CITY OF HARRISONBURG
FINANCE
& PURCHASING

409 SOUTH MAIN STREET, 3RD FLOOR
HARRISONBURG, VA 22801
FINANCE OFFICE (540) 432-7702 • FAX (540) 432-7779
PURCHASING OFFICE (540) 432-7794 • FAX (540) 432-7779

# INVITATION TO BID (ITB) COVER PAGE

| | | |
|---|---|---|
| **ISSUE DATE**:<br>November 30, 2021 | **INVITATION TO BID NUMBER:**<br>2022013-PW-B | **FOR:**<br>Mountain View Drive Stream Restoration |
| **DEPARTMENT:**<br>Public Works | **DATE/TIME OF CLOSING:**<br>January 12, 2022 at 3:00pm local time | **CONTRACT ADMINISTRATOR:**<br>Tom Hartman, Director of Public Works |
| **DATE/TIME LAST DAY FOR QUESTIONS:**<br>January 5, 2022 at 12:00pm (noon) local time | **DATE/TIME PRE-BID MEETING:**<br>December 8, 2021 at 2:00pm local time | **PRE-BID MEETING MANDATORY:**<br>_X_ Yes __No ___ N/A |

**Bids -** In accordance with the following and in compliance with all terms and conditions, unless otherwise noted, the undersigned offers and agrees, if the bid is accepted, to furnish items or services for which prices are quoted, delivered or furnished to designated points within the time specified. It is understood and agreed that this entire ITB and any addenda shall constitute a contract.

Sealed bids, subject to terms and conditions of this Invitation to Bid will be received by the City of Harrisonburg Purchasing Office, 409 South Main Street, Third Floor, Harrisonburg, Virginia 22801 until the date/ time specified above for furnishing items or services delivered or furnished to specified destinations within the time specified or stipulated by the vendor(s).

**The City does not discriminate against small and minority businesses or faith-based organizations.**

VENDOR INFORMATION

Name of Vendor:_____ Telephone #:_____

Address: _____ Federal Employer Identification #:_____

_____

Contact Name: _____ Contact Email Address:_____

**By signing this bid, Vendor(s) certifies, acknowledges, understands and agrees to be bound by the conditions set forth in this ITB.**

_____ _____
**VENDOR'S LEGALLY AUTHORIZED SIGNATURE** **DATE**

_____ _____
**PRINT NAME** **TITLE**

*Please take a moment to let us know how you found out about this Invitation to Bid (ITB) – Check one:*

☐ eVA Website ☐ Bid Room (Please List) _____

☐ The Daily News Record Newspaper ☐ Notified by City Directly ☐ Other (Please List) _____

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

# PROJECT MANUAL

# FOR

# CITY OF HARRISONBURG, VIRGINIA

# MOUNTAIN VIEW DRIVE STREAM RESTORATION

# PROJECT:
# 2022013-PW-B

## CITY OF HARRISONBURG, VIRGINIA

## DEPARTMENT OF PUBLIC WORKS

**November 30, 2021**

Prepared by

Department of Public Works
City of Harrisonburg
320 East Mosby Road
Harrisonburg, Virginia 22801

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SECTION 0001
INVITATION TO BIDDERS

1. PROJECT

Mountain View Drive Stream Restoration for the City of Harrisonburg, VA

2. DESCRIPTION OF WORK

This project will be bid using a Two-Step Competitive Sealed Bidding process as described below. Located in the City of Harrisonburg, Virginia, the proposed water quality improvement project consists of restoring approximately 1,650 linear feet of an unnamed tributary to Sieberts Creek, a tributary to Blacks Run. Proposed restoration approach will involve channel filling, grading, excavation, and select structure placement to re-establish stable dimensions, pattern, and profile. Structures and bioengineering measures to be utilized include but not limited to riffles, boulder and log cross vanes, toe with soil lifts, imbricated walls, and j-hooks. Stream bank and riparian buffers will be planted with native trees, shrubs, and grasses.

3. COMBINED TWO-STEP COMPETITIVE SEALED BIDDING PROCESS

The two-step process will require responding firms to submit an unpriced technical proposal in one sealed envelope and their bid price in a second sealed envelope to be submitted at the same time (please refer to Section 0001, #8). Responses are to be submitted in two separate sealed envelopes: one marked "Technical Proposal" and the other "Bid Price." Each envelope shall have identifying information with the bidder's name, company name and address, and ITB#2022013-PW-B.

The technical proposals are opened first and evaluated based on criteria for the project (outlined in section 0100, Instructions to Bidders, item #5, Award of Contract), and all other specifications and requirements. Only the Priced envelopes for those technical proposals selected as acceptable are opened. The award is made to the lowest responsive and responsible bidder. The award document will incorporate by reference the terms and conditions of the solicitation and include the contractor's technical proposal and the bid price. The envelopes containing the bid price for those proposals determined to be not acceptable will be returned unopened.

4. DOCUMENTS

Bid documents are available for viewing on the internet at www.harrisonburgva.gov/bids-proposals. Bid documents are available for purchase at DTS Reprographics 4803 South Valley Pike, Harrisonburg VA, 22801, (540) 433-8373.

5. MANDATORY PRE-BID CONFERENCE

December 8, 2021 at 2:00 PM local time via GOTO Meeting. Attendance for the entire pre-bid conference is mandatory. Please contact Danielle Morris at 540-434-5928 or Danielle.Morris@harrisonburgva.gov to register for the meeting. Attendees must register by 3:00 PM local time on December 7, 2021.

6. QUESTIONS

All questions must be received no later than January 5, 2022 at 12:00 PM (noon) local time. Questions related to the ITB or requests for clarification shall be directed to Mr. Shane Smith, Procurement Manager, by email to Questions@harrisonburgva.gov Oral questions will not be permitted. All responses to inquiries will be in writing and will be posted as addenda on at www.harrisonburgva.gov/bid-proposals. 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

7. BID BOND IN PRICE PROPOSAL ENVELOPE

   A Bid bond shall only be included in the Price Proposal envelope. A 5% Bid bond must be in the form of a cashier's check, certified check or a bid bond issued by a surety.

8. BIDS DUE

   Bids shall be received by the Purchasing Office no later than January 12, 2022 at 3:00 PM local time. The Purchasing Office is located in City Hall at 409 South Main Street, Third Floor, Harrisonburg, VA, 22801. Office hours are Monday through Friday, 8:00am to 5:00pm, except City holidays (www.harrisonburgva.gov/city-holidays ). Any bids received after this date and time will not be accepted. All bids must be in an opaque, sealed envelope or box and clearly marked: "Sealed Bid: Mountain View Drive Stream Restoration: Technical Proposal ITB#2022013-PW-B" AND "Sealed Bid: Mountain View Drive Stream Restoration: Bid Price ITB#2022013-PW-B". Bids shall clearly indicate the legal name, address and telephone number of the bidder (company, firm, partnership, or individual). All expenses for making the bid to the City shall be borne by the bidder. Bidders shall provide one (1) paper copy of the bid documents. Bid documents shall be mailed or hand-delivered; faxed or emailed bids will not be accepted. The City of Harrisonburg 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. The bidder has the sole responsibility to have the bid received by the Harrisonburg Purchasing Office at the above address and by the above stated time and date.

9. BID OPENING

   Bids will be opened and read publicly at City Hall, 409 South Main Street, Room 11, Harrisonburg, VA 22801 on January 12, 2022 at 3:00 PM local time. The names of bidders will be announced along with the bid amount.

10. COVID-19

    City contractors shall adhere to all aspects of the VOSH COVID-19 Permanent Standard 16VAC25-220 to include, but not limited to: face covering requirements, social distancing practices, VDH/VOSH notification procedures, and screening methods to ensure individuals who are known or suspected to be infected with COVID-19 shall not enter any City work site until they are cleared to return to work as specified by the VOSH COVID-19 Permanent Standard. City contractors shall also immediately notify the City's Contract Administrator if one of their employees is known or suspected to be infected with COVID-19 and was present at a City worksite within two (2) days prior to symptom onset.

11. OWNER

    City of Harrisonburg, 409 South Main Street, Harrisonburg, VA, 22801

12. CONTRACT ADMINISTRATOR

    Thomas Hartman, PE, 320 East Mosby Road, Harrisonburg, VA 22801.

SECTION 0100
INSTRUCTIONS TO BIDDERS

1. BIDDER ELIGIBILITY

   A. 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.

   B. 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.

   C. Where an installation or assembly is to be performed by a subcontractor, the bidder must name the subcontractor, and the City reserves the right to determine whether the named subcontractor is fit and capable to perform the required work.

   D. Bidders are required under Chapter 11, Title 54, Code of Virginia, to show evidence of certificate of registration before bid may be received and considered.

