costs are required during the performance of the contract as a result of the changed, deleted, or added items of work for which the Contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the item or items of work changed or added as approved by The City of Staunton.

3. MEASUREMENT AND PAYMENT

Payment for all work covered by this section will be paid for at the contract lump sum (LS) price for 'Mobilization' and 'Demobilization.'

END OF SECTION

SECTION-02 CLEARING AND GRUBBING

1. DESCRIPTION

Clearing and Grubbing shall be in accordance with Section 301 of the Virginia Department of Transportation, *Road and Bridge Specifications*, dated 2020. Clearing and grubbing will be in selected wooded areas within the limits of disturbance. The clearing and grubbing operations should be performed in advance of grading operations. All excess woody debris created from the clearing and grubbing process not used for brush toe, toe wood, log structures, wood chippings, and/or transplants shall be stockpiled separately and disposed of offsite by the Contractor.

A. The Contractor shall be responsible for any and all damage to trees, shrubs, herbaceous plants and wetlands located beyond the limits of disturbance which occurs from their operations during the life of the Contract. The Contractor shall fully restore, at their own expense, and to the satisfaction of The City of Staunton, any trees, shrubs, herbaceous plants, and wetlands that have been damaged or destroyed.

B. Disturbance of existing mature trees shall be minimized to the greatest extent possible.

C. Tree removal shall only be allowed as directed by The City of Staunton. Limits of Disturbance shall be marked with barricade tape per the Contract Documents and accepted by The City of Staunton prior to land disturbance.

2. MEASUREMENT AND PAYMENT

Clearing and Grubbing shall be measured and paid for by the actual number of acres (AC) of area cleared and grubbed. The payment will be full compensation for removal of woody material. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by The City of Staunton.

END OF SECTION

SECTION-03 EROSION AND SEDIMENT CONTROL

1. DESCRIPTION

The Contractor shall perform all work for sediment and erosion control in accordance with Section 107.16 of the Virginia Department of Transportation, *Road and Bridge Specifications* dated 2020, the *Virginia Erosion and Sediment Control Handbook* dated 1992, and the City of Staunton Program Plan, with the following exceptions:

ADD: Add the following:

1) The work in this section shall consist of all work necessary to control soil erosion and minimize the introduction of sediment and other pollutants into waterways by installing structural measures or performing work to control erosion during construction operations. Pollution control for any disposal area is the responsibility of the Contractor.

2) The Contractor shall supply, construct, maintain and dismantle erosion and sediment control measures in accordance with the Contract Documents. The contractor shall adhere to the sequence of construction found in the Contract Documents. The sequence of construction must be followed unless the contractor obtains written approval from the City of Staunton and the sediment control inspector.

3) All erosion and sediment control measures shall be maintained until the City of Staunton approves their removal.

4) Silt fence shall consist of the standard synthetic filter fabric or extra strength filter fabric only as specified in the Contract Documents. The Stream Crossings for access shall be installed as shown on the plans and in the *Virginia Erosion and Sediment Control Handbook.*

5) In the event that the contractor utilizes borrow pits or waste areas located outside of the City of Staunton, the location of such sites shall be designated at the time of contract awarding and the contractor shall be held solely responsible for complying with the applicable laws and regulations of other city or political jurisdictions.

6) The contractor shall be responsible for the protection of all existing culverts and inlets from sediment runoff. Approved sediment control measures shall be utilized, as necessary, for culverts and inlets in the vicinity of the proposed construction. The failure of the Contract Documents to indicate the appropriate measures needed shall not relieve the contractor of this responsibility. In the event sediment is carried into existing culverts or inlets, the contractor shall be responsible for cleaning and restoring the drainage system at their own expense.

7) Pursuant to the City of Staunton Program Plan, all land disturbing activities in the City of Staunton must comply with the provisions of the City's Erosion and Sediment Control (ESC) Program (Chapter 13.10 of the County Code). This locally implemented program is required by the Erosion and Sediment Control Law and must comply with requirements and minimum standards of the Erosion and Sediment Control Regulations. The Contractor shall follow the approved Sediment and Erosion Control Plan for the site, as provided in the plans and these specifications, and assumes liability for any fines or regulatory actions that may be imposed by failure to do so.

8) The Contractor shall maintain a copy of the approved Sediment and Erosion Control Plan, permit approvals, and current *Virginia Erosion and Sediment Control Handbook* on-site at all times. The Contractor is required to follow the requirements of the permit.

TEMPORARY STONE CONSTRUCTION ENTRANCE: The Contractor shall install stabilized Construction Entrance(s), at the location(s) shown on the plans or as directed by the Environmental Programs Administrator. Damage to any existing surface roads, curb & gutter or vegetation, adjacent to the designated entrance, shall be repaired by the Contractor to a condition equal to the pre-construction condition. The Contractor shall be solely responsible for the cost of such repairs, and these costs shall not be part of this contract.

Material: The filter fabric shall meet the requirements of *Virginia Erosion and Sediment Control Handbook*, Section III, Table 3.02-A for non-woven fabric.

Stone shall be VDOT #1 Coarse Aggregate (2 to 3-inch stone) and must be at least 6 inches thick and 12 feet wide. The entrance shall meet requirements for VDOT Standard Specifications, Section 3.02 for Stone Erosion Control.

Measurement and Payment: Temporary Stone Construction Entrance(s) shall be measured and paid for each (EA) item. The payment will be full compensation for the installation and removal of stone material. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

TEMPORARY STREAM CROSSING: This structure will serve as a means of crossing the existing and proposed stream to allow construction traffic access to both sides of the stream while minimizing sedimentation. Wood mats will be used for temporary stream crossings. The wood mats will be placed in locations shown on the plan sheets or as directed by the Environmental Programs Administrator. This item includes labor and equipment required for installation, repair, maintenance, and removal of the temporary stream crossings.

Material: Installation of temporary wood mat stream crossings shall follow the detail specification in the Erosion and Sediment Control Plans and Contractor shall also refer to the guidelines provided in specification 3.24 of the *Virginia Erosion and Sediment Control Handbook.* The Wood Mats shall be of sufficient size and width to adequately support the largest vehicle crossing the channel while maintaining stream bank stability.

Measurement and Payment: Temporary Stream Crossings – Wood Mats shall be measured

and paid for each (EA) item. The payment will be full compensation for the installation and removal of the wood mats. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

TEMPORARY SILT FENCE: The Contractor shall install temporary silt fence at the locations shown on the Erosion and Sediment Control Plans or as directed by the Environmental Programs Administrator. The work covered by this item consists of furnishing, installing, maintaining, and removing temporary silt fence for the purpose of intercepting and detaining small amount of sediment from disturbed areas during construction operations in order to prevent sediment from leaving the site. The temporary silt fence shall not permit seepage of water into the working area or contribute to siltation of the stream.

Material: The filter fabric shall meet the requirements of *Virginia Erosion and Sediment Control Handbook*, Section III, Table 3.05-B for silt fence physical properties.

Measurement and Payment: Temporary Silt Fence shall be measured and paid per linear foot installed (LF). The payment will be full compensation for the installation and removal of the silt fence material. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by The City of Staunton.

BARRICADE TAPE: This work shall consist of furnishing, installing and maintaining yellow and black barricade tape to denote limits of disturbance at locations shown on the plans or as directed by the Environmental Programs Administrator in accordance with special provisions included herein. Sections of tape shall be installed within one working day following mobilization operations. Unless prior approval is received from the Environmental Programs Administrator, failure to install the tape as specified herein will result in stoppage of all operations until the necessary fence is installed.
This section includes general protection of existing trees and plants that are affected by execution of the work, and existing sanitary manholes near the material storage area, during construction. The barricade tape must be installed before any other work can begin at the sites.

Material: Barricade tape shall be yellow with a black stripe made of waterproof woven polypropylene. The tape shall be 2 inches wide with tensile strength of 300 pounds.

Measurement and Payment: Barricade tape shall be measured and paid per linear foot installed (LF). The payment will be full compensation for the installation and removal of tape material. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

SAFETY FENCE: This work shall consist of furnishing, installing and maintaining Plastic (polyethylene) Fence or Metal “Chain-link” Fence to create a protective barrier around

locations shown on the Plans, or as directed by the Environmental Programs Administrator in accordance with special provisions included herein. Sections of fence shall be installed within one working day following mobilization operations. Unless prior approval is received from the Environmental Programs Administrator, failure to install the fence as specified herein will result in stoppage of all operations until the necessary fence is installed. Safety Fence shall be checked regularly for weather related or other damage, any necessary repairs must be made immediately. All access points (gates) at the end of each workday must be secured and any locking devices must be repaired or replaced as necessary. This section includes the general protection of the public, to prevent access to the site during construction.

Material: Plastic (polyethylene) Fence shall be "international" orange in color, installed with metal posts and used as a temporary barrier where specified. The fence shall be a minimum of 5 feet in height with a tensile strength of 2000 lbs. per 4 feet width.

Metal or "Chain-link" Fence shall be used where potentially dangerous or permanent control measures are installed, or in temporary situations when specified by responsible parties. The fence shall be zinc-coated steel 2-inch mesh. Posts, top nails, braces and gates shall be zinc coated. Zinc coating shall have a minimum weight of 1.8 ounces per square foot. Gates shall be single or double swing with a minimum width of 12-feet.

Measurement and Payment: Plastic or metal Fencing shall be measured by linear foot installed (LF). The payment will be full compensation for the installation and removal of fence material. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

DEWATERING: The work shall consist of all labor, equipment, and materials necessary to dewater the construction site in accordance with the Contract Documents, to provide dry working conditions. This work shall include the continuous operation of a pump-around to divert stream channel base flow, if necessary. A dewatering plan shall be submitted to the City for review and approval a minimum of one week prior to the pre-construction meeting.

Measurement and Payment: Dewatering shall be paid for on a lump sum basis. The payment will be full compensation for the installation and removal of pump-around equipment. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by The City of Staunton.

TEMPORARY SEEDING AND MULCHING: The work shall consist of installing measures or performing work to control erosion and minimize the production of sediment and other pollutants to water and air during construction operations. Temporary seeding will be used on all areas susceptible to erosion, including, but not limited to stream banks, access areas, steeper slopes, and areas where excess soil will be spread over upslope fields. Seeding will take place immediately after construction activities are completed in the disturbed areas.

The work shall consist of preparing the seedbed area, furnishing and placing seed and mulch, and anchoring mulch in the designated areas as specified. Temporary and permanent seeding shall take place on stream banks before erosion control matting is installed. Steep banks may require roughening, either by hand scarifying or by equipment, depending on site conditions. The Environmental Programs Administrator will determine condition needs onsite. If seeding is done immediately following construction, seedbed preparation or soil amendments may not be required except on compacted, polished or freshly cut area, since existing topsoil will be stockpiled and placed back over these areas to a depth of eight inches to achieve design grades and create a soil base for vegetation.

Material: For temporary seeding, apply the following vegetation at the listed rates and times. A combination of the two seed types shall be used during the boundary months of March, April, August and September to ensure survival. The Contractor shall also refer to the guidelines provided in specification 3.31 of the *Virginia Erosion and Sediment Control Handbook.*

Planting Dates	Temporary Seed	Rate (lbs/ acre)
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (*Lolium multi-florum*) & Cereal (Winter) Rye (*Secale cereale*)	50 - 100
Feb. 16 - Apr. 30	50/50 Mix of Annual Ryegrass (*Lolium multi-florum*) & Creeping Red Fescue (*Festuca rubra*)	60 - 100
May 1 - Aug 31	German Millet (*Setaria italica*)	50

Mulching shall be used to provide temporary protection of soil surfaces from erosion. Mulching should be performed within 48 hours of seeding. Mulching material should be derived from onsite cleared trees and mulch depth shall not exceed a 6-inch thickness. Grain and invasive free, straw mulch should be applied on seeded areas at a rate of 3 bales per 1,000 square feet (130 bales per acre). The Contractor should apply mulch uniformly.

Measurement and Payment: Temporary Seeding shall be measured and paid on a per acre basis. The cost of fertilizers and additives will be incidental to temporary seeding. The payment will include all material, labor, equipment and related costs. The Contractor must guarantee 70% temporary seeding coverage. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

PERMANENT SEEDING: The work shall consist of installing measures or performing work to control erosion and minimize the production of sediment and other pollutants to water and air during construction operations. Permanent seeding will be used on all areas indicated on the planting plan. Seeding will take place after construction activities are completed in the disturbed areas.

The work shall consist of preparing the seedbed area, furnishing and placing seed and mulch,

and anchoring mulch in the designated areas as specified. If seeding is done immediately following construction, seedbed preparation or soil amendments may not be required except on compacted, polished or freshly cut area, since existing topsoil will be stockpiled and placed back over these areas to a depth of eight inches to achieve design grades and create a soil base for vegetation.

Material: For permanent seeding, apply the vegetation in accordance with VA E&SC Spec 3.32-C. The Contractor shall also refer to the guidelines provided in specification 3.31 of the *Virginia Erosion and Sediment Control Handbook.*

Mulching shall be used to provide temporary protection of soil surfaces from erosion. Mulching should be performed within 48 hours of seeding. Mulching material should be derived from onsite cleared trees and mulch depth shall not exceed a 6-inch thickness. Grain and invasive free, straw mulch should be applied on seeded areas at a rate of 3 bales per 1,000 square feet (130 bales per acre). The Contractor should apply mulch uniformly.

Measurement and Payment: Payment for permanent seeding shall be measured and paid for at the contract unit price per acre (AC) of area seeded. Payment will be full compensation for furnishing and incorporating all seed, including all maintenance and warranty, materials, labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents or as directed by City of Staunton.

TEMPORARY TREE PRESERVATION AND PROTECTION: The Contractor shall install temporary tree preservation and protection at the locations shown on the Erosion and Sediment Control Plans or as directed by the Environmental Programs Administrator. The work covered by this item consists of furnishing, installing, maintaining, and removing temporary tree preservation and protection for the purpose of ensuring the survival of desirable trees where they will be effective for erosion and sediment control, watershed protection, landscape beautification, dust and pollution control, noise reduction, shade and/or other environmental benefits.

Material: The temporary tree preservation and protection shall meet the requirements of *Virginia Erosion and Sediment Control Handbook*, Standard & Specification 3.38.

Measurement and Payment: Temporary tree preservation and protection shall be measured and paid per linear foot installed (LF). The payment will be full compensation for the installation and removal of the tree preservation and protection material. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by The City of Staunton.

STRAW BALE BARRIER: The Contractor shall install temporary straw bale barriers at the locations shown on the Erosion and Sediment Control Plans or as directed by the Environmental Programs Administrator. The work covered by this item consists of furnishing, installing, maintaining, and removing of straw bale barriers for the purpose of

intercepting and detaining small amounts of sediment where silt fence is not applicable.

Material: The straw bale barrier shall meet the requirements of *Virginia Erosion and Sediment Control Handbook*, Standard & Specification 3.04.

Measurement and Payment: Straw Bale Barriers shall be measured and paid per linear foot installed (LF). The payment will be full compensation for the installation and removal of the Straw Bale Barriers. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

DIRTBAG: The Contractor shall install the Dirtbag® pumped sediment control device at the locations shown on the Erosion and Sediment Control Plans or as directed by the Environmental Programs Administrator. The work covered by this item consists of furnishing, installing, maintaining, and removing the Dirtbag® pumped sediment control device for the purpose of removing silt, sand, and other debris from pumped water.

Material: The Dirtbag® pumped sediment control device shall meet the requirements of *Virginia Erosion and Sediment Control Handbook.*

Measurement and Payment: The payment for any Dirtbag® pumped used during construction is to be included in the bid of overall erosion and sediment control plan unless a unit price is requested. Payment shall include all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

MEASUREMENT AND PAYMENT

Erosion and sediment control will be measured for payment separately for each measure or item implemented as described above and detailed on the plans. The payment will be full compensation for furnishing, installing, maintaining, and removing all erosion and sediment control measures shown on the plans, including all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton and the Environmental Programs Administrator.

END OF SECTION

SECTION-04 COIR FIBER MATTING

1. DESCRIPTION

This specification covers the furnishing, transporting, installing and maintaining of coir fiber matting on the graded stream banks, floodplain benching, terrace slopes, and at other locations as specified in the Contract Documents, or as directed by the Environmental Programs Administrator and the City of Staunton.

2. MATERIALS

A. 700g Coir Fiber Matting

Coir fiber matting shall be certified by the manufacturer or supplier.
Coir fiber matting shall have the following minimum properties:

1) Openings of 0.4”x0.5”
2) Weight of at least 700g/m^2
3) Recommended flow of 12 fps
4) Recommended shear stress of 4.5 lbs/ft^2

B. Stakes

Used to anchor coir matting and are biodegradable.

1) Stakes shall be Hanes Geo Components Eco Stakes or approved equal.
2) Stakes shall be 100% biodegradable from microbial activity in accordance to ASTM D5338 and ASTM D5271.
3) Stakes shall be manufactured out of low-density dried hardwood and provide at least 1-year effective hold.
4) Stakes shall be 6” to 12” in length.

C. Wedge Stakes

Used to anchor coir matting.

1) Stakes shall be standard two-by-four that has been cut diagonally along the length of the board.
2) Stakes shall be 18” to 24” in length.

3. CONSTRUCTION

A. Installation

1) All materials and construction techniques shall be inspected and approved by the City

of Staunton prior to installation.

2) Contractor shall provide a smooth soil surface free from stones, clods, or debris that will prevent the contact of the matting with the soil. Place the matting immediately upon seeding the final graded surface. Take care to preserve the required line, grade, and cross-section of the area covered.

3) Extend matting a minimum of 3' over crest of slope. Trenching is required if a minimum of 3' is not available at the crest of the slope or if overland flow is anticipated from upland areas. Refer to slope crest anchor methods "A" through "C" on the Contract Documents for appropriate details. Extend blanket a minimum of 3' beyond toe of slope. End seam of blankets shall overlap 2-4". Place stakes, one on each corner of blanket, 12" O.C. along blanket and through stitching on both blankets. Upslope blankets shall lap over downslope blankets in a shingle effect. Refer to construction details on plans for additional information.

4) Wedge stakes shall be utilized for coir matting at reinforced soil lifts, toe wood, below bankfull elevation and at the top and toe of slope application. Eco Stakes or approved equal shall be utilized in all other areas.

5) The Environmental Programs Administrator may require adjustments in the trenching or staking requirements to fit individual site conditions or on edges exposed to more than normal flow of water to be keyed-into the slope in a similar manner.

B. Clean-Up

1) During installation of coir fiber matting, all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, turf, structures, and private property.

2) The Contractor shall be responsible for off-site removal and disposal of all trash, excess backfill and any materials incidental to the project and disposing of them off-site.

4. MEASUREMENT AND PAYMENT

Coir fiber matting shall be measured and paid for at the Contract unit price per square yard (SY) of matting installed (including required overlaps). Payment for coir fiber matting shall be full compensation for furnishing, transporting, maintaining and installing all materials (including matting and stakes), labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

END OF SECTION

SECTION-05 CURLEX® I FIBRENET EC BLANKET

1. DESCRIPTION

This specification covers the furnishing, transporting, installing and maintaining of Curlex® I FibreNet EC Blanket, or approved equal, on the floodplain benching, terrace slopes, and at other locations as specified in the Contract Documents, or as directed by the Environmental Programs Administrator and the City of Staunton.

2. MATERIALS

A. Curlex® I FibreNet EC Blanket or approved equal

Curlex® I FibreNet EC Blanket shall be certified by the manufacturer or supplier. Curlex® I FibreNet EC Blanket shall have the following minimum properties:

1) Sheer stress of 1.75 lb/ft^2
2) Weight of 0.73 lb/yd^2
3) Netting option of FibreNet

B. Stakes

Used to anchor Curlex® I Fibrenet and are biodegradable.

1) Stakes shall be Hanes Geo Components Eco Stakes or approved equal.
2) Stakes shall be 100% biodegradable from microbial activity in accordance to ASTM D5338 and ASTM D5271.
3) Stakes shall be manufactured out of low-density hardwood and provide at least 1-year effective hold.
4) Stakes shall be 6” to 12” in length.

C. Wedge Stakes

Used to anchor Curlex® I Fibrenet.

1) Stakes shall be standard two-by-four that has been cut diagonally along the length of the board.
2) Stakes shall be 18” to 24” in length.

3. CONSTRUCTION

A. Installation

1) All materials and construction techniques shall be inspected and approved by the City of Staunton prior to installation.

2) Contractor shall provide a smooth soil surface free from stones, clods, or debris that will prevent the contact of the matting with the soil. Place the matting immediately upon seeding the final graded surface. Take care to preserve the required line, grade, and cross-section of the area covered.

3) Extend matting a minimum of 3' over crest of slope. Trenching is required if a minimum of 3' is not available at the crest of the slope or if overland flow is anticipated from upland areas. Refer to slope crest anchor methods "A" through "C" on the Contract Documents for appropriate details. Extend blanket a minimum of 3' beyond toe of slope. End seam of blankets shall overlap 2-4". Place stakes, one on each corner of blanket, 12" O.C. along blanket and through stitching on both blankets. Upslope blankets shall lap over downslope blankets in a shingle effect. Refer to construction details on plans for additional information.

4) Wedge stakes shall be utilized at top and toe of slope application. Eco Stakes or approved equal shall be utilized in all other areas.

5) The Environmental Programs Administrator may require adjustments in the trenching or staking requirements to fit individual site conditions or on edges exposed to more than normal flow of water to be keyed-into the slope in a similar manner.

B. Clean-Up

1) During installation of Curlex® I Fibrenet, all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, turf, structures, and private property.

2) The Contractor shall be responsible for off-site removal and disposal of all trash, excess backfill and any materials incidental to the project and disposing of them off-site.

4. MEASUREMENT AND PAYMENT

Curlex® I FibreNet EC Blanket shall be measured and paid for at the Contract unit price per square yard (SY) of matting installed (included required overlaps). Payment for Curlex® I FibreNet shall be full compensation for furnishing, transporting, maintaining and installing all materials (including matting and stakes), labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

END OF SECTION

SECTION-06 EARTHWORK

1. DESCRIPTION

Earthwork (cut, fill, disposal of excess materials) shall be in accordance with Section 303 of the Virginia Department of Transportation, *Road and Bridge Specifications*, dated 2020, with the following additions:

REPLACE: Replace all instances of the following: Roadway with: Stream & Floodplain

2. CONSTRUCTION

ADD: Add the following:

A. The existing elevations and contours shown on the plans were originally surveyed by Timmons Group dated January 2020. Existing elevations and grades may have changed since the original survey was completed due to the stream erosion, sediment accretion, and fill. It is the Contractors responsibility to confirm existing grades and adjust earthwork as necessary at no additional cost to the City of Staunton. If the existing elevations (especially stream inverts) shown on the Plans are found to differ significantly from the elevations in the field, the Contractor must notify the City of Staunton and the Environmental Programs Administrator immediately for an adjustment in elevations.

B. The Contractor shall excavate and grade the streambed and site within the Limits of Disturbance. Floodplain bench grading limits and proposed example cross-sections are provided in the plans. Suitable fill material, in accordance with the Geotechnical Notes in the construction plans shall be placed in the channels and compacted with construction equipment. The excavated materials will be placed into the existing stream channel and filled to design bankfull grades in compacted lifts not to exceed 10 inches. Under no circumstances will be Contractor place trash, debris, tree limbs, roots, *etc*. into filled channel sections. Excess material may be placed in stockpiles along the existing stream, until new sections of channel have been completed.

C. On floodplain benches and slopes above bankfull elevation, the Contractor shall strip, stockpile, and replace 6 inches of topsoil prior to achieving final design elevation. Each section shall be rough graded first along the specified segment, then install structures and bring proposed stream bed and banks to final grade as work proceeds downstream.

D. The Contractor shall be responsible for stabilizing all stream banks immediately after the completion of grading. The banks and other graded surfaces shall be seeded and lined with matting as shown on the Erosion and Sediment Control Plan. Each stream segment shall be brought to final grade and stabilized daily before continuing to the next segment. The Contractor shall perform all care and remediation work required to maintain stable stream banks during construction including erosion and sediment control.

E. The care and remediation of grading shall begin immediately upon the completion of the

acceptance of planting, seeding, and stream bank stabilization measures as specified in the Contract Documents and shall continue for a period of 1 year. During such time, the contractor shall perform work requested by the City of Staunton to repair riffle grade control and step-pool structures, stabilization matting or re-grade the stream channel or banks.

F. During earthwork activities, if existing utility crossings are encountered, they should be buried a minimum of 6" below proposed substrate, as specified on the Construction Documents.

G. It may be necessary to haul excavated material from one area of the site to balance cut and fill. All stockpile areas will require appropriate sediment control (silt fence) in order to prevent erosion and sediment transport throughout the duration of storage. All excess and/or unsuitable material shall be removed from the site to an off-site location with an approved sediment and erosion control plan as shown in the Contract Documents or as directed by the City of Staunton. All excess material shall be disposed of properly.

H. Select Tree Removal - This price shall include the material, equipment, and labor necessary to remove and dispose all trees in such a manner as to avoid damage to nearby homes and overhead lines. This item shall only be used when working in the immediate vicinity of homes and/or overhead power, telephone or cable lines. The unit bid price for Clearing and Grubbing will be used when removed trees that are not in the immediate vicinity of homes and/or overhead power, telephone or cable lines. Measurement and payment will be made on a lump sum basis.

3. MEASUREMENT AND PAYMENT

Excavation will be measured and paid for as a lump sum. The payment will be full compensation for all earthwork related activities which include excavation, hauling, salvaging, separating, stockpiling and placement of suitable materials, formation and compaction of embankments and backfill, backfilling old stream beds, or otherwise disposing of excess and unsuitable materials, undercutting and backfilling of undercuts, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. The cost of handling and re-handling wet soils and over-excavation to construct a temporary crossing, if necessary, shall be considered incidental to the cost of Earthwork, as appropriate.

Material will be measured in its original position and the volume computed by the Method of Average End Area. The cross-sectional area measured will not include water or other liquids. Measurement for Earthwork will not include any material removed outside the limits of payment as specified in the Contract Documents.

Earthwork bid item quantities are based on existing elevations/contours and proposed grading, as shown on the Contract Documents. Existing elevations and grades may have changed since the original survey was completed, due to erosion and sediment accumulation. Prior to the start of excavation, the Contractor may conduct surveys to confirm existing

grades and verify and adjust earthwork quantities and work efforts, at no additional cost to the City. The Contractor is solely responsible for restoring un-surveyed sections to design conditions at no additional cost to the City.

END OF SECTION

SECTION-07 STREAMBED SUBSTRATE MIX

1. DESCRIPTION

This work shall consist of furnishing, transporting, stockpiling, maintaining, and placing streambed substrate mix along the full length of the stream channel as indicated in the Contract Documents, or as directed by the City of Staunton. Salvaged streambed material (if available) shall be used to supplement streambed substrate mix, as specified in the Contract Documents, or as directed by the City of Staunton.

2. MATERIALS

A. All material used for sections of the stream channel that are raised above existing grade shall be reviewed and approved by the project Environmental Programs Administrator prior to placement in the stream channel.

B. Salvaged streambed material (if available) shall consist of cobbles, gravels, and sands excavated from point bars and riffles within the existing stream channel, as specified in the Contract Documents and as directed by the City of Staunton.

C. Cobble and gravel materials shall be rounded in nature and common to riverbed formations. Streambed substrate material shall consist of natural field rock or natural river rock, river gravel, and/or river cobble. Crushed rock from a quarry shall not be permitted (exceptions noted below). The stream bed material shall be sound, tough, dense, resistant to the action of air and water, and suitable in all respects for the purpose intended.

D. Fill consists of material excavated and relocated from the project site or associated areas on the property. Proposed fill sources shall be approved by the project Environmental Programs Administrator prior to use.

E. Source of off-site streambed substrate material, if necessary, shall be from an approved mining operation with up-to-date regulatory permits. Streambed material shall NOT be indiscriminately mined from active streams and rivers. Materials imported to the site shall be mixed to the specified percentages within the limits of the stockpile and staging areas prior to final placement.

F. Streambed substrate material shall be a mixture containing rock and particle sizes depicted in the Contract Documents.

G. All streambed substrate material shall meet the approval of the City of Staunton. While no specific gradation is required, the various sizes of the rock shall be equally distributed within the required size range. The size of an individual rock particle shall be determined by measuring its diameter across the intermediate axis.

H. Samples of streambed substrate material shall be delivered to project site for approval by the City of Staunton, prior to its use in the project. Any unsuitable material or material which does not meet the above specified size distribution shall be removed at the Contractor's expense.

3. CONSTRUCTION

Contractor shall install streambed substrate material to a minimum depth as depicted in the Contract Documents. Streambed substrate material shall be placed in each reach in accordance with the Contract Documents, and as directed by the City of Staunton.

Salvaged streambed material (if available) shall be used to top-dress and fill voids within the furnished streambed material as specified in the Contract Documents and as directed by the City of Staunton. The contractor shall moderately mix and compact the streambed substrate to create a continuous surface allowing for the 'perching' of water on top of the placed streambed.

4. MEASUREMENT AND PAYMENT

Payment for streambed substrate mix shall be measured and paid for by cubic yard (CY). Payment shall be full compensation for the excavation, transport, stockpiling, and placement, and for all material, labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton. The quantity of streambed substrate material to be installed will be affected by the actual conditions that occur during the construction of the project. Such variations in quantity shall not be considered as alterations in the details of construction or a change in the character of the work.

END OF SECTION

SECTION-08 GEOTEXTILES

1. DESCRIPTION

These specifications cover artificial fiber textile products to be used in stream channel construction work, as specified in the Contract Documents, or as directed by the City of Staunton.

2. MATERIALS

A. Geotextile Fabric

Geotextile fabric for this item shall be certified by the manufacturer or supplier. Geotextile fabric shall be 6 oz non-woven with the following minimum properties:

1) Grab Tensile Strength of 712 N (160 lbs.) by ASTM D 4632
2) Grab Tensile Elongation of 50% by ASTM D 4632
3) CBR Puncture of 1823 N (410 lbs.) ASTM D 6241
4) Trapezoid Tear of 267 N (60 lbs.) by ASTM D 4533
5) Apparent Opening Size < 0.21 mm (U.S. #70) by ASTM D 4751
6) Permittivity of 1.6 sec^{-1} by ASTM D 4491
7) Ultraviolet Degradation at 500 hours with 70% strength retained for all classes by ASTM D 4355
8) Flow Rate of 75 Liters/sec/m^2 (110 gal./min/$ft.^2$) by ASTM D 4491
   a. Minimum. Use value in weaker principle direction. All numerical values represent minimum average roll value (i.e., test results from any sampled roll in a lot shall meet or exceed the minimum values in the Table).
   b. Values apply to both the field and manufactured seams.

The Contractor shall submit manufacturer specifications to the Environmental Programs Administrator prior to ordering materials.

3. MEASUREMENT AND PAYMENT

Geotextiles shall not be bid under this section but will be included in SECTION-11 LOG SILL, SECTION-12 ROCK SILL, SECTION-13 ROCK CROSS VANE.

END OF SECTION

SECTION-09 BRUSH TOE

1. DESCRIPTION

This work shall consist of areas at which Brush Toe structures are to be placed, excavation of channel material, furnishing and placing brush toe, woody debris, backfill material, geotextile fabric, and finishing banks, structure slopes, and stream channel as specified in the Contract Documents, or as directed by the City of Staunton.

2. MATERIALS

A. Soil Wrap Matting (Koirwrap 1,000 by Nedia Enterprise or approved equal)

Soil wrap matting shall be certified by the manufacturer or supplier. Soil wrap matting shall be used to encapsulate soil lifts and use a of coir fiber matting in combination with a non-woven coir blanket. Soil wrap matting shall have the following minimum properties:

1) Thickness of 0.35 in
2) Mass per unit area of 33.3 oz/sqyd
3) Wide width tensile strength of 1008x936 lbs/ft
4) Recommended flow of 12 fps
5) Recommended shear stress of 4.5 lbs/sqft

B. Wedge Stakes

Used to anchor coir matting and are biodegradable.

1) Stakes shall be standard two-by-four that has been cut diagonally along the length of the board.
2) Stakes shall be 18” to 24” in length.

C. Woody Debris consists of logs, branches, brush, roots and soil as fill.

D. Compacted Soil

Used in between matting layers to provide the necessary lift. Prior to placing the embankment fill, the source material shall be approved by the Environmental Programs Administrator and the City of Staunton.

3. CONSTRUCTION

A. Installation

1) All materials and construction techniques shall be inspected and approved by the City of Staunton prior to installation.

2) A log shall be placed along the toe of slope. Wood debris shall then be placed on top of the log with a layer of live cuttings placed at the very top. Matting will then be keyed and bank construction will continue as normal.

3) Unroll soil wrap matting parallel to the stream bank or face of the slope, as the case may be. Ensure that the secondary layer (jute fabric) is on top. Drape soil wrap matting over the stabilizer board so that it forms a 90-degree angle where the inner face of the stabilizer board meets the soil surface. Keep a minimum embedment length of 5' as shown in the Contract Documents. Anchor Soil wrap matting using 2" x 4" wedge stakes at 3' spacing along the stabilizer board and along the edge of Soil wrap matting. Backfill with a well graded mixture of rock and suitable soil.

4) Compact soil to the required degree of compaction specified by the Environmental Programs Administrator. Spread native seeds on the portion of the lift that will be exposed to sunlight. Stretch soil wrap matting over the compacted soil and extend towards the slope. Anchor Soil wrap matting using wedge stakes at 3' spacing in a key trench. This base lift forms the foundation for the upper lifts and provides adequate stability to the slope. Spread 2" to 3" layer of the soil on the top surface of Soil wrap matting and place live self-rooting cuttings.

5) Repeat the same procedure for the upper lifts. Native soil without rock can be used as backfill for upper lifts. Offset each lift 3" to 36" from the previous lift as specified on the plans.

6) On the topmost lift, spread topsoil, seed and fertilizer. Cover the topsoil with soil wrap matting or an erosion control blanket as appropriate. Container seedlings or plant plugs can be inserted through the Soil wrap matting along the horizontal benches.

B. Clean-Up

1) During installation of the brush toe, all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, turf, structures, and private property.

2) The Contractor shall be responsible for off-site removal and disposal of all trash, excess backfill and any materials incidental to the project and disposing of them off-site.

4. MEASUREMENT AND PAYMENT

Brush Toe shall be measured and paid for at the Contract unit price per linear foot (LF) of brush toe. Payment shall be full compensation for the transport of all materials, excavation, installation and maintenance of brush toe, and for all material, labor, equipment, tools,

stockpiling and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

END OF SECTION

SECTION-10 CLAY PLUG

1. DESCRIPTION

This work shall consist of furnishing, transporting, installing and maintaining clay plugs within the abandoned stream channel, as specified in the Contract Documents, or as directed by The City of Staunton. Clay plugs shall be used in locations where the former and new stream channels intersect to prevent stream flow from re-activating the old channel. Additionally, clay plugs may be used to create valley wide barriers to stream flow preventing undermining of structures where large amounts of backfill are used to achieve grade. Clay plugs consist of soil material (i.e. clay) placed and compacted within the channel to block stream flow, and/or placed below structures, and/or within the valley as specified in the Contract Documents. Clay plugs shall be stabilized and dressed with topsoil, seed, and natural fiber matting.

2. MATERIALS

A. Soil Material

Soil material for the channel plug, structure footer, or valley plug shall be defined as CL, CH, MH, or SC in accordance with ASTM D 2487 – Classification of Soils for Engineering Purposes. Core of the plug shall be constructed using Clay (CL) with a minimum 50% passing the #200 sieve, with a plasticity index greater than 10.

3. CONSTRUCTION

A. Installation

1) The clay plug shall be constructed in the locations where the existing channel is to be abandoned as shown in the Contract Documents. The clay plug shall be placed within the abandoned channel in an orientation that is perpendicular to the flow direction, or oriented as needed to prevent flow from entering the filled stream channel. Prior to placing the plug, clear the stream channel cross-section on all sides to remove all vegetation and root mat material to an elevation which is at least one foot below the elevation of the existing stream channel cross-section.

2) Construct the plug to the length and dimensions shown on the construction plan. Clay plugs placed below structures shall be constructed to the width of the structure footer or to the width shown on the plan.

3) Clay plug material shall be spread evenly in horizontal layers of approximately 8 inches loose lift thickness over the width of the lift. Each lift of soil layer material shall be machine compacted to a minimum 95% standard proctor of the material as defined by ASTM D698 to a density significantly greater than the surrounding, undisturbed soil.

B. Clean-up

1) Upon completion of work, reshape slopes and stream bottom to specified elevations.

2) Remove unsuitable and surplus soil and excavated materials to fill areas or approved off-site locations.

4. MEASUREMENT AND PAYMENT

Clay Plugs shall be measured and paid for at the Contract unit price per cubic yard (CY) of clay plug. Payment shall be full compensation for the transport of all materials, excavation, installation and maintenance of clay plugs, and for all material, labor, equipment, tools, stockpiling and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

END OF SECTION

SECTION-11 LOG SILL

1. DESCRIPTION

The work covered by this item consists of furnishing, stockpiling, placing and maintaining any approved logs, stone, and geotextile fabric to be utilized to construct the log sill as shown on the plans and specified in the Contract Documents, or as directed by the Environmental Programs Administrator.

2. MATERIALS

A. Substrate Mix

Substrate mix shall be installed at a depth as specified in plans and shall be in accordance with SECTION 07 – STREAMBED SUBSTRATE MIX.

B. Geotextile Fabric

Geotextile fabric shall be 6 oz non-woven with the minimum properties specified in SECTION 08 - GEOTEXTILES. Geotextile fabric for this item shall be certified by the manufacturer or supplier. The Contractor shall submit manufacturer specifications to the Environmental Programs Administrator prior to ordering materials.

C. Logs

The logs shall be formed from trees that were alive when recently removed from the ground. Logs shall be at least 20 feet of trunk. Tree basal diameter shall be a minimum of 12 inches. Softwoods such as pine or poplar shall only be used as footer logs.

3. CONSTRUCTION

The Contractor shall place the logs in locations shown on the plans or as directed by the Environmental Programs Administrator, to the thickness, widths, and lengths as shown on the plans and described in the details. All logs shall be placed to form an in-stream structure in accordance with the plans, neatly and uniformly, and shall meet the approval of the Environmental Programs Administrator.

4. MEASUREMENT AND PAYMENT

Log sills shall be measured and paid for at the Contract unit price per each (EA) sill structure installed. Payment for log sills shall be full compensation for harvesting, stockpiling and placement of logs and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

END OF SECTION
SECTION-12 ROCK SILL

1. DESCRIPTION

This work shall consist of furnishing, transporting, stockpiling, installing and maintaining rock sill structures within the stream channel, as specified in the Contract Documents, or as directed by the City of Staunton.

2. MATERIALS

A. Substrate Mix

Substrate mix shall be installed at a depth as specified in plans and shall be in accordance with SECTION 07 – STREAMBED SUBSTRATE MIX.

B. Geotextile Fabric

Geotextile fabric shall be 6 oz non-woven with the minimum properties specified in SECTION 08 - GEOTEXTILES. Geotextile fabric for this item shall be certified by the manufacturer or supplier. The Contractor shall submit manufacturer specifications to the Environmental Programs Administrator prior to ordering materials.

C. Footer Rocks

Footer rocks consist of rocks placed below the invert of the proposed channel to provide support for the header rocks and prevent downstream scour.

Rock for this item shall be constructed of angular, flat, or cubed durable rock of sufficient hardness to resist weathering and shall be free of shale, cracks and other blemishes. Slag or recycled aggregate will be rejected. Minimum rock diameter is shown on the plans. Sill rocks shall have an intermediate dimension of at least 24 inches for the Main Channel. Rock source must be submitted to the City of Staunton for approval.

D. Header Rocks

Header rocks consist of the rocks placed upon the footer rocks.

Rock for this item shall be constructed of angular, flat, or cubed durable rock of sufficient hardness to resist weathering and shall be free of shale, cracks and other blemishes. Slag or recycled aggregate will be rejected. Minimum rock diameter is shown on the plans. Sill rocks shall have an intermediate dimension of at least 12 inches for the Main Channel. Rock source must be submitted to the City of Staunton for approval.

3. CONSTRUCTION

A. Installation

1) Rock sills shall be installed according to the Sequence of Construction, design plans, structure details, and the following Specification.

2) Excavate a trench across the bottom of the stream bed and lower bank area to accommodate the footer rocks and header rocks. The width of excavation in the direction of flow shall be a minimum of one foot wider than the rock sill to allow the substrate mix to extend a minimum of one foot upstream of the rock sill.

3) Place one or two courses of footer rocks to the minimum footer rock depth.