   E. By signing the Bid Form, Bidders certify that they are not currently barred from bidding on contracts by any agency of the Commonwealth of Virginia or any federal agency.

2. BID FORM AND SUBMISSION

   In order to receive consideration, submit bids in accordance with the following:

   A. Make bids upon the forms provided herewith, properly signed and with all items filled out. Do not change the wording of the bid form, and do not add words to the bid form. Unauthorized conditions, limitations, or provisions attached to the bid may be cause for rejection of the bid.
   All documents contained within the bid submission shall be completed in their entirety and signed and dated where required.

   B. Indicate receipt of issued addenda. All Bidders are cautioned to check at www.harrisonburva.gov/bids-proposals to assure that all Addenda have been received and that the cost consequences thereof have been included in the bid. 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.

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

   Technical Proposal Envelope shall include:

   - Signed Cover Sheet
   - 0302 Contractor Eligibility and Registration

- ☐ 0303 State Corporation Commission Registration
- ☐ 0304 Non-Collusion Affidavit
- ☐ 0311 References List
- ☐ 0312 Insurance Requirements
- ☐ 0401 Escrow Election Form
- ☐ Signed Addenda, if applicable

Bid Price Envelope shall include:

- ☐ 0300 Bid Form
- ☐ Bid Security

3. BID SECURITY & BONDS

A. Bid security in the amount of five percent (5%) must accompany each bid in the Bid Price envelope. The successful bidder's security will not be returned until he has signed the Contract and has furnished the required Certificates of Insurance.

B. The Owner reserves the right to retain the security of all bidders until the successful bidder enters into the Contract or until 90 days after bid opening, whichever is sooner. Other bid security will be returned as soon as practicable. If any bidder refuses to enter into a Contract, the bid security may be forfeited.

C. Prior to signing the Contract, the Owner will require the successful bidder to secure and post a Payment Bond and a Performance Bond, each in the amount of 100% of the Contract Sum. Such Bonds shall be issued by a Surety acceptable to the Owner.

4. EXAMINATION OF DOCUMENTS AND SITE OF WORK

Before submitting a bid, each bidder shall examine the Drawings carefully, shall read the Project Manual and all other proposed Contract Documents, 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 his 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. 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 as specified in Section 0001 of this ITB. The submission of a bid will be considered as conclusive evidence that the bidder has made such examination.

5. AWARD OF CONTRACT

The Contract, if awarded, will be awarded based on a two-step competitive sealed bidding process, to the lowest responsive and responsible bidder, meeting all specifications, subject to the Owner's right to reject any or all bids and to waive informality and irregularity in the bids and in the bidding. If the bid from the lowest responsive, responsible bidder exceeds

available funds, the Procurement Manager, or designee, may negotiate with the apparent low bidder to obtain a contract price within available funds.

**A. Technical Proposal Envelope:**

The Bidder shall demonstrate adequate construction experience and sufficient equipment resources to properly perform the work under and in conformance with the Contract Documents. This evaluation will be based upon a list of completed projects and a list of construction equipment available to the Bidder to perform the work. The Owner may make such investigations as deemed 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 reasonably request. Adequate construction experience, for the purposes of this Project, shall mean meeting the experience requirements as follows:

A. Completed a minimum of two (2) urban stream restoration and/or stabilization projects in the last 5 years each containing a minimum of 1,000 linear feet.
    1. Urban stream restoration and/or stabilization projects containing a minimum of 1,000 linear feet currently under construction/awarded through competitive solicitation may count towards this requirement.
B. Subcontractors: If the Bidder intends to sub-contract portions of the project, provide information on such firms according to the requirements of the above sections.

**<u>Additionally:</u>**

**Schedule**
Include a schedule that indicates the Contractor will complete the project by the required time. This schedule shall include sufficient detail to show the Selection Committee that the schedule is achievable.

**References**
The Selection Committee will review the provided references to assist in determining the responsiveness of the Contractor.

The proposals will be publicly opened, and the names of the firms submitting proposals will be announced. The City will evaluate and select those proposals which will meet the City's needs, based on all the mandatory criteria specified in the solicitation. The City may request written or oral discussions from bidders to clarify or amplify the material in the proposal. The contents of the technical proposal are not subject to negotiation and will be evaluated as submitted. They are not ranked but are determined to be acceptable or not acceptable for meeting the City's needs. Only the Sealed Bid Price Envelopes from the responsive bidders whose technical proposals are determined to be acceptable will be opened. The Sealed Bid Price Envelopes from those not deemed responsive will be returned to the bidders unopened.

**B. Bid Price Envelope:**

Only the bid price envelopes for those technical proposals selected as acceptable are opened. The award will be made to the lowest responsive and responsible bidder.

The award document will incorporate by reference the terms and conditions of the solicitation and include the contractor's technical proposal and the bid price. The envelopes containing the bid price for those proposals determined to be not acceptable will be returned unopened.

6. EXECUTION OF AGREEMENT

A. The form of the Agreement which the successful bidder will be required to execute is included in the ITB.

B. At or prior to delivery of the signed Agreement, the bidder shall deliver to the Owner a copy of their City Business License. The bidder shall ensure that the business license indicated a basis amount equal to or greater than the awarded Contract value. For information on City Business Licenses contact the Harrisonburg Commissioner of Revenue office at 540-432-7704.

C. Beginning upon receipt of the fully signed Agreement, and within ten (10) calendar days thereof, successful contractor shall deliver to the Owner as required by the Contract Documents:

- ☐ Certificates of Insurance and Endorsement
- ☐ Performance and Payment Bonds
- ☐ City Business License
- ☐ Recent W-9 Form

D. All requirements in Item C above shall be approved by the Owner before the successful bidder may proceed with work.

7. CONTRACT TERM / NOTICE TO PROCEED / TIME OF COMPLETION

The contract term shall begin on the date the contract is signed. Work shall begin upon City issue of Notice to Proceed document. Project shall be completed by December 31, 2022. The City may issue the Notice to Proceed immediately or within thirty (30) days of the contract date. The contractor is not to begin work until the receipt of the Notice to Proceed.

8. LIQUIDATED DAMAGES

The Agreement includes a stipulation that all Work be completed by a specified date (see section 0501). Any work not completed by the specified date will be accessed Liquidated Damages at a rate of $1,000 per each consecutive calendar day until work is substantially completed. The contractor is not to begin work until the receipt of the Owner's Notice to Proceed which will be effective upon receipt.

9. SPECIFICATIONS AND STANDARDS

Work in this project shall conform to the latest editions of the Virginia Department of Transportation (VDOT) Road and Bridge specifications, the VDOT Road and Bridge Standards, the Virginia Erosion and Sediment Control handbook, the Virginia Erosion and Sediment Control regulations, Virginia Work Area Protection Manual and the City of Harrisonburg Design and Construction Standards Manual. In the event of conflict between any of these standards, specifications or plans, the VDOT specification 105.12 will apply, and shows the hierarchy of documents and which shall govern.

10. CONSIDERATION OF PROJECT COMPLEXITIES

A. In preparing this bid, Contractor shall understand and account in their costs for the complexities involved in administrating the construction required by this Contract.

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

END INSTRUCTIONS TO BIDDERS

# 0300 BID FORM

The undersigned, having visited and examined the site and having carefully studied the drawings and specifications, hereby proposes to furnish all labor, equipment, materials, and services and to perform all operations necessary to execute and complete the work required for the project in strict accordance with the ITB and with any addenda issued during bidding period and hereby acknowledged subject to the terms and conditions of the Agreement for the following sums of money:

**BASE BID**

All labor, material, services and equipment necessary for the completion of the work shown on the Drawings and in the Project Manual and in the Addenda (if issued).**Note: In case of a discrepancy between the total listed on the bid tab and the total written below, the written one will prevail.

_____($_____)

This bid submitted by (name of firm): _____

It is understood and agreed that the Owner, in protecting his best interests, reserves the right to:

Reject any and all bids, or waive any defects in favor of the City

Or

Accept any bid at the bid price, whereupon the contractor shall furnish equipment and materials as specified.

Contractors shall indicate a unit price for each item listed in the Pay Items Summary which follows. The listed pay items are to contain all necessary costs required for completion of the work. It is understood that all quantities listed below are estimated quantities and the Owner reserves the right to raise, lower or eliminate any quantity or item. Unit prices shall be used in determining partial and full payment.

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

City of Harrisonburg
Mountain View Drive Steam Restoration ITB#2022013-PW-B

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

| Special Provision | Description | Quantity | Units | Unit Cost | Item Cost |
|---|---|---|---|---|---|
| 1 | Mobilization | 1 | LS | | - |
| 2 | Construction Stakeout | 1 | LS | | - |
| 4 | Silt Fence | 1,254 | LF | | - |
| 4 | Safety Fence/Tree Protection Fence | 3,953 | LF | | - |
| 4 | Construction Entrance | 5 | EA | | - |
| 4 | Temporary Stream Crossing | 2 | EA | | - |
| 6 | Temporary Access Path | 364 | CY | | - |
| 5 | Streamflow Maintenance | 1 | LS | | - |
| 8 | Clearing and Grubbing | 1 | AC | | - |
| 4 | Tree Protection | 23 | EA | | - |
| 18 | Riffle | 19 | EA | | - |
| 19 | Cascade | 11 | EA | | - |
| 15 | Brush Toe | 153 | LF | | - |
| 20 | Boulder J-hook | 3 | EA | | - |
| 17 | Log Cross Vane | 1 | EA | | - |
| 16 | Boulder Cross Vane | 6 | EA | | - |
| 21 | Imbricated Wall | 253 | LF | | - |
| 22 | Boulder Toe with Soil Lift | 400 | LF | | - |
| 10 | Natural Fiber Matting | 5466 | SY | | - |
| 9 | Furnished Fill Material | 250 | CY | | - |
| 9 | Excavated Material (Haul Off) | 1893 | CY | | - |
| 23 | Culvert Removal and Stormwater Infrastructure Installation | 215 | LF | | - |
| 24 | Joint Utility Duct Bank | 120 | LF | | - |

| | | | | | |
|---|---|---|---|---|---|
| 25 | Topsoil | 530 | CY | | - |
| 26 | Compost | 530 | CY | | - |
| 27 | Trees & Shrubs (3 gal container) | 1727 | EA | | - |
| 27 | Grass Plugs (1 qt container) | 6391 | EA | | - |
| 28 | Live Stakes | 1467 | EA | | - |
| 29 | Permanent Seeding | 1.38 | AC | | - |
| 29 | Temporary Seeding | 1.38 | AC | | - |
| 30 | Invasive Species Management | 1 | LS | | - |
| 33 | Asbuilt Survey | 1 | LS | | - |
| | | | **Total Cost** | **$** | **-** |

# 0302 CONTRACTOR ELIGIBILITY AND REGISTRATION

This is to certify that I (we) are not currently barred from bidding on contracts by any agency of The Commonwealth of Virginia, nor am I (we) a part of any firm/corporation that is currently barred from bidding on contracts by any agency of The Commonwealth of Virginia.

Check one:

_____I am currently registered as a contractor in the Commonwealth of Virginia.

_____My registration number is _____

_____I am currently not required to register as a contractor in the Commonwealth of Virginia per Chapter 11, Title 54 of the Code of Virginia.

_____
Contractor

[SEAL]

_____
Address

_____

_____

_____
Attest

By:_____
Signature

_____
Title

_____
Date

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

# 0303 State Corporation Commission Form

**<u>Virginia State Corporation Commission ("SCC") registration information</u>**:

**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 and returned with bid submission.***

# 0304 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 expires_____.

_____
Notary Public

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

## 0311 REFERENCES 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)***

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 shall be completed & returned with bid submission.***

# 312 INSURANCE REQUIREMENTS

By signing and submitting a bid or proposal the contractor certifies that if awarded the contract, they will have the following insurance coverages 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.

1.) The contractor will maintain a general liability policy with $1,000,000 combined single limits with a $2,000,000 aggregate. Coverage is to be on an occurrence basis with an insurer licensed to conduct business in the Commonwealth of Virginia. The insurer must have an A. M. Best rating of A- or better. **The insurer must list the City of Harrisonburg as an additional insured. The endorsement must be issued by the insurance company. A notation on the certificate of insurance is not sufficient.**

2.) The contractor will maintain workers' compensation coverage in compliance with the laws of the Commonwealth of Virginia. The coverage must have statutory limits and be with an insurer licensed to conduct business in the Commonwealth of Virginia. The insurer must have an A. M. Best rating of A- or better. As an alternative, it is acceptable for the contractor to be insured by a group self insurance association that is licensed by the Virginia Bureau of Insurance. The contractor will also carry employers liability insurance with a limit of at least $100,000 bodily injury by accident/$500,000 bodily injury by disease policy limit/$100,000 bodily injury by disease each employee.

3.) The contractor will maintain automobile liability insurance with limits of at least $1,000,000. The coverage is to be written with a symbol "1". The insurer must be licensed to conduct business in the Commonwealth of Virginia. The insurer must have an A. M. Best rating of A- or better.

**Please provide the City with two (2) documents upon request:**

1.) Certificate of Insurance (COI) for the City of Harrisonburg, 409 South Main St, Harrisonburg, VA 22801. COI must show the Additional Insured status.

2.) Additional Insured Endorsement issued by the insurance company to show the Additional Insured addition was made to the policy.

BIDDER STATEMENT

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

Signature:_____Date: _____

Name:_____Title:_____
*(Print)*

Name of Firm: _____

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

# 0400 GENERAL TERMS AND CONDITIONS OF THE CITY OF HARRISONBURG, VA

These General Terms & Conditions shall apply to all purchases and be a part of every contract awarded by the City of Harrisonburg unless otherwise specified in writing. Bidders/Offerors are expected to inform themselves fully as to the conditions, requirements and specifications before submitting bids/proposals. Procurement by the City is subject to the Virginia Public Procurement Act (VPPA) Title 2.2, Chapter 43 of the Code of Virginia and the provisions of The Purchasing and Contracting Policy Manual for the City of Harrisonburg and any revisions thereto. If an inconsistency exists between the VPPA and the Purchasing and Contracting Policy Manual for the City, the VPPA Virginia Code sections take precedence.

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AWARD
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## DEFINITIONS

**ADDENDUM/ADDENDA: A**ddition(s) or supplement(s) to a solicitation to clarify, modify or support information which becomes part of the contract.

**BID:** The offer of a prospective vendor/supplier to an Invitation To Bid to provide specific goods or services at specified prices and/or other conditions specified in the solicitation.

**BIDDER/OFFEROR:** Any individual, company, firm, corporation, partnership or other organization who submits a response to an Invitation to Bid or a Request for Proposal and offering to enter into a contract with the City.

**COLLUSION:** A secret agreement or cooperation between two or more parties to accomplish a fraudulent, deceitful, or unlawful purpose.

**CONFLICT OF INTEREST:** An actual or potential situation in which the personal interests of a vendor, employee or public official are, or appear to be, in conflict with the best interests of the City.

**CONTRACTOR:** The entity that has a direct contract with the City to furnish goods, services or construction for a certain price.

**CITY or OWNER:** City of Harrisonburg, Virginia.

**DAY(S):** Defined as calendar days unless otherwise specified as business days.

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

**INVITATION TO BID (ITB):** A formal request which is made to prospective suppliers (bidders) for their quotation on goods, services, or construction desired by the City. The issuance of an ITB will contain or incorporate by reference the specifications and contractual terms and conditions applicable to the procurement.

**PROFESSIONAL SERVICES:** Any type of professional service performed by an independent contractor within the practice of accounting, actuarial services, architecture, dentistry, land surveying, landscape architecture, law, medicine, optometry, pharmacy, or professional engineering (which shall be procured as set forth in the Code of Virginia). **2.2-4301**

**PROPOSAL:** The document submitted by the offeror in response to the RFP to be used as the basis for negotiations for entering into a contract.

**PURCHASING AGENT:** The individual employed and given authority by the Harrisonburg City Council by adoption of the City of Harrisonburg Purchasing and Contracting Policy Manual. Purchasing Agent may also be referred to as Procurement Manager.

**REQUEST FOR PROPOSAL (RFP):** A formal request for a proposal from prospective offerors which will indicate the general terms which are sought to be procured from the offeror and where negotiations are conducted to come to a final contract. The RFP will specify the evaluation criteria to be used and will contain or incorporate by reference other contractual terms and conditions applicable to the procurement.

**RESPONSIBLE BIDDER/OFFEROR:** An individual, company, firm, corporation, partnership or other organization having the capability in all respects to perform fully the contract requirements, and also having the moral and business integrity and reliability which will assure good faith performance.

**RESPONSIVE BIDDER/OFFEROR:** An individual, company, firm, corporation, partnership or other organization having submitted a bid/proposal which conforms in all material respects to the ITB or RFP.

**SOLICITATION:** A formal document issued by the City with the intent to purchase goods, services or construction. Can be either an Invitation To Bid or a Request For Proposal.

**SWAM:** Small, Women, and Minority-owned businesses.

**SUBCONTRACTOR:** A business entity that has a contract to supply labor or materials to the prime contractor to whom the contract was awarded or to any subcontractor in the performance of the work provided for in such contract.

## CONDITIONS OF BIDDING

**BID PRICE CURRENCY:** Unless stated otherwise in the solicitation, bidders/offerors shall state bid/proposal prices in US dollars.