4) Place header rocks on top of footer rocks so that each half of the weir rock rests on one half of a footer rock below. Offset the header rock in the upstream direction and place so they slope slightly against the flow direction. Top of header rocks should be at stream bed invert.

5) Extend the structure into the bank a minimum of 3 feet.

6) After installation, check proper function/flow path by observing flow over the structure. Repair as needed to ensure proper function.

4. MEASUREMENT AND PAYMENT

Rock sills shall be measured and paid for at the Contract unit price per each (EA) rock sill structure installed. Payment shall be full compensation for the transport of all materials, excavation, installation and maintenance of rock sill, and for all material, labor, equipment, tools, stockpiling and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by The City of Staunton.

END OF SECTION

SECTION-13 ROCK CROSS VANE

1. DESCRIPTION

The work covered by this item consists of furnishing, stockpiling, installing and maintaining Rock Cross Vane structures within the stream channel, as specified in the Contract Documents, or as directed by the City of Staunton.

2. MATERIALS

A. Substrate Mix

Substrate mix shall be installed at a depth as specified in plans and shall be in accordance with SECTION 07 – STREAMBED SUBSTRATE MIX.

B. Geotextile Fabric

Geotextile fabric shall be 6 oz non-woven with the minimum properties specified in SECTION 08 - GEOTEXTILES. Geotextile fabric for this item shall be certified by the manufacturer or supplier. The Contractor shall submit manufacturer specifications to the Environmental Programs Administrator prior to ordering materials.

C. Footer Rocks

Footer rocks consist of rocks placed below the invert of the proposed channel to provide support for the header rocks and prevent downstream scour. Rock for this item shall be constructed of angular, flat, or cubed durable rock of sufficient hardness to resist weathering and shall be free of shale, cracks, and other blemishes. Slag or recycled aggregate will be rejected. Minimum rock diameter is shown on the plans. Rock source must be submitted to the City of Staunton for approval.

D. Header Rocks

Header rocks consist of the rocks placed upon the footer rocks. Rock for this item shall be constructed of angular, flat, or cubed durable rock of sufficient hardness to resist weathering and shall be free of shale, cracks and other blemishes. Slag or recycled aggregate will be rejected. Minimum rock diameter is shown on the plans. Rock source must be submitted to the City of Staunton for approval.

3. CONSTRUCTION

A. Installation

1) Rock Cross Vanes shall be installed according to the design plans, structure details, Sequence of Construction, and the following Specification.

2) Excavate a trench across the bottom of the stream bed and lower bank area to accommodate the footer rocks and header rocks. The width of the excavation in the direction of flow shall be a minimum of one foot wider than the rock sill to allow the substrate mix to extend a minimum of one foot upstream of the rock sill.

3) Place one or two course of footer rocks to the minimum footer rock depth.

4) Place header rocks on top of footer rocks so that each half of the weir rocks rests on one half of a footer rock below. Offset the header rock in the upstream direction and place so they slope slightly against the flow direction. Top of header rocks should be at stream bed invert.

5) Extend the structure into the bank, a minimum of 5 feet.

6) After installation, check proper function/flow path by observing flow over the structure. Repair as needed to ensure proper function.

4. MEASUREMENT AND PAYMENT

Payment for Rock Cross Vane shall be measured and paid for by unit for each (EA). Payment shall be full compensation for the excavation, transport, stockpiling and placement of rocks and for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

END OF SECTION

SECTION-14 IMBRICATED WALL

1. DESCRIPTION

The work covered by this item consists of furnishing, transporting, stockpiling, installing and maintaining natural rock material into a retaining wall to the lines and grades designated on the Construction Drawings, or as directed by the Environmental Programs Administrator.

2. MATERIALS

A. Rocks

Footer Boulders (Rocks) shall meet the specifications for 'Rock' contained in the Contract Documents. Footer boulders (rock) consists of rock placed below the invert of the stream channel to provide support for the wall boulders.

Footer boulders (rocks) shall meet the specifications for 'Rock' contained in the Contract Documents. Footer boulders (rock) consists of rock placed below the invert of the stream channel to provide support for the wall boulders.

Wall Boulders (Rocks) shall meet the specifications for 'Rock' contained in the Contract Documents. Wall boulders (rock) consist of rock places on top of the footer boulders (rock) in accordance with Construction Drawings and Contract Documents to provide support to the stream bank.

Rock for this item shall be constructed of angular, flat, or cubed durable rock of sufficient hardness to resist weathering and shall be free of shale, cracks and other blemishes. Slag or recycled aggregate will be rejected. Minimum rock diameter is shown on the construction drawings and shall meet the specifications for 'Rock' contained in the Contract Documents. Rock source must be submitted to the City of Staunton for approval.

B. Select Backfill Material

Backfill material shall be streambed substrate mix per specification.

B. Geotextile Fabric

Geotextile fabric shall meet the specifications for 'Geotextile Fabric' contained in the Construction Documents.

The Contractor shall submit manufacturer specifications to the Owner prior to ordering materials.

3. CONSTRUCTION

A. Installation

1) The Contractor shall install the product in accordance with the details shown on the Construction Documents.

2) Footer boulders (rock) shall be installed per the Sequence of Construction, design plans, structure details, and the following Specification.

3) Excavate a trench to accommodate the footer boulders rocks. The depth of excavation shall be enough so that one foot of the boulder is buried below the invert of the steam bed.

4) Install geotextile fabric, boulder, and backfill with backfill material.

5) Place footer boulder (rock) rock/stones in trench on top of geotextile and compact in accordance with Construction Documents.

6) Contractor shall receive approval of all footer boulder (rock) placement by Environmental Programs Administrator and/or City of Staunton representative prior to placement of wall boulders (rock).

7) Place wall boulders (rock). Seams between footer boulders (rock) and wall boulders (rock) shall not line up. Offset wall boulders away from channel and layer into stream bank in accordance with the Construction Documents. Each row of wall boulders (rock) shall be offset a maximum 1/3 of the rock diameter farther towards the bank than the lower row.

8) Wall boulders (rock) shall be keyed into the bank by at least two rocks at the upstream and downstream end. These key rocks shall include footer boulders (rock).

9) Backfill behind the wall boulders (rock) every 6" and compact to 95% bearing capacity.

10) Once the boulder wall (rock) height is achieved, pull geotextile fabric over the top rock and request an inspection from Environmental Programs Administrator and/or City of Staunton representative.

11) After inspection, trim the geotextile fabric so it is not visible.

4. MEASUREMENT AND PAYMENT

Imbricated wall and boulders shall be measured and paid for at the Contract unit price per linear foot (LF) of imbricated wall installed. Payment for imbricated wall shall be full compensation for harvesting, stockpiling and placement of rocks and for all material, labor,

equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City.

END OF SECTION

SECTION-15 LIME AND FERTILIZER

1. DESCRIPTION

A. This work shall consist of furnishing and applying all fertilizer, lime, and laboratory testing of soil for the purposes of establishing plan specified vegetation and controlling erosion. Lime and fertilizer shall be placed on all disturbed areas targeted for restoration throughout Project using laboratory recommended rates at the locations specified in the Contract Documents, or as directed by The City of Staunton.

B. Prior to start of work on this item, the Contractor shall submit certified soil test results and soil amendment recommendations to The City of Staunton for review. No work shall be performed until the soil amendment recommendations are approved by The City of Staunton.

2. MATERIALS

A. Fertilizer and lime shall be applied per manufacturers' instructions, and at rates specified as a result of the soil testing and soil amendment recommendations, and as described in the proposed seeding schedule detailed in the plans.

B. Inorganic Soil Amendments
   1) If the topsoil analysis indicates the need for inorganic soil amendments, the following standards apply:
   2) Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
      1. Class: Class O, with a minimum 95 percent passing through No. 8 (2.36-mm) sieve and a minimum 55 percent passing through No. 60 (0.25-mm) sieve.
      2. Provide lime in form of dolomitic limestone.
   3) Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 (3.35-mm) sieve and a maximum 10 percent passing through No. 40 (0.425-mm) sieve.
   4) Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
   5) Aluminum Sulfate: Commercial grade, unadulterated.
   6) Perlite: Horticultural perlite, soil amendment grade.
   7) Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.
   8) Sand: Clean, washed, natural or manufactured, free of toxic materials.
   9) Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
   10) Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

3. MEASUREMENT AND PAYMENT

Payment for fertilizer and lime shall be measured and paid for at the contract unit price per acre (AC) of area seeded. Payment will be full compensation for furnishing and incorporating all lime and fertilizer including all maintenance and warranty, materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by The City of Staunton.

END OF SECTION

SECTION-16 WILDFLOWER & GRASS MIX SEEDING

1. DESCRIPTION

A. Related Documents
   1) The provisions of the Contract Documents apply to the work of this Section.

B. Summary
   1) This Section includes the following:
      1. Wildflower and Grass Schedule
      2. Products: Seed Mixes, Mulch, Topsoil, Amendments, Manufacturers
      3. Execution: Examination, Preparation, Seeding, Maintenance, Establishment

C. Submittals
   1) Installers qualifications
      1. Provide a list, with references, of the past three projects of a similar scope and magnitude.
   2) Amendment Plan.
      1. Provide copy of topsoil testing report.
      2. List of amendments proposed for topsoil, including application rates.

D. Quality Assurance
   1) Installer Qualifications: Engage a specialized Installer, who has successfully completed meadow establishment projects similar in size and complexity to this project.

E. Delivery, Storage, and Handling
   1) Seed: Deliver seed in original sealed, labeled, and undamaged containers.
   2) Straw mulch - Cereal grain straw shall be harvested from dry stalks and clean of weed seeds. Straw shall come in baled form to be spread by hand or machine blown. Protect from damage, weather, excessive temperatures and construction operations.

F. Coordination and Scheduling
   1) Seeding Schedule
   2) Low-Growing Wildflower & Grass Mix

G. Temporary Seeding
   1) Temporary Seed
      1. Annual Ryegrass - *(Lolium multiflorum)* seeded at the rate of 30lb per acre.

2) Weather Limitations: Proceed with planting only when existing and forecast weather conditions are suitable for work. Seeding shall be performed immediately after construction is completed.

H. Limits of Seeding
1) Prepare soil and seed all meadow areas as indicated on planting plan.

2. PRODUCTS

A. Seed
1) Seed Species

Low-Growing Wildflower & Grass Mix - ERNMX-156

	Botanical Name	Common Name
41.00 %	*Festuca ovina, Variety Not Stated*	Sheep Fescue, Variety Not Stated
27.30 %	*Lolium multiflorum*	Annual Ryegrass
10.00 %	*Bouteloua curtipendula, Butte*	Sideoats Grama, Butte
6.30 %	*Linum perenne*	Perennial Blue Flax
5.00 %	*Centaurea cyanus*	Cornflower (Bachelor's Button)
1.50 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis
1.50 %	*Gaillardia aristata*	Perennial Gaillardia (Blanketflower)
1.50 %	*Rudbeckia hirta*	Blackeyed Susan
1.30 %	*Gaillardia pulchella*	Annual Gaillardia (Indian Blanket)
1.00 %	*Chrysanthemum maximum*	Shasta Daisy
0.80 %	*Zizia aurea, PA Ecotype*	Golden Alexanders, PA Ecotype
0.50 %	*Asclepias tuberosa, PA Ecotype*	Butterfly Milkweed, PA Ecotype
0.50 %	*Aster oblongifolius, PA Ecotype*	Aromatic Aster, PA Ecotype
0.40 %	*Penstemon hirsutus*	Hairy Beardtongue
0.40 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint
0.30 %	*Papaver rhoeas, Red*	Corn Poppy, Red
0.30 %	*Papaver rhoeas, Shirley Mix*	Corn Poppy/Shirley Mix
0.20 %	*Agastache foeniculum*	Anise (Lavender) Hyssop
0.10 %	*Achillea millefolium*	Common Yarrow
0.10 %	*Oenothera fruticosa var. fruticosa*	Sundrops

B. Seed Manufacturer
1) Low-Growing Wildflower & Grass Seed Mix
1. Acceptable supplier: Ernst Conservations Seed, LLC. 8884 Mercer Pike. Meadville, PA 16335. 1-800-873-3321.

C. Fertilizer
1) Refer to Specification 18 – Lime and Fertilizer for all fertilizer amendments.

D. Topsoil
1) Topsoil:
1. Soil must contain 3% minimum organic matter by weight.
2) Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of

stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

3) Have topsoil tested by a certified soil testing laboratory to determine the type and quantity of soil amendments necessary. Add amendments to topsoil as necessary to meet these requirements. pH shall be within the range of 6.0- 7.5.

E. Inorganic Soil Amendments

1) If the topsoil analysis indicates the need for inorganic soil amendments, the following standards apply:
2) Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
    1. Class: Class O, with a minimum 95 percent passing through No. 8 (2.36-mm) sieve and a minimum 55 percent passing through No. 60 (0.25-mm) sieve.
    2. Provide lime in form of dolomitic limestone.
3) Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 (3.35-mm) sieve and a maximum 10 percent passing through No. 40 (0.425-mm) sieve.
4) Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
5) Aluminum Sulfate: Commercial grade, unadulterated.
6) Perlite: Horticultural perlite, soil amendment grade.
7) Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.
8) Sand: Clean, washed, natural or manufactured, free of toxic materials.
9) Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
10) Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

F. Organic Soil Amendments

1) If the topsoil analysis indicates the need for organic soil amendments, the following standards apply.
2) Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 19-mm (3/4-inch) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
    1. Organic Matter Content: 50 percent of dry weight.
    2. Feedstock: Agricultural, food, or industrial residuals; bio solids; yard trimmings; or source-separated or compostable mixed solid waste.

3. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.
4. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
5. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

G. Herbicides
   1) Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

3. CONSTRUCTION

A. Examination
   1) Examine areas to receive meadow grass for compliance with requirements and for conditions affecting performance of the Work. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Preparation
   1) Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by seeding operations.
   2) Install temporary stakes and twine to clearly indicate the areas to be protected from mowing.
   3) Protect adjacent and adjoining areas and plant materials from hydro-seed over spraying.
   4) Eradicate undesirable existing vegetation if present through herbicide applications.
      1. Applying herbicide: Complete two applications of a non-selective herbicide approved for aquatic use which does not leave an active soil residual with one to two weeks between each application. Ensure sufficient kill prior to commencing seeding. Apply additional sprays as required until effective kill has been established.

C. Topsoil Placement
   1) Remove stones, sticks and roots larger than 2” in any dimension from subgrade. Completely remove trash and other extraneous debris from subgrade. Maximum object size for topsoil shall be achieved by sifting not by hand removal or raking

following placement of topsoil.

D. Topsoil Preparation
   1) In dry areas, grade must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches with a disc, by dragging with a heavy chain, or using other equipment. In wet areas, leave the surface rough by creating mounds and kettles.
   2) All rocks and other debris larger than 2 inches in diameter shall be removed.
   3) Mix soil amendments into the top 4 inches of soil by disking or other suitable means.
   4) Do not till in wet areas.

E. Seeding Floodplain
   1) Hand seed, drill or dry broadcast seed with a spreader or a seeding machine when the water table is drawn down. Do not seed when water level is deeper than 2".
      1. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
      2. Mix a flow-enhancing material (calcine clay-based kitty litter, sawdust, etc.) to aid in the uniformity of dry broadcasting.
      3. Apply Fertilizer according to manufacturer recommendations.
      4. Dry broadcast seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   2) Rake or drag seed to the required depth and ensuring seed-to-soil contact, and water with fine spray in dry applications.
   3) No raking or dragging is necessary in wet applications.

F. Mulching
   1) Apply straw mulch to all seeded areas immediately after seeding.

G. Hydroseeding (Optional)
   1) Extra care must be taken when hydroseeding in order to ensure native wildflower germination.
      1. Hydroseeding
         a. The application should incorporate wildflower seed into a low mulch slurry to ensure proper seed/soil contact and avoiding seed suspension in upper mulch layer (which prevents germination).
         b. Follow seeding schedule when hydroseeding.
         c. Add fiber mulch and tackifier per manufacturer instructions.

H. Maintenance of New Meadow
   1) Contractor to begin maintenance of floodplain buffer immediately after planting

and continues until acceptable meadow is established. Maintain seeded meadow and all grassed areas until a satisfactory meadow is achieved.

2) Watering: Contractor to provide a source of water for use in establishing meadow until acceptable.
    1. Wildflower and Grass Mix.
        a. If a minimum ¼ inch of rainfall is not received within 10 days after seeding, irrigate with a minimum of ¼ inch of water.
        b. Provide supplemental moisture if and when necessary to assure early survival and establishment of meadow.
3) Establishment
    1. Contractor to replant bare areas with meadow seed until establishment of acceptable meadow.
    2. Contractor to control invasions by undesirable plants by pulling, mowing or spraying with a selective herbicide until establishment of acceptable meadow.
4) First Year Maintenance (By Owner)
    1. When floodplain meadow reaches 18 to 24 inches tall, using a string trimmer, trim to a height of 8 inches. Repeat procedure to limit growth above 24 inches. Cease trimming by the middle of September.
    2. Replant all areas with less than 40% ground cover by following the original seedbed preparations, amendment and seeding recommendations
    3. Replant all areas with between 40% and 85% cover by over-seeding at half the original rate.
5) Second Year/General Maintenance (By Owner)
    1. Spray undesirable weeds with an approved aquatic selective herbicide as needed.

I. Satisfactory Meadow
1) All Floodplain Meadow areas shall be considered satisfactory/acceptable provided requirements, including maintenance, have been met and a healthy, uniform, close stand of desired vegetation is established and no-bare spots exceeding 5 by 5 inches or any surface irregularities.
2) Replant meadows that do not meet requirements and continue maintenance until meadow is satisfactory/acceptable by Owner.

J. Cleanup and Protection
1) Promptly remove soil and debris created by meadow seeding and establishment from sidewalks and paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto surface of roads, walks, or other paved areas.

4. WARRANTY

The Contractor shall maintain a minimum 85% aerial coverage of seeding for 1 year after final inspection. This shall include necessary care and replacement to achieve the required coverage.

5. MEASUREMENT AND PAYMENT

Payment for upland seeding shall be measured and paid for at the contract unit price per acre (AC) of area seeded. Payment will be full compensation for furnishing and incorporating all seed, including all maintenance and warranty, materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton.

END OF SECTION

SECTION-17 PLANTING

1. DESCRIPTION & MATERIALS

Planting of containerized trees, plugs, tubelings, bare roots and livestakes shall occur per the details and specifications as presented on the construction plans.

2. MEASUREMENT AND PAYMENT

Measurement and payment for containerized trees, plugs, tubelings, and bare roots shall be made separately on a per each basis for materials, matting, and installations. Measurement and payment for live stakes and herbaceous plugs shall be made separately on a per each basis for materials and installation. The payment will be full compensation for furnishing and installing all tubelings and live stakes as shown on the plans, including all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by The City of Staunton and the Environmental Programs Administrator.

END OF SECTION

SECTION-18 REMOVAL AND DISPOSAL OF EXISTING BRIDGES

1. DESCRIPTION

This work shall consist of dismantling and removing the existing pedestrian bridges as specified in the Contract Documents, or as directed by the City of Staunton. Work shall meet requirements for VDOT Standard Specifications, Section 413 for Dismantling and Removing Existing Structures.

2. MATERIALS

A. During removal of the existing pedestrian bridges, all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants and pathways.

B. The Contractor shall be responsible for off-site removal and disposal of all material removed and any materials incidental to the project.

3. MEASUREMENT AND PAYMENT

Removal of the existing pedestrian bridges shall be measured and paid for on a per each basis. The payment shall include all labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Staunton and the Environmental Programs Administrator.

END OF SECTION

SECTION-19 CONCRETE PAVING

1. DESCRIPTION

A. Summary

1) Section covers the furnishing, transporting, installing and maintaining of concrete paving and walkways as specified in the Contract Documents, or as directed by the Environmental Programs Administrator.

B. Definitions

1) Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
2) W/C Ratio: The ratio by weight of water to cementitious materials.

C. Related Documents

1) The provisions of the Contract Documents apply to the work of this Section.
2) Virginia Department of Transportation (VDOT) Road and Bridge Specifications, current released version, and Road and Bridge Standards, current released version.

D. Informational Submittals

1) Qualification Data for qualified ready-mix concrete manufacturer.
2) Material Certificates: For the following, from manufacturer:
   1. Cementitious materials
   2. Steel reinforcement and reinforcement accessories
   3. Admixtures
   4. Curing Compounds
   5. Applied finish materials
   6. Bonding agent or epoxy adhesive
   7. Joint fillers

E. Action Submittals

1) Product Data:

   1. Job-Mix Designs: Certification that the materials for each concrete mix indicated on the plan complies with concrete mix specifications provided by Virginia Department of Transportation (VDOT) Road and Bridge Specifications, latest edition and Road and Bridge Standards, latest edition.

   2. Material Certification: Certification signed by Contractor certifying that each material complies with requirements.

F. Field Conditions
   1) Follow VDOT Road and Bridge Standards & Specifications for placement of concrete.

2. PRODUCTS

A. Concrete, General
   1) All materials used in the construction of concrete paving shall conform to the VDOT Road and Bridge Standards & Specifications, current edition.
   2) Comply with requirements for concrete materials, admixtures, bonding materials, curing materials, and others as required with the VDOT Road and Bridge Standards & Specifications, current editions.

B. Concrete Mix, Design, and Testing
   1) Design mix to produce normal-weight concrete consisting of Portland cement, aggregate, water-reducing or high-range water-reducing admixture (superplasticizer), air-entraining admixture, and water to produce the following properties:

      1. Comply with requirements of VDOT Road and Bridge Specifications, current edition, for VDOT concrete mix designs, sampling and testing, and quality control.

      2. Testing to be performed by the City's third-party testing firm.

3. Construction

A. Examination
   1) Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
   2) Proceed with installation only after unsatisfactory conditions have been corrected.

B. Preparation
   1) Remove loose material from compacted subbase surface immediately before placing concrete.

C. Edge Forms and Screed Construction
   1) Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
   2) Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

D. Installation of Steel Reinforcement
   1) General: Comply with requirements of VDOT Road and Bridge Specifications, current edition.

E. Joints
   1) General: Comply with requirements of VDOT Road and Bridge Specifications, current edition.

F. Concrete Placement
   1) General: Comply with requirements of VDOT Road and Bridge Specifications, current edition.
   2) Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
   3) Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
   4) Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

G. Float Finishing
   1) General: Comply with requirements of VDOT Road and Bridge Specifications, current edition.
   2) General: Do not add water to concrete surfaces during finishing operations.

H. Concrete Protection and Curling
   1) General: Comply with requirements of VDOT Road and Bridge Specifications, current edition.
   2) General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

I. Paving Tolerances
   1) General: Comply with requirements of VDOT Road and Bridge Specifications, current edition.

J. Field Quality Control
   1) Testing Agency: City will engage an independent construction materials testing agency.

K. Repair and Protection
   1) Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
   2) Drill test cores, where directed by Architect, when necessary to determine

magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.

3) Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
4) Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION-20 PREFABRICATED PEDESTRIAN BRIDGE

1. DESCRIPTION

A. Scope

1) These specifications are for implementation of the prefabricated pedestrian bridge.

B. Definitions

1) Owner: Entity who ultimately will own the bridge.
2) Architect/Environmental Programs Administrator/Landscape Architect: Entity or Firm who will be representing the Owner.
3) Foundation Environmental Programs Administrator: Engineering Entity or Firm who will be designing and detailing the foundation system.
4) Geotechnical Environmental Programs Administrator: Engineering Entity or Firm who will be responsible for providing the Geotechnical information necessary to design the foundation system.
5) Bridge Manufacturer: Firm who will be designing and supplying the bridge in accordance with these Special Provisions.

C. Qualified Bridge Manufacturer

Each Contractor is required to identify their intended supplier as part of the bid submittal. Qualified Bridge Manufacturers must have at least 5 years of experience fabricating these types of structures and shall have an up-to-date quality certification by AISC per Section 14.1 of these specifications. All suppliers shall fabricate their product utilizing a modern fabrication facility owned and operated by the Bridge Manufacturer that includes the use of CNC beam drilling machines, no brokers are allowed.

Pre-Approved Bridge Manufacturer or approved equals:

Permatrak
1-877-332-7862
Email: jphilbin@permatrak.com or ruhlenhake@permatrak.com

Bridge Manufacturers, other than those listed above, may be used provided the Environmental Programs Administrator receives a written request at least 10 days prior to the bid. The written request shall accompany the following information:

1) Bridge Manufacturer's Product Literature,
2) Name and resume of Bridge Manufacturer's design professional who will be signing and sealing the engineering submittals,
3) Copy of current AISC certification,
4) Representative copies of detailed drawings, field procedures, calculations, quality control manual, welder's certifications, proof of in-house C.W.I.,
5) Listing of projects including owner, location, size, year of fabrication, contact person,
6) Certification by Bridge Manufacturer's Design Professional that the bridge proposed will be in accordance with all project development done up to the date of those specifications.

The above will be evaluated by the Environmental Programs Administrator for accuracy and ability to provide the
bridge in accordance with these specifications. Bridge Manufacturers other than those listed above may only be used if the Environmental Programs Administrator provides written approval via addendum 5
days prior to the bid. The Environmental Programs Administrator's ruling shall be final.

D. Bridge Manufacturer's Design Professional and Submittals

The Bridge Manufacturer shall have as a direct employee, an engineer who is experienced in bridge design to be in responsible charge of all engineering related task and design. The engineer shall have a minimum of 10 years of experience in bridge design and be a currently licensed civil or structural engineer in the State of Virginia and shall be the engineer who will seal and sign the plans.

Engineering drawings, 11x17 format, shall be prepared and submitted to the Contractor or Owner for their review after receipt of the order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the bridge being fabricated. All relative design information such as member size, ASTM/AASHTO material specification, dimensions necessary to fabricate and required welding shall be clearly shown on the drawings. Drawings shall have referenced details and sheet numbers. All drawings shall be stamped, signed and dated by the Bridge Manufacturer's Design Professional.

Structural calculations for the design of the bridge superstructure shall be prepared by the Bridge Manufacturer and submitted for review after receipt of the order. Calculations shall include complete design, analysis and code checks for the controlling members,

connectivity and support conditions, truss stability checks, deck design, deflection checks, bearings and all splices.

2. APPLICABLE CODES AND STANDARDS

A. Governing Specifications

Bridge shall be designed in compliance with the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, 2009 (AASHTO Ped). Calculations shall be in accordance with this document, and formulas shall reference the appropriate sections.

B. Other Reference Codes, Specifications and Standards

1) AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020 (AASHTO LRFD)
2) AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, First Edition, 2005 (AASHTO Signs)
3) AISC Steel Construction Manual, 15th Edition, 2017 (AISC)
4) ANSI/AISC 360-16 Specification for Structural Steel Buildings, 2016 (AISC 360)
5) American Welding Society, Structural Welding Code, D1.1, 2015 (AWS D1.1)
6) ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures, 2010 (ASCE 7)
7) Setra Technical Guide for Footbridges, 2006 (Setra)
8) ANSI/AWC NDC-2015 National Design Specification for Wood Construction, 2015 (NDS)
9) Tropical Timbers of the World, US Forest Products Laboratory

The AASTO LRFD Guide Specifications for the Design of Pedestrian Bridges shall control if any conflicting requirements occur with the Other Reference Documents and/or other local Codes.

3. STRUCTURAL DESIGN CRITERIA

The bridge shall be designed, constructed, and installed in accordance with the Bridge Manufacturers specifications.

4. QUALITY CONTROL

A. AISC Certification

The bridge shall be fabricated in a shop owned by the Bridge Manufacturer. This facility shall have up to date quality certification by AISC as Certified Bridge Fabricator - Advanced (Major) with Fracture Critical Endorsement and

Sophisticated Paint Endorsement.

B. Certified Weld Inspector

The Bridge Manufacturer shall employ a Certified Weld Inspector (CWI), with endorsement by AWS QC1. This CWI shall be present during the complete fabrication of the bridge. The CWI shall provide written documentation that the bridge has been fabricated in accordance with these specifications and the approved design drawings.

C. Documentation

Material Certifications shall be available for review for all materials within the bridge. Traceability of heat numbers is required for all structural steel.

Documentation showing the performance of all critical quality checks shall also be made available for review by the Environmental Programs Administrator or Owner.

D. Non-Destructive Testing

All welds within the structure, shall be visually inspected for conformance to size, under cut, profile and finish.

All shop splices of main truss members shall be magnetic particle tested.

15. DELIVERY AND ERECTION

A. Delivery

Delivery shall be made via truck to a location nearest the site which is accessible to normal over-the-road equipment. All trucks delivering bridge materials will need to be unloaded at the time of arrival. If the erection Contractor needs special delivery or delivery is restricted, they shall notify the Bridge Manufacturer prior to bid date. This includes site issues which may prevent over-the-road equipment from accessing the site. Steerable dollies are not used in the cost provided by the Bridge Manufacturer. Determining the length of bridge section which can be delivered is the responsibility of the Contractor and shall be communicated to the Bridge Manufacturer prior to the bid date.

B. Installation & Lifting Procedures

The Bridge Manufacturer will provide standard typical written procedures for lifting and splicing the bridge. All actual means, methods, equipment and sequence of erection used are the responsibility of the Contractor.

16. Warranty

The Bridge Manufacturer shall warrant, at the time of delivery, that it has conveyed good title to its steel structure, free of liens and encumbrances created by the Bridge

Manufacturer, and that its steel structure is free of defects in design, material and workmanship. This warranty shall be valid for a period of one (1) year from the earlier date of delivery or 60 days after final fabrication is complete. Durable tropical hardwood decking and hardwood attachments shall carry a one (1) year warranty against rot, termite damage, or fungal decay. This warranty shall specifically exclude all softwood and decking material such as Treated Southern Yellow Pine, Douglas Fir and Wood thermoplastic composite lumber (e.g. Trex). Paint, galvanizing and other special coatings, if warranted, shall be warranted by the coating manufacturer in accordance with their warranty provisions and are not covered under the Bridge Manufacturer's warranty.

This warranty shall not cover defects in the steel structure caused by abuse, misuse, overloading, accident, improper installation, maintenance, alteration, or any other cause not expressly warranted. This warranty shall not cover damage resulting from or relating to the use of any kind of de-icing material. This warranty shall be void unless owner's records are supplied that show compliance with the minimum guidelines specified in the in the Bridge Manufacturer's inspection and maintenance procedures.

Repair, replacement, or adjustment, in Bridge Manufacturer's sole discretion, shall be the exclusive remedy for any defects under this warranty. This warranty shall exclude liability for any indirect, consequential, or incidental damages.

Contractor is solely responsible for providing all construction coordination between site work improvements, bridge abutments, wing walls, and the bridge so the installed bridge meets all project design requirements and applicable building codes.

END OF SECTION

SECTION-21 MAINTENANCE OF TRAFFIC

1. DESCRIPTION & MATERIALS

This price shall include the material, equipment and labor necessary to post road construction work signage and barricades, as well as detour signage, cones, and other traffic control devices for the re-routing of traffic. This price shall include all daily erection and removal of signage and other traffic control devices. Refer to the Contract Documents for specific traffic control information specifications and standards.

2. MEASUREMENT AND PAYMENT

Measurement and payment for maintenance of traffic devices shall be on a lump sum basis.

END OF SECTION

SECTION-22 GUARANTEE

The Contractor shall guarantee all of the work included in this Contract for a period of one (1) year after the date of completion and acceptance of the facilities by The City of Staunton as follows:

A. Against all faulty or imperfect materials, and against all imperfect, careless, unskilled workmanship on the part of the Contractor, his sub-contractors, or component manufacturers.

B. The entire facilities and each and every part thereof shall operate with normal care and attention in a satisfactory and efficient manner, and in accordance with the requirements of these Specifications.

C. The Contractor agrees to replace, with proper workmanship and materials, and to re-execute, correct, or repair, without cost to The City of Staunton, work which may be found to be improper or imperfect or which does not operate in a satisfactory manner or fails to perform as specified.

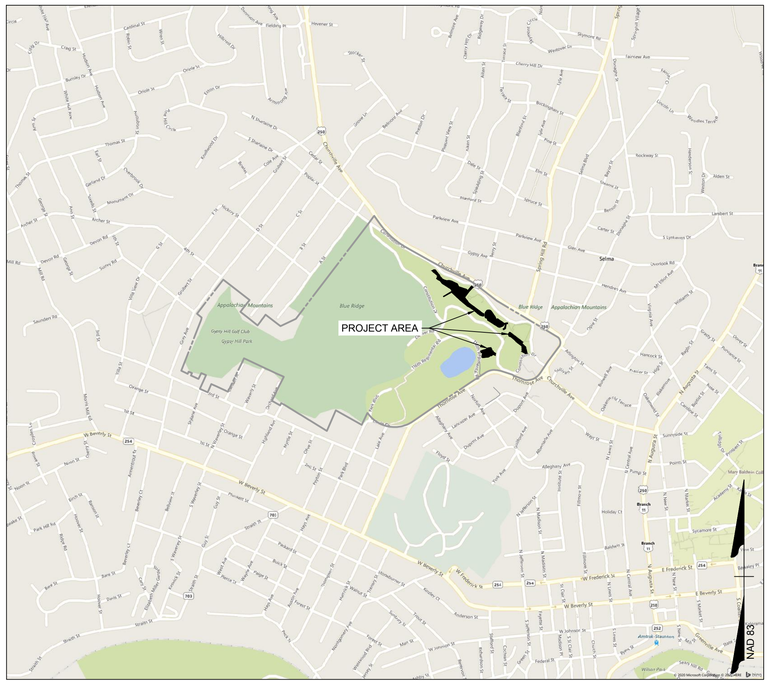
END OF SECTION

GYPSY HILL PARK STREAM RESTORATION

CITY OF STAUNTON, VIRGINIA

Sheet List Table

Sheet Number	Sheet Title
1.00	COVER
1.01	LEGEND & GEOMORRPHOLOGY
2.00	EXISTING CONDITIONS & DEMOLITION KEY PLAN
2.01	EXISTING CONDITIONS & DEMOLITION PLAN
2.02	EXISTING CONDITIONS & DEMOLITION PLAN
3.00	EROSION & SEDIMENT CONTROL NOTES
3.01	EROSION & SEDIMENT CONTROL DETAILS
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3.03	EROSION & SEDIMENT CONTROL KEY PLAN
3.04	EROSION & SEDIMENT CONTROL PLAN
3.05	EROSION & SEDIMENT CONTROL PLAN
3.06	EROSION & SEDIMENT CONTROL MATTING PLAN
3.07	EROSION & SEDIMENT CONTROL MATTING PLAN
4.00	CONSTRUCTION NOTES
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4.04	BRIDGE, BOARDWALK & SIGN SCHEMATIC DETAILS
5.00	GRADING PLAN & PROFILE KEY PLAN
5.01	MAIN REACH GRADING PLAN & PROFILE
5.02	MAIN REACH GRADING PLAN & PROFILE
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5.04	TRIBUTARY GRADING PLAN & PROFILE
5.05	DUCK POND BANK STABILIZATION GRADING PLAN & SECTIONS
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5.07	BOARDWALK PLAN & PROFILE
6.00	PROPOSED SECTIONS
7.00	VEGETATION NOTES
7.01	VEGETATION DETAILS
7.02	VEGETATION SCHEDULE
7.03	SEEDING & PLANTING PLAN
7.04	SEEDING & PLANTING PLAN
8.00	EXISTING 100-YEAR FLOODPLAIN MAP
8.01	PROPOSED 100-YEAR FLOODPLAIN MAP



VICINITY MAP
1" = 1000'

SEPTEMBER 15, 2023

REVISIONS

DATE	SHEET NUMBERS	DATE	SHEET NUMBERS

TOPOGRAPHY INFORMATION:

1. SOURCE OF TOPOGRAPHY - GROUND SURVEY
2. DATE OF THE SURVEY - 2/23/2020
3. NAME OF SURVEYOR THAT OVERSAW THE WORK - JOSEPH C. MEDLEY
4. NAME OF FIRM THAT PERFORMED THE WORK - TIMMONS GROUP

QUALITY ASSURANCE STATEMENT

A Quality Control and Assurance review has been performed on this document in accordance with the Timmons Group Quality Plan. The undersigned states that this document has been checked and reviewed in a manner commensurate with the level of detail for the type of submittal indicated below.

09/15/2023
Date

100% DESIGN
Type of Submittal

TOTAL DISTURBED ACREAGE:
3.22 AC. (121,735 SF)

NOTE:
THIS PROJECT DOES NOT RESULT IN SIGNIFICANT CHANGES TO THE PRE-DEVELOPMENT RUNOFF CHARACTERISTICS OF THE LAND SURFACE (NO ADDED TURF OR IMPERVIOUS COVER) AFTER COMPLETION OF CONSTRUCTION AND FINAL STABILIZATION. THEREFORE, PER DEQ AND CITY OF STAUNTON GUIDANCE, THIS PROJECT IS NOT REQUIRED TO PREPARE OR IMPLEMENT A STORMWATER MANAGEMENT PLAN.

DEPARTMENT OF COMMUNITY DEVELOPMENT
CITY OF STAUNTON VIRGINIA
APPROVED BY
9/22/23
ENVIRONMENTAL PROGRAMS ADMINISTRATOR — DATE

COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

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YOUR VISION ACHIEVED THROUGH OURS.