**BID/PROPOSAL ACCEPTANCE PERIOD:** Unless otherwise specified, all bids/proposals submitted shall be binding and may not be withdrawn for sixty (60) days following the bid/proposal opening date and time, unless extended by mutual consent of all parties. If the bid/proposal is not withdrawn at that time it remains in effect until an award is made or the solicitation is cancelled.

**CANCELLATION OF SOLICITATIONS: 2.2-4319** An ITB, RFP or any other solicitation may be cancelled or rejected, but shall not be cancelled or rejected solely to avoid awarding a contract to a particular responsive and responsible bidder/offeror. The reasons for cancellation shall be made part of the contract file.

**CITY HALL CLOSURE:** If City Hall is closed for business at the time scheduled for the bid opening, for whatever reasons, sealed bid/proposal will be accepted and opened on the next business day of the City, at the original scheduled hour.

**CLARIFICATION of TERMS: 2.2-4316** If any prospective bidder/offeror has questions about the specifications or other solicitation documents, the prospective bidder/offeror should contact the person identified in the solicitation no later than five (5) business days before the due date. Any revisions to the solicitation will be made only by addendum issued by the City.

**CONFLICT OF INTEREST/COLLUSION:** Contractor certifies by signing their bid/proposal submission to the City, that no conflict of interest or collusion exists between the Contractor and City that interferes with fair competition and no conflict of interest or collusion exists between Contractor and any other person or organization that constitutes a conflict of interest with respect to the contract with the City.

**DEBARMENT STATUS:** By signing their bid/proposal, the bidders/offerors certify that they are not currently debarred from submitting bids/proposals on contracts from any agency, public entity/locality or authority of the Commonwealth of Virginia.

**DISCRIMINATION PROHIBITED**: **2.2-4310** In the solicitation or awarding of a contract the City shall not discriminate against a bidder/offeror because of race; religion; color; sex; national origin; age; disability; status as a small, women-owned, minority-owned, or service disabled veteran-owned; employment services organization; or any other basis prohibited by state law relating to discrimination in employment. The City encourages the participation of these entities in public procurement activities. Towards that end, the City encourages contractors to provide for the participation of these entities through partnerships, joint ventures, subcontracts, and other contractual opportunities.

**ERRORS IN BIDS/PROPOSALS:** When an error is made in extending total prices, the unit price will govern. Bidders/Offerors are cautioned to recheck their bids/proposals for possible errors prior to submission.

**ETHICS IN PUBLIC CONTRACTING: 2.2-4371** By submitting their bids/proposals, the bidders/offerors certify that their bids/proposals are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other bidder/offeror, supplier, manufacturer or subcontractor in connection with their bid/proposal, 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 or minimal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

**EXCUSABLE DELAY:** The City shall not be in default of any failure in performance of this agreement in accordance with its terms if such failure arises out of causes beyond its reasonable control and without the fault of or negligence of the City. Such causes may include, but are not restricted to acts of God or the public enemy, fires, flood, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather, but in every case the failure to perform must be beyond the reasonable control and without the fault or negligence of the City.

**LICENSES, PERMITS and FEES:** All proposals submitted shall have included in price the cost of any business or professional licenses, permits or fees required by the City of Harrisonburg or the Commonwealth of Virginia. At or prior to delivery of the signed contract, the bidder/offeror to whom the contract is awarded shall deliver to the City a copy of their City Business License (if applicable). The bidder/offeror 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 Harrisonburg Commissioner of the Revenue's office at 540-432-7704. The bidder/offeror must have all necessary licenses to perform the services in the Commonwealth of Virginia and, if practicing as other than an individual, be authorized to do business in the Commonwealth of Virginia.

**MANDATORY USE of CITY FORMS AND TERMS and CONDITIONS for ITBs AND RFPs:** Failure to submit a bid/proposal on the official City form(s) provided or in the format identified, for that purpose shall be a cause for rejection of the bid/proposal. Unauthorized modification of or additions to any portion of the ITB or RFP may be cause for rejection of the bid/proposal. The City reserves the right to decide, on a case by case basis, in it's sole discretion, whether to reject any bid/ proposal which has been modified. As a precondition to its acceptance of an ITB response, the City may, in its sole discretion, request that the bidder withdraw or modify nonresponsive portions of a bid which do not affect quality, quantity, price, or delivery. No modification to the provisions of the contract shall be effective unless the modification is incorporated into the contract document.

**MODIFICATION & WITHDRAWAL OF BIDS/PROPOSALS: 2.2-4330**

1. A bidder for a public construction contract, other than a contract for construction or maintenance of public highways, may withdraw his bid from consideration if the price bid was substantially lower than the other bids due solely to a mistake in the bid, 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, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn.

   If a bid contains both clerical and judgment mistakes, a bidder may withdraw his bid from consideration if the price bid would have been substantially lower than the other bids due solely to the clerical mistake, that was an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of a bid that shall be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn.
2. 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.
3. No bid shall be withdrawn under this section when the result would be the awarding of the contract on another bid of the same bidder or of another bidder in which the ownership of the withdrawing bidder is more than five percent.
4. If a bid is withdrawn in accordance with this section, the lowest remaining bid shall be deemed to be the low bid.
5. No bidder who is permitted to withdraw a bid shall, for compensation, supply any material or labor to or perform any subcontract or other work agreement for the person or firm to whom the contract is awarded or otherwise benefit, directly or indirectly, from the performance of the project for which the withdrawn bid was submitted.
6. The public body shall notify the bidder in writing within five business days of its decision regarding the bidder's request to withdraw its bid. If the public body denies the withdrawal of a bid under the provisions of this section, it shall state in such notice the reasons for its decision and award the contract to such bidder at the bid price, provided such bidder is a responsible and responsive bidder. At the same time that the notice is provided, the public body shall return all work papers and copies thereof that have been submitted by the bidder.
7. These procedures also apply for the withdrawal of bids for other than construction contracts.
8. A bidder/offeror may modify or withdraw his bid/proposal, either personally or by written request to the Purchasing office at any time prior to the scheduled time for opening of bids/proposals.

**PUBLIC INSPECTION OF CERTAIN RECORDS: 2.2-4342** Public inspection of all records is strictly governed by Code of Virginia 2.2-4342 and in accordance with the Virginia Freedom of Information Act (VA Code 2.2-3700 et seq). Any inspection of procurement transactions shall be subject to reasonable restrictions to ensure the security and integrity of the records. Cost estimates relating to a proposed procurement transaction prepared by or for a public body shall not be open to public inspection.

**REVISIONS to the OFFICIAL ITB/RFP:** No bidder/offeror shall modify, revise, edit or make any unauthorized change(s) to the original official ITB/RFP. The official solicitation document and the Addenda(um) are the documents posted on the eVA website (www.eva.virginia.gov). Any such violation as stated above may result in rejection of the ITB/RFP response. In addition, violations may result in the debarment of the bidder/offeror by the City of Harrisonburg.

**TAXES:** Sales to the City of Harrisonburg are normally exempt from State sales tax. Virginia Sales and Use Tax Certificate of Exemption, Form ST-12, will be issued upon request. The City may also be exempt from other taxes and fees.

## AWARD

### CONTRACT AWARD

For ITB: The award(s) made in response to an ITB will be made to the lowest responsive and responsible bidder(s) for each item, or group of items indicated in the bid. The City reserves the right to make the sole determination of whether the product and/or options offered meet the minimum specifications and is acceptable in accordance with the specifications. The City's decision shall be final. The City reserves the right to make a separate award for each item, a group of items or all items, and to make awards either in whole or in part, whichever is deemed by the City to be in its best interest. Delivery time lines may be a factor in making an award.

For RFP: The award(s) made in response to an RFP will be made to the highest qualified offeror whose proposal is determined to be the most advantageous to the City, taking into consideration the evaluation criteria set forth in the RFP. After negotiations, the offeror who has made the best proposal and provides the best value shall be awarded the contract.

Professional services shall be procured and awarded by competitive negotiation as set forth in **2.2-4302.2 A 4.**

The City reserves the right to cancel a solicitation at any time and to reject any or all bids/proposals, in whole or in part, to waive any informality and to delete items prior to making the award(s), whenever it is deemed in the sole opinion of the City to be in its best interest.

**NEGOTIATION WITH THE LOWEST BIDDER: 2.2-4318** Unless all bids are canceled or rejected, the City reserves the right to negotiate with the lowest responsive and responsible bidder to obtain a contract price within the funds available to the City whenever such low bid exceeds the City's available funds for the project. The City shall initiate such negotiations by written notice to the lowest responsive, responsible bidder that its bid exceeds the available funds and the City wishes to negotiate a lower contract price. The times, places and manner of negotiating shall be agreed to by the City and the lowest responsive, responsible bidder.

**PRECEDENCE of TERMS:** General Terms and Conditions shall apply in all instances with the exceptions for projects funded by the Federal Highway Administration (FHWA) and by the Federal Transportation Administration (FTA). In the event there is a conflict between the General Terms and Conditions and any Federal, Special, Standard, or Supplementary Terms and Conditions in this solicitation, the Federal, Special, Standard, or Supplementary Terms and Conditions shall apply.

**QUALIFICATIONS of BIDDERS/OFFERORS:** The City may make such reasonable investigations as deemed proper and necessary to determine the responsibility and 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.

**SELECTION PROCESS/NOTICE OF AWARD:** Upon the award or the announcement of the decision to award a contract as a result of this solicitation, the Purchasing office will publicly post such notice and/or will notify all responsive bidders/offerors and records are available for public inspection in accordance with the VA Freedom of Information Act (VA Code 2.2-3700 et seq). The City posts all Notice of Awards on eVA at www.eva.virginia.gov.

## CONTRACT PROVISIONS

**ANTI-DISCRIMINATION: 2.2-4311** By submitting their bids/proposals, bidders/offerors certify to the City 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.

In every contract over $10,000 the provisions 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, 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 these requirements.
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.

**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.

**APPLICABLE LAWS and COURTS:** This solicitation and any resulting contract shall be governed in all respects by the laws of the Commonwealth of Virginia, excluding its conflict of laws provisions, and venue for litigation with any respect thereto shall be proper only in the Circuit Court of Rockingham County, Virginia. The contractor shall comply with all applicable federal, state and local laws, rules and regulations.

**ASSIGNMENT of CONTRACT:** A contract shall not be assignable by the contractor in whole or in part without the written consent of the City.

**CHANGES to the CONTRACT:** Changes can be made to the contract in any of the following ways:
1. The parties by mutual agreement in writing, to modify the terms, conditions or scope of the contract subject to item 2. below. Any additional goods or services to be provided shall be of a sort that is ancillary to the contract goods or services, or within the same broad product or service categories as were included in the contract award. Any increase or decrease in the price of the contract resulting from such modification shall be agreed to by the parties as a part of their written agreement to modify the scope of the contract.
2. A public contract may include provisions for modification of the contract during performance, but no fixed-price contract may be increased by more than twenty-five percent (25%) of the amount of the contract or $50,000, whichever is greater, without the advance written approval of the Harrisonburg City Council. In no event may the amount of any contract, without adequate consideration, be increased for any purpose, including, but not limited to, relief of a bidder/offeror from the consequences of an error in its (bid/offer). **2.2-4309**
3. The Procurement Manager (or City delegated agent) may order changes within the general scope of the contract at any time by written notice to the contractor. Changes within the scope of the contract include, but are not limited to, things such as services to be performed, the method of packing or shipment, and the place of delivery or installation. The contractor shall comply with the notice upon receipt unless the contractor intends to claim an adjustment to compensation, schedule, or other contractual impact that would be caused by complying with such notice, in which case the contractor shall, in writing, promptly notify the City of the adjustment to be sought, and before proceeding to comply with the notice, shall await the City's written decision affirming, modifying, or revoking the prior written notice. If the City decides to issue a notice that requires an adjustment to compensation, the contractor shall be compensated for any additional costs incurred as the result of such order and shall give the City a credit for any savings. Said compensation shall be determined by one of the following methods:
   a. By mutual agreement between the parties in writing; or
   b. By agreeing upon a unit price or using a unit price set forth in the contract, if the work to be done can be expressed in units, and the contractor accounts for the number of units of work performed, subject to the City's right to audit the contractor's records and/or to determine the correct number of units independently; or
   c. By ordering the contractor to proceed with the work and keep a record of all costs incurred and savings realized. A markup for overhead and profit may be allowed if provided by the contract. The same markup shall be used for determining a decrease in price as the result of savings realized. The contractor shall present the City with all vouchers and records of expenses incurred and savings realized. The City shall have the right to audit the records of the contractor as it deems necessary to determine costs or savings. Any claim for an adjustment in price under this provision must be asserted by written notice to the City within thirty (30) days from the date of receipt of the written order from the City. If the parties fail to agree on an amount of adjustment, the question of an increase or decrease in the contract price or time for performance shall be resolved in accordance with the procedures for resolving disputes provided by the Disputes Clause of this contract or, if there is none, in accordance with the disputes provisions of the City of Harrisonburg Purchasing and Contracting Policy Manual. Neither the existence of a claim nor a dispute resolution process, litigation or any other

provision of this contract shall excuse the contractor from promptly complying with the changes ordered by the City or with the performance of the contract generally.

**CONTRACT EXECUTION:** Per City Code (Sec 3-1-2, 3-1-1), the City Manager and the Deputy City Manager shall have authority to execute all contracts and agreements on behalf of the City except as otherwise directed by the Harrisonburg City Council in specific instances.

**CONTRACTUAL DISPUTES:** Contractual claim procedures shall be as per Code of VA **2.2-4363**.

**COOPERATIVE PROCUREMENT: 2.2-4304** This procurement is being conducted in accordance with the provisions of 2.2-4304 Code of VA. Except for contracts for architectural and engineering services, if agreed to by the contractor, other public bodies may utilize this contract. The Contractor shall deal directly with any public body it authorizes to use the contract. The City, its officials and staff are not responsible for placement of orders,invoicing, payments, contractual disputes, or any other transactions between the Contractor and any other public bodies, and in no event shall the City, its officials or staff be responsible for any costs, damages or injury resulting to any party from use of a City Contract. The City assumes no responsibility for any notification of the availability of the contract for use by other public bodies, but the Contractor may conduct such notification. Other public bodies desiring to use this contract must make their own legal determination as to whether the use of this contract is consistent with their laws, regulations, and other policies

**DEFAULT:** In case of failure to deliver goods or services in accordance with the contract terms and conditions, the City, after due oral or written notice, may procure items of a comparable quality from other sources and hold the contractor responsible for any resulting additional costs above the contract price when purchases are made in the open market. This remedy shall be in addition to any other remedies, which the City may have.

**DRUG-FREE WORKPLACE: 2.2-4312** During the performance of this contract, the contractor agrees to: (i) provide a drug-free workplace for the contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

**IMMIGRATION REFORM and CONTROL ACT OF 1986: 2.2-4311.1** By submitting their bids/proposals, bidders/offerors certify that they do not and will not during the performance of this contract employ illegal alien workers or otherwise violate the provisions of the federal Immigration Reform and Control Act of 1986.

**INDEMNIFICATION:** Contractor agrees to indemnify, defend and hold harmless the City, its officers, agents, volunteers, and employees against any and all liability, losses, damages, claims, causes of action, suits of any nature, cost, and expenses, including attorney's fees, resulting from or arising out of Contractor's or it's agent's and subcontractor's negligent activities or omissions, or from which the Contractor would have legal liability outside of contract.

**INSURANCE:** By signing and submitting a bid/proposal under this solicitation, the bidder/offeror certifies that if awarded the contract, it will have insurance coverages per the solicitation document at the time of contract execution. For construction contracts, if any subcontractors are involved, the subcontractor will have workers' compensation insurance in accordance with **2.2-4332** and **65.2-800** et seq. of the Code of Virginia. The bidder/offeror further certifies that the contractor and any subcontractors will maintain these insurance coverages during the entire term of the contract and that all insurance coverages will be provided by insurance companies authorized to sell insurance in Virginia by the Virginia State Corporation Commission.

**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.

**NONDISCRIMINATION OF CONTRACTORS: 2.2-4343.1H** A bidder, offeror, or contractor shall not be discriminated against in the solicitation or award of this contract because of race, religion, color, sex, 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 his objection, access to equivalent goods, services, or disbursements from an alternative provider.

**PAYMENT: 2.2-4352 – 2.2-4354**

1. To Prime Contractor:
   Invoices for items ordered, delivered and accepted shall be submitted by the contractor directly to the payment address shown on the purchase order/contract. Any payment terms requiring payment in less than 45 days will be regarded as requiring payment 45 days after invoice or delivery, whichever occurs last. This shall not affect offers of discounts for payment in less than 45 days, however. All goods or services provided under this contract or purchase order, that are to be paid for with public funds, shall be billed by the contractor at the contract price.

   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. Individual contractors shall provide their social security numbers, and proprietors, partnerships, and corporations shall provide the City with a federal employer identification number, prior to receiving any payment from the City. The City requires an updated IRS Form W-9 be filed with the Purchasing Office at or before the contract is signed.