P.O. BOX 58 STAUNTON, VA 24402
CITY OF STAUNTON, VIRGINIA
ATTN: MR. PETER K. KESECKER
(540) 332-3858

TIMMONS GROUP

GYPSY HILL PARK STREAM RESTORATION
CITY OF STAUNTON DEPARTMENT OF COMMUNITY DEVELOPMENT

JOB NO. 44801
SHEET NO. 1.00

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EXISTING CONDITIONS

- PROPERTY LINE
- RIGHT-OF-WAY
- EASEMENT
- MAJOR CONTOUR
- MINOR CONTOUR
- TREELINE
- EDGE OF PAVEMENT
- ASPHALT PATH
- GRAVEL PATH
- DIRT PATH
- GRAVEL ROAD
- ASPHALT ROAD
- CONCRETE PAD
- FENCELINE
- POWER POLE
- LIGHT POLE
- TRANSFORMER
- ELECTRIC VAULT
- GUY
- TELEPHONE PEDESTAL
- UNDERGROUND TELECOMMUNICATIONS
- OVERHEAD UTILITY SUPPLY
- UNDERGROUND POWER SUPPLY
- WETLANDS
- POW WETLAND (OPEN WATER)
- PERENNIAL STREAM CENTERLINE
- INTERMITTENT STREAM CENTERLINE
- EPHEMERAL STREAM CENTERLINE
- DITCH CENTERLINE
- RESOURCE PROTECTION AREA (RPA)
- FLOODPLAIN
- STORM PIPE
- PIPE TO BE REMOVED
- RIPRAP
- DRAINAGE MANHOLE
- GRATED TOP INLET
- SANITARY MANHOLE
- MONITORING WELL
- DECIDUOUS TREE
- CONIFEROUS TREE
- SHRUB
- BOLLARD
- SIGN
- CONTROL

DRAINAGE & SOILS

- MAJOR DRAINAGE AREA
- MINOR DRAINAGE AREA
- TIME OF CONCENTRATION
- SOIL GROUP BOUNDARY
- 1A SOIL GROUP IDENTIFIER

CROSS-SECTIONS

- EXISTING GRADE (FIELD TOPO)
- PROPOSED GRADE

FLOODPLAINS

- EXISTING FEMA 100 YR FLOODPLAIN
- DETAILED EXISTING 100 YR FLOODPLAIN
- DETAILED PROPOSED 100 YR FLOODPLAIN

EROSION & SEDIMENT CONTROL LEGEND

- LIMITS OF DISTURBANCE/ BARRICADE TAPE (LOD)
- SILT FENCE
- STRAW BALE BARRIER
- TREE PROTECTION (TP)
- STREAM CROSSING
- CONSTRUCTION ENTRANCE
- TEMPORARY SEEDING (APPLY AS NEEDED) (TS)
- PERMANENT SEEDING (REFER TO SHEETS 7.03 & 7.04) (PS)
- CONSTRUCTION ACCESS PATH
- SAFETY FENCE (SAF)

PROPOSED IMPROVEMENTS

- DESIGN STREAM CENTERLINE
- MAJOR CONTOUR
- MINOR CONTOUR
- ROCK SILL
- LOG SILL
- IMBRICATED STONE WALL
- BRUSH TOE
- CLAY PLUG
- FILL ABANDONED CHANNEL
- 4" CLASS A3 SIDEWALK
- PERMATRAK STREAM CROSSING

PROFILES

- EXISTING GRADE (FIELD TOPO)
- PROPOSED GRADE
- DESIGN BANKFULL
- SUBSTRATE MIX (1' DEPTH)
- ROCK SILL
- DOUBLE LOG SILL
- EXISTING STORM PIPE
- EXISTING STORM PIPE (CROSSING)
- EXISTING UTILITY
- EXISTING UTILITY (CROSSING)

PROPOSED SEEDING

- WILDFLOWER & GRASS SEEDING
- PERMANENT SEEDING

PROPOSED PLANTING

- STREAMBANK HERBACEOUS PLUGS

GEOMORPHOLOGY TABLES

MAIN REACH (PEYTON BRANCH)

Design Parameters	Target Ratios		Existing Condition		Reference Reach		Reference Reach	
	Min	Max	Min	Max	Min	Max	Min	Max
Stream Name	Peyton Branch Upper Reach		Peyton Branch Upper Reach		King William, VA		Sky Meadow	
Stream Type	C4		B4c		C5		C4	
Drainage Area, DA (sq mi)	1.34		1.34		2.61		1.23	
Riffle Mean Depth, d_{bkf} (ft)	0.6		0.7		1.2		0.83	
Riffle Width, W_{bkf} (ft)	6.3		5.8		15.6		25.10	
Riffle Width-to-Depth Ratio, [W_{bkf}/d_{bkf}]	10.0		8.3		13.0		30.2	
Riffle Bottom Width, W_{bot} (ft)	2.5	4.5	3.5	4.5	N/A	N/A	-	-
Riffle XSEC Area, A_{bkf} (sq ft)	4.0		4.3		19.5		20.9	
Riffle Max Depth, d_{mbkf} (ft)	0.7	1.0	0.6	1.7	1.1	1.7	1.5	1.5
Riffle Max Depth Ratio, [d_{mbkf}/d_{bkf}]	1.2	1.6	0.8	2.4	0.1	0.1	1.7	1.7
Pool Mean Depth, d_{pool} (ft)	0.9	1.5	1.3	2.2	2.2	2.2	2.1	2.1
Pool Mean Depth Ratio, [d_{pool}/d_{bkf}]	1.5	2.5	1.8	3.1	0.1	0.1	2.5	2.5
Pool Width, W_{pool} (ft)	7.6	9.5	7.6	15.2	13.5	13.5	14.9	14.9
Pool Width Ratio, [W_{pool}/W_{bkf}]	1.2	1.5	1.3	2.6	1.0	1.0	0.6	0.6
Pool XSEC Area, A_{pool} (sq ft)	6.0	10.0	13.7	32.7	29.8	29.8	30.9	30.9
Pool Area Ratio, [A_{pool}/A_{bkf}]	1.5	2.5	3.2	7.6	26.6	26.6	1.5	1.5
Pool Max Depth, d_{mpool} (ft)	0.9	2.1	0.6	2.4	1.7	3.0	4.0	4.0
Pool Max Depth Ratio, [d_{mpool}/d_{bkf}]	1.5	3.5	0.8	3.4	0.1	0.2	4.8	4.8
Low Bank Height, LBH (ft)	0.7	1.0	1.3	1.7	N/A	N/A	-	-
Low Bank Height Ratio, [LBH/d_{mbkf}]	1.0	1.0	2.2	1.0	N/A	N/A	-	-
Width Flood Prone Area, W_{fpa} (ft)	14	25	10	12	150	150	59.0	59.0
Entrenchment Ratio, [W_{fpa}/W_{bkf}]	2.2	4.0	1.7	2.1	11.5	11.5	2.4	2.4
Point Bar Slope, H/V (ft/ft)	0.20	0.50	0.2	0.2	N/A	N/A	-	-
Meander Length, L_m (ft)	31.5	75.6	34.5	79.3	102.0	102.0	-	-
Meander Length Ratio, [L_m/W_{bkf}]	5.0	12.0	5.9	13.6	7.8	7.8	-	-
Radius of Curvature, R_c (ft)	12.6	25.2	5.4	52.5	36.0	53.0	85.0	85.0
Rc Ratio, [R_c/W_{bkf}]	2.0	4.0	0.9	9.0	2.8	4.1	3.4	3.4
Curve Length, L_c (ft)	12.7	30.5	16.3	45.9	N/A	N/A	84.0	84.0
Curve Length Ratio, [L_c/W_{bkf}]	2.0	4.8	2.8	7.9	N/A	N/A	3.3	3.3
Meander Belt Width, W_{blt} (ft)	22.1	50.4	2.3	9.0	33.0	87.0	84.0	84.0
MW Ratio, [W_{blt}/W_{bkf}]	3.5	8.0	0.4	1.5	2.5	6.7	3.3	3.3
Riffle Length, L_{rif} (ft)	6.3	20.2	10.7	44.3	2.6	30.7	33.6	34.8
Riffle Length Ratio, [L_{rif}/W_{bkf}]	1.0	3.2	1.8	7.6	0.2	2.4	1.3	1.4
Riffle Slope, S_{rif} (ft/ft)	1.42%	2.14%	0.31%	1.04%	0.47%	4.98%	1.30%	3.60%
Riffle Slope Ratio, [S_{rif}/S_{ave}]	1.0	1.5	0.2	0.6	1.8	19.3	0.9	2.4
Pool Length, L_{pool} (ft)	7.6	25.2	19.2	43.9	10.7	33.7	18.9	31.5
Pool Length Ratio, [L_{pool}/W_{bkf}]	1.2	4.0	3.3	7.5	0.8	2.6	0.8	1.3
Pool Slope, S_{pool} (ft/ft)	0.00%	0.43%	0.35%	1.03%	0.566%		0.20%	0.50%
Pool Slope Ratio, [S_{pool}/S_{ave}]	0.0	0.3	0.2	0.6	2.2		0.1	0.3
Pool to Pool Spacing, p-p (ft)	15.8	37.8	66.5	181.5	13.8	107.8	60.0	70.5
Pool Spacing Ratio, [p-p/W_{bkf}]	2.5	6.0	11.4	31.2	1.1	8.3	2.4	2.8
Valley Length, VL (ft)	1002.0		1002.0		N/A		260.7	
Valley Elevation Change, VΔ (ft)	11.8		11.8		N/A		-	
Valley Slope, VS (ft/ft)	1.18%		1.2%		0.3%		1.70%	
Stream Length, SL (ft)	1229.5		1045.8		N/A		300.0	
Stream Elevation Change, SΔ (ft)	17.5		17.5		N/A		-	
Average Water Surface Slope, S (ft/ft)	1.42%		1.7%		0.3%		1.5%	
Sinuosity, K (ft/ft)	1.2		1.0		1.3		1.2	
Bankfull Wetted Perimeter, P (ft)	7.5		7.2		18.0		26.8	
Bankfull Hydraulic Radius, R (ft)	0.5		0.6		1.1		0.8	
Bankfull Mannings n (esitmate)	0.040		0.040		0.035		0.040	
Manning Bkf Discharge, Q_{bkf} (cfs)	11.2		14.6		44.9		82.6	
Manning Bkf Velocity, u_{bkf} (ft/s^2)	2.8		3.4		2.3		4.0	
Bankfull Stream Power, ω (lb/ft/s)	1.2		2.2		0.4		3.0	
Bankfull Shear Stress, τ (lb/ft^2)	0.44		0.63		0.18		0.76	
Calculated Shields - Diameter Mobilized (mm)	33.14		*		1*		59	
Calculated Colorado - Diameter Mobilized (mm)	83.11		*		1*		124	

TRIBUTARY

Design Parameters	Target Ratios		Existing Condition		Reference Reach		Reference Reach	
	Min	Max	Min	Max	Min	Max	Min	Max
Stream Name	Lake Tams Trib		Lake Tams Trib		King William, VA		Sky Meadow	
Stream Type	C4		C		C5		C4	
Drainage Area, DA (sq mi)	1.12		1.12		2.61		1.23	
Riffle Mean Depth, d_{bkf} (ft)	0.6		0.6		1.2		0.83	
Riffle Width, W_{bkf} (ft)	5.9		6.2		15.6		25.10	
Riffle Width-to-Depth Ratio, [W_{bkf}/d_{bkf}]	10.0		10.3		13.0		30.2	
Riffle Bottom Width, W_{bot} (ft)	1.5	2.0	1.3	1.5	N/A	N/A	-	-
Riffle XSEC Area, A_{bkf} (sq ft)	3.5		3.8		19.5		20.9	
Riffle Max Depth, d_{mbkf} (ft)	0.7	0.9	0.7	1.3	1.1	1.7	1.5	1.5
Riffle Max Depth Ratio, [d_{mbkf}/d_{bkf}]	1.2	1.5	1.1	2.2	0.1	0.1	1.7	1.7
Pool Mean Depth, d_{pool} (ft)	0.9	1.5	3.3	3.7	2.2	2.2	2.1	2.1
Pool Mean Depth Ratio, [d_{pool}/d_{bkf}]	1.5	2.5	5.4	6.2	0.1	0.1	2.5	2.5
Pool Width, W_{pool} (ft)	7.1	8.9	6.4	9.6	13.5	13.5	14.9	14.9
Pool Width Ratio, [W_{pool}/W_{bkf}]	1.2	1.5	1.0	1.5	1.0	1.0	0.6	0.6
Pool XSEC Area, A_{pool} (sq ft)	5.3	8.8	23.9	31.1	29.8	29.8	30.9	30.9
Pool Area Ratio, [A_{pool}/A_{bkf}]	1.5	2.5	6.3	8.2	26.6	26.6	1.5	1.5
Pool Max Depth, d_{mpool} (ft)	0.9	2.1	0.8	3.6	1.7	3.0	4.0	4.0
Pool Max Depth Ratio, [d_{mpool}/d_{bkf}]	1.5	3.5	1.3	6.0	0.1	0.2	4.8	4.8
Low Bank Height, LBH (ft)	0.7	0.9	1.0	4.5	N/A	N/A	-	-
Low Bank Height Ratio, [LBH/d_{mbkf}]	1.0	1.0	1.4	3.4	N/A	N/A	-	-
Width Flood Prone Area, W_{fpa} (ft)	13	24	6	11	150	150	59.0	59.0
Entrenchment Ratio, [W_{fpa}/W_{bkf}]	2.2	4.0	1.0	1.8	11.5	11.5	2.4	2.4
Point Bar Slope, H/V (ft/ft)	0.20	0.50	0.00	0.01	N/A	N/A	-	-
Meander Length, L_m (ft)	29.5	70.8	10.0	20.7	102.0	102.0	-	-
Meander Length Ratio, [L_m/W_{bkf}]	5.0	12.0	1.6	3.3	7.8	7.8	-	-
Radius of Curvature, R_c (ft)	11.8	17.7	6.9	27.6	36.0	53.0	85.0	85.0
Rc Ratio, [R_c/W_{bkf}]	2.0	3.0	1.1	4.4	2.8	4.1	3.4	3.4
Curve Length, L_c (ft)	10.7	25.6	7.5	11.3	N/A	N/A	84.0	84.0
Curve Length Ratio, [L_c/W_{bkf}]	1.8	4.3	1.2	1.8	N/A	N/A	3.3	3.3
Meander Belt Width, W_{blt} (ft)	20.7	47.2	1.2	1.6	33.0	87.0	84.0	84.0
MW Ratio, [W_{blt}/W_{bkf}]	3.5	8.0	0.2	0.3	2.5	6.7	3.3	3.3
Riffle Length, L_{rif} (ft)	5.9	17.7	13.6	21.2	2.6	30.7	33.6	34.8
Riffle Length Ratio, [L_{rif}/W_{bkf}]	1.0	3.0	2.2	3.4	0.2	2.4	1.3	1.4
Riffle Slope, S_{rif} (ft/ft)	2.84%	3.55%	1.19%	3.44%	0.47%	4.98%	1.30%	3.60%
Riffle Slope Ratio, [S_{rif}/S_{ave}]	1.2	1.5	0.5	1.3	1.8	19.3	0.9	2.4
Pool Length, L_{pool} (ft)	5.9	20.7	10.8	20.2	10.7	33.7	18.9	31.5
Pool Length Ratio, [L_{pool}/W_{bkf}]	1.0	3.5	1.7	3.3	0.8	2.6	0.8	1.3
Pool Slope, S_{pool} (ft/ft)	0.00%	0.47%	1.35%	2.38%	0.566%		0.20%	0.50%
Pool Slope Ratio, [S_{pool}/S_{ave}]	0.0	0.2	0.5	0.9	2.2		0.1	0.3
Pool to Pool Spacing, p-p (ft)	20.7	29.5	51.2	103.1	13.8	107.8	60.0	70.5
Pool Spacing Ratio, [p-p/W_{bkf}]	3.5	5.0	8.3	16.6	1.1	8.3	2.4	2.8
Valley Length, VL (ft)	192.1		192.1		N/A		260.7	
Valley Elevation Change, VΔ (ft)	5.0		5.0		N/A		-	
Valley Slope, VS (ft/ft)	2.60%		2.6%		0.3%		1.70%	
Stream Length, SL (ft)	211.3		192.9		N/A		300.0	
Stream Elevation Change, SΔ (ft)	5.0		5.0		N/A		-	
Average Water Surface Slope, S (ft/ft)	2.37%		2.6%		0.3%		1.5%	
Sinuosity, K (ft/ft)	1.1		1.0		1.3		1.2	
Bankfull Wetted Perimeter, P (ft)	7.1		7.4		18.0		26.8	
Bankfull Hydraulic Radius, R (ft)	0.5		0.5		1.1		0.8	
Bankfull Mannings n (esitmate)	0.040		0.040		0.035		0.040	
Manning Bkf Discharge, Q_{bkf} (cfs)	12.6		14.4		44.9		82.6	
Manning Bkf Velocity, u_{bkf} (ft/s^2)	3.6		3.8		2.3		4.0	
Bankfull Stream Power, ω (lb/ft/s)	2.7		3.1		0.4		3.0	
Bankfull Shear Stress, τ (lb/ft^2)	0.74		0.81		0.18		0.76	
Calculated Shields - Diameter Mobilized (mm)	56.97		*		1*		59	
Calculated Colorado - Diameter Mobilized (mm)	121.82		*		1*		124	

DESIGN NARRATIVE:

THE GYPSY HILL PARK (SITE) STREAM RESTORATION IS LOCATED ON ONE 135-ACRE CITY OWNED PARCEL. THE SITE IS LOCATED NORTH OF THORNROSE CEMETARY, SOUTH OF CHURCHVILLE AVE, AND EAST OF SHELBURNE MIDDLE SCHOOL. THE SITE IS BOUND BY RESIDENTIAL AREAS ON ALL SIDES. THE SECTION OF PEYTON BRANCH BEING RESTORED FLOWS FROM NORTH TO SOUTH DISCHARGING INTO LEWIS CREEK WHICH ULTIMATELY DISCHARGES TO THE SOUTH FORK OF THE SHENANDOAH RIVER.

THE TOTAL DRAINAGE AREA TO THE SITE IS APPROXIMATELY 1.34 SQUARE MILES, AND IS COMPRISED OF 24% IMPERVIOUS AND 76% PERVIOUS SURFACES. THE EXISTING PEYTON BRANCH LIES WITHIN AN UNCONFINED VALLEY THROUGHOUT MOST OF THE REACH LENGTH. THE STREAMBED HAS DOWNCUT SIGNIFICANTLY CREATING AN INCISED CHANNEL WITH BANK HEIGHTS RANGING FROM 3.5 FEET TALL AT THE UPSTREAM END OF THE REACH TO 2.0 FEET TALL AT THE DOWNSTREAM END. THE EXISTING STREAM SLOPE IS AN AVERAGE OF 2.5% IN THE MAIN REACH AND AN AVERAGE OF 3.5% IN THE TRIBUTARY. ACCORDING TO THE ROSGEN CLASSIFICATION OF NATURAL RIVERS METHODOLOGY, THE STREAM IN ITS EXISTING STATE CLASSIFIED AS A B4c IN THE MAIN REACH AND A C IN THE TRIBUTARY. CONTINUOUS LAND USE CHANGES WITHIN THE WATERSHED HAVE CONTRIBUTED TO THE LATERAL AND VERTICAL CHANNEL INSTABILITY. DUE TO THE INCISED CHANNEL CONDITIONS, SIGNIFICANT EROSION HAS OCCURRED.

PROPOSED RESTORATION FOR THE SITE WILL INCLUDE AN EXISTING REACH LENGTH OF 1100 LINEAR FEET (LF) WITH A RESTORATION LENGTH OF APPROXIMATELY 1400 LF. RESTORATION EFFORTS WILL CONSIST OF NATURAL CHANNEL DESIGN (NCD) TECHNIQUES AND WILL REQUIRE A COMBINATION OF PRIORITY I AND PRIORITY II DESIGN METHODS. THE SLOPES ALONG THE NEWLY CREATED FLOOD BENCH WILL BE GRADED BETWEEN A 2:1 AND 3:1 TO CREATE ADDITIONAL STABILITY WITHIN THE VALLEY. A C4 CHANNEL HAS BEEN DESIGNED FOR BOTH THE MAIN REACH AND THE TRIBUTARY WITH SEVERAL STEP-POOL SEQUENCES INTERSPERSED THROUGHOUT. THIS PROJECT INVOLVES A CULVERT DAYLIGHT, SPRING BOX REMOVAL , PEDESTRIAN BRIDGE INSTALLATION, AND MANEUVERING PAST SEVERAL UTILITY CROSSING ALONG THE MAIN REACH. RIFFLE CROSS SECTIONS WERE DEVELOPED USING A COMBINATION OF VIRGINIA REGIONAL CURVE DATA, REFERENCE REACHES, ONSITE BANKFULL DATA COLLECTION, AND STREAM GAUGE DATA. ALL DENUDED AREAS WILL BE RE-SEEDED, FERTILIZED, MATTED, AND PLANTED WITH NATIVE WOODY STEMS AND HERBACEOUS COVER. LARGE GROWTH TREES WILL BE PROTECTED TO THE GREATEST EXTENT PRACTICABLE, ALLOWING FOR INCREASED SEED DISPERSAL AND SHADE CANOPY FOR THE NEWLY PLANTED SEEDLINGS.

Regional Curve Data for Peyton Branch

Virginia Coastal Plain Bankfull Regional Curves[1]

Drainage Area Label	Existing Thalweg Station	Drainage Area (acres)	Drainage Area (sq mi)	Cross-Sectional Area	Bankfull Discharge (cfs)	Bankfull Width	Bankfull Mean Depth
1	Peyton Branch Upper Reach	855.01	1.336	14.42	33.66	11.61	1.24
3	Lake Tams Tributary	718.078	1.122	12.90	30.33	10.89	1.18

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DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: NONE

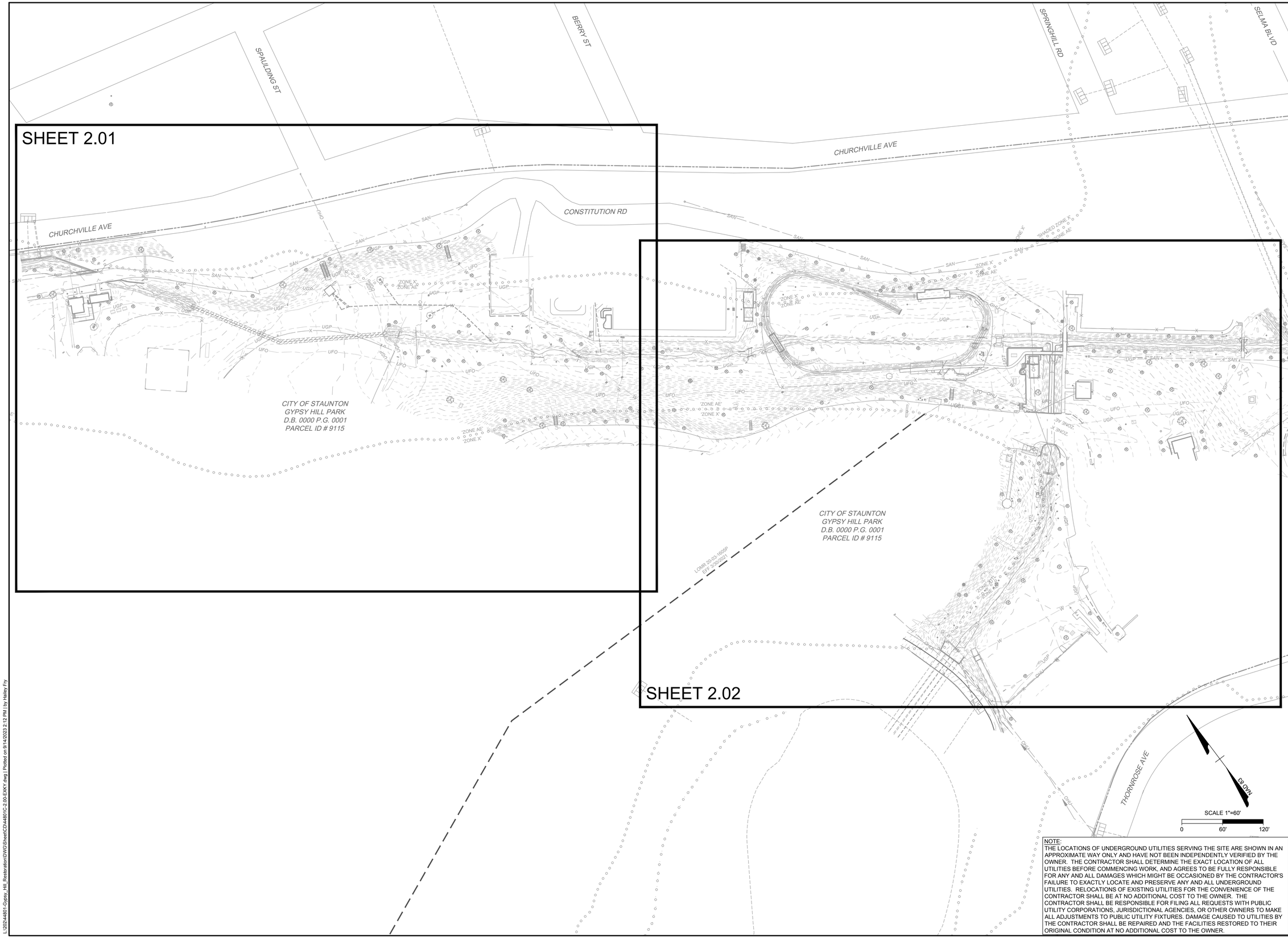
TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
LEGEND & GEOMORPHOLOGY

JOB NO. 44801
SHEET NO. 1.01

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NOTE:
THE LOCATIONS OF UNDERGROUND UTILITIES SERVING THE SITE ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. RELOCATIONS OF EXISTING UTILITIES FOR THE CONVENIENCE OF THE CONTRACTOR SHALL BE AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILING ALL REQUESTS WITH PUBLIC UTILITY CORPORATIONS, JURISDICTIONAL AGENCIES, OR OTHER OWNERS TO MAKE ALL ADJUSTMENTS TO PUBLIC UTILITY FIXTURES. DAMAGE CAUSED TO UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED AND THE FACILITIES RESTORED TO THEIR ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.

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SCALE: 1" = 60'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

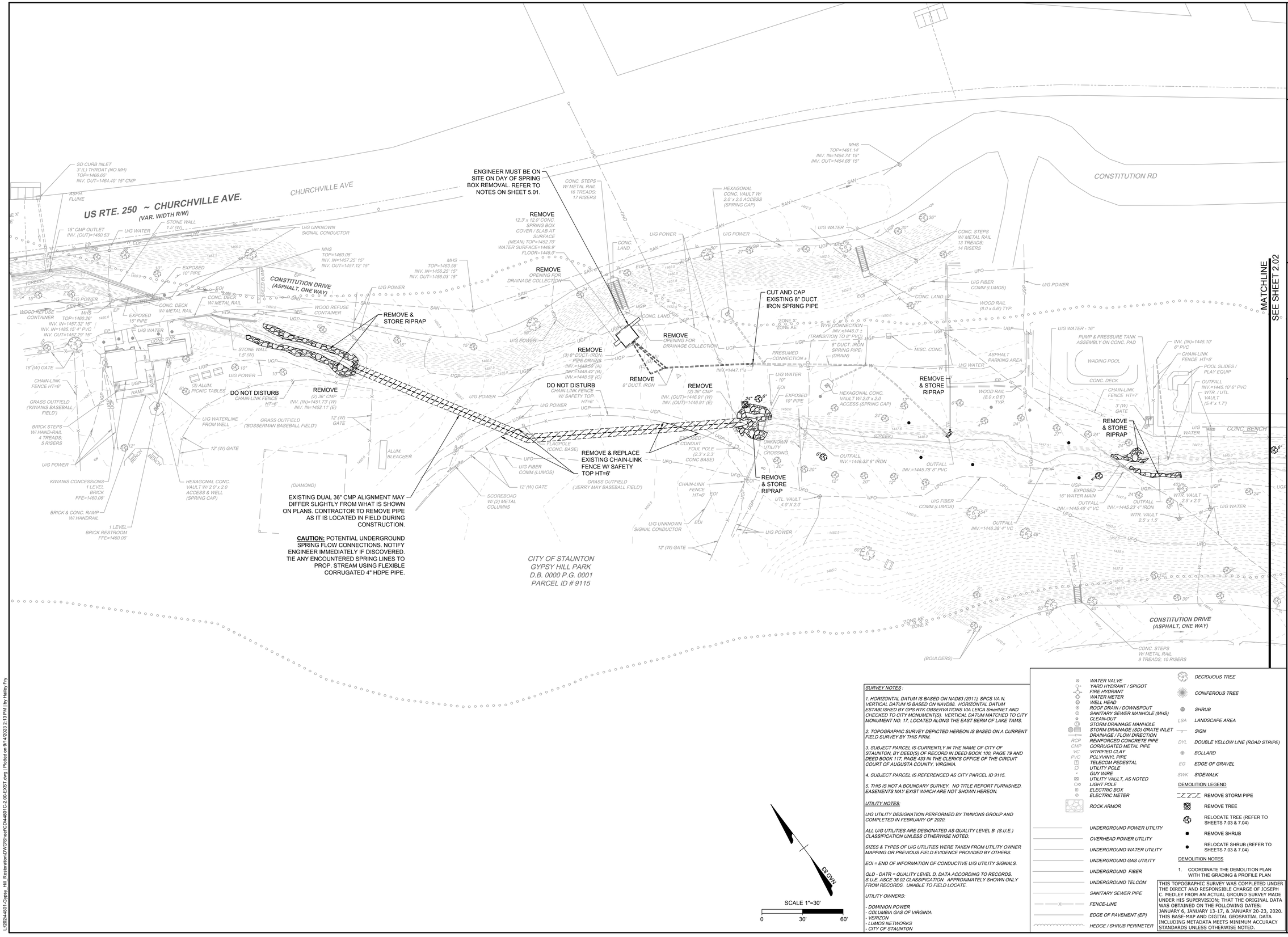
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

EXISTING CONDITIONS & DEMOLITION KEY PLAN

JOB NO. 44801
SHEET NO. 2.00

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SURVEY NOTES :

1. HORIZONTAL DATUM IS BASED ON NAD83 (2011). SPCS VA N. VERTICAL DATUM IS BASED ON NAVD88. HORIZONTAL DATUM ESTABLISHED BY GPS RTK OBSERVATIONS VIA LEICA SmartNET AND CHECKED TO CITY MONUMENT(S). VERTICAL DATUM MATCHED TO CITY MONUMENT NO. 17, LOCATED ALONG THE EAST BERM OF LAKE TAMS.

2. TOPOGRAPHIC SURVEY DEPICTED HEREON IS BASED ON A CURRENT FIELD SURVEY BY THIS FIRM.

3. SUBJECT PARCEL IS CURRENTLY IN THE NAME OF CITY OF STAUNTON, BY DEED(S) OF RECORD IN DEED BOOK 100, PAGE 79 AND DEED BOOK 117, PAGE 433 IN THE CLERK'S OFFICE OF THE CIRCUIT COURT OF AUGUSTA COUNTY, VIRGINIA.

4. SUBJECT PARCEL IS REFERENCED AS CITY PARCEL ID 9115.

5. THIS IS NOT A BOUNDARY SURVEY. NO TITLE REPORT FURNISHED. EASEMENTS MAY EXIST WHICH ARE NOT SHOWN HEREON.

UTILITY NOTES:

U/G UTILITY DESIGNATION PERFORMED BY TIMMONS GROUP AND COMPLETED IN FEBRUARY OF 2020.

ALL U/G UTILITIES ARE DESIGNATED AS QUALITY LEVEL B (S.U.E.) CLASSIFICATION UNLESS OTHERWISE NOTED.

SIZES & TYPES OF U/G UTILITIES WERE TAKEN FROM UTILITY OWNER MAPPING OR PREVIOUS FIELD EVIDENCE PROVIDED BY OTHERS.

EOI = END OF INFORMATION OF CONDUCTIVE U/G UTILITY SIGNALS.

QLD - DATR = QUALITY LEVEL D, DATA ACCORDING TO RECORDS. S.U.E. ASCE 38.02 CLASSIFICATION. APPROXIMATELY SHOWN ONLY FROM RECORDS. UNABLE TO FIELD LOCATE.

UTILITY OWNERS:

- DOMINION POWER
- COLUMBIA GAS OF VIRGINIA
- VERIZON
- LUMOS NETWORKS
- CITY OF STAUNTON

- WATER VALVE
- YARD HYDRANT / SPIGOT
- FIRE HYDRANT
- WATER METER
- WELL HEAD
- ROOF DRAIN / DOWNSPOUT
- SANITARY SEWER MANHOLE (MHS)
- CLEAN-OUT
- STORM DRAINAGE MANHOLE
- STORM DRAINAGE (SD) GRATE INLET
- DRAINAGE / FLOW DIRECTION
- RCP REINFORCED CONCRETE PIPE
- CMP CORRUGATED METAL PIPE
- VC VITRIFIED CLAY
- PVC POLYVINYL PIPE
- TELECOM PEDESTAL
- UTILITY POLE
- GUY WIRE
- UTILITY VAULT, AS NOTED
- LIGHT POLE
- ELECTRIC BOX
- ELECTRIC METER
- ROCK ARMOR
- UNDERGROUND POWER UTILITY
- OVERHEAD POWER UTILITY
- UNDERGROUND WATER UTILITY
- UNDERGROUND GAS UTILITY
- UNDERGROUND FIBER
- UNDERGROUND TELCOM
- SANITARY SEWER PIPE
- FENCE-LINE
- EDGE OF PAVEMENT (EP)
- HEDGE / SHRUB PERIMETER
- DECIDUOUS TREE
- CONIFEROUS TREE
- SHRUB
- LSA LANDSCAPE AREA
- SIGN
- DYL DOUBLE YELLOW LINE (ROAD STRIPE)
- BOLLARD
- EG EDGE OF GRAVEL
- SWK SIDEWALK

DEMOLITION LEGEND

- REMOVE STORM PIPE
- REMOVE TREE
- RELOCATE TREE (REFER TO SHEETS 7.03 & 7.04)
- REMOVE SHRUB
- RELOCATE SHRUB (REFER TO SHEETS 7.03 & 7.04)

DEMOLITION NOTES

1. COORDINATE THE DEMOLITION PLAN WITH THE GRADING & PROFILE PLAN

THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF JOSEPH C. MEDLEY FROM AN ACTUAL GROUND SURVEY MADE UNDER HIS SUPERVISION; THAT THE ORIGINAL DATA WAS OBTAINED ON THE FOLLOWING DATES: JANUARY 6, JANUARY 13-17, & JANUARY 20-23, 2020. THIS BASE-MAP AND DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.

COMMONWEALTH OF VIRGINIA
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CHECKED BY: K.ATKINSON
SCALE: 1" = 30'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

EXISTING CONDITIONS & DEMOLITION PLAN

JOB NO. 44801
SHEET NO. 2.01

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MATCHLINE
SEE SHEET 2.01

CITY OF STAUNTON
GYPSY HILL PARK
D.B. 0000 P.G. 0001
PARCEL ID # 9115

LOMR 20-03-1858P
EFF. 5/5/2021

CONSTITUTION DRIVE
(ASPHALT, ONE WAY)

116TH REGIMENTAL RD

TEMPORARILY REMOVE, STORE, & REINSTALL FENCE

TEMPORARILY REMOVE, STORE, & REINSTALL

DO NOT DISTURB MEMORIAL TREE

DO NOT DISTURB EXISTING BRIDGE

DO NOT DISTURB

REMOVE & STORE RIPRAP

REMOVE CONC. PEDESTRIAN BRIDGE

TEMPORARILY REMOVE, STORE, & REINSTALL ALUM. BENCH

TEMPORARILY REMOVE, STORE, & REINSTALL LIGHT POSTS

(2) ALUM. PICNIC TABLES TEMPORARILY REMOVE, STORE, & REINSTALL

SCALE 1"=30'
0 30' 60'
NAD 83

L:\2024\44801-Gypsy_Hill_Restoration\DWG\Sheet\C0744801C-2.00-EXST.dwg | Plotted on 9/14/2023 2:13 PM | by Hailey Fry

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SCALE: 1" = 30'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

EXISTING CONDITIONS & DEMOLITION PLAN

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EROSION AND SEDIMENT CONTROL NARRATIVE

A. Project Description: This Project consists of approximately 1,500 linear feet of full channel restoration for Peyton Branch and its associated Unnamed Tributary, and an additional 225 linear feet of soil lifts/ maintenance along Peyton Branch. The entire project is located within one parcel (9115) owned by the City of Staunton. The total limits of disturbance for this project is 3.22 ac. There is no impervious area proposed within the limits of disturbance and no new impervious area proposed on the site in the post-developed condition.

B. Existing Site Conditions: The Project Area is located within the City of Staunton, between Churchville Ave and W Beverley St at Gypsy Hill Park. The project site consists of a Main Reach extending from Constitution Drive through the park site downstream to Thomrose Ave and a Tributary adjacent to the National Guard facility parking lot. Existing topography varies in steepness with slopes ranging from 35% to 65%. The orientation of the flow path is generally northwest to southeast. Yellow and black non-tearable barricade tape will be used to bound the Project Area.

C. Adjacent Areas: The surrounding property is residential land, residential structures, forested areas, and roads. The Project will have minimal temporary impacts (noise pollution, possible traffic interruptions, etc) to the adjacent residential areas.

D. Off-Site Areas: No off-site disturbance is planned. All spoil material shall be disposed of properly at an approved off-site location. Any off-site land-disturbing activity associated with the project shall have an approved ESC Plan.

E. Soils: The Project Area is underlain by highly variable soils that are mostly characterized by silt loams and Urban land complex deposits.

The predominant soils on the project site are:

Map Unit: 44E2 - Frederick-Christian silt loams, 25 to 45 percent slopes, rocky, eroded.
Component: Frederick and similar soils (50%), Christian and similar soils (40%)

The Frederick component makes up to 50 percent of the map unit. Slopes are 25 to 45 percent. This component is on hills. The parent material is Residuum weathered from dolomitic and cherty limestone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 9.0 inches). The runoff class is high. This soil does not meet hydric criteria.

The Christian component makes up to 40 percent of the map unit. Slopes are 25 to 45 percent. This component is on hills. The parent material is Residuum weathered from limestone or interbedded limestone and sandstone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.2 inches). The runoff class is high. This soil does not meet hydric criteria.

Map Unit: 540C2 - Frederick-Christian silt loams-Urban land complex, 15 to 25 percent slopes, eroded.
Component: Urban land (50%), Frederick and similar soils (23%), Christian and similar soils (22%)

The Urban land component makes up to 50% of the map unit. Slopes are 15 to 25 percent. This component is on hills. This soil does not meet hydric criteria.

The Frederick component makes up to 23 percent of the map unit. Slopes are 15 to 25 percent. This component is on hills. The parent material is Residuum weathered from dolomitic and cherty limestone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 9.0 inches). The runoff class is high. This soil does not meet hydric criteria.

The Christian component makes up to 22 percent of the map unit. Slopes are 15 to 25 percent. This component is on hills. The parent material is Residuum weathered from limestone or interbedded limestone and sandstone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.2 inches). The runoff class is high. This soil does not meet hydric criteria.

Map Unit 541C3 - Frederick-Christian-Urban land complex, 15 to 25 percent slopes, severely eroded.
Component: Urban land (50%), Frederick and similar soils (25%), Christian and similar soils (20%)

The Urban land component makes up to 50% of the map unit. Slopes are 15 to 25 percent. This component is on hills. This soil does not meet hydric criteria.

The Frederick component makes up to 25 percent of the map unit. Slopes are 15 to 25 percent. This component is on hills. The parent material is Residuum weathered from dolomitic and cherty limestone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.7 inches). The runoff class is high. This soil does not meet hydric criteria.

The Christian component makes up to 20 percent of the map unit. Slopes are 15 to 25 percent. This component is on hills. The parent material is Residuum weathered from limestone or interbedded limestone and sandstone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.4 inches). The runoff class is high. This soil does not meet hydric criteria.

Map Unit: 541D3 - Frederick-Christian-Urban land complex, 7 to 15 percent slopes, severely eroded.
Component: Urban land (50%), Frederick and similar soils (23%), Christian and similar soils (22%)

The Urban land component makes up to 50% of the map unit. Slopes are 7 to 15 percent. This component is on hills. This soil does not meet hydric criteria.

The Frederick component makes up to 23 percent of the map unit. Slopes are 7 to 15 percent. This component is on hills. The parent material is Residuum weathered from dolomitic and cherty limestone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.7 inches). The runoff class is medium. This soil does not meet hydric criteria.

The Christian component makes up to 22 percent of the map unit. Slopes are 7 to 15 percent. This component is on hills. The parent material is Residuum weathered from limestone or interbedded limestone and sandstone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.4 inches). The runoff class is medium. This soil does not meet hydric criteria.

Map Unit: 542C2 - Frederick-Christian gravelly silt loams-Urban land complex, 15 to 25 percent slopes, eroded.
Component: Urban land (50%), Frederick and similar soils (23%), Christian and similar soils (22%)

The Urban land component makes up to 50% of the map unit. Slopes are 15 to 25 percent. This component is on hills. This soil does not meet hydric criteria.

The Frederick component makes up to 23 percent of the map unit. Slopes are 15 to 25 percent. This component is on hills. The parent material is Residuum weathered from dolomitic and cherty limestone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.6 inches). The runoff class is high. This soil does not meet hydric criteria.

The Christian component makes up to 22 percent of the map unit. Slopes are 15 to 25 percent. This component is on hills. The parent material is Residuum weathered from limestone or interbedded limestone and sandstone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.1 inches). The runoff class is high. This soil does not meet hydric criteria

Map Unit: 544C2 - Frederick-Christian-Urban land complex, 7 to 15 percent slopes, rocky, eroded.
Component: Urban land (50%), Frederick and similar soils (25%), Christian and similar soils (19%)

The Urban land component makes up to 50% of the map unit. Slopes are 7 to 15 percent. This component is on hills. This soil does not meet hydric criteria.

The Frederick component makes up to 25 percent of the map unit. Slopes are 7 to 15 percent. This component is on hills. The parent material is Residuum weathered from dolomitic and cherty limestone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 9.0 inches). The runoff class is medium. This soil does not meet hydric criteria.

The Christian component makes up to 19 percent of the map unit. Slopes are 7 to 15 percent. This component is on hills. The parent material is Residuum weathered from limestone or interbedded limestone and sandstone. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is moderate (about 8.2 inches). The runoff class is medium. This soil does not meet hydric criteria.

Map Unit: 583 - Udifluvents-Urban land complex
Component: Urban land (50%), Udifluvents and similar soils (45%)

The Urban land component makes up to 50% of the map unit. This component is on hills. This soil does not meet hydric criteria.

The Udifluvents component makes up to 45 percent of the map unit. Slopes are 0 to 3 percent. This component is on floodplains. The parent material is Alluvium derived from limestone, sandstone, and shale. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high to high. Available water storage in profile is high (about 9.8 inches). The runoff class is low. This soil does not meet hydric criteria.

Map Unit: W - Water
Component: Water (100%)

F. Critical Areas: Earth moving shall be conducted in accordance with the Construction Guidelines in this plan and the Contractor's workflow plan. Work will begin in the higher elevations of the project and progress downstream to completion, unless agreed to otherwise by Project Engineer. Work shall be completed in specified segments in accordance with the Project Engineer approved Contractor's workflow plan.

If necessary base stream shall be pumped from upstream of the active work area to downstream of the active work area. Each segment of the stream channel shall be brought to final grade and stabilized before continuing to the next segment taking special care to have the site stabilized at the end of each day so that stream flow can be redirected back into the existing channel. As final grade and stabilization of the banks progress downstream, the banks shall be seeded and the erosion control matting shall be installed to protect the newly seeded bank in accordance with the plans and technical specifications.