   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 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 the City of its prompt payment obligations with respect to those charges which are not in dispute **(2.2.4363).**

2. To Subcontractors:
   A contractor awarded a contract under this solicitation is hereby obligated to pay the subcontractor(s) within seven (7) days of the contractor's receipt of payment from the City for the proportionate share of the payment received for work performed by the subcontractor(s) under the contract; or;

   Notify the City and the subcontractor(s), in writing, of the contractor's intention to withhold payment and the reason.
   The contractor 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 contractor that remain unpaid seven (7) days following receipt of payment from the City, 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. A contractor's obligation to pay an interest charge to a subcontractor may not be construed to be an obligation of the City. Any such contract awarded shall further require the contractor to include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor. A contractor's obligation to pay an interest charge to a subcontractor may not be construed to be an obligation of the City.

**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.

**TERMINATION:** Subject to the provisions below, the contract may be terminated by the City upon thirty (30) days advance written notice to the other party. Any contract cancellation notice shall not relieve the contractor of the obligation to deliver and perform on all outstanding orders issued prior to the effective date of cancellation.

1. Termination for Convenience: In the event that the contract is terminated upon request and for the convenience of the City, without the required thirty (30) days advance notice, then the City shall be responsible for payment of services up to the termination date.
2. Termination for Cause: Termination by the City for cause, default or negligence on the part of the contractor shall be excluded from the foregoing provision; termination costs, if any shall not apply. However, the City may hold the contractor responsible

for any resulting additional purchase and administrative costs. The thirty (30) day advance notice requirement is waived in the event of Termination for Cause.

3. Termination Due to Unavailability of Funds: Agreements are made subject to the appropriation of funds (including grant funds, gifts or donations) by the Harrisonburg 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.

## SPECIFICATIONS

**CONDITION OF ITEMS:** Unless otherwise specified in the solicitation, all items shall be new, latest edition/model in first class condition.

**FORMAL SPECIFICATIONS:** When a solicitation contains a specification which states no substitutes, no deviation therefrom will be permitted and the bidder will be required to furnish articles in conformity with that specification.

**USE OF BRAND NAMES: 2.2-4315** Unless otherwise provided in this solicitation, the name of a certain brand, make or manufacturer does not restrict bidders/offerors to the specific brand, make or manufacturer named, but conveys the general style, type, character, and quality of the article desired. Any article which the public body, in its sole discretion, determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted. The bidder/offeror is responsible to clearly and specifically identify the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the City to determine if the product offered meets the requirements of the solicitation. This is required even if offering the exact brand, make or manufacturer specified. Normally in competitive sealed bidding only the information furnished with the bid will be considered in the evaluation. Failure to furnish adequate data for evaluation purposes may result in declaring a bid nonresponsive. Unless the bidder/offeror clearly indicates in its bid/proposal that the product offered is an "equal" product, such bid/proposal will be considered to offer the brand name product referenced in the solicitation. The City reserves the right to determine the suitability of substituted items for those specified and to accept in whole or in part any and all bids/proposals received.

## DELIVERY

**DEFECTS OR IMPROPRIETIES:** In instances where there is a defect or impropriety in an invoice or in the goods or services received, the City shall notify the supplier of the defect or impropriety, if the defect or impropriety would prevent payment by the payment date. The notice shall be sent within (30) thirty days after receipt of the invoice or the goods or services.

**TESTING AND INSPECTION: 2.2-4302.1** The City reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications. Materials or components that have been rejected by the City, in accordance with the terms of the contract, shall be replaced by the Contractor at no cost to the City.

**TRANSPORTATION AND PACKAGING:** All materials shipped to the City must be shipped Free On Board (FOB) Destination unless otherwise stated in the contract. By submitting their bids/proposals, all bidders/offerors certify and warrant that the price offered for FOB destination includes only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped. Except as otherwise specified herein, standard commercial packaging, packing and shipping containers shall be used. All shipping containers shall be legibly marked or labeled on the outside with purchase order number, commodity description, and quantity.

## 0401 ESCROW ACCOUNT ELECTION

## 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 to use the Escrow Account Procedure for Retainage, an "Escrow Agreement" form will be provided by the City and 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 his rights to the use of the Escrow Account Procedure.

Company_____

Authorized Signature_____

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

0401 ESCROW AGREEMENT
CITY OF HARRISONBURG, VIRGINIA

THIS AGREEMENT ("Agreement"), made and entered into this _____ day of _____, 20_____ by, between and among the City of Harrisonburg, 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 Harrisonburg 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 his 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.

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 Harrisonburg 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 Harrisonburg City Treasurer, it shall be made in cash or cash 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 Rockingham County Circuit Court, or in the Rockingham County 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.

**SIGNATURE PAGE TO FOLLOW**

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

Typed Name of Contractor

Attest: (if corporation)
Witness: (if individual)

President/Vice-President;
Partner or Owner (Seal

Typed Name of Escrow Agent

Attest:

Bank Officer

Vice President

Witness:

Typed Name of Surety Company

By:_____
Attorney-In-Fact

Attest:

City of Harrisonburg, Virginia

City Clerk

City Manager/Deputy City Manager

Approved as to form:

City Attorney

Approved as to execution:

City Attorney

# 0501 AGREEMENT

This AGREEMENT is dated as of the ___ day of _____ in the year 20__ between the City of Harrisonburg, Virginia (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR). OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

## ARTICLE 1. WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents for the project titled City of Harrisonburg, Virginia, Harrisonburg Solid Waste Transfer Station. The Work is generally described as follows:

This project consists of restoring approximately 1,650 linear feet of an unnamed tributary to Sieberts Creek, a tributary to Blacks Run. Proposed restoration approach will involve channel filling, grading, excavation, and select structure placement to re-establish stable dimensions, pattern, and profile. Structures and bioengineering measures to be utilized include but not limited to riffles, boulder and log cross vanes, toe with soil lifts, imbricated walls, and j-hooks. Stream bank and riparian buffers will be planted with native trees, shrubs, and grasses.

## ARTICLE 2. CONTRACT ADMINSTRATOR

This Project has been designed by the Ecosystems Services and administered by the Department of Public Works. The Director of Public Works of Harrisonburg, Virginia, or their designee, is hereinafter called CONTRACT ADMINSTRATOR, will assume all duties and responsibilities and will have the rights and authority assigned to CONTRACT ADMINSTRATOR in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

## ARTICLE 3. CONSTRUCTION TIME AND LIQUIDATED DAMAGES

3.1 Contract Time shall be Fixed Completion Dates for the various phases of work as follows:

All work shall be completed by December 31, 2022.

3.2 Consideration for time extensions attributable to weather will not be given except as provided for in Section 108.04 of the VDOT Standard Specifications.

3.3 Liquidated Damages shall be in accordance with Section 0100 Instructions to Bidders, Item 8 of this Invitation to Bid.

## ARTICLE 4. CONTRACT PRICE

4.1 OWNER shall pay CONTRACTOR for performance of the Work in accordance with the Contract Documents such amounts as required by the Contract Documents.

## ARTICLE 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Schedule of Values submitted by the CONTRACTOR. Applications for Payment will be processed by CONTRACT ADMINSTRATOR as provided below.

5.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by CONTRACT ADMINSTRATOR, on or about the 1st day of each month during construction as provided below. All Progress Payments will be on the basis of the progress of the Work measured by the schedule of values.

5.1.1 Prior to completion Progress Payments will be made in an amount equal to:

95% of the Work completed, and

95% of the materials and equipment not incorporated in the Work but delivered and suitably stored less in each case the aggregate of payment previously made.

5.1.2 Upon substantial completion, OWNER shall pay amount sufficient to increase total payments to CONTRACTOR to 98% of the Contract Price, less such amount as CONTRACT ADMINSTRATOR shall determine in accordance with Contract.

5.2. Final Payment. Upon final completion and acceptance of the Work in accordance with the Contract OWNER shall pay the remainder of the Contract Price as recommended by CONTRACT ADMINSTRATOR as provided in said Contract.

## ARTICLE 6. INTEREST

All monies not paid when due hereunder shall bear interest at maximum rated allowed by law at the place of the Project.

## ARTICLE 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

7.1 CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

7.2 CONTRACTOR has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which were relied upon by CONTRACT ADMINSTRATOR in the preparation of the Drawings and Specifications and which have been identified in the Supplementary Conditions.

7.3 CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in Paragraph 7.2. as he deems necessary for the performance of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examination, investigations, tests, reports or similar data are or will be required by CONTRACTOR for such purposes.

7.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.

7.5 CONTRACTOR has given CONTRACT ADMINSTRATOR written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by CONTRACT ADMINSTRATOR is acceptable to CONTRACTOR.

## ARTICLE 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR are attached by reference to this Agreement, made a part hereof and consist of the following:

8.1 This Agreement (pages 1 to 5, inclusive)

8.2 Performance and Payment bonds

8.3 Certificate of Insurance and Endorsement

8.4 Notice of Award

8.5 Notice to Proceed

8.6 City's Invitation to Bid ITB#2022013-PW-B "Mountain View Drive Stream Restoration"

8.7 Drawings

8.8 Signed Addenda

8.9 Contractor's Bid

8.10 Documentation submitted by Contractor prior to Notice of Award.

8.11 Any modifications or change orders, duly delivered after execution of Agreement.

All contract documents must be listed in this article. Contract documents may be altered, amended or repealed only as allowed by the City's General Terms and Conditions.