G. Erosion and Sediment Control Measures: The following measures shall be installed and used by the Contractor, however, additional measures may be necessary depending on the conditions at the time of construction. Prior to commencing land disturbing activities in areas not indicated on these plans, the Contractor shall submit a supplementary erosion control plan to the Owner for review and approval by the Plan Approving Authority. Unless otherwise indicated, all vegetative and structural erosion and sediment control practices shall be constructed and maintained according to the minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992, as well as any additional measures required by applicable local, state and federal regulations.

1. Structural Practices
   - 1.1. Barricade Tape: Yellow and black barricade tape shall be installed to indicate the limits of disturbance on the site and indicate trees to be protected.
   - 1.2. Safety Fence - 3.01: A protective barrier installed to prevent access to an erosion control measure.
     - 1.2.1. Safety fence shall be checked regularly for weather-related or other damage. Any necessary repairs must be made immediately.
     - 1.2.2. Care should be taken to secure all access points (gates) at the end of each working day. All locking devices must be repaired or replaced as necessary
   - 1.3. Temporary Construction Entrance - 3.02: A temporary construction entrance with wash rack shall be installed where the access area intersects with a public maintained road. During muddy site conditions, drivers of construction vehicles will be required to wash sediment off the wheels before entering the public roadway.
   - 1.4. Straw Bale Barrier - 3.04: A temporary sediment barrier consisting of a row of entrenched and anchored straw bales used to intercept and detain small amounts of sediment where silt fence is not applicable.
     - 1.4.1. Straw bale barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall and necessary repairs shall be accomplished promptly.
     - 1.4.2. Sediment deposits should be removed after each rainfall. They must be removed when the level of deposition reaches approximately one-half the height of the barrier.
   - 1.5. Silt Fence Barrier - 3.05: Silt fence sediment barriers will be installed downslope of areas with minimal grades to filter sediment-laden runoff from sheet flow.
     - 1.5.1. Sediment must be removed when deposits reach approximately one-half the height of the barrier.
     - 1.5.2. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform with the existing grade, prepared and seeded.
     - 1.5.3. Silt fence shall be maintained until stabilization is achieved in accordance with the erosion control notes.
   - 1.6. Temporary Vehicular Stream Crossing - 3.24: A temporary structural span across a live stream to provide vehicular access to construction activity on either side of the stream while keeping sediment out of the stream and preventing damage to the channel bed and banks.
     - 1.6.1. Structures shall be inspected after every rainfall and at least once a week, whether it has rained or not, and all damages repaired immediately.
   - 1.7. Tree Preservation and Protection - 3.38: Protection of desirable trees from mechanical and other injury during land disturbing and construction activity. Trees requiring protection shall be marked prior to construction.
   - 1.8. Pump Around:
     - 1.8.1. Construction Notes
       - 1.8.1.1. Diversion of surface water shall be continuous during the period that damage to the construction work could occur. Unless otherwise specified, diverted surface water shall be conveyed to the same drainageway that the water would have reached before being diverted.
       - 1.8.1.2. In instances where topography and/or space does not allow for the passive diversion of water, pumps and pipes will be required to divert water flow.
       - 1.8.1.3. During the dewatering operations, adequate protection from erosion at the discharge area must be provided. Refer to dewatering device specifications listed below in Section 1.5 Dirtbag.
       - 1.8.1.4. All materials placed for the protection of discharge outfalls are temporary in nature and shall be removed from the project area upon completion of the dewatering process.
       - 1.8.1.5. Any fill placed in the active channel during the dewatering process, shall be removed from the channel upon completion of the work. In the event sandbags are used in the dewatering process, the sandbags will be removed and emptied outside the active channel area.
       - 1.8.1.6. Upon removal of the dewatering measures, the disturbed surfaces shall be re-graded, any contaminated soils shall be removed, and all areas shall be restored consistent with the stabilization of the project site.
     - 1.8.2. Equipment
       - 1.8.2.1. Pump selection requires the computation of total dynamic head (TDH): TDH=static suction lift + static discharge head + friction loss + velocity head (Godwin 2003).
       - 1.8.2.2. Pumping equipment shall be electric, diesel or gasline venturi, vacuum, or centrifugal primed pump with an appropriately sized rigid intake and discharge pipe/hose with positive restrained joints. Fuel shall be properly stored.
       - 1.8.2.3. The pump shall have a capacity greater than that required to pump the desired flow.
       - 1.8.2.4. A dewatering structure shall be constructed per the standard and specification 3.26 in the Virginia Erosion and Sediment Control Handbook or sediment/dirt bag per manufacturers specifications.
       - 1.8.2.5. Height of in-stream barriers shall be the normal base flow depth + 1 foot of freeboard for pump-around diversions that will be installed and removed in the same workday.
       - 1.8.2.6. In-stream barriers shall be either riprap per Specification 3.19 in the Virginia Erosion and Sediment Control Handbook or sandbags. Sandbags may be filled on site or prefilled and made of burlap or polypropylene materials which are resistant to ultraviolet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of fill material.
       - 1.8.2.7. Sheeting shall be seamless polyethylene plastic with a minimum 4-mil thickness impervious and resistant to puncture, tearing and ultraviolet degradation or equivalent.
     - 1.8.3. Installation
       - 1.8.3.1. Excavate sump hole or identify existing pool upstream of work area.
       - 1.8.3.2. Set up pump and hose/pipe.
       - 1.8.3.3. Install upstream and downstream barriers and start pump.
       - 1.8.3.4. Use dewatering pump and dewatering device to remove water left between the instream barriers after primary pump installation and as needed during construction.
       - 1.8.3.5. Complete in-stream construction activities and remove in-stream barriers.
   - 1.9. Dirtbag:
     - 1.9.1. Description
       - 1.9.1.1. This work shall consist of furnishing, placing and removing the Dirtbag® pumped sediment control device as directed by the design engineer or as shown on the contract drawings. The Dirtbag® pumped-silt control system is marketed by ACF Environmental, Inc. 2831 Cardwell Drive, Richmond, Virginia 23234 phone: 800-448-3636 fax: 804-743-7779
     - 1.9.2. Materials
       - 1.9.2.1. The Dirtbag® shall be a non-woven bag which is sewn with a double needle matching using a high strength thread.
       - 1.9.2.2. The Dirtbag® seams shall have an average wide width strength per ASTM D-4884 as follows. Dirtbag style test method test result: Dirtbag® 53 ASTM D-4884 60 lb/in Dirtbag® 55 ASTM D-4884 100 lb/in
       - 1.9.2.3. Each standard Dirtbag® has a fill spout large enough to accommodate a 4" discharge hose. Attached are straps to secure the hose and prevent pumped water from escaping without being filtered.
       - 1.9.2.4. The geotextile fabric shall be non-woven fabric with the following properties:

Properties	Test Method	Units	Nonwoven	
			53	**55**
Weight	ASTM D-3776	Oz/Yd	8	10
Grab Tensile	ASTM D-4632	Lbs.	203	250
Puncture	ASTM D-4833	Lbs.	130	165
Flow Rate	ASTM D-4491	Gal/Min/Ft^2	80	70
Permissivity	ASTM D-4491	Sec.$^{-1}$	1.5	1.3
Mullen Burst	ASTM D-3786	Lbs.$^{/in2}$	400	550
UV Resistant	ASTM D-4355	%	70	70
AOS % Retained	ASTM D-4751	%	100	100

All properties are minimum average roll value except the weight of the fabric which is given for information only.

H. Permanent Stabilization: Site work activities shall be completed, if possible, at least eight weeks earlier than the recommended planting window (i.e. November 1). During this time, the erosion control cover crop shall be permitted to mature. Permanent seeding shall be in accordance with the Planting Specifications on the attached Vegetation Notes and Details sheet.

It should be expected that the specified stream and buffer vegetation will be planted in the "wet". Planting of all specified containerized, bare root, and live stake vegetation shall be in accordance with the Planting Specifications on the attached Planting Notes and Details sheet.

I. Stormwater Runoff Considerations: Stormwater runoff is a concern for those portions of the site that will be disturbed for an extended length of time. It will be necessary to actively maintain the perimeter controls in the material stockpile and composting area. Additionally, the proposed access road shall be located along the natural ridge along the general path in the plan. A slight increase in runoff in this area is considered, and the road should be monitored to see if any other controls are needed.

J. Maintenance: The contractor shall inspect all erosion and sediment control measures immediately (within 24 hours) after each rainfall event greater than 0.5" per 24-hour period, at least daily during prolonged rainfall, and at least once every seven days. Damaged or deficient measures shall be repaired by the close of each day and any additional measures required shall be immediately installed. A field book documenting these inspections and resulting maintenance activities shall be maintained by the contractor and provided to the Owner upon completion of the work. This documentation shall be in accordance with Virginia Stormwater Management Program (VSMP) Storm Water Construction General Permit No. DCR01 requirements. Owner is responsible for procuring said VSMP permit registration.

The contractor shall make a daily review of areas of construction activity to ensure that erosion and sediment control devices are properly located for effectiveness. Where deficiencies exist, additional measures shall be promptly installed. The contractor shall also be responsible for providing any additional temporary erosion and sediment control measures that may be required, commensurate with his scheduling sequence of construction, to prevent erosion and sediment related damage to the property of others, to adjacent and/or downstream waterways, or to the project, during construction and prior to permanent stabilization of all disturbed areas. The contractor shall take all necessary measures to promptly relieve any inadvertent ponding of water (except in areas designed to pond, i.e., in the constructed wetlands).

The following items shall be checked in particular:

1. Check the seeding areas to ensure that a stand of grass is maintained. Fertilize and reseed as needed.
2. Clean out the check dams when sediment deposition reaches one half of the original height of the dam.
3. Check diversions to ensure a stand of grass is maintained. Remove sediment as required to ensure flow of water is not impeded.
4. Sediment shall be removed from the sediment traps when the volume of the wet storage is reduced by one-half.

Further, the City of Staunton Environmental Inspector shall have the authority to add or delete erosion and sediment controls as needed in the field, as conditions warrant.

K. Calculations: NA

L. General Erosion and Sediment Control Notes:

1. The local office responsible for erosion and sediment control measures shall be notified at least 48 hours in advance of any plans to begin clearing and grading operation and one week prior to the final inspection.
2. All erosion and sediment control measures are to be placed prior to or as the first step in clearing.
3. A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.
4. Prior to commencing land disturbing activities in areas other than individual lots contained on these plans the contractor shall submit a supplementary erosion control plan to the owner for review and approval by the plan approving authority.
5. The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the approving authority.
6. All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.
7. During de-watering operations, water will be pumped into an approved filtering device.
8. The contractor shall inspect all erosion control measures periodically and after each runoff-producing event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.

M. Minimum Standards (MS): An erosion and sediment control program adopted by a district or locality must be consistent with the following criteria, techniques and methods:

MS-1 Soil Stabilization. Permanent or temporary stabilization shall be applied to denuded areas within 7 days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within 7 days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year. If the project requires a Construction General Permit (CGP), the permit standards will apply.

MS-2 Soil Stockpile Stabilization. During construction, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. Temporary protection and permanent stabilization shall be applied to all soil stockpiles on the site and borrow areas or soil intentionally transported from the project site.

MS-3 Permanent Stabilization. Permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive, and will inhibit erosion.

MS-4 Sediment Basins & Traps. Sediment basins, sediment traps, perimeter dikes, sediment barriers, and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

MS-5 Stabilization of Earthen Structures. Stabilization measures shall be applied to earthen structures such as dams, dike's and diversions immediately after installation.

MS-6 Sediment Traps & Sediment Basins. Sediment traps and basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin as follows:

1. Sediment Traps:
   - 1.1. Only control drainage areas less than three acres.
   - 1.2. Minimum storage capacity of 134 cubic yards per acre of drainage area.
2. Sediment Basins:
   - 2.1. Control drainage areas greater than or equal to three acres.
   - 2.2. Minimum storage capacity of 134 cubic yards per acre of drainage area.
   - 2.3. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a twenty-five year storm of 24-hour duration.

MS-7 Cut and Fill Slopes Design & Construction. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

MS-8 Concentrated Runoff Down Slopes. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.

MS-9 Slope Maintenance. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

MS-10 Storm Sewer Inlet Protection. All storm sewer inlets made operable during construction shall be protected so that sediment-laden water cannot enter the stormwater conveyance system without first being filtered/ treated to remove sediment.

MS-11 Stormwater Conveyance Protection. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

MS-12 Work in Live Watercourse. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

MS-13 Crossing Live Watercourse. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.

MS-14 Regulation of Watercourse Crossing. All applicable federal state and local regulations pertaining to working in or crossing live watercourses shall be met.

MS-15 Stabilizing of Watercourse. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

MS-16 Underground Utility Line Installation. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

a. No more than 500 linear feet of trench may be opened at one time.
b. Excavated material shall be placed on the uphill side of trenches.
c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
e. Restabilization shall be accomplished in accordance with these regulations.
f. Comply with applicable safety regulations.

MS-17 Vehicular Sediment Tracking. Where construction vehicle access routes intersect paved or public roads:

a. Provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface.
b. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day.
c. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner.

MS-18 Removal of Temporary Measures. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

MS-19 Stormwater Management. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:

a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
b. Adequacy of all channels and pipes shall be verified in the following manner:
   1. The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or
   2. (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
      (b) All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and
      (c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system.
c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
   1. Improve the channels to a condition where a 10-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks; or
   2. Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;
   3. Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel; or
   4. Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.
d. The applicant shall provide evidence of permission to make the improvements.
e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
h. All on-site channels must be verified to be adequate.
i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.
j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.
k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.
l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the Act.
m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMP) Regulation or are exempt pursuant to subdivision C 7 of § 62.1-44.15:34 of the Act.
n. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) Regulation shall be deemed to satisfy the requirements of this subdivision 19.

N. Erosion Control Sequence:

1. Before any work commences, an on-site pre-construction conference shall be held to ensure that all affected parties (Environmental Inspector, project engineer, contractor, surveyor, certified responsible land disturber, and project manager) fully understand the construction sequencing.
2. Prior to any construction activities, the temporary construction entrance, construction roads, stockpile, composting, staging areas, and all other erosion and sediment control measures shall be installed in accordance with the Erosion and Sediment Control Plan prepared by Timmons Group.
3. Land disturbance outside the preliminary limits of disturbance may not occur until the initial erosion and sedimentation control measures have been approved by the Environmental Inspector. After erosion control measures are approved by the inspector, areas proposed for grading may be cleared and grubbed.
4. Dirtbag Construction Sequence:
   - 4.1. Install Dirtbag® on a slope so incoming water flows downhill through the Dirtbag® without creating more erosion. Strap the neck of the Dirtbag® tightly to the discharge hose. To increase the efficiency of filtration, place the bag on an aggregate or haybale bed to maximize water flow through the surface area of the bag.
   - 4.2. The Dirtbag® is full when it no longer can efficiently filter sediment or pass water at a reasonable rate. flow rates will vary depending on the size of the Dirtbag, the type and amount of sediment discharged into the Dirtbag®, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies. Under most circumstances Dirtbag's® will accommodate flow rates of 1500 gallons per minute. use of excessive flow rates or overfilling Dirtbag® with sediment will cause ruptures of the bags or failure of the hose attachment straps.
   - 4.3. Dispose Dirtbag® as directed by the site engineer. If allowed, the Dirtbag® may be cut open and the contents seeded after removing visible fabric. Dirtbag is strong enough to be lifted with added straps if it must be hauled away (extra option). Off-site disposal may be facilitated by placing the Dirtbag® in the back of a dump truck or flatbed prior to use and allowing the water to drain from the bag in place, thereby dismissing the need to lift the Dirtbag®.
   - 4.4. Basis of payment
     - 4.4.1. The payment for any Dirtbag® used during construction is to be included in the bid of overall erosion and sediment control plan unless a unit price is requested.
5. All areas subject to grading shall be seeded and mulched as soon as practicable as follows:
   - 5.1. Seedbed preparation (including fertilizer and lime), seeding and mulching shall be in accordance with Standard and Specification 3.31 of the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992. Vegetation species and rate of live seed application shall be as specified in this plan.
6. Erosion control measures must remain in place until all contributing areas are permanently stabilized.
7. Erosion control measures cannot be removed without approval of the Environmental Inspector for the project.

COMMONWEALTH OF VIRGINIA
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REVISION DESCRIPTION	DATE

DATE: 09/15/2023
DRAWN BY: H. FRY
DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: NONE

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
EROSION & SEDIMENT CONTROL NOTES

JOB NO. 44801
SHEET NO. 3.00

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TABLE 3.31-B
(REVISED JUNE 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

SEED		
APPLICATION DATES	**SPECIES**	**APPLICATION RATES**
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 -100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME

- Apply 10-10-10 **fertilizer** at a rate of 450 lbs / acre (or 10 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons / acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:
1. A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
2. Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
3. When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs

TABLE 3.32-C
(REVISED JUNE 2003)
PERMANENT SEEDING SPECIFICATIONS FOR APPALACHIAN / MOUNTAIN AREA

SEED[1]		
LAND USE	SPECIES	APPLICATION PER ACRE
MINIMUM CARE LAWN (COMMERCIAL OR RESIDENTIAL)	TALL FESCUE[1] PERENNIAL RYEGRASS[2] KENTUCKY BLUEGRASS[1]	90-100% 0-10% 0-10% TOTAL: 200-250 LBS.
HIGH-MAINTENANCE LAWN	MINIMUM OF THREE (3) UP TO FIVE (5) VARIETIES OF KENTUCKY BLUEGRASS FROM APPROVED LIST FOR USE IN VIRGINIA[1]	TOTAL: 125 LBS.
GENERAL SLOPE (3:1 OR LESS)	TALL FESCUE[1] RED TOP GRASS OR CREEPING RED FESCUE SEASONAL NURSE CROP[3]	128 LBS. 2 LBS. 20 LBS. TOTAL: 150 LBS.
LOW-MAINTENANCE SLOPE (STEEPER THAN 3:1)	TALL FESCUE[1] RED TOP GRASS OR CREEPING RED FESCUE SEASONAL NURSE CROP[3] CROWNVETCH[4]	108 LBS. 2 LBS. 20 LBS. 20 LBS. TOTAL: 150 LBS.

1 - WHEN SELECTING VARIETIES OF TURFGRASS, USE THE VIRGINIA CROP IMPROVEMENT ASSOCIATION (VCIA) RECOMMENDED TURFGRASS VARIETY LIST. QUALITY SEED WILL BEAR A LABEL INDICATING THAT THEY ARE APPROVED BY VCIA. A CURRENT TURFGRASS VARIETY LIST IS AVAILABLE AT THE LOCAL COUNTY EXTENSION OFFICE OR THROUGH VCIA AT 804-746-4884 OR AT HTTP://SUDAN.CSES.VT.EDU/HTML/TURF/TURF/PUBLICATIONS/PUBLICATIONS2.HTML
2 - PERENNIAL RYEGRASS WILL GERMINATE FASTER AND AT LOWER SOIL TEMPERATURES THAN TALL FESCUES, THEREBY PROVIDING COVER AND EROSION RESISTANCE FOR SEEDBED.
3 - USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:
MARCH, APRIL - MAY 15TH ..... ANNUAL RYE
MAY 16TH - AUGUST 15TH ..... FOXTAIL MILLET
AUGUST 16TH - SEPTEMBER, OCTOBER ..... ANNUAL RYE
NOVEMBER - FEBRUARY ..... WINTER RYE
4 - ALL LEGUME SEED MUST BE PROPERLY INOCULATED. IF FLATPEA IS USED, INCREASE TO 30 LBS/ACRE. IF WEEPING LOVEGRASS IS USED, INCLUDE IN ANY SLOPE OR LOW MAINTENANCE MIXTURE DURING WARMER SEEDING PERIODS, INCREASE TO 30-40 LBS/ACRE.

FERTILIZER & LIME

- APPLY 10-20-10 FERTILIZER AT A RATE OF **500** LBS. / ACRE (OR 12 LBS. / 1,000 SQ. FT.)
- APPLY **PULVERIZED AGRICULTURAL LIMESTONE** AT A RATE OF 2 TONS/ACRE (90 LBS. / 1,000 SQ. FT.)

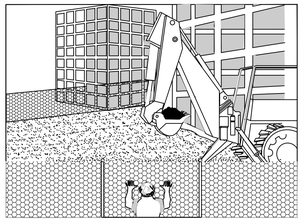
NOTE:
- A SOIL TEST IS NECESSARY TO DETERMINE THE ACTUAL AMOUNT OF LIME REQUIRED TO ADJUST THE SOIL pH OF SITE.
- INCORPORATE THE LIME AND FERTILIZER INTO THE TOP 4 - 6 INCHES OF THE SOIL BY DISKING OR BY OTHER MEANS.
- WHEN APPLYING SLOWLY AVAILABLE NITROGEN, USE RATES AVAILABLE IN EROSION & SEDIMENT CONTROL TECHNICAL BULLETIN #4, 2003 NUTRIENT MANAGEMENT FOR DEVELOPMENT SITES AT HTTP://WWW.DCR.STATE.VA.US/SW/E&S.HTM#PUBS

1992 3.01

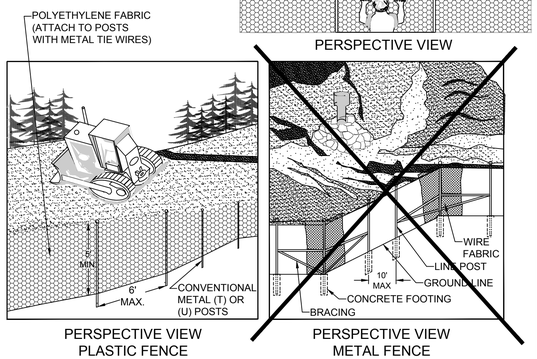
TABLE 3.01-A
PHYSICAL PROPERTIES OF PLASTIC SAFETY FENCE

Physical Property	*Test*	*Requirements*
Recommended color	*N/A*	*"International"orange*
Tensile yield	*ASTM D638*	*Average 2000 lbs. per 4ft. width*
Ultimate tensile strength	*ASTM D638*	*Average 2000 lbs. per 4ft. width*
Elongation at break (%)	*ASTM D638*	*Greater than 1000%*
Chemical resistance	*N/A*	*Inert to most chemicals and acids*

CHAIN LINK FENCE
a. FABRIC SHALL BE ZINC-COATED STEEL, 2 INCH MESH, 9 GAUGE MIN.
b. ZINC COATING SHALL HAVE A MIN WEIGHT OF 1.8 OZ PER SQUARE FOOT.
c. POSTS SHALL BE STEEL PIPE, ZINC-COATED.
d. TOP NAILS SHALL BE STEEL PIPE, ZINC-COATED.
e. BRACES SHALL BE MADE OF ZINC-COATED STEEL.
f. GATES SHALL BE 24' WIDE DOUBLE SWING, ZINC-COATED STEEL. REFER TO DOUBLE SWING CONSTRUCTION ENTRANCE GATE DETAIL ON THIS SHEET.



PERSPECTIVE VIEW



PERSPECTIVE VIEW PLASTIC FENCE

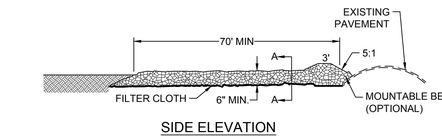
PERSPECTIVE VIEW METAL FENCE

SOURCE: ADAPTED FROM CONWED PLASTICS AND VDOT ROAD AND BRIDGE STANDARDS

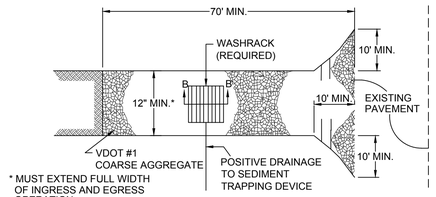
PLATE 3.01-1

SAF **SAFETY FENCE**
NO SCALE

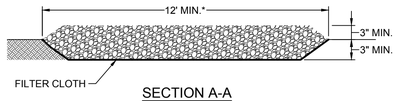
1992 3.02



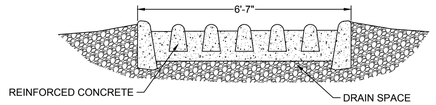
SIDE ELEVATION



PLAN VIEW



SECTION A-A



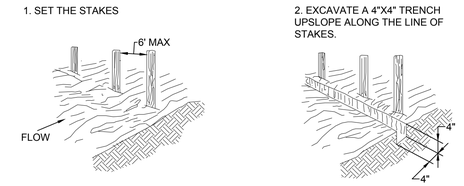
SECTION B-B

SOURCE: VA. DSWC

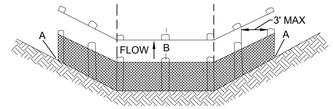
PLATE 3.02-1

CE **CONSTRUCTION ENTRANCE**
NO SCALE

1992 3.05



SHEET FLOW INSTALLATION
(PERSPECTIVE VIEW)



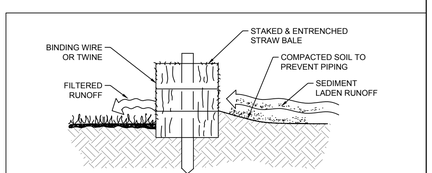
POINT 'A' SHOULD BE HIGHER THAN POINT 'B'

DRAINAGEWAY INSTALLATION
(FRONT INSTALLATION)

SOURCE: ADAPTED FROM INSTALLATION OF STRAW AND FABRIC FILTER BARRIERS FOR SEDIMENT CONTROL, SHERWOOD AND WYANT

PLATE 3.05-2

SF **SILT FENCE (WITHOUT WIRE SUPPORT)**
NO SCALE



PROPERLY INSTALLED STRAW BALE
(CROSS SECTION)

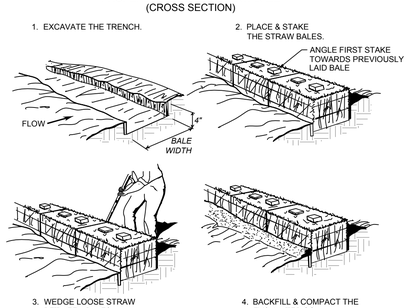
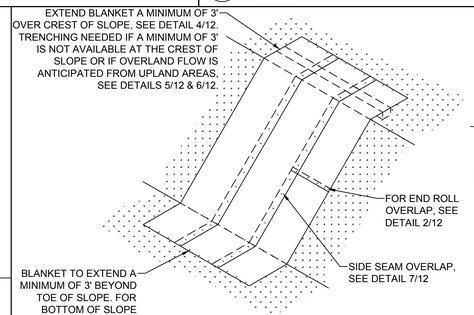


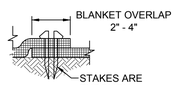
PLATE 3.04-1

STB **CONSTRUCTION OF A STRAW BALE BARRIER**
NO SCALE

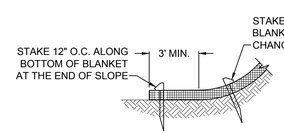


END SEAM OF BLANKETS OVERLAP 2 - 4". PLACE STAKES, ONE ON EACH CORNER OF BLANKET, 12" O.C. ALONG BLANKET AND THROUGH STITCHING ON BOTH BLANKETS. UPSLOPE BLANKET LAPS OVER DOWNSLOPE BLANKETS IN A SHINGLE EFFECT.

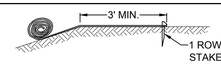
DETAIL 2/12: END ROLL OVERLAP



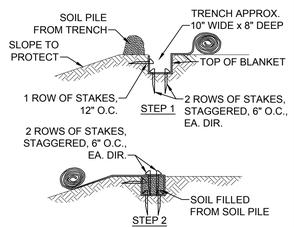
DETAIL 7/12: SIDE SEAM OVERLAP STAKE DETAIL



DETAIL 3/12: BOTTOM OF SLOPE TERMINATION

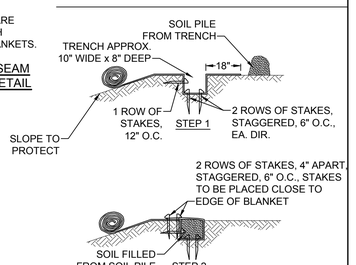


DETAIL 4/12: SLOPE CREST ANCHOR METHOD "A" (NO TRENCH)



DETAIL 5/12: SLOPE TRENCHING METHOD "B"

NOTE: TRENCHING NOT REQUIRED IF BLANKET CAN BE EXTENDED A MINIMUM OF 3' OVER THE SLOPE CREST.



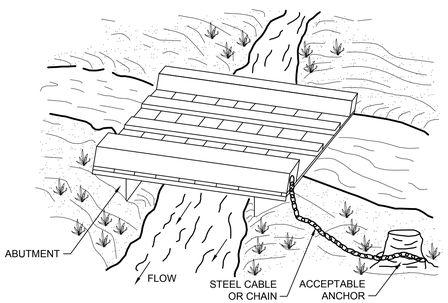
DETAIL 6/12:SLOPE TRENCHING METHOD "C"

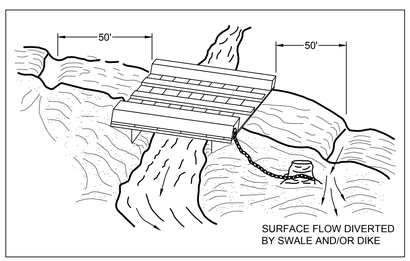
NOTES:
1. IN THE EVENT A SINGLE ROLL OF BLANKET WILL SPAN FROM TOP OF BANK TO TOE OF SLOPE, A PARALLEL INSTALLATION MAY BE USED.
2. BLANKET TO EXTEND TO PROPOSED LIMITS OF SUBSTRATE. BLANKET SHALL BE INSTALLED PRIOR TO SUBSTRATE.
3. STAKE SHALL BE HANES GEO COMPONENTS ECO STAKE OR APPROVED EQUAL.
4. SOURCE: AMERICAN EXCELSIOR COMPANY - EARTH SCIENCE DIVISION. DATE: 05/01/03. REFER TO MOST RECENT MANUFACTURER'S INSTALLATION RECOMMENDATIONS.

REV. 11/11/13

700g COIR FABRIC AND CURLEX ® NETFREE™ SLOPE APPLICATION DETAIL
NO SCALE

1992 3.24





SOURCE: 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

PLATE 3.24-1

SC **TEMPORARY BRIDGE CROSSING**
NO SCALE

COMMONWEALTH OF VIRGINIA
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PROFESSIONAL ENGINEER

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DESIGNED BY
K.ATKINSON
CHECKED BY
K.ATKINSON
SCALE
NONE

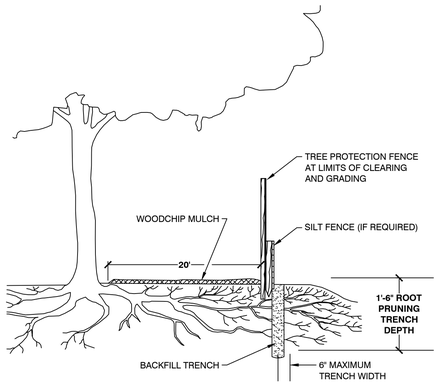
TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
EROSION & SEDIMENT CONTROL DETAILS

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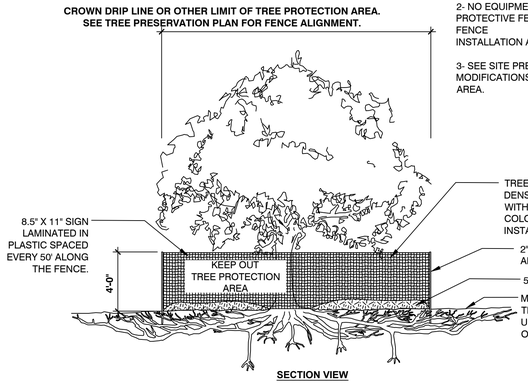
TREE PROTECTION FENCE & ROOT PRUNING W/MULCH

N.T.S.

NOTES:
1- NO PRUNING SHALL BE PERFORMED EXCEPT BY APPROVED ARBORIST.

2- NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING INCLUDING DURING FENCE
INSTALLATION AND REMOVAL.

3- SEE SITE PREPARATION PLAN FOR ANY MODIFICATIONS WITH THE TREE PROTECTION AREA.



SECTION VIEW

TP TREE PROTECTION

3/16" = 1'-0"

URBAN TREE FOUNDATION © 2014
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DESIGNED BY K.ATKINSON
CHECKED BY K.ATKINSON
SCALE NONE

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
EROSION & SEDIMENT CONTROL DETAILS

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CHURCHVILLE AVE

CONSTITUTION RD

SHEETS 3.04 & 3.06 (LOWER)

SHEETS 3.04 & 3.06 (UPPER)

CITY OF STAUNTON
GYPSY HILL PARK
D.B. 0000 P.G. 0001
9115

CITY OF STAUNTON
GYPSY HILL PARK
D.B. 0000 P.G. 0001
PARCEL ID # 9115

SHEETS 3.05 & 3.07 (UPPER)

THORNROSE AVE

SCALE 1"=60'
0 60' 120'
NAD 83

COMMONWEALTH OF VIRGINIA
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Lic. No. 063050
09/15/2023
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DRAWN BY: H. FRY
DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: 1" = 60'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

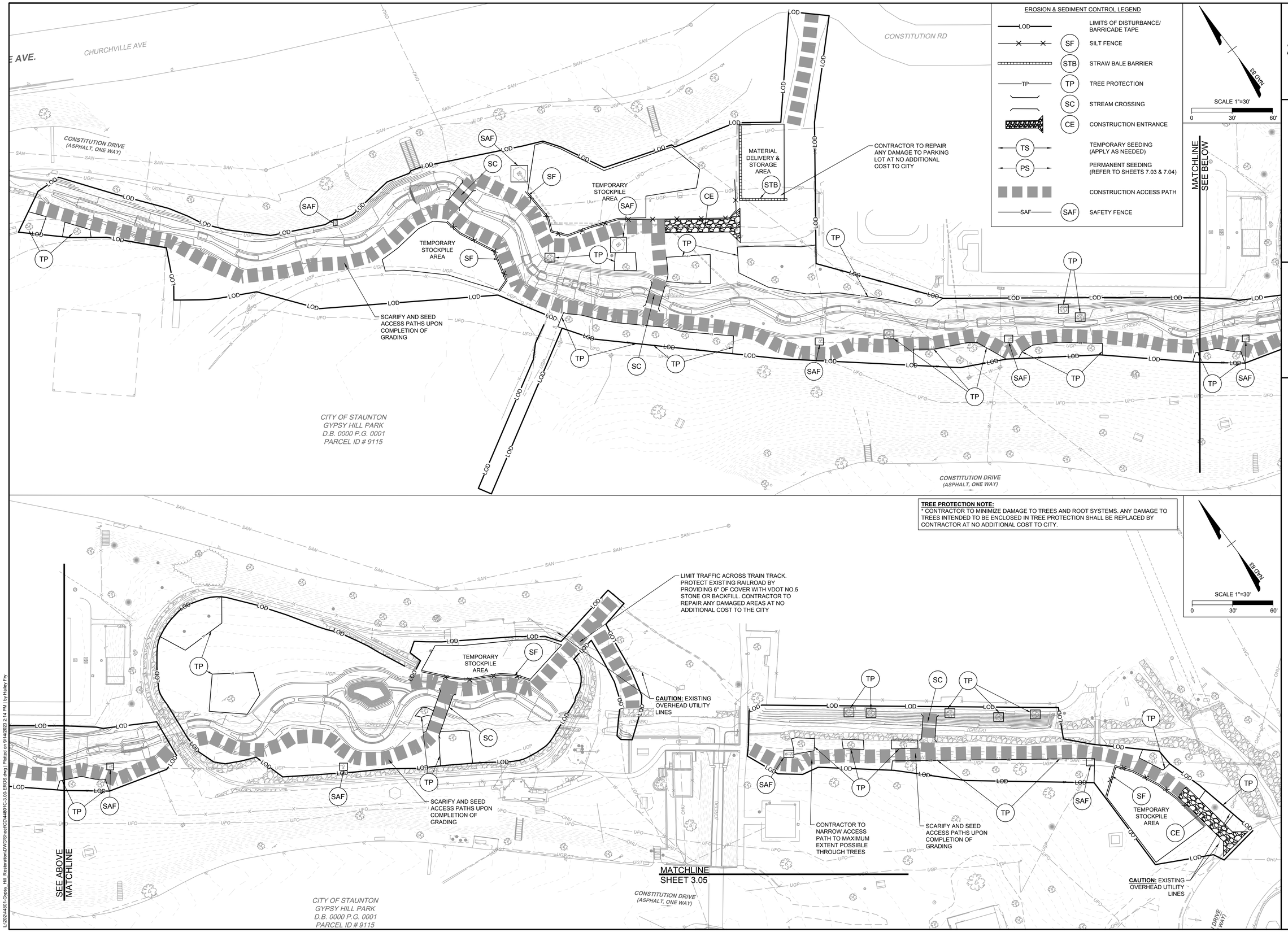
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

EROSION & SEDIMENT CONTROL KEY PLAN

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DATE	09/15/2023
DRAWN BY	H. FRY
DESIGNED BY	K.ATKINSON
CHECKED BY	K.ATKINSON
SCALE	1" = 30'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

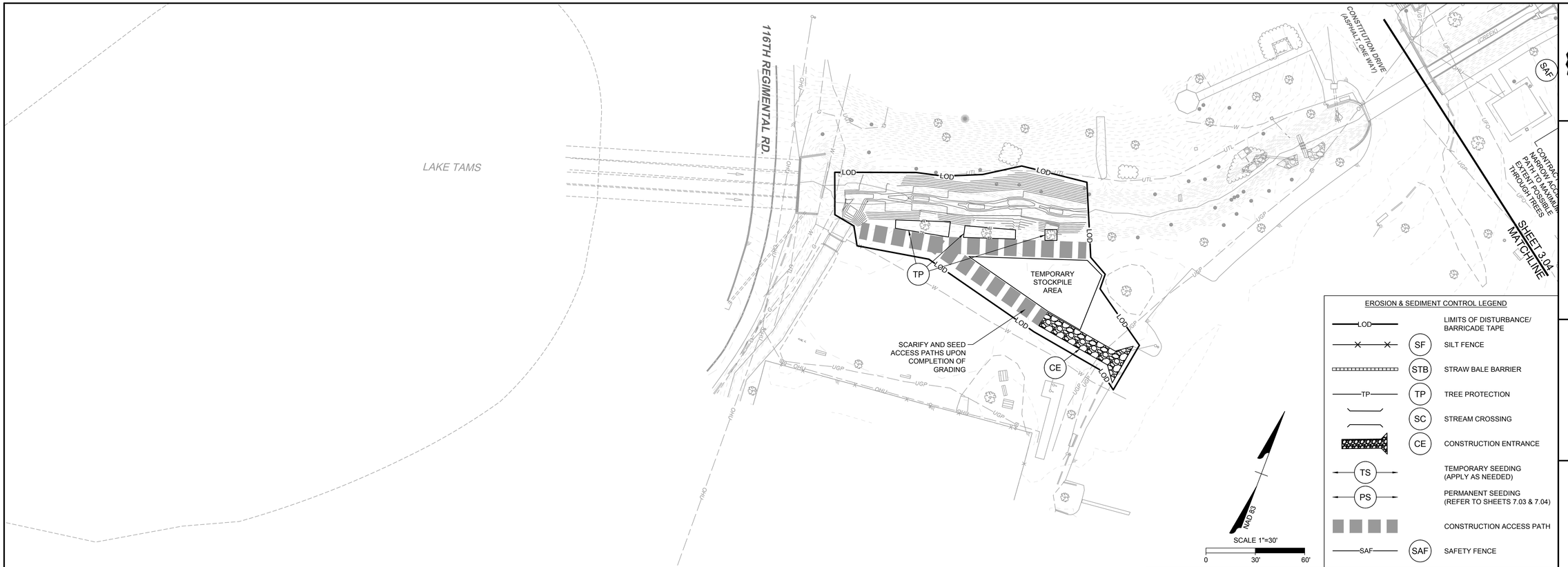
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

EROSION & SEDIMENT CONTROL PLAN

JOB NO.	44801
SHEET NO.	3.04

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TREE PROTECTION NOTE:
* CONTRACTOR TO MINIMIZE DAMAGE TO TREES AND ROOT SYSTEMS. ANY DAMAGE TO TREES INTENDED TO BE ENCLOSED IN TREE PROTECTION SHALL BE REPLACED BY CONTRACTOR AT NO ADDITIONAL COST TO CITY.

COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

THIS DRAWING PREPARED AT THE
CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL. 804.200.6500 FAX. 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP

REVISION DESCRIPTION

DATE

DATE 09/15/2023
DRAWN BY H. FRY
DESIGNED BY K.ATKINSON
CHECKED BY K.ATKINSON
SCALE 1" = 30'

GYPSY HILL STREAM RESTORATION

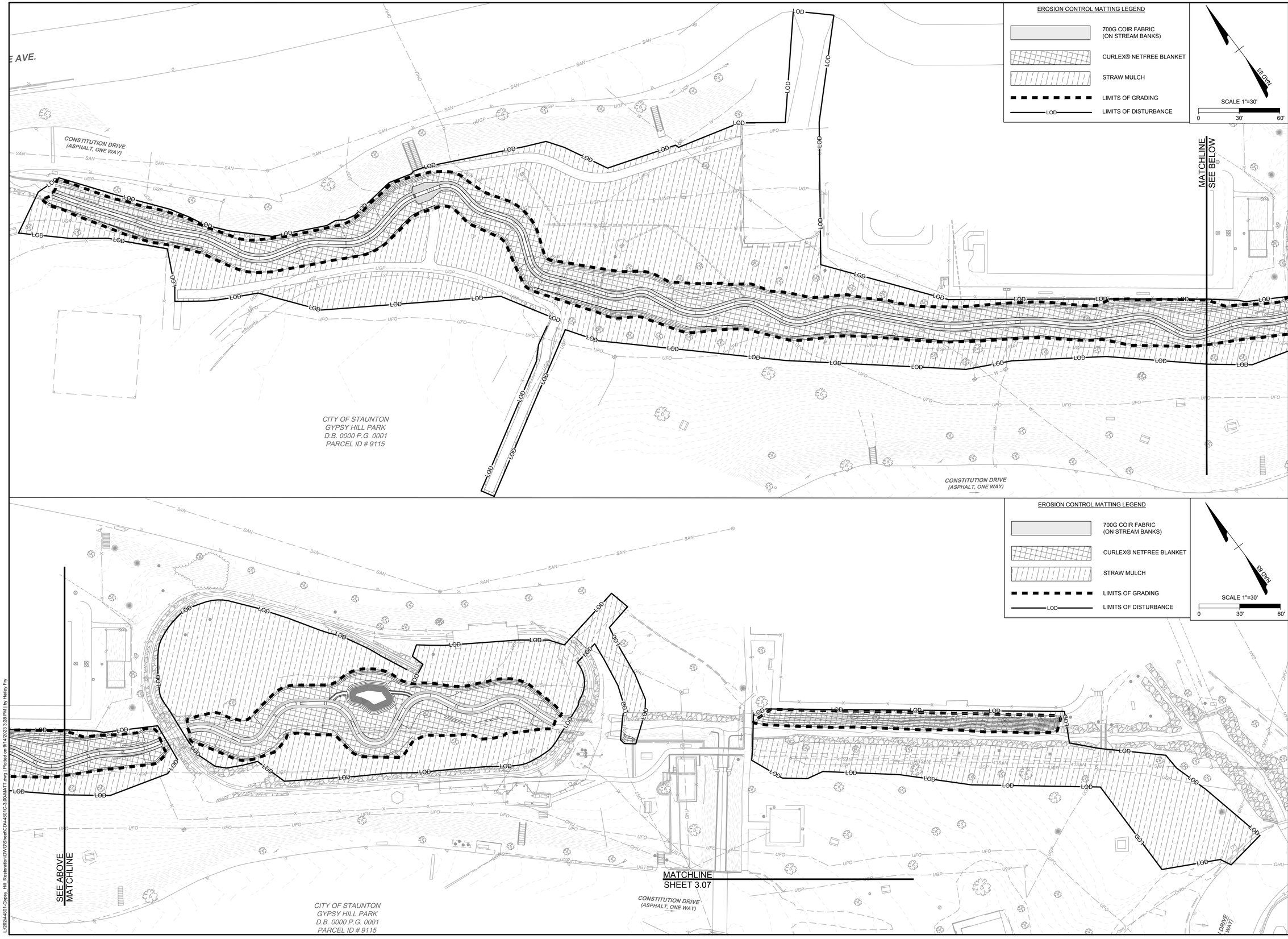
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

EROSION & SEDIMENT CONTROL PLAN

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TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

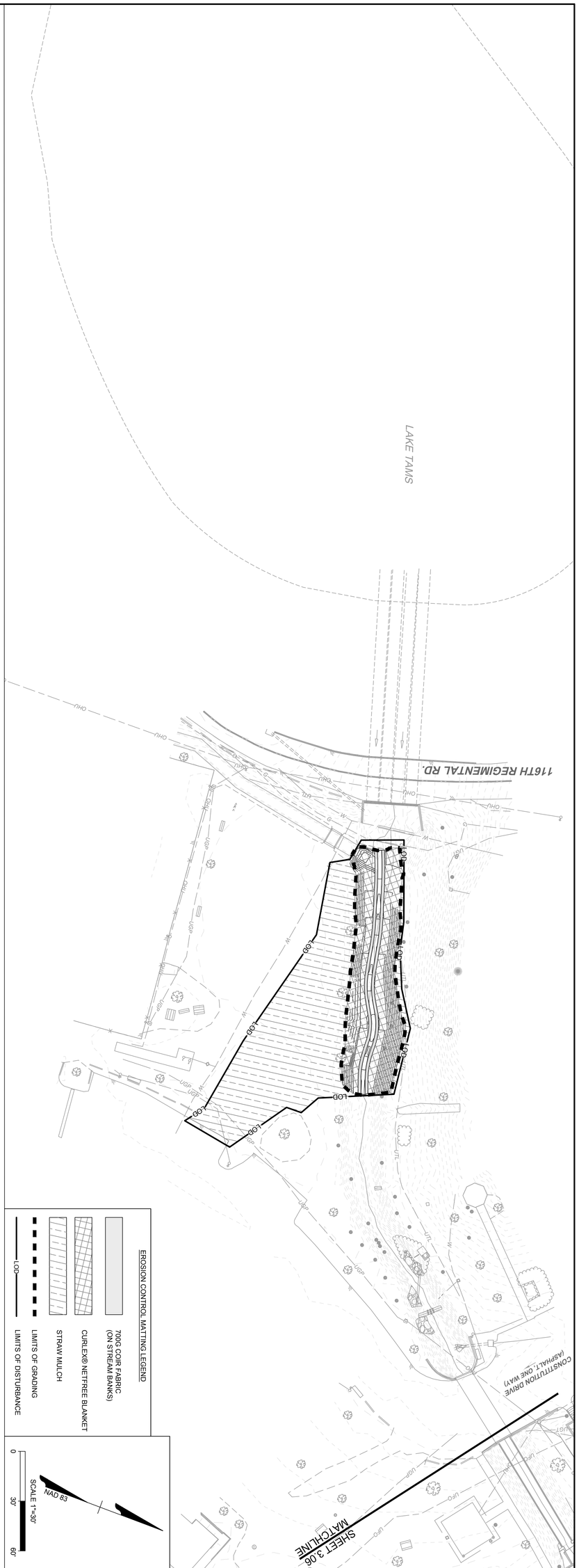
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

EROSION & SEDIMENT CONTROL MATTING PLAN

JOB NO. 44801
SHEET NO. 3.06

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GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

EROSION & SEDIMENT CONTROL MATTING PLAN

JOB NO.	SHEET NO.
44801	3.07

SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
1" = 30'	K.ATKINSON	K.ATKINSON	H. FRY	09/15/2023

DATE	REVISION DESCRIPTION

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GENERAL NOTES:

1. THIS PROJECT IS PROPOSED BY: CITY OF STAUNTON
DEPARTMENT OF COMMUNITY DEVELOPMENT
116 W BEVERLEY ST
3RD FLOOR
STAUNTON, VA 24401
ATTN: MR. PETER K. KESECKER
PHONE: (540) 332-3858
EMAIL: KESECKERPK@CI.STAUNTON.VA.US
FAX: (540) 851-4007

2. ENGINEER OF RECORD: TIMMONS GROUP
1001 BOULDERS PARKWAY
RICHMOND, VA 23225
KATIE ATKINSON, PE
PHONE: (804) 200-6531
EMAIL: KATIE.ATKINSON@TIMMONS.COM
FAX: (804) 560-1016

3. NUMBER OF LOTS AFFECTED BY THIS PROJECT: 1

4. LIMITS OF DISTURBANCE: 3.22 AC.

5. TAX PARCEL NUMBERS: 9115

6. EXISTING ZONING OF PROPERTY THROUGH WHICH PROJECT IS PROPOSED: HIGH DENSITY RESIDENTIAL DISTRICT (R4).

7. EXISTING USE OF PROPERTY THROUGH WHICH PROJECT IS PROPOSED: RECREATION/PARK.

8. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS DATED 2020, AND ROAD AND BRIDGE STANDARDS DATED 2016, AS AMENDED BY CONTRACT PROVISIONS AND THESE PLANS. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM WITH CITY OF STAUNTON STANDARDS AND SPECIFICATIONS, IF MORE STRINGENT.

9. ALL ENTRANCES AND STREET SIGNS, AS SPECIFIED ON THE PLANS, ARE TO BE RESTORED TO ORIGINAL CONDITION AS DIRECTED BY CITY OF STAUNTON ENGINEERING DEPARTMENT.

10. STREET SIGNS SHALL BE REPLACED IMMEDIATELY AFTER AREA IS BACKFILLED AND NO LATER THAN THE CLOSE OF EACH WORK DAY, EVEN IF REPLACEMENT IS ONLY TEMPORARY.

11. SAFE PEDESTRIAN AND VEHICULAR ACCESS TO BUSINESSES SHALL BE PROVIDED AT ALL TIMES.

12. SURVEY NOTES:

12.1. THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF JOSEPH C. MEDLEY FROM AN ACTUAL GROUND SURVEY MADE UNDER HIS SUPERVISION; THAT THE ORIGINAL DATA WAS OBTAINED ON THE FOLLOWING DATES: JANUARY 6, JANUARY 13-17, AND JANUARY 20-23, 2020. THIS BASE-MAP AND DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.

12.2. HORIZONTAL DATUM IS BASED ON NAD83 (2011), SPCS VA N. VERTICAL DATUM IS BASED ON NAVD88. HORIZONTAL DATUM ESTABLISHED BY GPS RTK OBSERVATIONS VIA LEICA SMARTNET AND CHECKED TO CITY MONUMENTS. VERTICAL DATUM MATCHED TO CITY MONUMENT NO. 17, LOCATED ALONG THE EAST BERM OF LAKE TAMS.

12.3. SUBJECT PARCEL IS CURRENTLY IN THE NAME OF CITY OF STAUNTON, BY DEED(S) OF RECORD IN DEED BOOK 100, PAGE 79 AND DEED BOOK 117, PAGE 433 IN THE CLERK'S OFFICE OF THE CIRCUIT COURT OF AUGUSTA COUNTY, VIRGINIA.

12.4. SUBJECT PARCEL IS REFERENCED AS CITY PARCEL ID 9115.

12.5. THIS IS NOT A BOUNDARY SURVEY. NO TITLE REPORT FURNISHED. EASEMENTS MAY EXIST WHICH ARE NOT SHOWN HEREON.

12.6. PAINTED UTILITIES LOCATED BY TIMMONS GROUP IN FEBRUARY OF 2020.

12.7. ALL UNDERGROUND UTILITIES ARE DESIGNATED AS QUALITY LEVEL B (S.U.E.) CLASSIFICATION UNLESS OTHERWISE NOTED.

12.8. SIZED AND TYPES OF UNDERGROUND UTILITIES WERE TAKEN FROM UTILITY OWNER MAPPING OR PREVIOUS FIELD EVIDENCE PROVIDED BY OTHERS.

12.9. WETLANDS FLAGGED BY TIMMONS GROUP AND FIELD LOCATED BY SURVEY AND LOCATIONS SHOWN HEREON.

12.10. FEMA LINES SHOWN ARE FROM GIS INFORMATION AND CAN BE FOUND ON FIRM NO. 51015C0337D, EFFECTIVE DATE 09/28/2007 . THERE IS AN EFFECTIVE FEMA LOMR FOR WEST BEVERLY TRIBUTARY, EFFECTIVE DATE 03/30/2021.

13. THE PROPOSED WORK FALLS WITHIN THE BOUNDARIES OF A MAPPED FEMA FLOODPLAIN OR FLOODWAY AND WITHIN A CITY OF STAUNTON MAPPED FLOODPLAIN.

14. REFER TO THE PLANS AND TECHNICAL SPECIFICATIONS FOR SPECIAL PROVISIONS.

CONSTRUCTION NOTES

1. PRE-CONSTRUCTION PREPARATION & NOTIFICATION

1.1. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER A MINIMUM OF ONE (1) WEEK PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES FOR VERIFICATION THEY ARE IN ACCORDANCE WITH THE APPROVED PERMITS.

1.2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATIONS OF ALL EXISTING UTILITIES AND SERVICES WITHIN THE PROJECT LIMITS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS, AND MUST CONTACT "MISS UTILITY" A MINIMUM OF 72 HOURS PRIOR TO ANY CONSTRUCTION WORK. ALL UTILITIES SHALL BE CLEARLY IDENTIFIED PRIOR TO CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES WITHIN THE PROJECT AREA IS NOT NECESSARILY SHOWN ON THE CONSTRUCTION DRAWINGS AND WHERE SHOWN IS ONLY APPROXIMATELY CORRECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES WHETHER ABOVE GRADE OR UNDERGROUND FACILITIES.

1.3. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING ACCOMMODATING PROJECT STAKEHOLDERS (PROJECT ENGINEER, SUBCONTRACTORS, CERTIFIED RESPONSIBLE LAND DISTURBER, OWNER'S REPRESENTATIVE, SWPPP COORDINATOR, AND THE LOCAL PLAN APPROVING AUTHORITY) A MINIMUM OF ONE (1) WEEK PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES. AT THIS TIME, THE CONTRACTOR SHALL BE PREPARED TO REVIEW THEIR WORKFLOW PLAN AND PROPOSED CONSTRUCTION SCHEDULE (REFERENCE FOLLOWING SUBMITTALS SECTION).

1.4. THE CONTRACTOR SHALL INSTALL TREE PROTECTION FENCE AND SAFETY FENCE AND THEN NOTIFY THE PROJECT ENGINEER OF THE COMPLETED INSTALLATION. THE PROJECT ENGINEER SHALL THEN PROVIDE THE CITY E&S CONTROL INSPECTOR INSPECTOR 48-HOUR NOTIFICATION TO SCHEDULE AN ONSITE PRE-CONSTRUCTION MEETING TO INSPECT THE INSTALL OF THESE EROSION AND SEDIMENT CONTROL MEASURES, PRIOR TO ISSUANCE OF THE LAND DISTURBANCE PERMIT. THE CONTRACTOR SHALL ENSURE THEIR CERTIFIED RESPONSIBLE LAND DISTURBER IS AVAILABLE TO ATTEND THIS PRE-CONSTRUCTION MEETING AS WELL.

1.5. LIMITED CONSTRUCTION ACCESS (MAINTENANCE) EASEMENTS ARE SPECIFIED ON THE CONSTRUCTION DRAWINGS. ALTERNATIVES OR DEVIATIONS SHALL BE APPROVED BY THE PROJECT ENGINEER AND OWNER PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTRACTOR PROPOSED ALTERNATIVES WITH DELINEATION OF ENTRANCE LOCATIONS AND ACCESS PATHS SHALL BE INCLUDED IN THE PROPOSED WORKFLOW PLAN.

1.6. PRIOR TO THE PRE-CONSTRUCTION MEETING, NON-IMPACT WETLANDS SHALL BE FLAGGED AND NO DISTURBANCE SHALL OCCUR WITHIN THESE AREAS.

1.7. IF THERE ARE ANY CITY OF STAUNTON MAINTAINED SIGNS WITHIN THE CONSTRUCTION LIMITS THAT THE CONTRACTOR FEELS ARE IN THE WAY, PLEASE CONTACT TRAFFIC ENGINEERING FOR REMOVAL AND REINSTALLATION.

2. SUBMITTALS

2.1. CONTRACTOR SHALL DEVELOP A WORKFLOW PLAN AND CONSTRUCTION SCHEDULE FOR SUBMITTAL TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL A MINIMUM OF ONE (1) WEEK PRIOR TO THE PRE-CONSTRUCTION MEETING. THE PROPOSED WORKFLOW PLAN SHALL DESCRIBE/DELINEATE THE CONTRACTOR'S PROPOSED CONSTRUCTION ACCESS PATHS, ALTERNATE TEMPORARY STOCKPILE LOCATIONS, ESTIMATED DAILY CHANNEL SEGMENTS, AND ALTERNATIVE MEANS & METHODS. THE PROPOSED CONSTRUCTION SCHEDULE SHALL INCLUDE SUBMITTAL REVIEW TIME, KEY CONSTRUCTION AND CRITICAL PATH TASKS, PHASING OF WORK FLOW, WEATHER CONTINGENCY, AS-BUILT SURVEY COORDINATION, PLANTING PERIOD AND SUBSTANTIAL AND/OR FINAL COMPLETION GOALS.

2.2. CONTRACTOR SHALL PROVIDE EXPERIENCE QUALIFICATIONS TO THE PROJECT ENGINEER IDENTIFYING THE KEY PERSONNEL TO BE WORKING ON THE PROJECT, INCLUDING THEIR PROJECT MANAGER, SUPERINTENDENT AND SWPPP COORDINATOR. CONTRACTOR SHALL ALSO SPECIFY THE MINIMUM NUMBER OF DAILY CREW/STAFF AND EQUIPMENT TO BE EXPECTED ONSITE DURING CONSTRUCTION.

2.3. CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT THREE (3) COPIES OF THE MATERIAL CERTIFICATIONS TO THE PROJECT ENGINEER FOR REVIEW ON ANY CONSTRUCTION MATERIALS USED ON THE PROJECT SITE. THE CERTIFICATION SHALL STATE THAT THE PRODUCT IS MANUFACTURED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE APPROVED SHOP DRAWING OR DETAIL, AS APPLICABLE. ANY MATERIALS ORDERED OR WORK PERFORMED WITH SAID MATERIALS BY THE CONTRACTOR BEFORE THE PROJECT ENGINEER HAS REVIEWED THE RESPECTIVE MATERIAL CERTIFICATIONS SHALL BE AT THE RISK OF THE CONTRACTOR.

2.4. CONTRACTOR SHALL SUBMIT DEWATERING PLAN TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL A MINIMUM OF ONE (1) WEEK PRIOR TO THE PRE-CONSTRUCTION MEETING.

2.5. REVIEW TIME FOR THE SPECIFIED SUBMITTALS SHALL BE CLEARLY NOTED IN THE CONSTRUCTION SCHEDULE. ALLOW A MINIMUM OF ONE (1) WEEK REVIEW TIME FOR SUBMITTAL PACKAGE.

3. SURVEYING

3.1. THE SURVEYOR WILL STAKE OUT THE NEW STREAM ALIGNMENT. PC AND PT POINTS SHALL BE STAKED ALONG THE CENTERLINE AND AT 50-FOOT OFFSETS, IDENTIFIED BY CORRESPONDING CENTERLINE STATION. THE CENTER OF EACH CURVE SHALL BE STAKED AND MARKED WITH THE CORRESPONDING RADIUS OF CURVATURE. VERTICAL CONTROL BENCHMARKS SHALL BE CLEARLY MARKED AT A MINIMUM OF 1,000-FOOT INTERVALS ALONG THE PROPOSED STREAM CHANNEL.

3.2. IF DURING CONSTRUCTION, THE EXISTING ELEVATIONS (ESPECIALLY STREAM INVERTS) SHOWN ON THESE CONSTRUCTION DRAWINGS ARE FOUND TO DIFFER SIGNIFICANTLY FROM THE ELEVATIONS IN THE FIELD, THE CONTRACTOR MUST NOTIFY THE PROJECT ENGINEER IMMEDIATELY FOR AN ADJUSTMENT IN ELEVATIONS.

3.3. THE SURVEYOR WILL SCHEDULE AND PERFORM THE AS-BUILT SURVEY FOLLOWING WRITTEN NOTIFICATION, FROM THE CONTRACTOR TO THE PROJECT ENGINEER, STATING THAT SUBSTANTIAL COMPLETION HAS BEEN ACHIEVED. THIS COORDINATION SHALL BE PERFORMED PRIOR TO DISKING, FINAL SEEDING AND PLANTING.

3.4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COSTS ASSOCIATED WITH ADDITIONAL AS-BUILT SURVEY RESULTING FROM PROJECT AREAS DISCOVERED TO NOT BE IN SUBSTANTIAL ACCORDANCE WITH THE SPECIFIED DESIGN.

3.5. AS PART OF THE AS-BUILT SURVEY, THE CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL MONITORING LOCATIONS IN ACCORDANCE WITH THE NATIONWIDE 27 PERMIT CONDITIONS.

3.5.1. PROJECT ENGINEER WILL PROVIDE MONITORING LOCATIONS.

3.5.2. THE START POINT AND END POINT OF ALL DESIGN ALIGNMENTS SHALL BE MONUMENTED WITH $\frac{5}{8}$" x 3' REBAR.

3.5.3. MONITORED CROSS-SECTIONS SHALL BE MONUMENTED WITH $\frac{5}{8}$" x 3' REBAR, CAPPED WITH 1" x 5' PVC STAKES.

3.5.4. MONITORED VEGETATION PLOTS SHALL BE MONUMENTED WITH 1" x 5' PVC STAKES.

4. MINIMIZING IMPACTS

4.1. ALL NECESSARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE ATTACHED EROSION AND SEDIMENT CONTROL PLAN SHEETS PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITIES. ALTERNATIVE AND/OR ADDITIONAL MEASURES SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO INSTALLATION.

4.2. DISTURBANCE OF EXISTING MATURE TREES SHALL BE MINIMIZED TO THE GREATEST EXTENT PRACTICABLE. TREE PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS TO PRESERVE TREES NOT UTILIZED FOR STRUCTURES OR DISTURBED BY GRADING. CONTRACTOR SHALL ONLY REMOVE VEGETATION NECESSARY TO PERFORM GRADING OPERATIONS DEPICTED ON THE CONSTRUCTION DRAWINGS. TREE AND ROOT DAMAGE SHALL BE AVOIDED TO THE MAXIMUM EXTENT PRACTICABLE WITHIN THE PROJECT BOUNDARY AND TEMPORARY CONSTRUCTION ACCESS AREAS.

4.3. MATERIALS, SUPPLIES OR EQUIPMENT SHALL BE STOCKPILED AND/OR STORED OUTSIDE OF NON-IMPACT WETLAND LIMITS. CONTRACTOR SHALL NOT TRAVEL ACROSS, STORE SPOILS ON OR OTHERWISE IMPACT THE NON-IMPACT WETLANDS AND FLAGGED BUFFER AREAS. ALL TEMPORARY IMPACTS TO WETLANDS SHALL BE RE-VEGETATED.

4.4. MATERIAL STORAGE AND STAGING AREAS SHALL BE LOCATED AND PROTECTED AS SHOWN ON THE ATTACHED EROSION AND SEDIMENT CONTROL PLAN SHEETS. ANY DEVIATION FROM THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE APPROVED BY THE PROJECT ENGINEER AND OWNER PRIOR TO IMPLEMENTATION. ALL EQUIPMENT AND SUPPLIES SHALL BE STORED WITHIN THE CONSTRUCTION STAGING AREA WHILE CONSTRUCTION ACTIVITIES HAVE CEASED FOR THE DAY.

4.5. EXCESS EXCAVATION MATERIAL SHALL BE DISPOSED OF IN A SUITABLE LOCATION APPROVED BY THE PROJECT ENGINEER AND OWNER. SUITABLE LOCATIONS FOR SPREADING AND/OR STOCKPILING EXCESS MATERIAL WILL BE DISCUSSED AT THE PRE-CONSTRUCTION MEETING. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE PROJECT ENGINEER AND OWNER PRIOR TO PERMANENTLY PLACING EXCESS MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COST ASSOCIATED WITH REMOVING AND RELOCATING ANY EXCESS MATERIAL PLACED WITHOUT PRIOR APPROVALS. CONTRACTOR SHALL ENDEAVOR TO SEPARATE SUITABLE AND UNSUITABLE MATERIALS DURING EXCAVATION OPERATIONS TO ALLOW FOR SEPARATE MEANS OF DISPOSAL FOR EXCESS MATERIALS.

4.6. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS AND DISPOSE OF OFFSITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS. ANY NECESSARY PERMITS REQUIRED FOR SUCH DISPOSAL SHALL BE OBTAINED BY THE CONTRACTOR AT THEIR EXPENSE.

4.7. THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND DEVICES NECESSARY TO PROTECT THE PROJECT LIMITS, ADJACENT PROPERTY, EMPLOYEES, AND THE GENERAL PUBLIC FOR THE DURATION OF THE PROJECT CONSTRUCTION.

4.8. STRIP AND STOCKPILE TOPSOIL IN DESIGNATED MATERIAL STORAGE AREAS.

4.9. THE CONTRACTOR SHALL REMOVE ALL TREES, STUMPS, SHRUBS, BRUSH AND OTHER ORGANIC MATERIAL WITHIN THE GRADING LIMITS NECESSARY TO FACILITATE EARTHWORK ACTIVITIES. OTHER DEBRIS SHALL ALSO BE REMOVED.

4.10. ALL VEGETATION REMOVED WITHIN THE PROJECT LIMITS THAT CANNOT BE CHIPPED OR USED FOR STRUCTURES SHALL BE HAULED OFF-SITE AND DISPOSED OF BY THE CONTRACTOR.

5. CONSTRUCTION GUIDELINES

5.1. THE PROJECT SITE BOUNDARIES ARE SHOWN ON THE PLANS AS LIMITS OF DISTURBANCE (LOD). THE CONTRACTOR SHALL PERFORM ALL ACTIVITIES RELATED TO THIS CONTRACT WITHIN THE LIMITS OF DISTURBANCE. THE PROJECT SITE SHALL BE ACCESSED THROUGH THE DESIGNATED ACCESS POINTS OFF CONSTITUTION DRIVE, AS SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS THROUGHOUT ALL CONSTRUCTION ACTIVITIES. UPON COMPLETION OF ALL WORK, THE CONTRACTOR WILL RESTORE THE AREA TO A CONDITION EQUAL TO OR BETTER THAN FOUND PRIOR TO CONSTRUCTION ACTIVITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING FEATURES PRIOR TO COMPLETION OF THE PROJECT.

5.2. NO PARKING OF CONSTRUCTION VEHICLES AND EQUIPMENT SHALL BE ALLOWED ON THE ACCESS ROAD. CONSTRUCTION VEHICLES AND EQUIPMENT SHALL BE STORED IN THE "MATERIAL DELIVERY STORAGE AREA" DEPICTED ON THE EROSION AND SEDIMENT CONTROL PLAN.

5.3. ALL REFERENCES TO "LEFT" AND "RIGHT" IN THE CONSTRUCTION DRAWINGS ARE IN REFERENCE TO LOOKING DOWNSTREAM.

5.4. STREAM CONSTRUCTION SHALL PROCEED FROM UPSTREAM TO DOWNSTREAM, WORKING AND COMPLETING ONE SEGMENT OF THE PROPOSED CHANNEL AT A TIME, UNLESS INDICATED OTHERWISE. IF NEEDED, PUMP ANY BASE STREAM FLOW FROM UPSTREAM OF THE ACTIVE WORK AREA TO DOWNSTREAM OF THE ACTIVE WORK AREA.

5.5. AS STATED IN SECTION 2.1 IN THESE CONSTRUCTION NOTES, THE CONTRACTOR IS RESPONSIBLE FOR DESCRIBING THEIR PROPOSED CONSTRUCTION MEANS AND METHODS IN THEIR WORKFLOW PLAN; HOWEVER, TO ACCOMMODATE A BALANCE OF EARTH WORK ON THIS SITE, THE FOLLOWING CONSTRUCTION SEQUENCE IS SUGGESTED BY THE PROJECT ENGINEER:

5.5.1. BEGIN CONSTRUCTING THE MAIN REACH, WORKING UPSTREAM TO DOWNSTREAM, FROM STATION 10+00 TO 10+65.10 AS SHOWN ON SHEET 5.01. REMOVE & STORE RIPRAP ALONG EXISTING STREAM BANKS. TEMPORARILY TIE-IN TO EXISTING CULVERT. PROTECT EXISTING STREAM BANKS AS NEEDED DURING THIS SEGMENT OF CONSTRUCTION.

5.5.2. WORKING OFFLINE, CONSTRUCT MAIN REACH FROM STATION 11+73.59 TO 14+09.29 AND TEMPORARILY TIE-IN TO EXISTING STREAM.

5.5.3. INSTALL PERMATRAK BOARDWALK STREAM CROSSING.

5.5.4. CONTINUE CONSTRUCTING MAIN REACH FROM STATION 10+65.10 TO 11+73.59. REMOVE SECTIONS OF EXISTING DUAL 36" CMP AS REQUIRED TO COMPLETE CONSTRUCTION OF PROPOSED CHANNEL.

5.5.5. REMOVE REMAINING SECTIONS OF EXISTING DUAL 36" CMP. USE CAUTION DUE TO POTENTIAL PRESENCE OF UNDERGROUND CONNECTIONS. NOTIFY ENGINEER IMMEDIATELY IF DISCOVERED. TIE ENCOUNTERED SPRING LINES TO PROPOSED STREAM USING 4" FLEXIBLE CORRUGATED HDPE PIPE.

5.5.6. CONSTRUCT PROPOSED CONCRETE SIDEWALK AS SHOWN ON SHEETS 5.01 AND 5.02.

5.5.7. CONTINUE CONSTRUCTION OF MAIN REACH FROM STATION 14+09.29 TO 14+37.10. INSTALL PROPOSED 6" CONCRETE ENCASEMENTS PER DETAIL ON SHEET 4.01.

5.5.8. CONTINUE CONSTRUCTION OF MAIN REACH FROM STATION 14+37.10 TO 17+18.54. INSTALL PROPOSED 6" CONCRETE ENCASEMENT PER DETAIL ON SHEET 4.01.

5.5.9. CONTINUE CONSTRUCTION OF MAIN REACH FROM STATION 17+18.54 TO STATION 19+98.83. ENSURE FLANKING HEADER & FOOTER ROCKS ARE ANGLED INTO BANK PER DETAIL ON SHEET 4.02 . TIE IN TO EXISTING CHANNEL.

5.5.10. CONTINUE CONSTRUCTION OF MAIN REACH FROM STATION 20+20.71 TO 23+45.70. CONSTRUCT OXBOW POND ALONG WITH INLET AND OUTLET CHANNELS.

5.5.11. INSTALL IMBRICATED STONE WALL ALONG TOE OF DUCK POND EMBANKMENT AND PERFORM PROPOSED GRADING.

5.5.12. WORKING UPSTREAM TO DOWNSTREAM, CONSTRUCT TRIBUTARY FROM STATION 10+12.14 TO 11+62.28. TIE-IN PROPOSED CHANNEL TO EXISTING CHANNEL AT STATION 11+62.28.

5.5.13. INSTALL ROCK SILL DOWNSTREAM OF CONCRETE CHANNEL.

5.6. CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND PREPARE SITE CONDITIONS, INCLUDING EROSION CONTROL MEASURES, FOR PENDING STORMS CAPABLE OF PRODUCING SIGNIFICANT RAINFALL.

5.7. THE CONTRACTOR SHALL PERFORM ALL ROUGH AND FINE GRADING EARTHWORK OPERATIONS IN ACCORDANCE WITH PROPOSED GRADES AND TECHNICAL SPECIFICATIONS, AS SHOWN HEREIN.

5.8. ON BENCHES AND SLOPES ABOVE BANKFULL ELEVATION, THE CONTRACTOR SHALL STRIP, STOCKPILE, AND REPLACE 6 INCHES OF TOPSOIL PRIOR TO ACHIEVING FINAL DESIGN ELEVATION. EACH SECTION SHALL BE ROUGH GRADED FIRST ALONG THE SPECIFIED SEGMENT, THEN INSTALL STRUCTURES AND BRING PROPOSED STREAM BED AND BANKS TO FINAL GRADE AS WORK PROCEEDS DOWNSTREAM. EXISTING PLANT MATERIALS THAT HAVE BEEN TEMPORARILY STORED FOR RELOCATION SHALL THEN BE BROUGHT BACK TO THESE AREAS AND REPLANTED AT THE FINAL GRADE.

5.9. FINAL GRADE OF THE PROPOSED CHANNEL SHALL UTILIZE THE SPECIFIED BED SUBSTRATE MATERIAL AS THE FINAL LAYER IN THE PROPOSED CHANNEL. STONES SHALL BE ROUNDED AND PLACED TO CREATE A DENSE MASS WITH A MINIMUM OF VOIDS.

5.10. COIR FABRIC ALONG THE BANKS SHALL BE INSTALLED ALONG WITH INSTALLATION OF ROCK AND WOOD STRUCTURES SO THAT FABRIC CAN BE PLACED FIRST WITH SILLS ON TOP TO PIN FABRIC IN PLACE. SILLS SHALL BE EMBEDDED SO THAT TOPS ARE AT FINAL PROPOSED GRADE.

5.11. EACH STREAM SEGMENT SHALL BE BROUGHT TO FINAL GRADE AND STABILIZED DAILY BEFORE CONTINUING TO THE NEXT SEGMENT, ALLOWING DIVERTED (PUMP AROUND) STREAM FLOW TO BE REDIRECTED BACK INTO THE EXISTING CHANNEL.

5.12. AS FINAL GRADE AND STABILIZATION OF THE BANKS PROGRESSES DOWNSTREAM, THE BANKS AND OTHER GRADED SURFACES SHALL BE SEEDED AND LINED WITH MATTING AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN ALL DENUDED AND DISTURBED AREAS UNTIL WHICH TIME THEY HAVE BEEN STABILIZED WITH THE SPECIFIED VEGETATIVE COVER. THE COUNTY INSPECTOR AND PROJECT ENGINEER SHALL DETERMINE WHEN THE SITE HAS BEEN COMPLETELY STABILIZED.

5.13. SPECIFIED PLANTINGS AND REFORESTATION SHALL OCCUR IN ACCORDANCE WITH THE PLANTING PLAN FOLLOWING FINAL GRADING, MATTING, SEEDING AND AS-BUILT SURVEY COORDINATION. CONTRACTOR SHALL ONLY USE ATV SCALE VEHICLES AND SMALL EQUIPMENT TO COMPLETE PLANTING WORK TO AVOID TRACK RUTTING AND DISRUPTION OF FINAL GRADE.

5.14. UPON COMPLETION OF CONSTRUCTION AND VEGETATIVE STABILIZATION, THE CONTRACTOR SHALL REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE ATTACHED EROSION AND SEDIMENT CONTROL NOTES. THIS WORK INCLUDES PERMANENT SEEDING OF ANY REMAINING DISTURBANCE TO TEMPORARY MATERIAL STORAGE AREAS AND ACCESS EASEMENTS.

GEOTECHNICAL NOTES

1. SOIL MATERIALS

1.1. SUITABLE FILL MATERIALS ARE DEFINED AS THOSE COMPLYING WITH ASTM D2487 SOIL CLASSIFICATION GROUPS SW, SP, SM, SC, GW, GP, GM OR GC, UNLESS APPROVED OTHERWISE BY THE PROJECT ENGINEER.

1.2. UNSUITABLE FILL MATERIALS ARE DEFINED AS THOSE COMPLYING WITH ASTM D2487 SOIL CLASSIFICATION GROUPS CL, ML, OL, CH, MH, OH OR PT.

1.3. STREAMBED SUBSTRATE IS DEFINED AS A CONTRACTOR DEVELOPED MATERIAL MIXTURE SPECIFIED BY THE PROJECT ENGINEER FOR CHANNEL LINING IN ACCORDANCE WITH THESE CONSTRUCTION DRAWINGS. REFER TO SUBSTRATE MIX REQUIREMENTS ON SHEET 4.02.

1.4. TOPSOIL MATERIAL - REFERENCE THE ATTACHED EROSION AND SEDIMENT CONTROL NOTES AND PLANTING SPECIFICATIONS FOR MATERIAL DEFINITION, CONTENT AND PLACEMENT.

2. EXCAVATION

2.1. EXCAVATION CONSISTS OF SOIL MATERIAL REMOVAL FROM ANY LOCATION WITHIN THE PROJECT LIMITS. ALL EXCAVATION SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS.

2.2. UNAUTHORIZED EXCAVATION CONSISTS OF REMOVAL OF SOIL MATERIALS BEYOND SPECIFIED SUBGRADE ELEVATIONS, DIMENSIONS OR LOCATIONS WITHOUT SPECIFIC DIRECTION FROM THE PROJECT ENGINEER AND OWNER APPROVAL.

2.3. UNSUITABLE MATERIAL SHALL BE IDENTIFIED AND REMOVED, IF NECESSARY, TO THE LIMITS DETERMINED BY THE GEOTECHNICAL ENGINEER AND SUITABLE REPLACEMENT MATERIAL SHALL BE BACKFILLED IN ACCORDANCE WITH THE GEOTECHNICAL SPECIFICATIONS CONTAINED HEREIN.

2.4. ALL WORK SHALL BE PERFORMED IN A SAFE MANNER IN ACCORDANCE WITH 29CFR1926 OSHA STANDARDS, LATEST EDITION.

2.5. DEWATERING, IF NECESSARY, SHALL BE PERFORMED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL NOTES AND THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

3. BACKFILLING & FILL PLACEMENT

3.1. VEGETATIVE DEBRIS AND DELETERIOUS ORGANIC MATTER SHALL BE REMOVED FROM THE CHANNEL (FILL AREA) PRIOR TO THE PLACEMENT OF FILL.

3.2. MATERIAL USED FOR FILL SHALL BE SUITABLE MATERIAL AS PREVIOUSLY DEFINED, FREE FROM ROCKS LARGER THAN 4 INCHES IN ANY DIMENSION, DEBRIS, ROOT MASS, CLODS OR DELETERIOUS MATTER. FILL SHALL BE PLACED IN LIFTS NOT TO EXCEED 8 INCHES AND EACH LIFT SHALL BE COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR.

3.3. THE USE OF A BRIDGE LIFT IS PERMITTED AS THE INITIAL FILL LIFT ONLY, WHERE THE EXISTING CHANNEL BOTTOM CONSISTS OF SOIL MATERIALS THAT ARE EITHER UNSUITABLE OR EXCEED OPTIMUM MOISTURE CONDITIONS. BRIDGE LIFTS SHALL BE PLACED IN LIFTS NOT TO EXCEED 8 INCHES WITH A MAXIMUM DEPTH OF 2 FEET AND BE CONSTRUCTED WITH SUITABLE FILL WITHIN 3 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT. FILL LIFTS INSTALLED ABOVE THE BRIDGE LIFT SHALL BE COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR.

3.4. STREAMBED SUBSTRATE MIX SHALL BE PLACED IN LIFTS NOT TO EXCEED 8 INCHES AND EACH LIFT SHALL BE THOROUGHLY COMPACTED WITH HEAVY EQUIPMENT.

3.5. REFERENCE THE ATTACHED EROSION AND SEDIMENT CONTROL NOTES AND PLANTING SPECIFICATIONS FOR DIRECTION ON TOPSOIL STRIPPING, STOCKPILING, TESTING, AMENDMENT AND REAPPLICATION.

COMMONWEALTH OF VIRGINIA
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Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

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DATE

DATE 09/15/2023
DRAWN BY H. FRY
DESIGNED BY K.ATKINSON
CHECKED BY K.ATKINSON
SCALE NONE

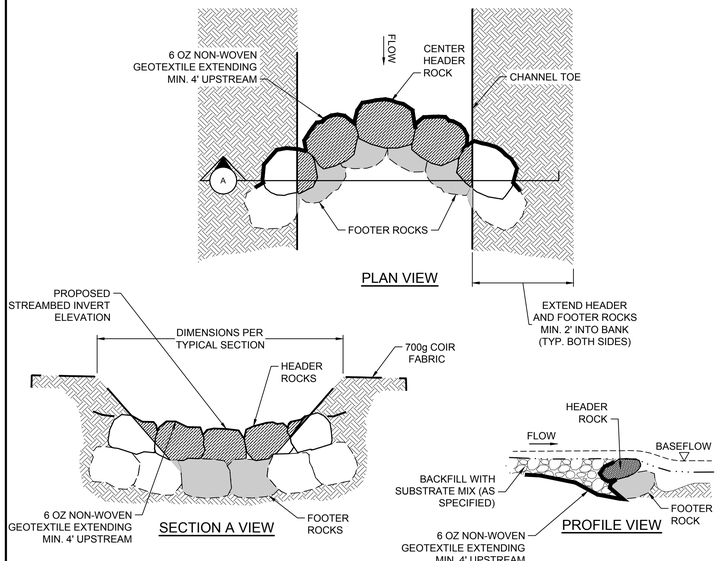
TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
CONSTRUCTION NOTES

JOB NO. 44801
SHEET NO. 4.00

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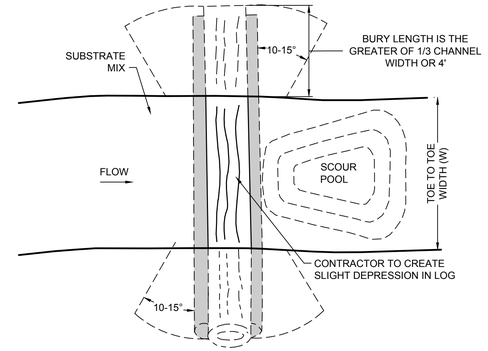
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NOTES:
1. REFER TO SUITABLE ROCK SIZE DIAGRAM ON THIS SHEET FOR HEADER AND FOOTER ROCK DIMENSIONS.
2. THE ROCK SILL IS TO BE CENTERED IN THE CHANNEL WITH ALL HEADER ROCKS FLUSH WITH THE PROPOSED GRADE. ALL ROCKS PLACED TIGHTLY TO EACH OTHER WITH SUBSTRATE MIX COMPACTED AROUND EACH.
3. ANY GAPS OBSERVED DURING INSTALLATION SHOULD BE CHINKED USING SMALLER SUBSTRATE. THESE AREAS SHALL BE INSPECTED BY THE PROJECT ENGINEER TO VERIFY INSTALL.
4. EXTEND 6 OZ NON-WOVEN GEOTEXTILE TO THE MIDPOINT ALONG THE TOP FACE OF THE HEADER ROCK.
5. REFER TO STRUCTURE TABLE ON SHEET 4.03.