## ARTICLE 9. MISCELLANEOUS

9.1 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, monies that may become due and monies that are now due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.2 OWNER and CONTRACTOR each binds himself, his partners, successors, assigns and legal representatives to the party hereto, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

**ARTICLE 10. OTHER PROVISIONS**

IN WITNESS WHEREOF, the parties hereto have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and CONTRACT ADMINSTRATOR. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by CONTRACT ADMINSTRATOR on their behalf.

OWNER: City of Harrisonburg

Signature_____

Name & Title: _____

Attest _____

Address for giving notices:

_____

_____

CONTRACTOR:_____

Signature_____

Name & Title:_____

Attest_____

Address for giving notices:

_____

_____

License No._____

END OF AGREEMENT

# 0502 NOTICE TO PROCEED

**DATE:**_____

**TO:** _____

_____

_____

**Re:** **City of Harrisonburg**

**PROJECT TITLE:** _____

**PROJECT NO:** _____

In accordance with the Contract between the City of Harrisonburg and Contractor you are notified that the Time for Completion under the above Agreement will commence to run on _____ , 20 _____. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Contract between Owner and Contractor, the Work shall be substantially completed within _____ calendar days from and after the said date, which is _____, 20_____.

Before you may start any Work at the site, the City of Harrisonburg requires that you deliver to the City the Certificates of Insurance which the Contractor is required to purchase and maintain in accordance with the Contract Documents.

By _____
Owner Authorized Signature

_____
Name & Title (Print)

# 0800 APPLICATION FOR PAYMENT

1. Applications for progress payment shall be made on forms identical/similar to those shown on pages 0800-2 and 0800-3. The following application for payment is an excel spreadsheet and will be made available for the contractor's use.

2. A draft of the application for progress payment shall be emailed to the Project Manager and Project Coordinator for review. After review and approval by the City, the contractor shall **mail two signed applications** for progress payment to: 320 East Mosby Road, Harrisonburg, VA 22801.

3. The Contractor shall submit daily quantities for review to the Project Manager and Project Coordinator no later than 10:00 AM on the following day. After reviewing, the City will sign-off on the submitted quantities and return to the Contractor.

4. Any quantity issues will be handled by the inspector and/or Project Manager and will be discussed with the Contractor. Any change in quantities, based on their final decision, will be noted on the submitted quantity sheet and returned to the Contractor.

## 0800 APPLICATION AND CERTIFICATE FOR PAYMENT

To Owner: City of Harrisonburg
320 E. Mosby Rd.
Harrisonburg, VA 22801

Project:

Application No.:

Period To:

From Contractor:

Contract Date:

| | |
|---|---|
| 1. Original Contract Sum | $ |
| 2. Net Change by Change Order | $ |
| 3. Contract Sum To Date (line 1 + line 2) | $ |
| 4. Total Completed and Stored To Date (column G) | $ |
| 5. Retainage: | |
| a. ___% of Completed Work (column D + column E) | $ |
| b. ___% of Stored Materials (column F) | $ |
| 6. Total Earned Less Retainage (line 4 less line 5) | $ |
| 7. Less Previous Applications for Payment | $ |
| 8. Current Payment Due | $ |
| 9. Balance to Finish, Plus Retainage | $ |

| CHANGE ORDER SUMMARY | Additions | Deductions |
|---|---|---|
| Total Changes Approved Previously | | |
| Total Approved this Month | | |
| Totals | | |
| **Net Changes by Change Order** | | |

The undersigned contractor hereby swears and under penalty of perjury that (1) all previous progress payments received from the owner on account of work performed under the contract referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with work covered by prior applications for payment under said contract, being Applications for Payment 1 through _____ inclusive; and (2) all materials and equipment incorporated in said project or otherwise listed in or covered by this application for payment are free and clear of all liens, claims, security and encumbrances.

Signature _____ Date _____

Printed Name _____ Title _____

State of _____ County of _____

Before me this _____ day of _____, 20 __ personally appeared _____ known to me, who being duly sworn, did depose and say that he/she is the _____ of the contractor above mentioned, that he/she executed the above application for payment on behalf of said contractor and that all of the statements contained herein are true, correct and complete.

Notary Public _____ Registration No. _____

My Commission Expires _____

APPLICATION NO.: PERIOD TO: PROJECT:

| A | B | C | | | | D | | E | | F | G | | | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE NO. | WORK DESCRIPTION | SCHEDULED VALUE | | | | COMPLETED WORK PREVIOUS PERIOD | | COMPLETED WORK THIS PERIOD | | STORED MATERIAL (not in D or E) | TOTAL WORK COMPLETED TO DATE | | % (G/C) | BALANCE TO COMPLETION (C-G) |
| | | Unit | Qty. | Unit Price | Amount | Qty. | Total | Qty. | Total | | Qty | Total | | |
| 1 | MOBILIZATION | LS | 1 | $200.00 | $200.00 | 0.50 | $100.00 | 0.50 | $100.00 | | 1.00 | $200.00 | 100% | $0.00 |
| 2 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 3 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 4 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 5 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 6 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 7 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 8 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 9 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 10 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 11 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 12 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 13 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 14 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 15 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 16 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 17 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 18 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 19 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 20 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 21 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| 22 | | | | | $0.00 | | | | $0.00 | | 0.00 | $0.00 | #DIV/0! | $0.00 |
| TOTALS | | $200.00 | | | | | $100.00 | $100.00 | | $0.00 | | $200.00 | | $0.00 |

# SECTION 1000
# SUPPLEMENTAL SPECIFICATIONS

# MOUNTAIN VIEW DRIVE STREAM RESTORATION

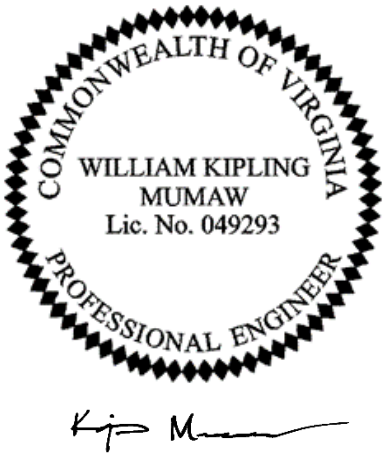
## TECHNICAL SPECIFICATIONS MANUAL

**Prepared For:**
City of Harrisonburg
Attn: Tom Hartman, PE
Public Works Department
320 East Mosby St.
Harrisonburg, VA 22801

**Prepared By:**


Ecosystem Services, LLC
Attn: Kip Mumaw, P.E.
1739 Allied Drive, Suite A
Charlottesville, VA 22903


**August 2021**



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# ***Section 1: Site Preparation***

## Special Provision 1: Mobilization

### 1. Description

Mobilization shall consist of furnishing, transporting, and stockpiling of all Materials for assembling and setting up for the project's operations. Mobilization shall include, but is not limited to, all activities and associated costs for transportation of Contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, staging areas, stockpiling areas, and other necessary general facilities for the Contractor's operations at the site, including coinsurance and reinsurance agreements as applicable; and other items specified.

Mobilization shall include sanitary facilities. The Contractor shall furnish and install temporary sanitary facilities for use throughout the Construction period. This includes containers to dispense drinking water, enclosed toilet facilities and general washing facilities for Construction personnel, which complies with OSHA safety and health regulations and local ordinances. Appropriate sanitary facilities are to be established within the project site.

Mobilization shall include all activities and costs for demobilization as well, including transportation of personnel, equipment, and supplies not required or included in the contract from the site, in addition to disassembly, removal, and site cleanup.

### 2. Measurement and Payment

Mobilization, including demobilization, shall be measured and paid for as a lump sum (LS) item. No additional payment will be made for demobilization and remobilization because of shutdowns, suspensions of work, or other mobilization activities.

Fifty percent (50%) of the mobilization will be paid on the initial movement of equipment and personnel. Another 25% will be paid midway through the project. The last 25% will be paid at completion of demobilization.

## Special Provision 2: Construction Stakeout

### 1. Description

Construction stakeout survey shall include, but not be limited to, setting the Construction baseline staking the proposed channel centerline (PT, PC, and radius of curvature), staking of structures, and any other survey incidental to Construction or as directed by the City of Harrisonburg and/or Engineer. At a minimum, the Contractor is responsible for:

- All Construction staking including point of tangency, point of curvature, radius point, and limits of Construction.
- Layout and maintenance of a Construction baseline that is offset from the baseline.
- Staking all horizontal centerline control, elevation benchmarks, and structure

location and elevation.
- Erosion and sediment control and critical areas.
- Benchmarks shall be set and preserved.