REV. 3/2/19

ROCK SILL
NO SCALE

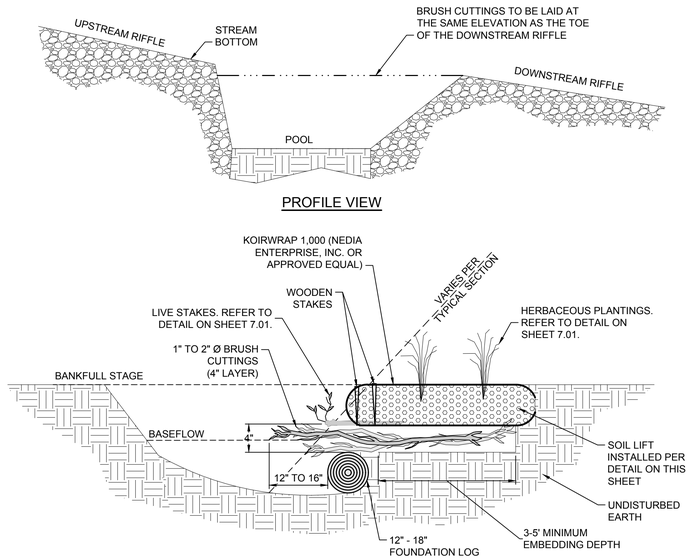


SECTION VIEW

NOTES
1. REFER TO STRUCTURE TABLE ON SHEET 4.03.
2. LOG SILLS MUST BE ANGLED WITHIN A RANGE FROM 10-15° AS SHOWN IN PLAN VIEW .

REV. 3/2/19

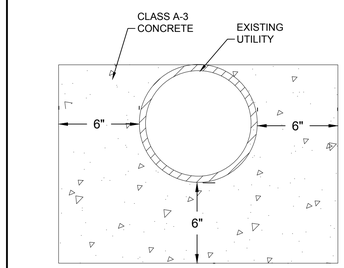
LOG SILL (TRIPLE)
NO SCALE



NOTES:
1. THE FOUNDATION LOG MAY OR OR MAY NOT REST ON THE BOTTOM OF THE POOL. IF THE LOG IS ELEVATED ABOVE THE BOTTOM OF THE POOL, A BENCH SHALL BE CUT IN TO HOLD THE LOG.
2. THE BRUSH CUTTINGS SHALL BE INSTALLED AT 2" ABOVE AND 2" BELOW BASEFLOW.
3. THE BRUSH CUTTINGS SHALL NOT EXTEND INTO THE CENTER OF THE CHANNEL OBSTRUCTING FLOW.
4. SOIL LIFT SHALL BE INSTALLED PER THE DETAIL ON SHEET THIS SHEET.
5. REFER TO BRUSH TOE STRUCTURE TABLE ON SHEET 4.03.

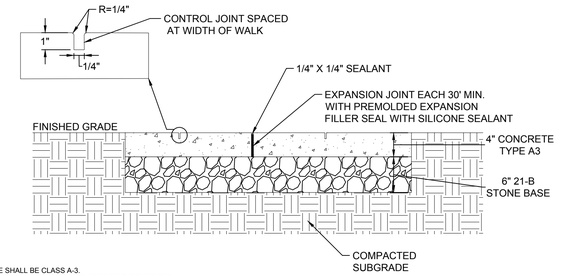
REV. 7/5/17

BRUSH TOE
NO SCALE



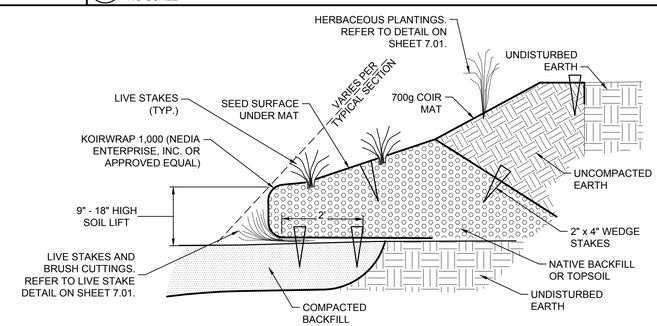
CONCRETE ENCASEMENT FOR UTILITY CROSSING

NOT TO SCALE



NOTES:
1. CONCRETE SHALL BE CLASS A-3.
2. MAX CROSS SLOPE OF 2% UNLESS SPECIFIED OTHERWISE.

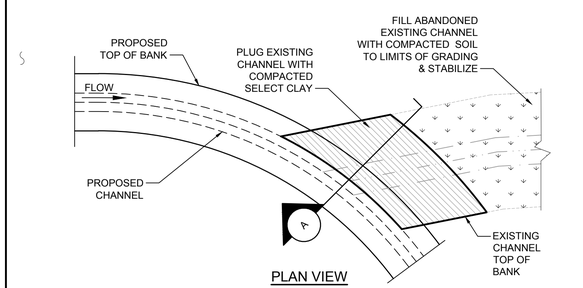
CONCRETE PAVEMENT TYPICAL SECTION
NO SCALE

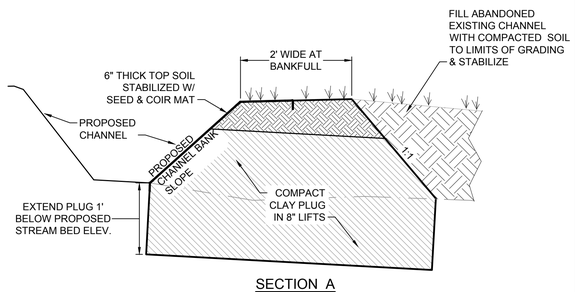


NOTES:
1. REFER TO STRUCTURE TABLE ON SHEET 4.03.

REV. 7/11/13

REINFORCED SOIL LIFTS
NO SCALE





CLAY PLUG
NO SCALE

COMMONWEALTH OF VIRGINIA
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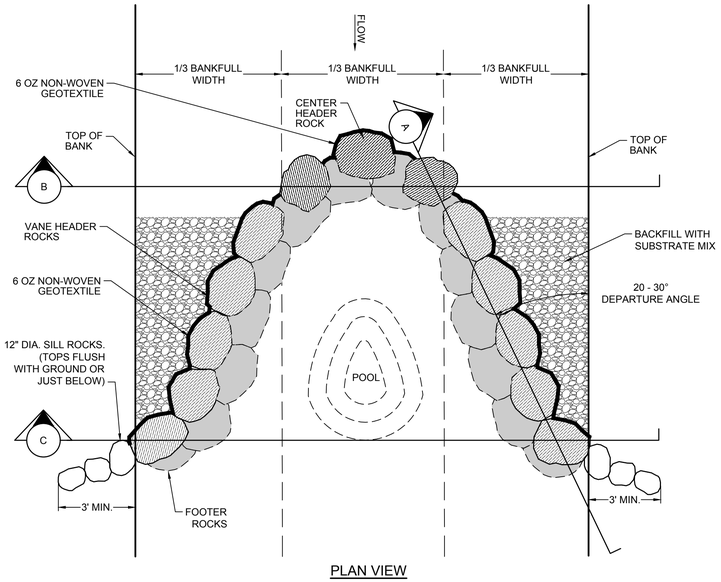
DATE	09/15/2023
DRAWN BY	H. FRY
DESIGNED BY	K.ATKINSON
CHECKED BY	K.ATKINSON
SCALE	NONE
JOB NO.	44801
SHEET NO.	4.01

TIMMONS GROUP

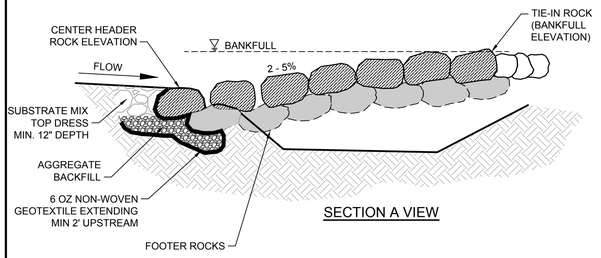
GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
CONSTRUCTION DETAILS

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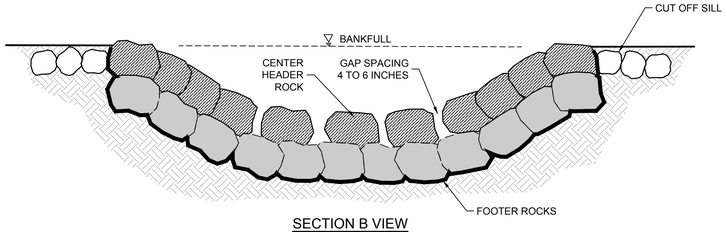
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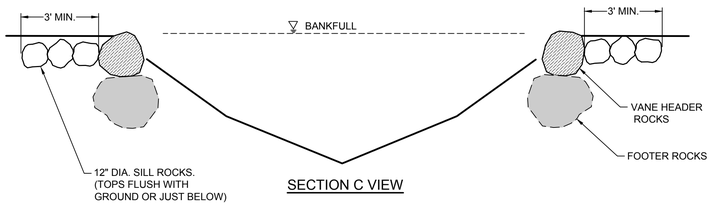
PLAN VIEW



SECTION A VIEW



SECTION B VIEW



SECTION C VIEW

NOTES:
1. REFER TO SUITABLE ROCK SIZE DIAGRAM ON SHEET 4.02 FOR HEADER AND FOOTER ROCK DIMENSIONS.
2. REFER TO STRUCTURE TABLE ON SHEET 4.03.

REV. 2/22/2019

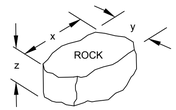
ROCK CROSS VANE
NO SCALE

REACH (SLOPE)	MATERIAL	SIZE (D_{50}) in.	SIZE (D_{50}) mm
TRIB	COBBLE	6.0	102
MAIN	COBBLE	6.0	153
MAIN (STEP POOLS)	COBBLE	9.0	229

1. ALL MATERIAL USED FOR SECTIONS OF THE STREAM CHANNEL THAT ARE RAISED ABOVE EXISTING GRADE SHALL BE REVIEWED AND APPROVED BY THE PROJECT ENGINEER PRIOR TO PLACEMENT IN THE STREAM CHANNEL.
2. COBBLE AND GRAVEL MATERIALS SHALL BE ROUNDED IN NATURE AND COMMON TO RIVERBED FORMATIONS.
3. SUBSTRATE SHALL BE NATURAL ROUNDED ROCK.
4. THE APPROVED MIX WILL BE DOCUMENTED TO ACCOMMODATE MIXING AT THE PLANT AND ENSURE CONSISTENCY WITH SITE DELIVERED LOADS.
5. SUBSTRATE MIX MUST CONTAIN SUFFICIENT FINES TO FILL ANY VOID SPACES SURROUNDING THE COBBLE.

REV. 08/16/18

SUBSTRATE MIX SPECIFICATIONS
NO SCALE



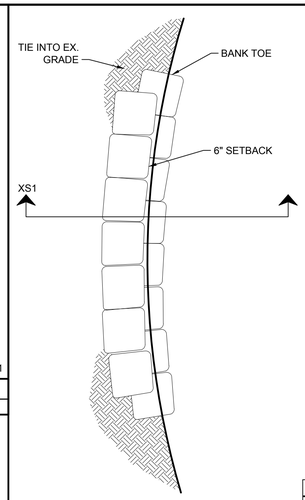
SUITABLE ROCKS WILL HAVE THE FOLLOWING THREE PRIMARY DIMENSIONS (±2"):

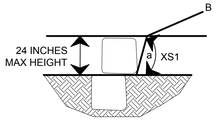
x = LONGEST DIMENSION
y = INTERMEDIATE DIMENSION
z = SHORTEST DIMENSION

REACH (SLOPE)	INTERMEDIATE DIMENSION, Y (in.)
MAIN (0 - 6.3%) & TRIB (0 - 4.1%)	12

REV. 9/26/11

SUITABLE ROCK SIZE DIAGRAM
NO SCALE



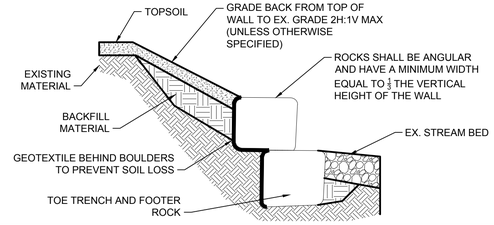


B = BACKFILL SLOPE ANGLE (2H:1V OR FLATTER UNLESS SPECIFIED OTHERWISE)

a = WALL INCLINATION FROM HORIZONTAL (1H = 6V TO 1H:4V UNLESS SPECIFIED OTHERWISE)

GENERAL IMBRICATED WALL NOTES:
1. REFER TO STRUCTURE ROCK NOTES AND IMBRICATED WALL BOULDER SIZING ON THIS SHEET FOR ADDITIONAL INFORMATION.
2. BOULDERS SHALL BE ROTATED INTO THE BANKS DURING PLACEMENT SUCH THAT UPSTREAM BLOCKS OVERLAP THE DOWNSTREAM BLOCKS BY A MINIMUM OF SIX INCHES (6").
3. FILL BEHIND BOULDERS SHALL BE PLACED IN SIX INCH LIFTS AND COMPACTED.
4. IMBRICATED WALL ROCKS SHOULD BE PLACED SO AS TO MINIMIZE GAPS BETWEEN ROCKS. TIGHTEN JOINTS ON TOP OF ROCKS USING BACKFILL. GAPS LARGER THAN FIST SIZE SHALL BE CHINKED ON BACKSIDE OF STRUCTURE PRIOR TO PLACING FILTER FABRIC AND BACKFILLING.

ROCK DIMENSIONS				
STRUCTURE	ROCK TYPE	X-AXIS	Y-AXIS	Z-AXIS
IMBRICATED WALL	FOOTER	2' - 4'	1.0' - 2.0'	2' - 4'
	TOP ROCK	2' - 4'	1.0' - 2.0'	1' - 2'



IMBRICATED WALL
NO SCALE

COMMONWEALTH OF VIRGINIA
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DATE 09/15/2023
DRAWN BY H. FRY
DESIGNED BY K.ATKINSON
CHECKED BY K.ATKINSON
SCALE NONE

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
CONSTRUCTION DETAILS

JOB NO. 44801
SHEET NO. 4.02

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MAIN REACH UPSTREAM SILL/HEADER TABLE		
Structure Name	**Station**	**Elevation**
TRIPLE LOG SILL	10+20.00	1454.62
TRIPLE LOG SILL	10+65.10	1454.08
TRIPLE LOG SILL	11+12.81	1453.53
TRIPLE LOG SILL	11+44.61	1453.04
TRIPLE LOG SILL	11+90.17	1452.55
TRIPLE LOG SILL	12+26.41	1452.00
TRIPLE LOG SILL	12+74.34	1451.33
CROSS VANE	12+89.39	1451.03
ROCK SILL	13+09.32	1450.60
TRIPLE LOG SILL	13+37.32	1450.24
TRIPLE LOG SILL	13+66.67	1449.69
ROCK SILL	14+00.49	1449.17
ROCK SILL	14+09.29	1448.62
ROCK SILL	14+17.85	1448.08
ROCK SILL	14+37.10	1447.41
ROCK SILL	14+43.94	1446.99
ROCK SILL	14+50.34	1446.59
TRIPLE LOG SILL	14+66.82	1446.22
TRIPLE LOG SILL	14+89.90	1446.19
TRIPLE LOG SILL	15+21.04	1446.04
TRIPLE LOG SILL	15+66.89	1445.82
TRIPLE LOG SILL	16+04.56	1445.69
TRIPLE LOG SILL	16+41.41	1445.57
TRIPLE LOG SILL	16+71.39	1445.48
TRIPLE LOG SILL	17+18.54	1445.32
TRIPLE LOG SILL	17+31.75	1445.20
TRIPLE LOG SILL	17+56.00	1445.01
TRIPLE LOG SILL	17+83.21	1444.44
TRIPLE LOG SILL	18+19.90	1444.15
TRIPLE LOG SILL	18+67.90	1443.76
TRIPLE LOG SILL	19+02.90	1443.48
TRIPLE LOG SILL	19+43.31	1442.99
TRIPLE LOG SILL	19+68.24	1442.74
CROSS VANE	19+98.83	1441.70

MAIN REACH UPSTREAM BT/SL/CP TABLE			
STRUCTURE TYPE	**START STATION**	**END STATION**	**SIDE**
BRUSH TOE	11+46.52	11+73.45	R
BRUSH TOE	12+29.13	12+54.98	R
BRUSH TOE	12+76.14	12+88.68	L
BRUSH TOE	13+11.65	13+26.83	L
BRUSH TOE	13+39.26	13+50.27	R
BRUSH TOE	13+69.11	13+86.84	L
BRUSH TOE	14+68.91	14+83.50	R
BRUSH TOE	14+92.56	15+02.19	L
BRUSH TOE	15+23.26	15+47.61	R
BRUSH TOE	16+07.00	16+24.76	R
BRUSH TOE	16+43.64	16+65.64	L
BRUSH TOE	18+70.85	18+89.34	L
BRUSH TOE	19+04.96	19+23.28	R
BRUSH TOE	19+45.42	19+58.37	L

MAIN REACH DOWNSTREAM BT/SL/CP TABLE			
STRUCTURE TYPE	**START STATION**	**END STATION**	**SIDE**
BRUSH TOE	20+21.94	20+43.93	L
BRUSH TOE	20+62.14	20+82.12	R
CLAY PLUG	20+86.18	21+03.91	R
BRUSH TOE	21+74.47	22+03.70	R
CLAY PLUG	22+05.80	22+17.87	R
BRUSH TOE	22+24.82	22+51.41	L
BRUSH TOE	22+70.05	22+90.96	R
BRUSH TOE	23+01.62	23+19.09	L

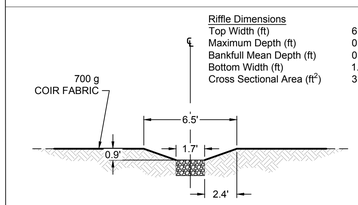
TRIBUTARY BT/SL/CP TABLE			
STRUCTURE TYPE	**START STATION**	**END STATION**	**SIDE**
BRUSH TOE	10+89.85	11+04.22	R
BRUSH TOE	11+14.78	11+30.01	L
BRUSH TOE	11+40.04	11+53.75	R

MAIN REACH DOWNSTREAM SILL/HEADER TABLE		
Structure Name	**Station**	**Elevation**
ROCK SILL	20+20.71	1441.32
TRIPLE LOG SILL	20+60.02	1440.90
TRIPLE LOG SILL	20+96.20	1440.55
TRIPLE LOG SILL	21+36.20	1440.07
TRIPLE LOG SILL	21+71.20	1439.82
TRIPLE LOG SILL	22+22.20	1439.33
TRIPLE LOG SILL	22+65.91	1439.00
TRIPLE LOG SILL	22+98.32	1438.75
TRIPLE LOG SILL	23+30.00	1438.61
CROSS VANE	23+45.75	1438.52

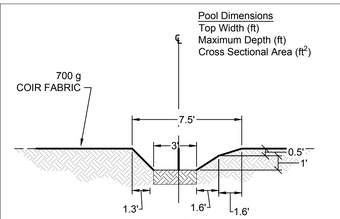
OXBOW SILL/HEADER TABLE		
Structure Name	**Station**	**Elevation**
ROCK SILL	10+51.11	1439.00

TRIBUTARY SILL/HEADER TABLE		
Structure Name	**Station**	**Elevation**
ROCK SILL	10+12.14	1445.91
ROCK SILL	10+17.90	1446.00
TRIPLE LOG SILL	10+53.58	1444.42
TRIPLE LOG SILL	10+87.29	1443.86
TRIPLE LOG SILL	11+12.60	1443.61
TRIPLE LOG SILL	11+37.37	1443.42
ROCK SILL	11+62.28	1443.23

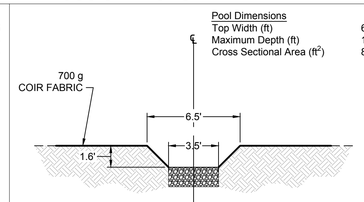
MAIN REACH TYPICAL CROSS SECTIONS



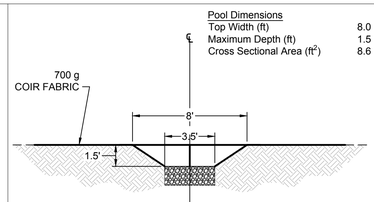
TYPICAL
RIFFLE SECTION



TYPICAL
MEANDER POOL SECTION

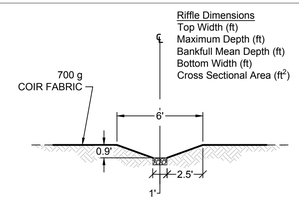


TYPICAL
STEP POOL SECTION

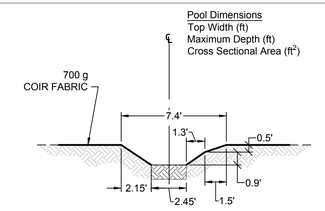


TYPICAL
STRAIGHT POOL SECTION

TRIBUTARY TYPICAL CROSS SECTIONS



TYPICAL
RIFFLE SECTION



TYPICAL
MEANDER POOL SECTION

COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

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YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION

DATE

DATE: 09/15/2023
DRAWN BY: H. FRY
DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: NONE

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
TYPICAL SECTIONS & STRUCTURE TABLES

JOB NO. 44801
SHEET NO. 4.03

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EDUCATIONAL SIGNAGE EXAMPLE

Mulberry Run Constructed Wetland

PROTECTING THE SOUTH RIVER & THE CHESAPEAKE BAY

Urban stormwater runoff is rainwater that comes from homes, businesses and roadways in the City. This runoff does not have a chance to soak into the ground, and the water picks up pollutants as it runs across parking lots, rooftops, and roadways. Stormwater can cause flooding and create water pollution when this happens. A goal of the City of Waynesboro Public Works Department is to better manage flood waters and to decrease pollution reaching local waterways. This facility in front of you was originally built as a dry detention basin to control floodwaters. The site was later converted to a constructed wetland to also remove pollution.

Important Numbers:

- 330 Acres of urban landscape drain to this site
- The wetland is 10 Acres
- Annual Pollution Removal:
  - > 300 lbs Phosphorous
  - > 1,700 lbs Nitrogen

This project will take out over 300 pounds of Phosphorus a year from the water that flows through the site. Virginia uses Phosphorous as a gauge to determine how much pollution a practice removes.

HOW IT WORKS

The wetland will capture stormwater runoff in Mulberry Run before it reaches the South River and, ultimately, the Chesapeake Bay. Small internal dams and rock spillways direct normal stream flows through the basin.

Mulberry Run will pass through a series of shallow and deep pools. These pools hold the water and give time for sediment to fall out. Trees, shrubs and wetland grasses planted within the basin also work to absorb nutrients found in the stream flows.

Flood Control:

The constructed wetland was excavated into the bottom of the dry detention basin. This means the available flood storage volume is not reduced.

Sign Sponsored by:
Shenandoah Valley Pure Water Forum

Project Partners:
TIMMONS GROUP · DEQ





Before Construction

Construction Photos



Types of Planted Vegetation



For more information on the City's Stormwater Program: www.waynesboro.va.us.

Waynesboro Public Works



BRIDGE & BOARDWALK EXAMPLE DETAILS



PermaTrak Low Profile Series

For boardwalk applications that require a shallow structure depth due to limited grade separation from walking surface to finished grade, PermaTrak has developed the Low Profile Series, an innovative design that offers an efficient section with similar structural integrity as a more traditional precast concrete boardwalk.

This complete precast bridge option can be installed as a "bridge in a day" with lower material cost and faster installation time.

How does it work?

Low Profile Series treads are laid in line with the trail and beams act like an abutment beneath the treads, allowing the boardwalk to lie flat with the surrounding trail.

The Low Profile Series is a great fit for projects with shorter span lengths, narrow widths, and low elevations. The traditional PermaTrak options such as color, texture, railing and curb edge treatments are available for the Low Profile Series, however there is a limitation to matching required trail alignment.

This product is covered by Patent #5906084 and other Patents Pending.
Updated January 2021

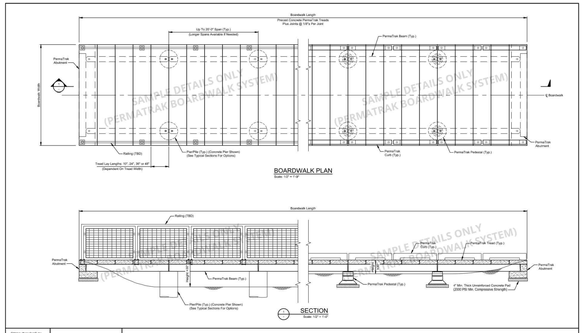
BENEFITS

- Reduced structure depth and walking surface height
- Provides maximum hydraulic waterway openings for span to rise ratios
- Lower material cost/faster installation
- Designed for live loads up to H-15 and can be engineered for construction equipment
- May eliminate the need for railing

COMMON APPLICATIONS

- Shallow grade separations
- Over tree roots
- Swale crossings
- Temporary bridge crossings

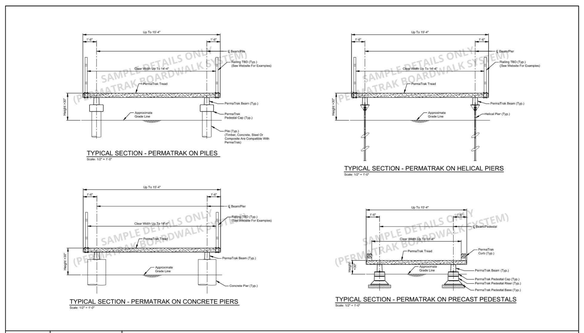
PermaTrak
The Concrete Boardwalk Company
877-332-7862 permatrak.com



FOR INFORMATION PURPOSES ONLY

TYPICAL BOARDWALK PLAN AND SECTION — PT3

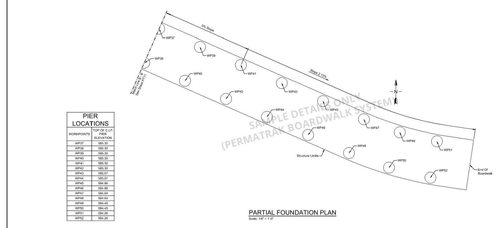
Updated 1/19/2022



FOR INFORMATION PURPOSES ONLY

TYPICAL BOARDWALK SECTIONS — PT4

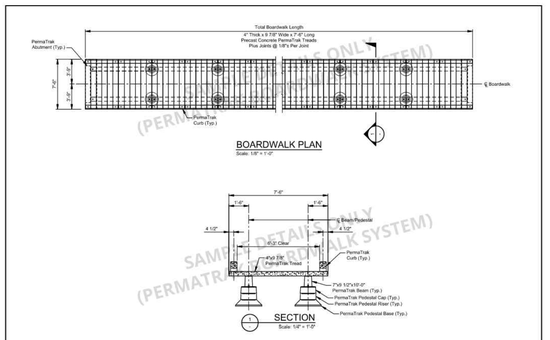
Updated 1/19/2022



FOR INFORMATION PURPOSES ONLY

SAMPLE SET OF BOARDWALK FOUNDATION DRAWINGS — PT11

Updated 1/19/2022



FOR INFORMATION PURPOSES ONLY

SAMPLE #1 STRAIGHT BOARDWALK - 7'-6" WITH CURB — PT5

Updated 1/19/2022

COMMONWEALTH OF VIRGINIA
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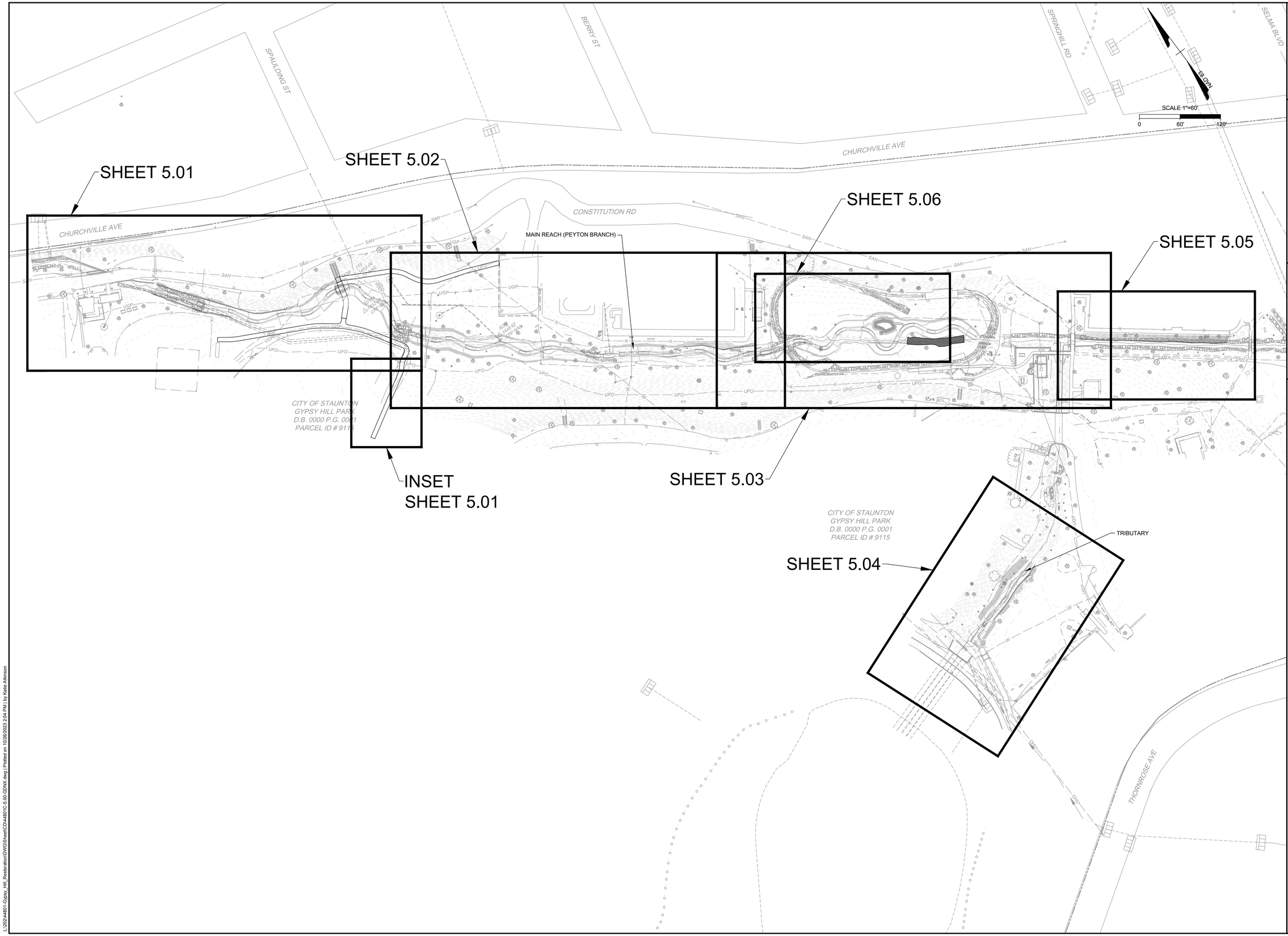
TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
BRIDGE, BOARDWALK & SIGN SCHEMATIC DETAILS

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CHECKED BY: K.ATKINSON
SCALE: 1" = 60'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

GRADING PLAN & PROFILE KEY PLAN

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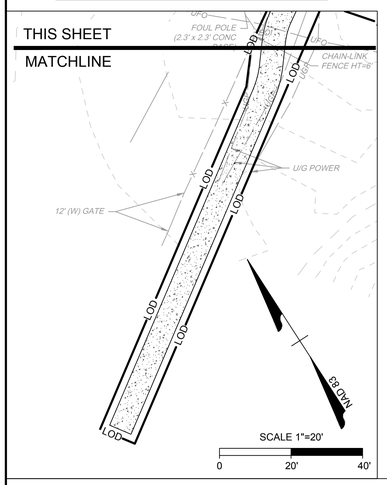
SPRING BOX NOTE:
* PROJECT ENGINEER MUST BE ON SITE THE DAY OF SPRING BOX REMOVAL. SPRING BOX REMOVAL MAY REQUIRE FIELD CHANGES OR DEVIATION FROM PLANS THAT ENGINEER MUST BE PRESENT FOR.

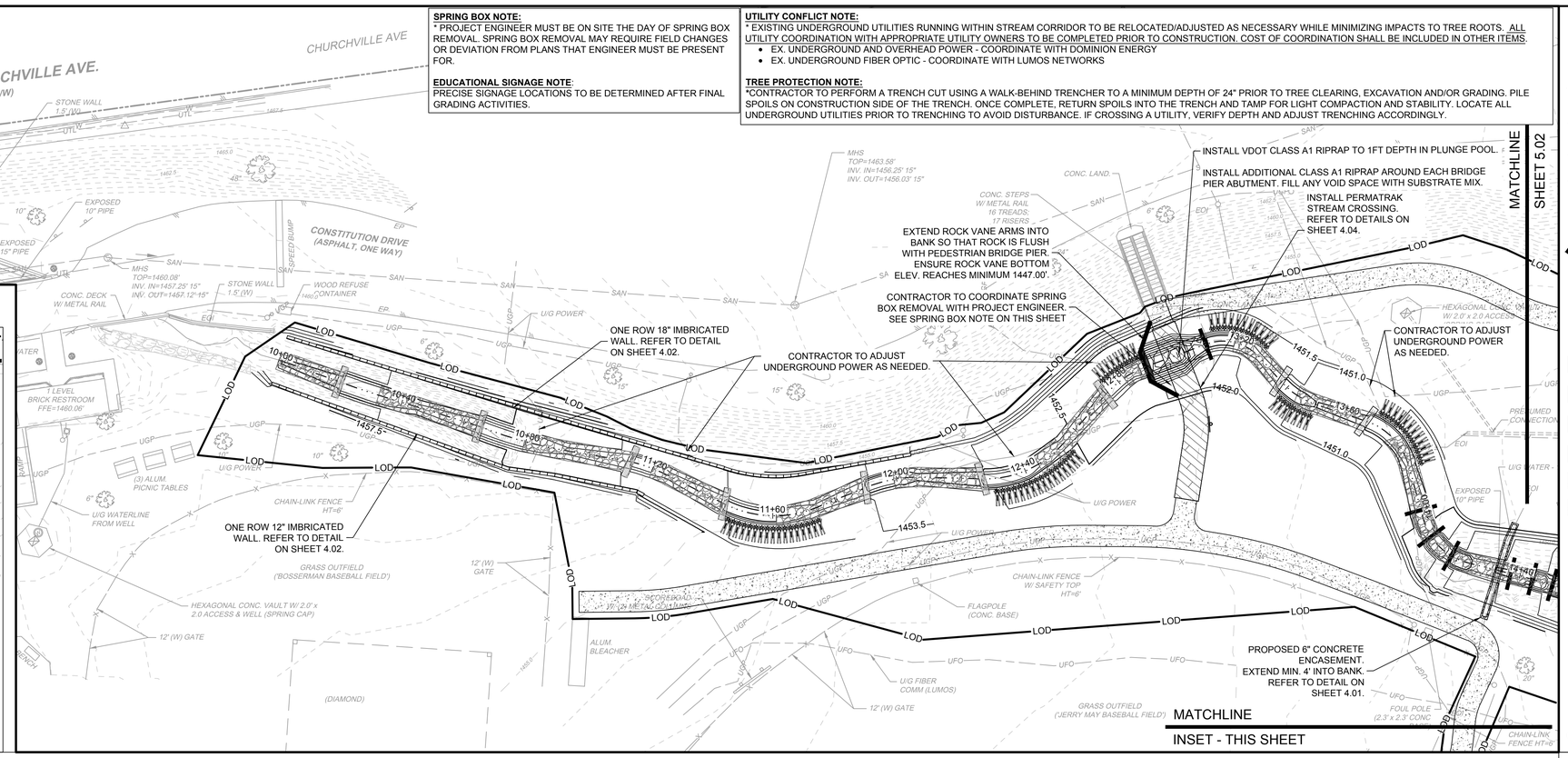
EDUCATIONAL SIGNAGE NOTE:
PRECISE SIGNAGE LOCATIONS TO BE DETERMINED AFTER FINAL GRADING ACTIVITIES.

UTILITY CONFLICT NOTE:
* EXISTING UNDERGROUND UTILITIES RUNNING WITHIN STREAM CORRIDOR TO BE RELOCATED/ADJUSTED AS NECESSARY WHILE MINIMIZING IMPACTS TO TREE ROOTS. ALL UTILITY COORDINATION WITH APPROPRIATE UTILITY OWNERS TO BE COMPLETED PRIOR TO CONSTRUCTION. COST OF COORDINATION SHALL BE INCLUDED IN OTHER ITEMS.
- EX. UNDERGROUND AND OVERHEAD POWER - COORDINATE WITH DOMINION ENERGY
- EX. UNDERGROUND FIBER OPTIC - COORDINATE WITH LUMOS NETWORKS

TREE PROTECTION NOTE:
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INSET: PROPOSED CONCRETE PATH





PROPOSED IMPROVEMENTS

- LOD — LIMITS OF DISTURBANCE/ BARRICADE TAPE
- DESIGN STREAM CENTERLINE
- MAJOR CONTOUR
- MINOR CONTOUR
- ROCK SILL
- ROCK CROSS VANE
- LOG SILL
- IMBRICATED STONE WALL
- BRUSH TOE
- CLAY PLUG
- FILL ABANDONED CHANNEL
- SIDEWALK
- PERMATRAK STREAM CROSSING
- SUBSTRATE MIX (1' DEPTH)
- VDOT CLASS A1 RIPRAP (1' DEPTH)

PROFILE

- EXISTING GRADE (FIELD TOPO)
- PROPOSED GRADE
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- SUBSTRATE MIX (1' DEPTH)
- VDOT CLASS A1 RIPRAP (1' DEPTH)
- ROCK SILL
- DOUBLE LOG SILL

4
0
0
20
PROFILE SCALE

NOTES:

ALL UNDERGROUND POWER AND FIBER OPTIC LINES SHOWN WITH ASSUMED 36" COVER.

GRADING AND RELOCATION OF UNDERGROUND UTILITIES SHALL BE DONE IN A WAY TO MINIMIZE DAMAGE TO TREE ROOTS.

COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

THIS DRAWING PREPARED AT THE **CORPORATE OFFICE**
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DATE: 09/15/2023
DRAWN BY: H. FRY
DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: AS SHOWN

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

MAIN REACH GRADING PLAN & PROFILE

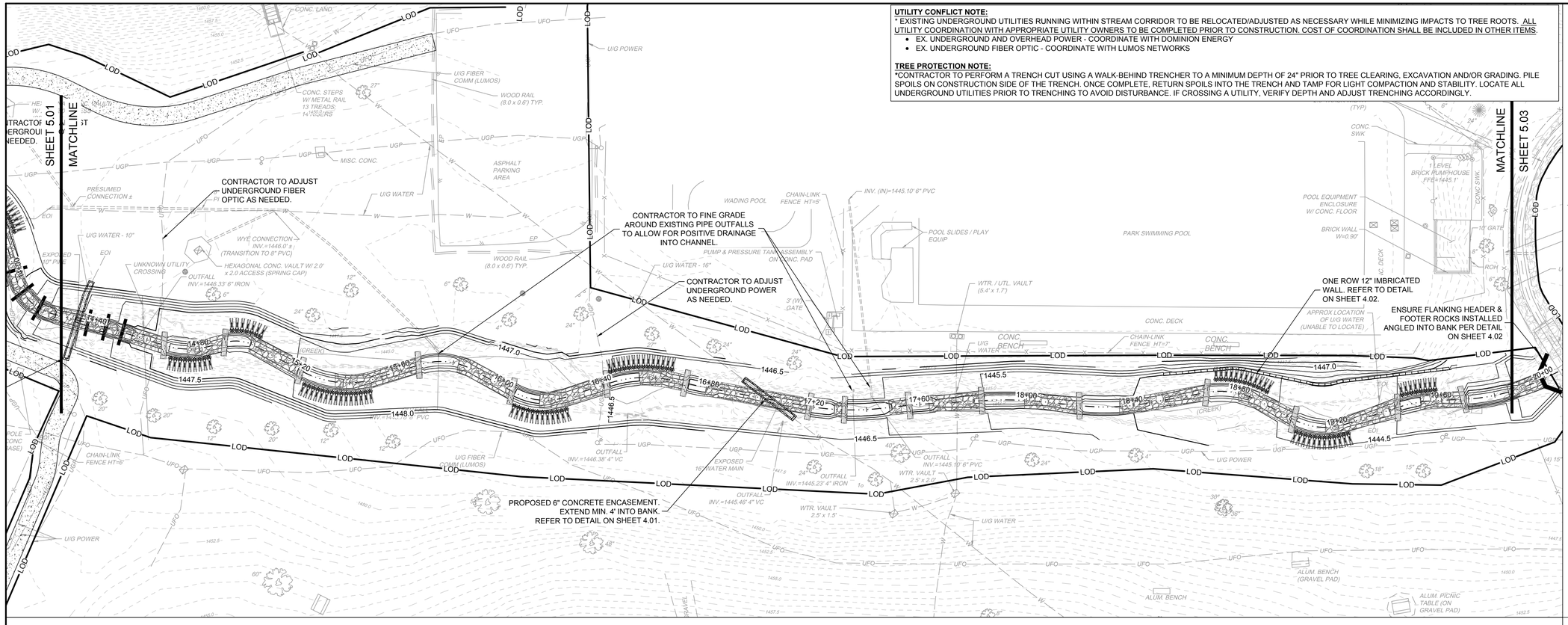
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SHEET NO. 5.01

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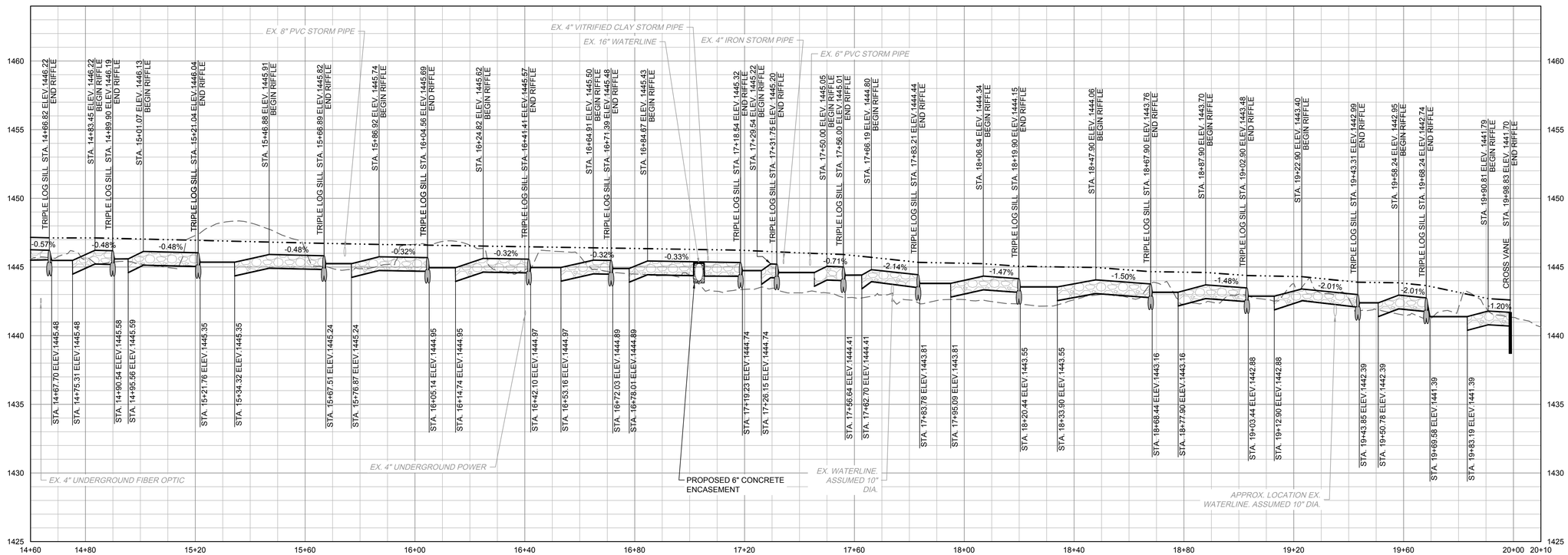


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- SUBSTRATE MIX (1' DEPTH)
- VDOT CLASS A1 RIPRAP (1' DEPTH)

TAN 83

SCALE 1"=20'
0 20' 40'



MAIN REACH PROFILE VIEW (STA.14+60.00 - STA.20+10.00)

PROFILE

- EXISTING GRADE (FIELD TOPO)
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4
0
0 20
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TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

MAIN REACH GRADING PLAN & PROFILE

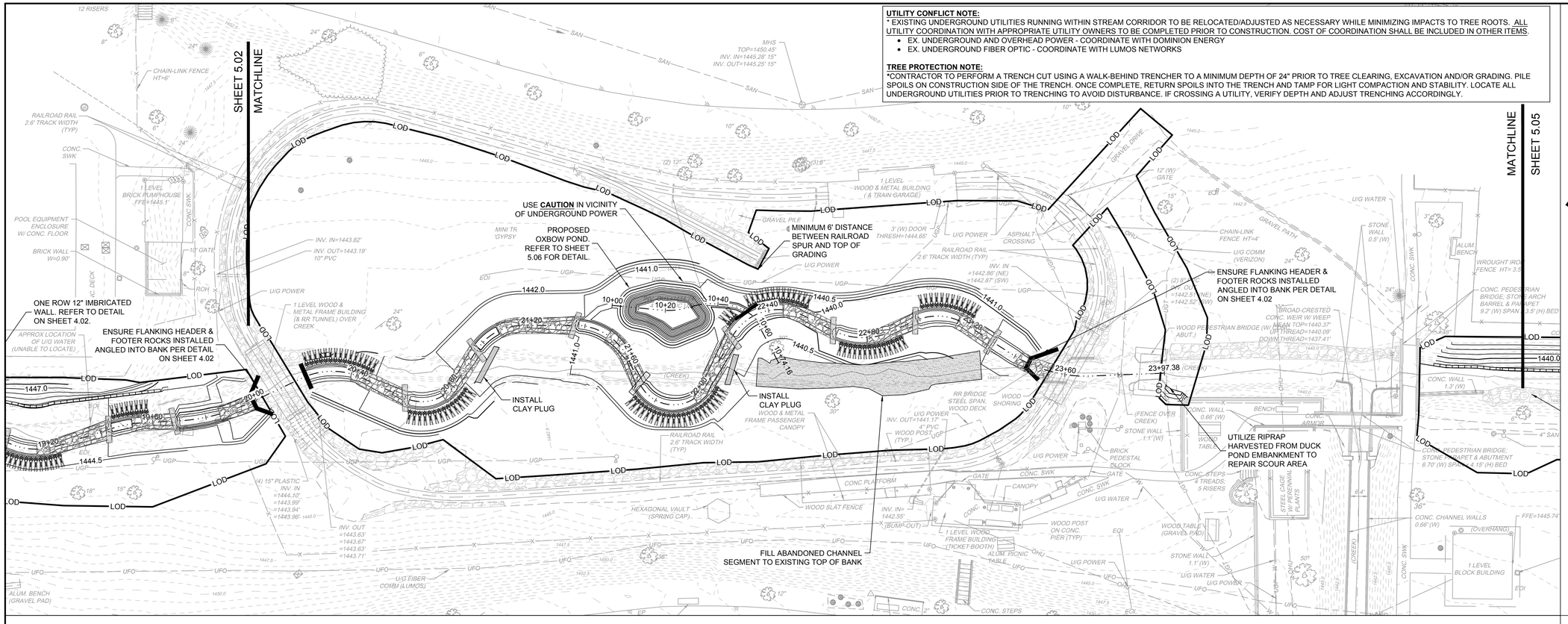
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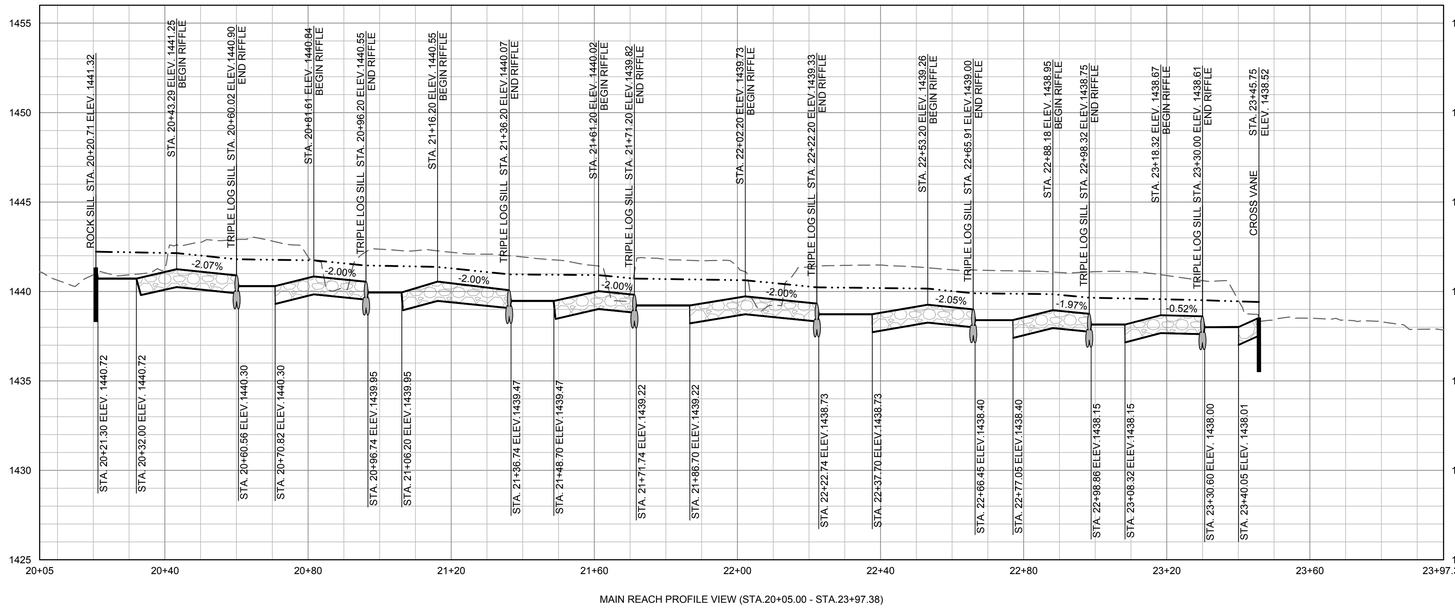
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- MAJOR CONTOUR
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- ROCK CROSS VANE
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MAIN REACH PROFILE VIEW (STA.20+05.00 - STA.23+97.38)

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GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

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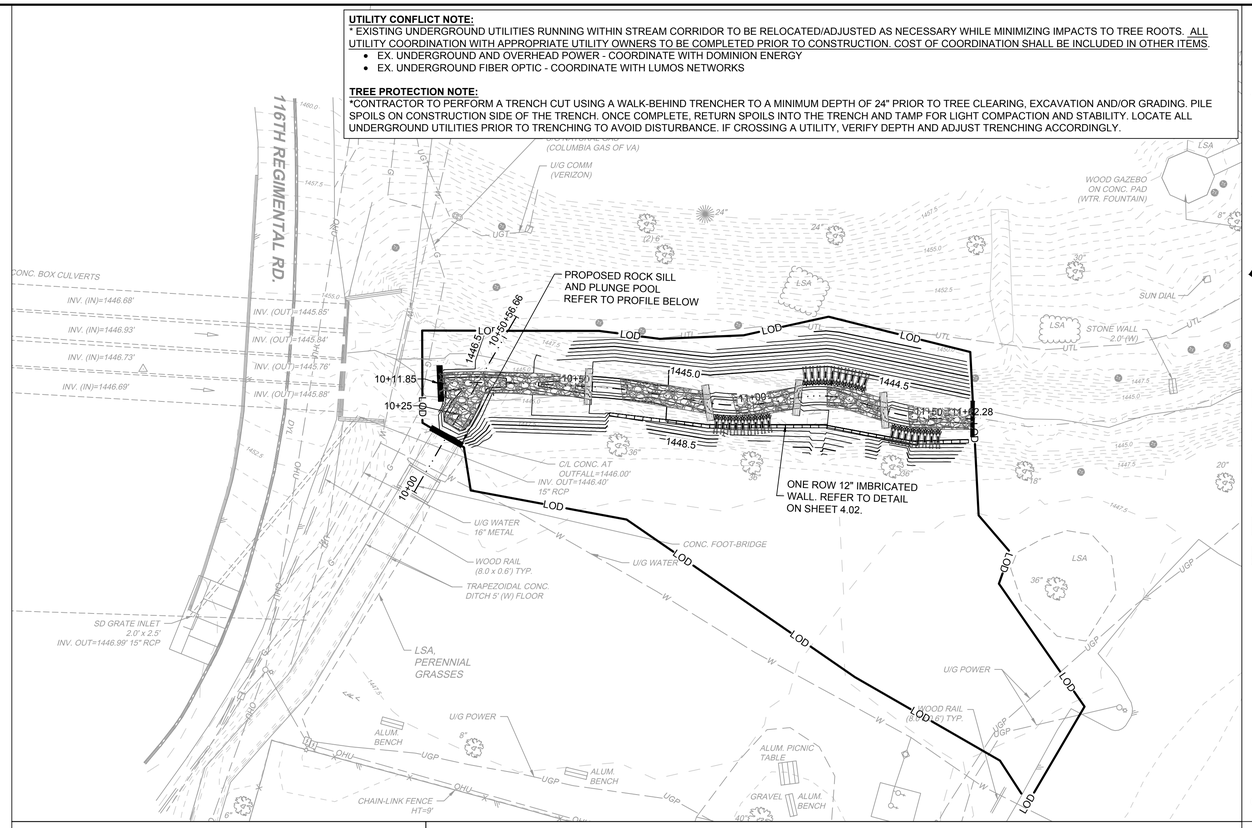
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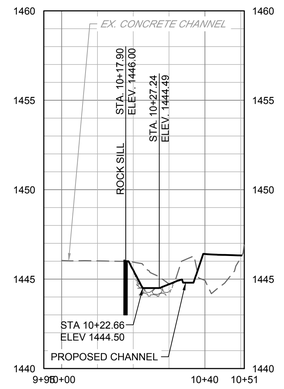


PROPOSED IMPROVEMENTS

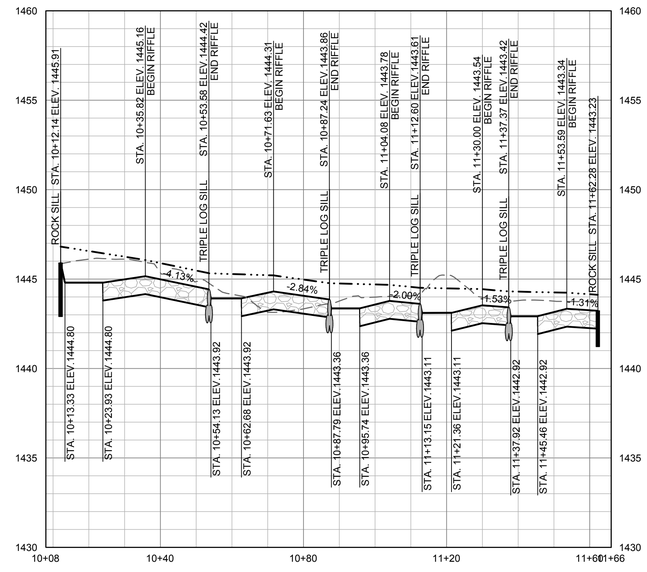
- LOD — LIMITS OF DISTURBANCE/ BARRICADE TAPE
- DESIGN STREAM CENTERLINE
- MAJOR CONTOUR
- MINOR CONTOUR
- ROCK SILL
- ROCK CROSS VANE
- LOG SILL
- IMBRICATED STONE WALL
- BRUSH TOE
- CLAY PLUG
- FILL ABANDONED CHANNEL
- SIDEWALK
- PERMATRAK STREAM CROSSING
- SUBSTRATE MIX (1' DEPTH)
- VDOT CLASS A1 RIPRAP (1' DEPTH)

NAD 83

SCALE 1"=20'
0 20' 40'



CONCRETE CHANNEL PROFILE VIEW (STA.9+95.00 - STA.10+51.00)



TRIBUTARY PROFILE VIEW (STA.10+08.00 - STA.11+66.00)

PROFILE

- EXISTING GRADE (FIELD TOPO)
- PROPOSED GRADE
- DESIGN BANKFULL
- SUBSTRATE MIX (1' DEPTH)
- VDOT CLASS A1 RIPRAP (1' DEPTH)
- ROCK SILL
- DOUBLE LOG SILL

4
0
0 20
PROFILE SCALE

NOTES:

ALL UNDERGROUND POWER AND FIBER OPTIC LINES SHOWN WITH ASSUMED 36" COVER.

GRADING AND RELOCATION OF UNDERGROUND UTILITIES SHALL BE DONE IN A WAY TO MINIMIZE DAMAGE TO TREE ROOTS.

COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

THIS DRAWING PREPARED AT THE
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DATE: 09/15/2023
DRAWN BY: H. FRY
DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: AS SHOWN

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

TRIBUTARY GRADING PLAN & PROFILE

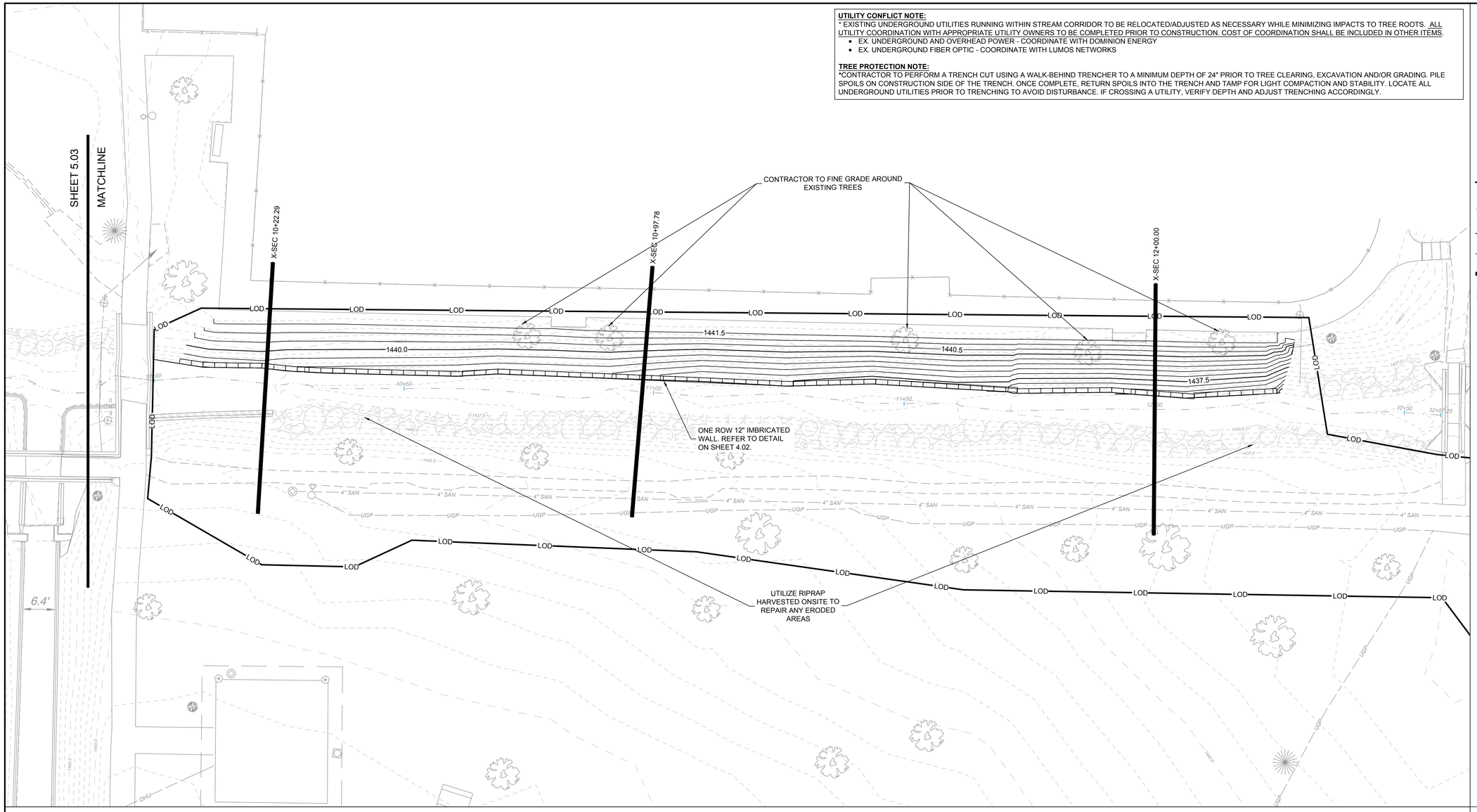
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SHEET NO. 5.04

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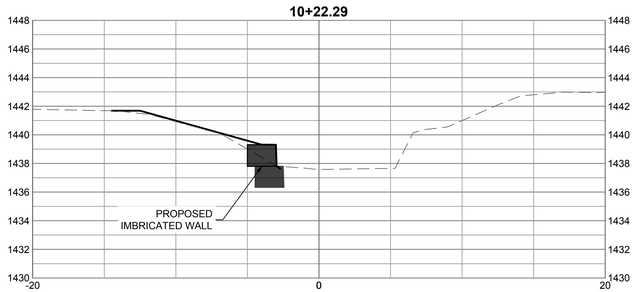


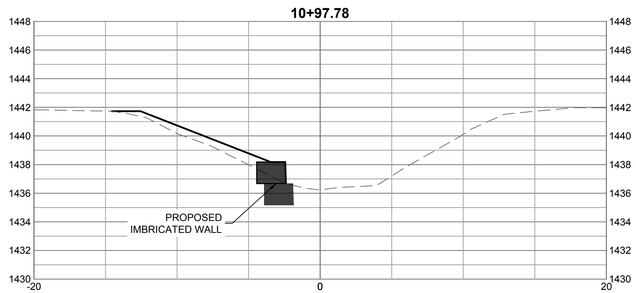
PROPOSED IMPROVEMENTS

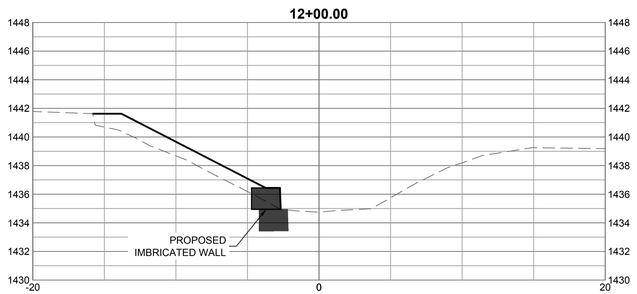
- LOD — LIMITS OF DISTURBANCE/ BARRICADE TAPE
- EXISTING STREAM CENTERLINE
- MAJOR CONTOUR
- MINOR CONTOUR
- CROSS SECTION
- IMBRICATED STONE WALL

NAD 83

SCALE 1"=10'
0 10' 20'







SECTION

- EXISTING GRADE (FIELD TOPO)
- PROPOSED GRADE

5
0
0 5
SECTION SCALE

NOTES:

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COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
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09/15/2023
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DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: AS SHOWN

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
DUCK POND BANK STABILIZATION GRADING PLAN & SECTIONS

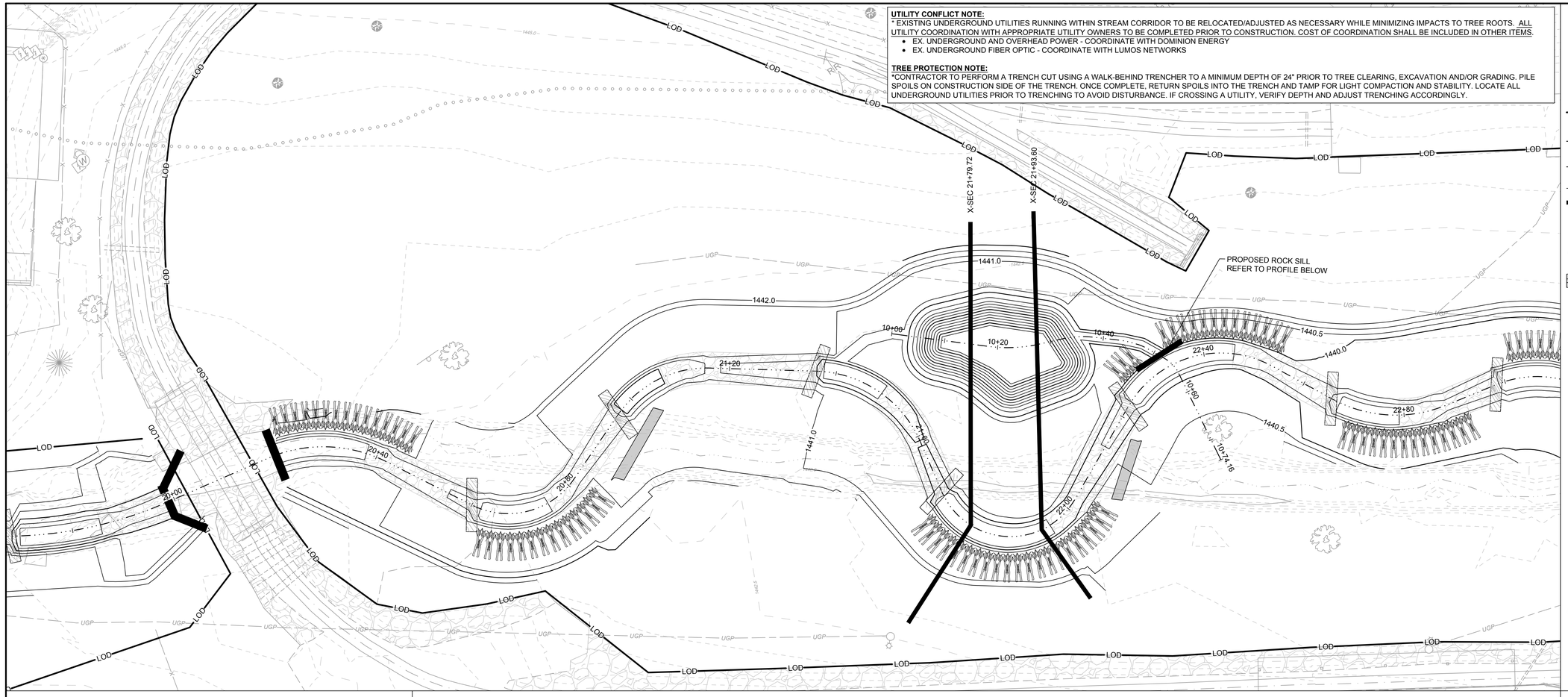
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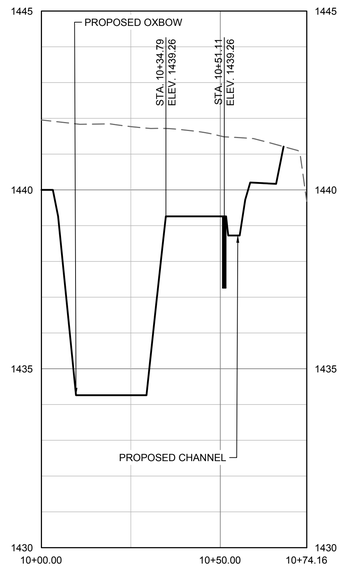


PROPOSED IMPROVEMENTS

- LOD — LIMITS OF DISTURBANCE/ BARRICADE TAPE
- DESIGN STREAM CENTERLINE
- MAJOR CONTOUR
- MINOR CONTOUR
- CROSS SECTION
- ROCK SILL
- LOG SILL
- BRUSH TOE
- CLAY PLUG

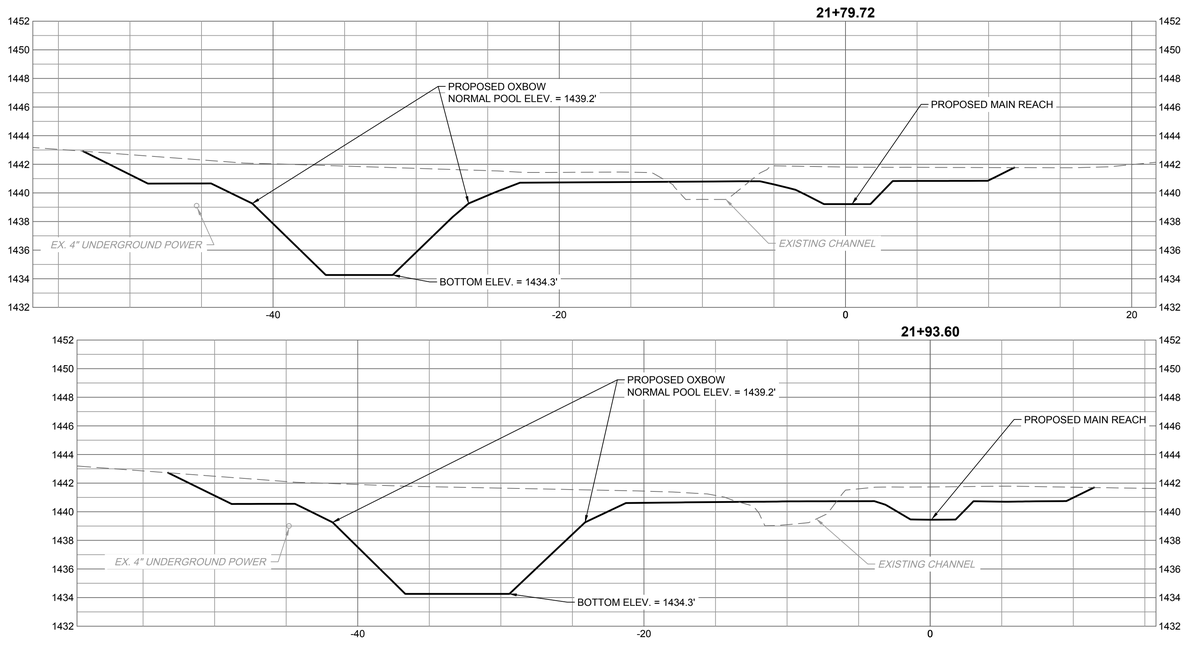
NORTH

SCALE 1"=10'
0 10' 20'



OXBOW OUTLET CHANNEL PROFILE VIEW

2
0
0 25
PROFILE SCALE



PROFILE & SECTION

- EXISTING GRADE (FIELD TOPO)
- PROPOSED GRADE

5
0
0 5
SECTION SCALE

NOTES:

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DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: AS SHOWN

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

OXBOW GRADING PLAN & PROFILE

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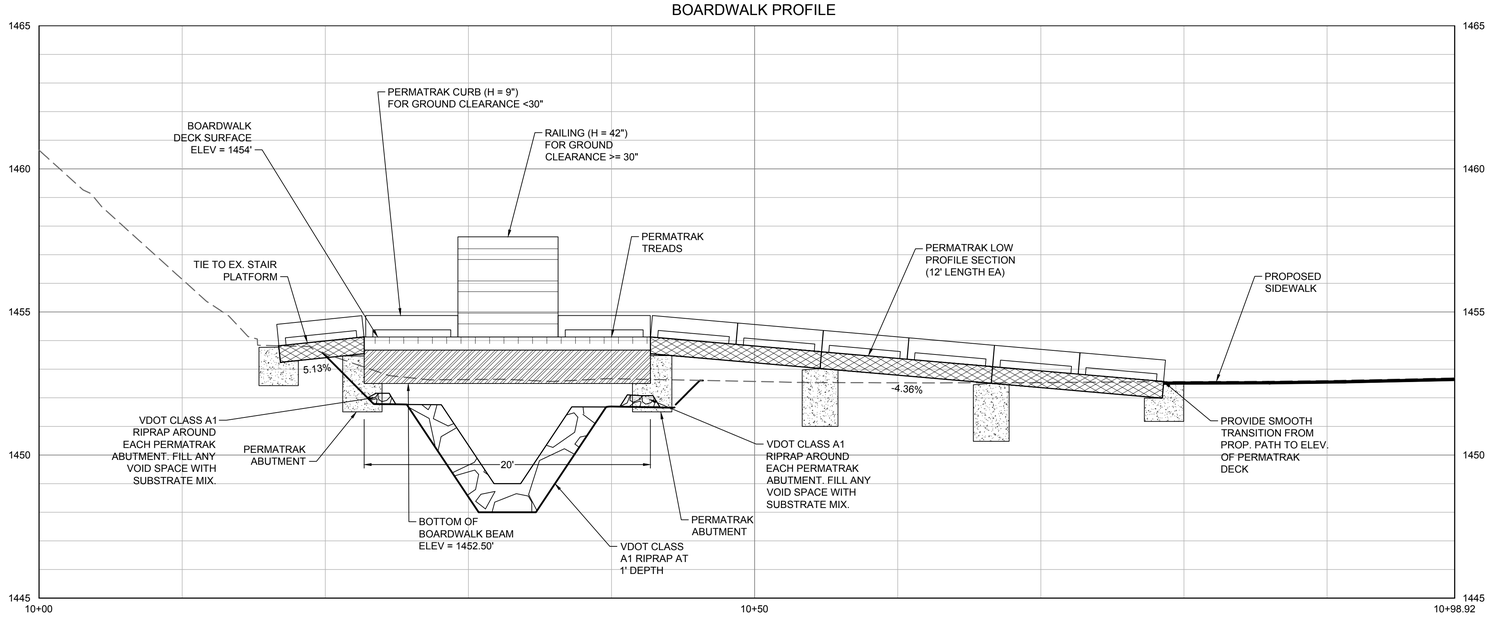
US RTE. 250 ~ CHURCHVILLE AVE. (VAR. WIDTH R/W)
CONSTITUTION DRIVE (ASPHALT, ONE WAY)
INSTALL VDOT CLASS A1 RIPRAP TO 1FT DEPTH IN PLUNGE POOL.
INSTALL ADDITIONAL CLASS A1 RIPRAP AROUND EACH BRIDGE PIER ABUTMENT. FILL ANY VOID SPACE WITH SUBSTRATE MIX.
INSTALL PERMATRAK STREAM CROSSING. REFER TO DETAILS ON SHEET 4.04.
EXTEND ROCK VANE ARMS INTO BANK SO THAT ROCK IS FLUSH WITH PEDESTRIAN BRIDGE PIER. ENSURE ROCK VANE BOTTOM ELEV. REACHES MINIMUM 1447.00'.
CONTRACTOR TO COORDINATE SPRING BOX REMOVAL WITH PROJECT ENGINEER. SEE SPRING BOX NOTE ON THIS SHEET
ONE ROW 18" IMBRICATED WALL. REFER TO DETAIL ON SHEET 4.02.
CONTRACTOR TO ADJUST UNDERGROUND POWER AS NEEDED.
CONTRACTOR TO ADJUST UNDERGROUND POWER AS NEEDED.
ONE ROW 12" IMBRICATED WALL. REFER TO DETAIL ON SHEET 4.02.
PROPOSED 6" CONCRETE ENCASEMENT. EXTEND MIN. 4' INTO BANK. REFER TO DETAIL ON SHEET 4.01.
KIWANIS CONCESSIONS 1 LEVEL BRICK FFE=1460.06'
1 LEVEL BRICK RESTROOM FFE=1460.06'
GRASS OUTFIELD ('KIWANIS BASEBALL FIELD')
GRASS OUTFIELD ('BOSSERMAN BASEBALL FIELD')
GRASS OUTFIELD ('JERRY MAY BASEBALL FIELD')
(DIAMOND)
ALUM. BLEACHER
(3) ALUM PICNIC TABLES
BRICK STEPS W/ HAND-RAIL 4 TREADS; 5 RISERS
BRICK & CONC. RAMP W/ HANDRAIL
HEXAGONAL CONC. VAULT W/ 2.0' x 2.0 ACCESS & WELL (SPRING CAP)
SCOREBOARD W/ 3'H METAL CLAD WALL
FLAGPOLE (CONC. BASE)
CHAIN-LINK FENCE HT=6'
CHAIN-LINK FENCE W/ SAFETY TOP HT=6'
16' (W) GATE
12' (W) GATE
U/G WATERLINE FROM WELL
U/G POWER
U/G FIBER COMM (LUMOS)
U/G WATER
EXPOSED 10" PIPE
EXPOSED 15" PIPE
15" CMP OUTLET INV. (OUT)=1460.53'
SD CURB INLET 3' (L) THROAT (NO MH) TOP=1466.65' INV. OUT=1464.40' 15" CMP
MHS TOP=1463.58' INV. IN=1456.25' 15" INV. OUT=1456.03' 15"
MHS TOP=1460.08' INV. IN=1457.25' 15" INV. OUT=1457.12' 15"
MHS TOP=1460.20 INV. IN=1457.32' 15" INV. IN=1465.15' 4" PVC INV. OUT=1457.29' 15"
WOOD REFUSE CONTAINER
CONC. DECK W/ METAL RAIL
STONE WALL 1.5' (W)
ASPH. FLUME
(CREEK)
CONC. LAND
CONC. STEPS W/ METAL RAIL 16 TREADS; 17 RISERS
HEXAGONAL CONC. VAULT W/ 2.0' x 2.0 ACCESS
PRESUMED CONNECTION
ZONE 'X' 0.2% ANNUAL CHANCE
ZONE AE
10+00
10+40
10+80
11+20
11+60
12+00
12+40
12+80
13+20
13+60
14+00
14+40
10+98.92
1451.5
1451.0
1452.0
1452.5
1453.5

PROPOSED IMPROVEMENTS

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- DESIGN STREAM CENTERLINE
- MAJOR CONTOUR
- MINOR CONTOUR
- ROCK SILL
- LOG SILL
- BRUSH TOE
- PERMATRAK STREAM CROSSING
- CLAY PLUG
- FILL ABANDONED CHANNEL

NAD 83
SCALE 1"=20'
0 20' 40'

BOARDWALK PROFILE



PROFILE

- EXISTING GRADE (FIELD TOPO)
- PROPOSED GRADE

2.5
0
0 5
PROFILE SCALE

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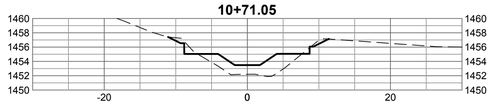
GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
BOARDWALK PLAN & PROFILE

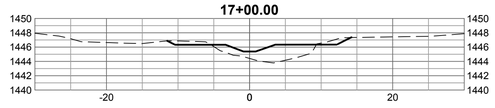
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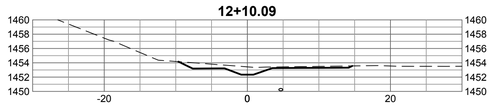
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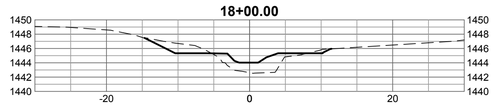
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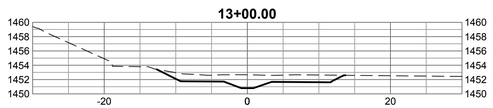
MAIN REACH - UPSTREAM

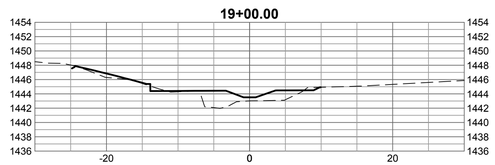


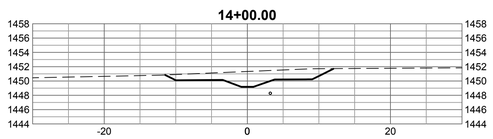


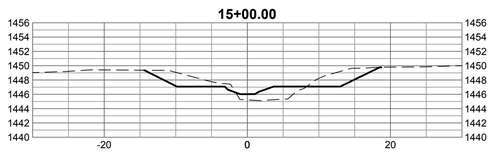


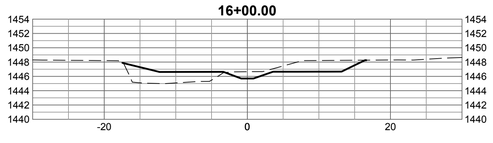




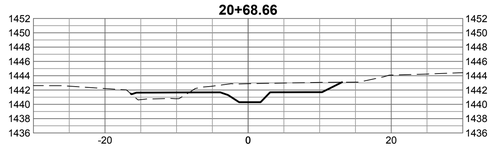


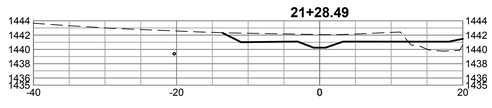


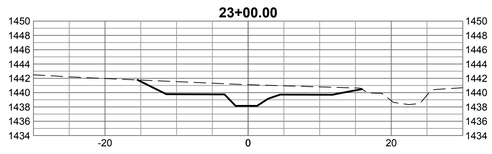




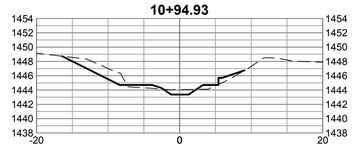
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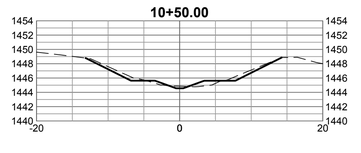


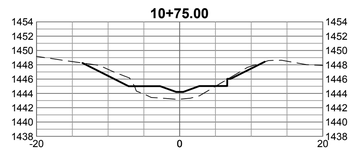


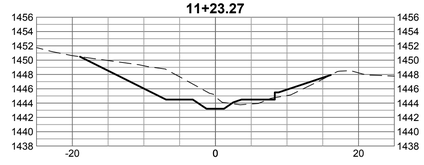


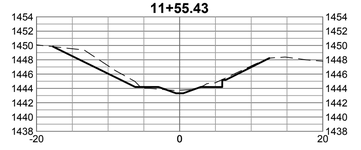
TRIBUTARY







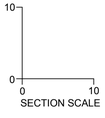




LEGEND

EXISTING GROUND

PROPOSED GRADE



COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

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REVISION DESCRIPTION

DATE

DATE: 09/15/2023
DRAWN BY: H. FRY
DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: H: 1" = 10' V: 1" = 10'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

PROPOSED SECTIONS

JOB NO. 44801

SHEET NO. 6.00

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PLANTING SPECIFICATIONS

A. General:

1. Plant details are incorporated into this specification by reference.

2. Submittals
2.1. Installer Qualifications: provide a list, with references, of the past three projects of similar scope.
2.2. Product Data: for each type of product indicated.
2.3. Plant Material Certifications: The Contractor shall be required to submit the material certifications to the Project Engineer for review and approval prior to material purchase.
2.4. Topsoil Analysis and Soil Amendments: The Contractor shall be responsible to submit certified soil test results and soil amendment recommendations prior to commencement of construction.
2.5. The Contractor should schedule a minimum of one week for Project Engineer review time of the specified submittal.

3. Quality Assurance
3.1. Supplier Certification: the supplier of all seeds and/or vegetation shall certify that origin of the seeds from which the plants or seeds were produced is from hardiness zone 6b, from the eastern or central portions of the U.S., prior to planting.
3.2. Installer Qualifications: engage an experienced installer who has successfully completed planting projects similar in size and complexity to this project.
3.3. Installer Field Supervision: Installer to maintain an experienced full-time supervisor on the project site when planting is in progress.

4. Plant Materials
4.1. Provide plant materials of quantity, size, genus, species and variety indicated on the construction drawings.

5. All plant materials and work shall comply with recommendations and requirements of ANSI Z60.1 2004 American Standard for Nursery Stock. All seed must meet applicable state and federal regulations and must include labeling indicating supplier, formulation, germination rates and seed date.

6. Do not make substitutions unless approved by the Project Engineer. If specified landscape material is not obtainable, submit proof of non-availability to Project Engineer together with proposal for use of equivalent material.

7. Project Engineer may inspect plant materials either at place of growth or on site during planting activities for compliance with requirements for genus, species, variety, size and quality. Additionally, Project Engineer retains the right to further inspect plant material. Material found to be unacceptable will be rejected and the Contractor will be required to supply replacement material within a reasonable time frame (i.e., 1 week). Rejected material shall be immediately removed from project site. Unacceptable material is defined as the following:
7.1. Plants with bent trunks or multiple leaders, unless characteristic for the species;
7.2. Plants with diseased trunks, stems or leaves;
7.3. Plants with pest-infested trunks, stems or leaves;
7.4. Plants of insufficient size;
7.5. Plants of wrong species/sub-species; and
7.6. Plants having root girdling in the container.

8. Delivery, Storage and Handling
8.1. Protect bark, branches and root systems from sun scald, drying, sweating, whipping and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during delivery. Do not drop plants during delivery.
8.2. Deliver plant materials after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set plant materials in shade, protect from weather and mechanical damage and keep roots moist and free from frost. Prevent plug, tubelings and bareroot material from drying.
8.3. Do not remove container-grown stock from containers until planting time.
8.4. Balled and burlapped material shall be dug so as to retain as many fibrous roots as practicable and shall come from soil which will form a firm ball. The soil in the ball shall be the original and undisturbed soil in which the plant has been grown. The plant shall be dug, wrapped, transported and handled in such a manner that the soil ball will not be loosened to cause stripping of the small and fine feeding roots or cause the soil to drop away from such roots.
8.5. Balled and burlapped material shall be freshly dug. If trees are stored, untie and set vertically.
8.6. Handle planting stock by root ball.
8.7. Prevent live staking material from drying out and store according to supplier's recommendations.

9. Project Conditions
9.1. Examine the sub-grade and topsoil, verify the elevations and observe the conditions under which work is to be performed. All soil amendments and conditioning shall be completed prior to seeding and plant material installation. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
9.2. Call "Miss Utility", 811, 48 hours prior to any excavation. Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate as required.
9.3. This site contains historically significant trees. All trees intended to be encompassed by tree protection are to have minimal impacts. Roots are to be protected and have minimal pruning done during grading and underground utility relocation.

10. Planting and Seeding Restrictions
10.1. Plants and livestakes shall be planted during unfrozen soil conditions September 15th - April 15th. Plant installation outside of this time period shall not occur unless approved by the Project Engineer and may require additions to the scope of work, such as watering regimes and additional plant quantities.
10.2. Seeding shall be completed during March - May or September - November. Grading operations needing stabilization outside of this time period shall be seeded with an alternative warm season or cool season grass mix as specified in the seeding schedule notes on Sheet 7.02
10.3. These limits may not be modified unless approved by the Project Engineer in advance, with the risk of survival borne solely by the Contractor.

11. Warranty
11.1. Warranty period is for one (1) year after date of Final Acceptance and covers defects including death and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others or unusual phenomena or incidents which are beyond Contractor's control.
11.2. Contractor shall guarantee a minimum survival rate for the warranty period of 85% for balled and burlapped, container grown and tubelings, and 75% for bare root and live stakes.
11.3. If survival rates are less than the above warranty rates, the Contractor shall replace the quantity of defective or dead plants up to the original construction drawing specified plant quality. Warranty plantings shall occur within the next planting window (September 15th - April 15th, excluding frozen soil conditions) following the end of the applicable warranty period.
11.4. It shall be the Contractor's responsibility during the warranty period to provide written notice of any maintenance practice to the Owner, which in their opinion will affect the guarantee if not remedied promptly. The Project Engineer will render an opinion of any conflict if necessary.

12. Maintenance
12.1. The Contractor is responsible for maintaining all plant material until Final Acceptance. The Owner is responsible for maintaining all plant material throughout the warranty period according to the Project Engineer approved Maintenance Schedule.

B. Products/Materials:

1. Plant Materials
1.1. General: The Contractor is to provide nursery-grown plant materials complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae and defects such as knots, sun scald, injuries, abrasions and disfigurement.
1.2. Transplants: Transplants may include live stakes, shrubs, small trees, grass plugs and live mats. When available, the source and location of suitable materials for transplanting will be identified by the Project Engineer. The plant materials to be transplanted will be marked and identified for the Contractor prior to construction.

2. Live Stakes
2.1. Commercially supplied or field harvested live stakes shall be at least one year old, and shall be harvested and transported when plants are dormant.
2.2. The size of stakes shall range from ½ inch to 1 inch in caliper and average 24 inches in length with a minimum planted length of 18 inches. Side branches shall be removed with the remaining bark intact. The bottom (basal) end shall be cleanly cut at a 45 degree or sharper angle and the top end should be cut square (flat), protruding no more than 4 inches.

3. Branch Cutting
3.1. Commercially supplied or field harvested branch cuttings shall be approximately ½ inch in diameter and shall not exceed 2 inches in diameter. Cuttings shall be 3 to 6 feet in length.
3.2. Live branch cuttings shall consist of a mix of at least two of the approved plants species as specified on the Planting Schedule.

4. Seed: Seed should be clean and dry. Do not use seed that has become moist during delivery or storage.

5. Water: Free of substances harmful to plant growth.

6. Tree Mats: Ecodepot Treemat™ or Project Engineer approved equal. Tree mat must be composed of 100% biodegradable, machine-compressed coir fiber with 100% biodegradable rubber coating on one side. Tree mat must have a center opening, a radial slit and must be a minimum of ½ inch thick. Manufacturer's recommended sizing:

12" Treemat - tubelings and bareroot trees/shrubs
16" Treemat - 1 gallon containerized trees/shrubs
24" Treemat - 3 gallon containerized trees/shrubs
30" Treemat - 5 gallon containerized trees/shrubs and 1 inch caliper trees
36" Treemat - 2 inch caliper trees

7. Tree Shelters: Ecodepot Biobark™ tree shelter or Project Engineer approved equal. Tree shelter must be composed of 100% biodegradable materials and should be made of hardwood slats woven together with natural roping. The tree shelter must be at least 36 inches tall with at least 3 longer hardy stakes for insertion into the ground to provide support.

8. Topsoil
8.1. Reuse of surface soil stockpiled on-site: The Contractor is responsible to submit soil test results, certifying suitability of stockpiled surface soil for topsoil use, to the Project Engineer for approval.
8.2. If stockpiled surface soil is determined to be suitable for reuse as topsoil, the Contractor shall clean soil to remove roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth prior to use as topsoil. The Contractor may use sifted stone material as substrate material for the proposed stream as long as it meets the requirements and specifications of substrate material listed on sheet 4.01.
8.3. Imported Topsoil: If on-site soil is determined to be unsuitable, the Contractor shall supplement with imported or manufactured topsoil from off-site sources with certified topsoil. Obtain topsoil displaced from naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes. If agricultural land is the source of topsoil the material cannot include manure.
OR
8.4. Amended Surface Soil: If on-site soil is determined to be unsuitable then contractor shall amend existing in-place surface soil to produce topsoil. Contractor is responsible to submit certified surface soil test results and recommended amendments to the Project Engineer for approval prior to purchasing amendments. The Contractor shall clean surface soil to remove roots, plants, sod, stones, clay lumps and other extraneous materials harmful to plant growth prior to mixing in approved amendments.

9. Organic Soil Amendments
9.1. Organic backfill shall be added as a soil amendment and shall consist of composted yard waste, or other approved recycled organic materials. Prior to delivery, the Contractor shall submit to the Project Engineer for approval a sample of the organic backfill that will be used by the Contractor.
9.2. Organic backfill shall be aged not less than one year and must be free of viable weed seed. The Project Engineer reserves the right at any time to test and reject compost material that fails to meet these specifications. Composted waste products shall exclude sewer sludge or bio-solids, plastics or metals.

10. Straw Mulch: Cereal grain straw shall be harvested from dry stalks, properly stored and clean of weed seeds. Straw shall come in baled form to be spread by hand or machine-blown.

11. Herbicide Spray Application: Existing areas with substantial coverage of undesirable grass species shall be sprayed with an aquatic safe glyphosate (AquaPro® or approved equal). Apply at a rate of 8 ounces of AquaPro (or approved equal) and 4 ounces of non-ionic surfactant (Cide-Kick® or approved equal) with 2 gallons of water per 50' x 50' area, spraying directly onto target plants. Cool season grass eradication requires one application in the fall and one in the spring. Grass should be allowed to grow 6 inches, either after mowing or from spring growth to weaken the plant and provide maximum surface area for application. See product label for complete use directions. Glyphosate is a non-selective chemical which will control any vegetation on which it is sprayed. Care should be taken to avoid contact with non-target species. Preferably, application should be applied by a certified pesticide applicator.

12. Tree Tags: Tree Tags shall be 5 inch x ½ inch wrap-around tags constructed of fade resistant plastic. Tag color shall be proposed with product submittal to Project Engineer. Recommend Enviroflex® Wrap-Around Tag distributed by Western Tag & Label, or approved equal.

C. Execution:

Install plant materials in accordance with the specifications and details of the construction drawings following the addition of soil amendments, seeding and installation of applicable erosion control fabric.

1. Container Grown Material
1.1. Planting of container grown material shall occur in accordance with locations and/or patterns specific to the construction drawings.
1.2. Planting holes shall be twice the diameter and 1 foot deeper than the container in which they are grown. Scarify planting hole bottom a minimum of 6 inches and mix ½ cubic foot of organic blend with hole backfill prior to setting plant. Do not remove plant material from container until immediately before installation. Examine the roots to see if they are pot bound. Carefully separate any pot bound or cramped roots and spread them out when placing the plant within the hole so that the roots can grow without further constriction of the root ball.
1.3. Set plant materials plumb and centered within hole, ensuring that the top of the root ball is elevated 2 to 3 inches above the surrounding soil elevations. Backfill around root ball with suitable native soil, maintaining plumb and gently tamping backfill layers to eliminate voids. Water in backfill layers to the point of soil saturation.
1.4. Following the backfilling, add existing soil to bring the final grade in the planting hole to the surrounding soil surface. Rake the unused existing soil outside the planting house, taking care not to mound the soil or to significantly alter the existing grades.
1.5. Install tree mat around plant and secure with 8 inch sod staples in accordance with manufacturer's recommendations. If approved by the Project Engineer as an alternate, the Contractor may apply 2 to 3 inch average thickness of approved organic mulch layer in lieu of installing Treemats across the entire planting hole extending a minimum of 9 inches radially. Do not place mulch within 3 inches of plant trunk or stem.
1.6. Install approved tree tag in accordance with manufacturer's recommendations.

2. Bareroot and Tubeling Material
2.1. Planting of tubeling and bare root material shall occur in a random pattern across the site and in accordance with the schedule and details provided.
2.2. It should be anticipated that the soil may be compacted more than optimal for planting and it shall be the Contractor's responsibility to disk and rake soil to assure optimal planting condition.
2.3. Bareroot material shall be treated with root dip according to the manufacturer's recommendation prior to planting. Materials shall be planted immediately or otherwise stored per the manufacturer's recommendations.
2.4. Install 12" tree mat around plant and secure with 8 inch sod staples in accordance with manufacturer's recommendations. If approved by the Project Engineer as an alternate, the Contractor may apply 2 to 3 inch average thickness of approved organic mulch layer extending a minimum of 9 inches radially in lieu of installing Treemats across the entire planting hole . Do not place mulch within 3 inches of plant trunk or stem.
2.5. Install approved tree tag in accordance with manufacturer's recommendations.

3. Live Stake Material
3.1. Live stake material shall be soaked with growth hormone 48 hours prior to installation and shall be kept moist according to manufacturers recommendations. Do not allow the live stakes to dry out prior to installation.
3.2. Material shall be planted according to the detail provided on sheet 7.01. The use of a punch/planting bar, auger, rebar or water-jet may be used to pre-drill hole if necessary. Tamp soil around stake following install.

4. Seeding
4.1. Seeding in areas graded or otherwise denuded shall occur in accordance with the current version of the Virginia Erosion and Sediment Control Handbook. Seed shall be applied prior to installation of any erosion control fabric. Areas applied with herbicide in the spring may be seeded 7 days after application.
4.2. Sow seed with a spreader or a hydroseed machine with manufacturer recommended binding agent. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
4.3. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
4.4. Sow seed prior to installation of erosion control fabric where applicable.
4.5. Rake seed lightly into the top ¼ to ½ inch of topsoil, roll lightly, and water with a fine spray.
4.6. Protect seeded areas against erosion by spreading straw mulch immediately following completion of seeding operations if other erosion control measures are not otherwise specified. Spread uniformly at a rate of 2 tons per acre (90 lb. per 1,000 S.F.) to form a continuous blanket over seeded areas. Spread by hand, blower or other suitable equipment. Anchor straw mulch by crimping into topsoil by suitable mechanical equipment.

5. Live Mat Transplants
5.1. Unless otherwise directed by the Project Engineer, the Contractor shall stage transplanting of live mats such that they can be immediately re-planted on the prepared surface. Double handling of the mats shall be avoided when possible.
5.2. The surface that will receive the mats shall be graded and loose. Mats will not be placed over compacted or currently vegetated soils without cultivating the surface.
5.3. The Contractor shall use suitable equipment so as to obtain a thick mat of vegetation with the root mass intact. Mats shall be a minimum of one foot (1') thick, and three foot (3') by four foot (4') size.
5.4. After placement on the prepared slope, the Contractor shall tamp the mat to ensure it is in full and stable contact with the underlying soil surface. Handwork with sharp shovels may be needed to trim mats such that the joints between mats are tight, with minimal exposed soil.

6. Grass, Shrub, and Tree Transplanting
6.1. Unless otherwise directed by the Project Engineer, the Contractor shall stage transplanting of grass/shrubs/trees such that materials can be immediately re-planted. Double handling of the shrubs/trees shall be avoided when possible.
6.2. The Contractor shall use suitable equipment to harvest the grass/shrubs/trees with an adequate root-mass for the plants survival. Grasses shall be harvested using a hand trowl and transported in vessels capable of maintaining moisture and adequate soil around the roots.
6.3. The Contractor shall avoid excessive damage to the materials during the harvesting and planting process. Large shrubs shall be bundled and tied prior to digging to reduce damage to the bark. Tree limbs may be trimmed as is reasonable to avoid damage from the equipment.
6.4. Transplanted shrubs/trees shall be re-planted such that the plants are set into the ground at the same depth they were growing at the harvest location. The shrubs/trees shall be placed in a hole of an adequate size and shall be backfilled and tamped to remove voids in the soil. Water may be used to wash fill material around the root mass.
6.5. Larger trees may require staking. When specified by the Project Engineer, trees shall be staked on two sides with wooden stakes and heavy wire. Protective collars shall be used where the wire makes contact with the tree bark.

7. Ball and Burlap Material
7.1. Planting of ball and burlap material shall occur in accordance with locations and/or patterns specific to the construction drawings.
7.2. Planting holes shall be triple the diameter. Do not remove plant material from container until immediately before installation.
7.3. If field grown, cut away all balling ropes. Remove burlap or wire basket from top ⅓ of ball. Prune suckers.
7.4. Set plant materials on unexcavated or tampered soil, plumb, and centered within hole, ensuring that the top of the root ball is elevated 2 to 3 inches above the surrounding soil elevations. Remove burlap around root ball and allow roots to extend into pit Backfill around root ball with suitable native soil, maintaining plumb and gently tamping backfill layers to eliminate voids. Water in backfill layers to the point of soil saturation.
7.5. Following the backfilling, add existing soil to bring the final grade in the planting hole to the surrounding soil surface. Rake the unused existing soil outside the planting house, taking care not to mound the soil or to significantly alter the existing grades.
7.6. Install tree mat around plant and secure with 8 inch sod staples in accordance with manufacturer's recommendations. If approved by the Project Engineer as an alternate, the Contractor may apply 2 to 3 inch average thickness of organic mulch layer extending a minimum of 9 inches radially in lieu of installing tree mats across the entire planting hole. Do not place mulch within 3 inches of plant trunk or stem.
7.7. Install Tree Shelter around plant in accordance with manufacturer's recommendations.

COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

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REVISION DESCRIPTION	DATE

DATE: 09/15/2023
DRAWN BY: H. FRY
DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: NONE

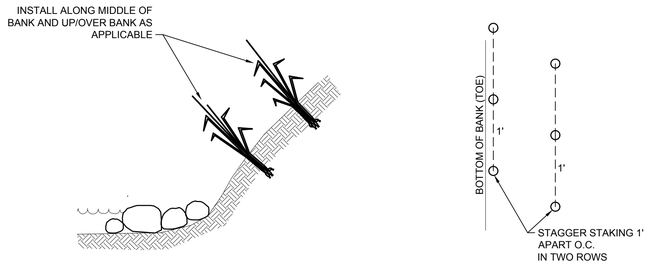
TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
VEGETATION NOTES

JOB NO. 44801
SHEET NO. 7.00

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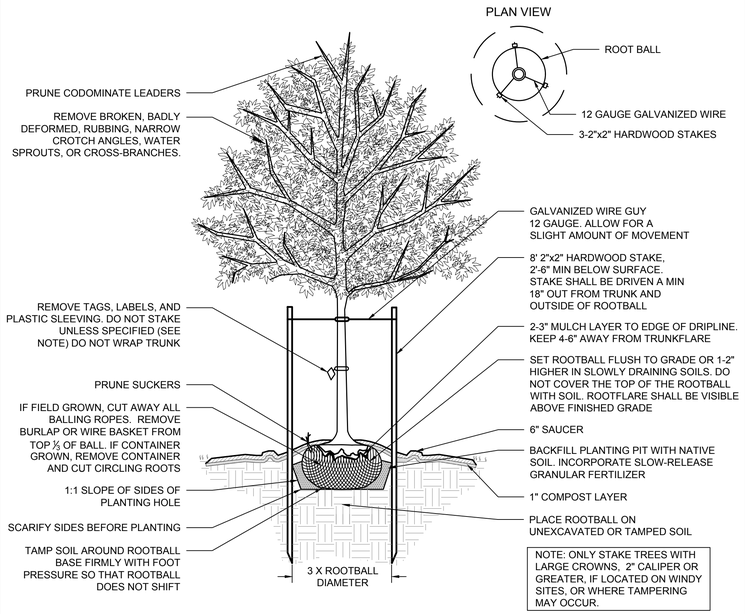


NOTE:

REFER TO PLANTING SPECIFICATIONS ON SHEET 7.00 FOR APPROPRIATE PLANTING DATES.

REV. 8/1/22

HERBACEOUS PLANTING DETAIL
NO SCALE



2.5" CALIPER TREE INSTALLATION
NO SCALE

COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
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09/15/2023
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REVISION DESCRIPTION | DATE

DATE: 09/15/2023
DRAWN BY: H. FRY
DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: NONE

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
VEGETATION DETAILS

JOB NO. 44801
SHEET NO. 7.01

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SEEDING SCHEDULE

							QUANTITY PER ZONE			
	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	MIX DENSITY	SEEDING RATE (LBS / ACRE)	TOTAL QUANTITY (LB)	AREA : (ACRES)	A 0.48	B 0.42	C 0.06	D 0.03
LOW-GROWING WILDFLOWER & GRASS MIX (ERNMX-156)	*Festuca ovina*	Sheep Fescue	UPL	50.0%							
	Bouteloua curtipendula, Butte	Sideoats Grama, Butte	NI	21.5%							
	Lolium multiflorum	Annual Ryegrass	NI	17.0%							
	Linum perenne	Perennial Blue Flax	NI	4.0%							
	Coreopsis lanceolata	Lanceleaf Coreopsis	NI	1.5%							
	Rudbeckia hirta	Blackeyed Susan	FACU	1.5%							
	Chrysanthemum leucanthemum	Oxeye Daisy	UPL	1.2%							
	Chamaecrista fasciculata	Partridge Pea	FACU	1.0%							
	Papaver rhoeas, Red	Corn Poppy, Red	NI	1.0%							
	Asclepias tuberosa	Butterfly Milkweed	NI	0.3%							
	Aster oblongifolius, PA Ecotype	Aromatic Aster	NI	0.3%							
	Achillea millefolium	Common Yarrow	FACU	0.2%							
	Pycnanthemum tenuifolium	Narrowleaf Mountainmint	FACW	0.2%							
	Oenothera fruticosa var. fruticos	Sundrops	FAC	0.1%							
	Penstemon hirsutus	Hairy Beardtongue	NI	0.1.%							
	Zizia aurea, PA Ecotype	Golden Alexanders	FAC	0.1%							
	TOTAL QUANTITY			**100%**	**20**	**19.89**	**0.96**	**9.57**	**8.39**	**0.70**	**1.24**

							QUANTITY PER ZONE			
	BOTANICAL NAME	COMMON NAME	INDICATOR STATUS	MIX DENSITY	SEEDING RATE (LBS/ACRE)	TOTAL QUANTITY (LB)	AREA : (ACRES)	A 0.48	B 0.42	C 0.06	D 0.03
	Lolium multiflorum	Annual Ryegrass	UPL	**100%**	**30**	**29.83**	**0.99**	**14.35**	**12.58**	**1.86**	**1.05**

						QUANTITY PER ZONE			
	PERMANENT SEEDING	INDICATOR STATUS	MIX DENSITY	SEEDING RATE (LBS / ACRE)	TOTAL QUANTITY (LB)	AREA : (ACRES)	A 0.91	B 0.22	C 0.29	D 0.22
SPEC 3.32-D MIX (REFER TO SHEET 3.01)	*Site specific seed mixtures for Appalachian/Mountain area*	NA	(SHEET 3.01)	125						
	TOTAL QUANTITY			**125**	**203.55**	**1.63**	**114.02**	**26.99**	**35.66**	**26.89**

SEEDING SCHEDULE NOTES:

1. Annual Ryegrass shall be substituted with German Foxtail Millet (*Setaria italica*) if grading activities are scheduled to conclude between June 1 and August 31.
2. The above referenced seed mixes are available from Ernst Conservation Seeds, 8884 Mercer Pike, Meadville PA 16335; Phone: (800) 873-3321.
3. Quantities are based on estimated areas of grading activity. Additional seeding shall conform to the materials and rate of this schedule.
4. Seeding quantities are for convenience only and shall be verified by the Planting Contractor based on the specified density (pounds/acre) prior to bidding.
5. Substitutions shall only be made with the approval of the Project Engineer.

PLANTING SCHEDULE

ZONE	STRATUM	GROUPS	SPECIES: BOTANICAL NAME	SPECIES: COMMON NAME	SPECIES: INDICATOR STATUS	PLANT SPACING (FEET O.C.)	TOTAL QUANTITY: PER STREAM LENGTH	TOTAL QUANTITY: # OF PLANTS	ZONE	MAIN REACH	TRIBUTARY
									LENGTH	1,350	150
										PLUGS	PLUGS
STREAM BANK	HERBACEOUS	1	*Carex lurida*	Shallow sedge	OBL	1	**1,500**	3,000		2,700	300
			Juncus effusus	Common rush	OBL	1		3,000		2,700	300

PLANTING SCHEDULE NOTES:

1. Quantities are based on estimated areas of planting, including areas of disturbance. Additional plantings shall conform to the materials and rate of this schedule.
2. Planting quantities are for convenience only and shall be verified by the Planting Contractor based on the specified density (plants/acre) prior to bidding.
3. Substitutions shall only be made with the approval of the Project Engineer.
4. Seeding shall occur prior to planting.
5. Herbaceous plug quantities are cumulative for entire length of stream (both sides of banks).

COMMONWEALTH OF VIRGINIA
KATHERINE E. ATKINSON
Lic. No. 063050
09/15/2023
PROFESSIONAL ENGINEER

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DATE

DATE 09/15/2023
DRAWN BY H. FRY
DESIGNED BY K.ATKINSON
CHECKED BY K.ATKINSON
SCALE NONE

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
VEGETATION SCHEDULE

JOB NO. 44801
SHEET NO. 7.02

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MAINTENANCE NOTE:
LOW-GROWING WILDFLOWER & GRASS MIX (ERMNX-156) MAY BE MOWED ANNUALLY AFTER THE ESTABLISHMENT YEAR, PREFERABLY IN THE SPRING PRIOR TO ONSET OF NEW GROWTH. MOWING MAY ALSO OCCUR AFTER THE MEADOW CEASES BLOOMING IN THE FALL.

NAD 83

SCALE 1"=30'
0 30' 60'

LEGEND
- WILDFLOWER & GRASS SEEDING
- PERMANENT SEEDING (REFER TO SPEC ON SHEET 3.01)
- STREAMBANK HERBACEOUS PLUGS
- RELOCATE SHRUB
- RELOCATE TREE
- X — ZONE IDENTIFIER

US RTE. 250 ~ CHURCHVILLE AVE.
(VAR. WIDTH R/W)

CHURCHVILLE AVE

CONSTITUTION RD

CONSTITUTION DRIVE
(ASPHALT, ONE WAY)

12.3' x 12.0' CONC. SPRING BOX COVER / SLAB AT SURFACE
(MEAN) TOP=1452.70'
WATER SURFACE=1448.9'
FLOOR=1448.0'

OPENING FOR DRAINAGE COLLECTION

(2) 36" CMP
INV. (IN)=1451.73' (W)
INV. IN=1452.11' (E)

LOD

CONTRACTOR TO UTILIZE TREE SPADE TO RELOCATE EXISTING SHRUB TO RIPARIAN FLOOD BENCH

CONTRACTOR TO UTILIZE TREE SPADE TO RELOCATE EXISTING SHRUB TO RIPARIAN FLOOD BENCH

CONTRACTOR TO UTILIZE TREE SPADE TO RELOCATE EXISTING TREE TO RIPARIAN FLOOD BENCH

CONTRACTOR TO UTILIZE TREE SPADE TO RELOCATE EXISTING TREE TO RIPARIAN FLOOD BENCH

MATCHLINE
SEE SHEET 7.04

CITY OF STAUNTON
GYPSY HILL PARK
D.B. 0000 P.G. 0001
PARCEL ID # 9115

A

CONSTITUTION DRIVE
(ASPHALT, ONE WAY)

COMMONWEALTH OF VIRGINIA
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DESIGNED BY: K.ATKINSON
CHECKED BY: K.ATKINSON
SCALE: 1" = 30'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

SEEDING & PLANTING PLAN

JOB NO. 44801
SHEET NO. 7.03

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MATCHLINE
SEE SHEET 7.03

CITY OF STAUNTON
GYPSY HILL PARK
D.B. 0000 P.G. 0001
PARCEL ID # 9115

CONSTITUTION DRIVE
(ASPHALT, ONE WAY)

CONSTITUTION DRIVE
(ASPHALT, ONE WAY)

116TH REGIMENTAL RD.

CONTRACTOR TO UTILIZE TREE SPADE TO RELOCATE EXISTING SHRUB TO RIPARIAN FLOOD BENCH

A

B

C

D

MAINTENANCE NOTE:
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NAD 83

SCALE 1"=30'

0 30' 60'

LEGEND

- WILDFLOWER & GRASS SEEDING
- PERMANENT SEEDING (REFER TO SPEC ON SHEET 3.01)
- STREAMBANK HERBACEOUS PLUGS
- RELOCATE SHRUB
- RELOCATE TREE
- X — ZONE IDENTIFIER

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GYPSY HILL STREAM RESTORATION

CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA

SEEDING & PLANTING PLAN

JOB NO. 44801
SHEET NO. 7.04

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EXISTING CONDITIONS FLOODPLAIN MAPPING (100-YEAR STORM)

LEGEND

- MAPPED FEMA 100-YR FLOODPLAIN
- EFFECTIVE FEMA LOMR BOUNDARY
- DETAILED EXISTING 100-YR FLOODPLAIN

LIMITS OF DETAILED STUDY

X-SEC 32+72 | X-SEC 32+22 | X-SEC 31+73 | X-SEC 30+20 | X-SEC 28+80 | X-SEC 28+47 | X-SEC 27+47 | X-SEC 25+30 | X-SEC 24+20 | X-SEC 23+08 | X-SEC 22+78 | X-SEC 22+59 | X-SEC 22+37 | X-SEC 21+50 | X-SEC 20+92 | X-SEC 20+09 | X-SEC 19+62 | X-SEC 19+18 | X-SEC 18+80 | X-SEC 17+50

LIMITS OF DETAILED STUDY

ZONE X
ZONE AE
SHADED ZONE X

15" RCP
78 LF
CPP NAIL

10174
1452.68
CPP NAIL

8234
1448.60
CPP NAIL

ZONE X
ZONEAE

CITY OF STAUNTON
GYPSY HILL PARK
D.B. 0000 P.G. 0001
PARCEL ID # 9115

X-SEC 10+40 | X-SEC 10+89 | X-SEC 11+40 | X-SEC 11+62 | X-SEC 12+89 | X-SEC 19+67

X-SEC 11+87 | X-SEC 13+26 | X-SEC 13+09 | X-SEC 13+71 | X-SEC 14+63

LOMR 20-03-1606P
EFF 3/30/2021

LIMITS OF DETAILED STUDY

LIMITS OF DETAILED STUDY

MAP 63

SCALE 1"=80'

0 80' 160'

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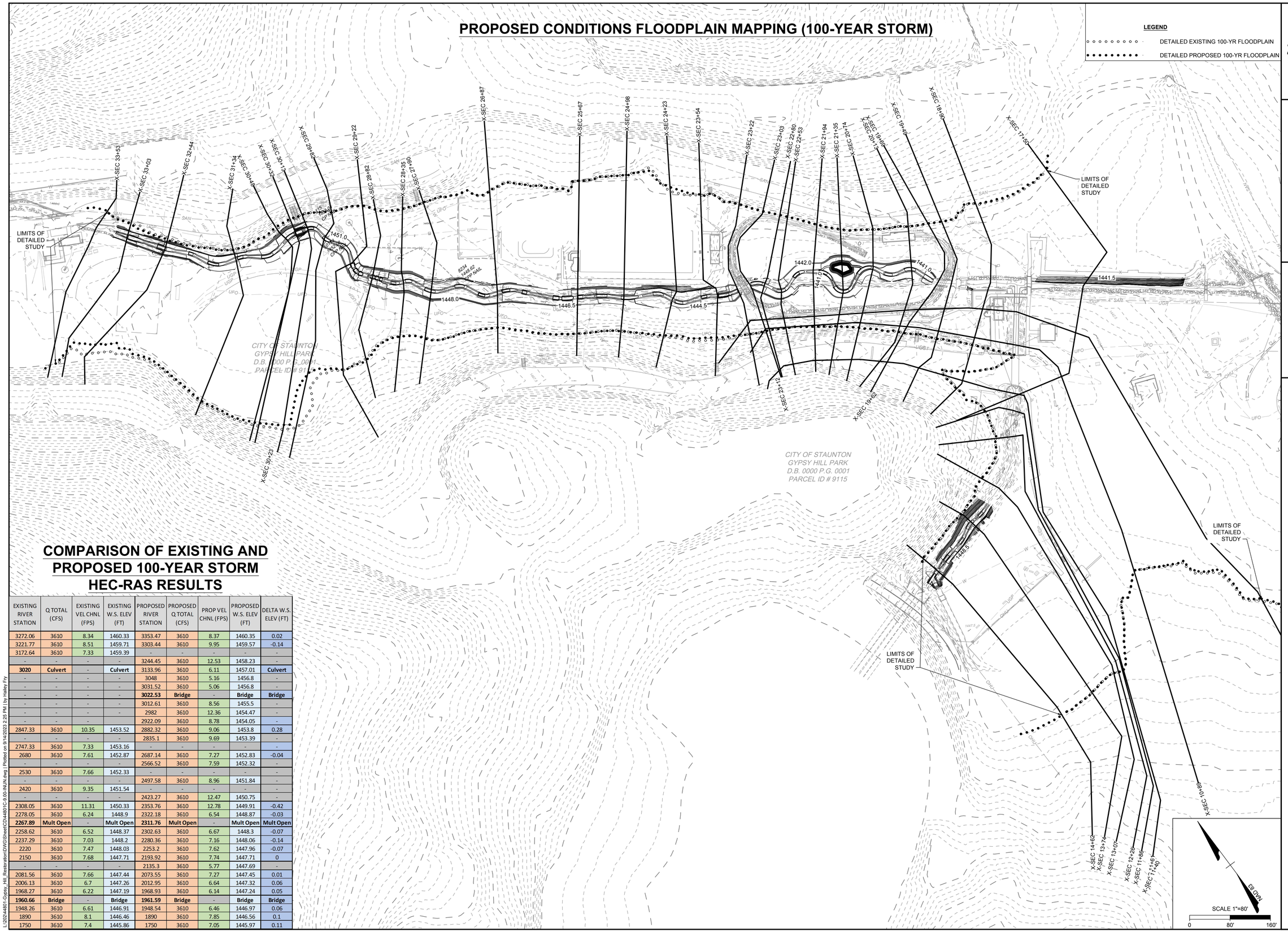
GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
EXISTING 100-YEAR FLOODPLAIN MAP

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PROPOSED CONDITIONS FLOODPLAIN MAPPING (100-YEAR STORM)



COMPARISON OF EXISTING AND PROPOSED 100-YEAR STORM HEC-RAS RESULTS

EXISTING RIVER STATION	Q TOTAL (CFS)	EXISTING VEL CHNL (FPS)	EXISTING W.S. ELEV (FT)	PROPOSED RIVER STATION	PROPOSED Q TOTAL (CFS)	PROP VEL CHNL (FPS)	PROPOSED W.S. ELEV (FT)	DELTA W.S. ELEV (FT)
3272.06	3610	8.34	1460.33	3353.47	3610	8.37	1460.35	0.02
3221.77	3610	8.51	1459.71	3303.44	3610	9.95	1459.57	-0.14
3172.64	3610	7.33	1459.39	-	-	-	-	-
-	-	-	-	3244.45	3610	12.53	1458.23	-
3020	**Culvert**	-	**Culvert**	3133.96	3610	6.11	1457.01	**Culvert**
-	-	-	-	3048	3610	5.16	1456.8	-
-	-	-	-	3031.52	3610	5.06	1456.8	-
-	-	-	-	**3022.53**	**Bridge**	-	**Bridge**	**Bridge**
-	-	-	-	3012.61	3610	8.56	1455.5	-
-	-	-	-	2982	3610	12.36	1454.47	-
-	-	-	-	2922.09	3610	8.78	1454.05	-
2847.33	3610	10.35	1453.52	2882.32	3610	9.06	1453.8	0.28
-	-	-	-	2835.1	3610	9.69	1453.39	-
2747.33	3610	7.33	1453.16	-	-	-	-	-
2680	3610	7.61	1452.87	2687.14	3610	7.27	1452.83	-0.04
-	-	-	-	2566.52	3610	7.59	1452.32	-
2530	3610	7.66	1452.33	-	-	-	-	-
-	-	-	-	2497.58	3610	8.96	1451.84	-
2420	3610	9.35	1451.54	-	-	-	-	-
-	-	-	-	2423.27	3610	12.47	1450.75	-
2308.05	3610	11.31	1450.33	2353.76	3610	12.78	1449.91	-0.42
2278.05	3610	6.24	1448.9	2322.18	3610	6.54	1448.87	-0.03
2267.89	**Mult Open**	-	**Mult Open**	**2311.76**	**Mult Open**	-	**Mult Open**	**Mult Open**
2258.62	3610	6.52	1448.37	2302.63	3610	6.67	1448.3	-0.07
2237.29	3610	7.03	1448.2	2280.36	3610	7.16	1448.06	-0.14
2220	3610	7.47	1448.03	2253.2	3610	7.62	1447.96	-0.07
2150	3610	7.68	1447.71	2193.92	3610	7.74	1447.71	0
-	-	-	-	2135.3	3610	5.77	1447.69	-
2081.56	3610	7.66	1447.44	2073.55	3610	7.27	1447.45	0.01
2006.13	3610	6.7	1447.26	2012.95	3610	6.64	1447.32	0.06
1968.27	3610	6.22	1447.19	1968.93	3610	6.14	1447.24	0.05
1960.66	**Bridge**	-	**Bridge**	**1961.59**	**Bridge**	-	**Bridge**	**Bridge**
1948.26	3610	6.61	1446.91	1948.54	3610	6.46	1446.97	0.06
1890	3610	8.1	1446.46	1890	3610	7.85	1446.56	0.1
1750	3610	7.4	1445.86	1750	3610	7.05	1445.97	0.11

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SCALE: 1" = 60'

TIMMONS GROUP

GYPSY HILL STREAM RESTORATION
CITY OF STAUNTON - AUGUSTA COUNTY - VIRGINIA
PROPOSED 100-YEAR FLOODPLAIN MAP

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