**2. Measurement and Payment**

Construction stakeout shall be measured and paid for as a lump sum (LS) item. The payment will be full compensation for furnishing, placing, and maintaining Construction stakeout necessary to complete the work.

## Special Provision 3: Photographic Documentation

**1. Description**

Photographic requirements for photographic documentation of Construction and their required submittals. At a minimum, the Construction Oversight Consultant is responsible for:

- Submit photographs taken prior to start of Construction to show original site conditions.
- Submit color progress photographs in a digital format (JPEG, JPG, BMP, or TIFF file types) with each payment application. Progress photos are to be taken no more than seven (7) days before inclusion with payment application. Files shall be labeled in such a way so as to easily determine the date taken. Photos should be submitted on a clearly labeled CD or DVD, or other digital media approved by the City of Harrisonburg.

**2. Execution**

A. PreConstruction Photographs

- Prior to commencement of any Construction, take color photographs of entire limits of project and streets proposed to detour traffic or where Construction traffic will ingress/egress the project site. Present digital copy to the City of Harrisonburg for use in contract administration and inspection.
- Take sufficient number of photographs to show structural condition of concrete/asphalt and conditions of existing trees, shrubs, and grass. Fully document conditions of adjacent features such as driveway entrances, sidewalks, gardens, etc.

B. Progress Photographs

- Progress photos need only be taken in disturbed or active areas of Construction.

C. Post-Construction Photographs

- Upon final stabilization, but prior to project close-out, take color photographs of all features originally documented in item A.
- Document any changes evident in photographs that represent damage or concerns

to adjacent property and provide to the Town of Christiansburg.

- Contractor shall be responsible for repair or replacement of damaged structures or property.

**3. Measurement and Payment**

Payment is included in the cost of Construction administration to the Consultant.

## ***Section 2:*** ***Site Maintenance***

## Special Provision 4:Erosion & Sediment Control

1. **Description**

An Erosion and Sediment Control (ESC) Plan has been completed and is included in the approved Construction plan set. Contractor shall perform all work in accordance with the Virginia Erosion and Sediment Control Handbook, Third Edition, dated 1992, the Contract Documents, or as directed by the City of Harrisonburg and/or Engineer.

2. **Measurement and Payment**

Erosion and Sediment Control will be measured for payment on a linear foot (LF) basis for Silt Fence and Safety Fence, per each (EA) for Construction Entrance, Tree Protection, and Temporary Stream Crossing. 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 Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 5: Streamflow Maintenance

1. **Description**

This work shall consist of furnishing, installing, maintaining, and removing any and all pump around systems used on this project. The Contractor shall install a pump around system in locations shown on plans and approved by the City of Harrisonburg and/or Engineer. The number of pump around operations may be increased, decreased, or eliminated. Such variations in quantity will not be considered as alterations in the details of Construction or a change in the character of the work.

2. **Materials**

A. Sandbags

Sandbags shall consist of Materials which are resistant to ultraviolet radiation, tearing, and puncture and woven tightly enough to prevent leakage of fill material (i.e. sand, fine gravel, etc.).

B. Sheeting

Sheeting shall consist of polyethylene plastic, which is impervious and resistant to puncture and tearing.

C. Pump(s)

Pump(s) shall be large enough to maintain uninterrupted base flow to the channel downstream of the work area. The pump around shall include a hose suitable to convey

water overland to the downstream section. Minimum linear feet of hose required is equivalent to the maximum estimate for one workday provided by the Contractor. The pump shall be shut off at night and baseflow shall flow through the completed and stabilized portion of the project into the existing downstream channel unless otherwise noted in the Contract Documents.

D. Filter bags

Filter bags made of non-woven geotextile as specified in the Contract Documents shall be used for dewatering the turbid water within the active work area.

**3. Construction**

A. Installation of sand bags, sheeting, and pump around shall be in accordance with the approved erosion and sediment control plan in the Contract Documents, or as directed by the City of Harrisonburg.

B. The diversion structure shall be installed from upstream to downstream.

C. The height of the sand bag diversion structure shall be a minimum of baseflow depth plus one foot, and a minimum of 2 feet. Further, the sand bag diversion shall be of sufficient height as to provide a pool deep enough to maintain pumping operations.

D. Sheeting shall overlap the sandbags such that the upstream portion covers the downstream sandbag face with at least an 18 inch overlap.

E. When dewatering the work area, the pump shall discharge into a non-woven geotextile filter bag of adequate size to accommodate the incoming flow as specified in the Contract Documents. The filter bag must be placed within the Limits of Disturbance on a flat surface to allow dewatering without creating erosive conditions in the area of the outfall.

**4. Measurement and Payment**

Stream Flow Maintenance (also referred to as pump around practice) shall be measured and paid for as a lump sum (LS) item. The payment will be full compensation for installing and maintaining stream flow maintenance. Payment shall include sand bags, geotextile fabric, pumps, hoses, and any other Materials, labor, equipment, tools, stockpiling, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 6:Temporary Access Path

**1. Description**

This work shall consist of installing, maintaining, and removing a temporary access path constructed of shredded hardwood mulch for the purpose of maintaining a stable access path to active Construction areas and minimizing ground and tree disturbance as specified

in the Contract Documents, or as directed by the City of Harrisonburg and/or Engineer and/or Engineer.

**2. Materials**

A. Shredded Hardwood Mulch

Shredded hardwood mulch shall consist of natural wood and bark from hardwood trees that has been milled and screened to a maximum 4 in. particle size.

**3. Construction**

A. Installation

The access paths shall be a minimum of 10-feet wide and 6 inches in depth. These dimensions shall be maintained throughout the duration of the project.

B. Upon completion of Construction activities, mulch access roads will be removed or abandoned in place as directed by the City of Harrisonburg and/or Engineer.

C. Cleanup

During installation of mulch access paths, 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. The Contractor shall be responsible for onsite and/or offsite removal of mulch during final stabilization and close-out of project.

**4. Measurement and Payment**

Temporary access paths shall be measured and paid for at the contract unit price per cubic yard (CY) of access path installed. The payment will be full compensation for the installation, maintenance, and removal of the temporary access path as shown on the plans, including all Materials, labor, equipment, tools, stockpiling and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg.

## Special Provision 7: Staging and Stockpile Areas

**1. Description**

This work shall consist of installing, maintaining, and removing stockpile/staging areas for the purpose of maintaining stable Materials and equipment storage areas as specified in the Contract Documents, or as directed by the City of Harrisonburg.

**2. Materials**

A. Geotextile fabric as specified in the Contract Documents., <u>if deemed necessary and required by the City</u>.

B. Hardwood Mats, if deemed necessary and required by the City.

C. Silt Fence as specified in the Contract Documents.

**3. Construction**

A. Installation

1. Hardwood Mats shall be installed by the contractor within active stockpile/staging areas during the tree removal stage as specified in the Contract Documents, or as directed by the City of Harrisonburg. Installation of Hardwood Mats shall be installed concurrently so that equipment used for specified tree removal within active stockpile/staging areas shall travel on top of installed Hardwood Mats.

2. Hardwood Mats shall be installed according to the detail provided in Contract Documents. Geotextile fabric must be installed under and extend a minimum of 4 feet around all active stockpile/staging areas.

3. Install Hardwood Mats in the areas designated in the Contract Documents. Place the hardwood mats such that the timbers run parallel with the vehicle tread (to increase durability). Subsequent mats shall be installed such that the ends and sides abut one another.

4. Silt fence shall be installed around the downhill end of the stockpile/staging areas as specified in the Erosion and Sediment Control Plan and Details presented in the Contract Documents, or as directed by the City of Harrisonburg.

5. Any erodible Materials left in stockpile areas shall be mulched or covered prior to rain events.

B. Clean-up

1. Remove Hardwood Mats starting with the mat farthest into the stockpile/staging areas and work back to the access path.

2. As mats are removed grade shall be returned to the pre-Construction grade and areas of vegetation shall be replanted according to the planting plan and vegetation schedule presented in the Contract Documents.

**4. Measurement and Payment**

Stockpile/staging areas shall not be measured and payment for shall be incidental to Special Provision 1 -Mobilization.

## Special Provision 8:Clearing & Grubbing

### 1. Description

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

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

B. Tree removal shall only be done in accordance with Contract Documents or as directed by the City of Harrisonburg and/or Engineer. The Contractor shall only clear and grub as much of the proposed grading area that the Contractor can complete and stabilize within the same day. The Contractor shall install tree protection fencing and matting, as described in the Contract Documents, prior to any disturbance.

### 2. Measurement and Payment

Clearing and grubbing shall be measured and paid for on a per acre (AC) basis. The payment will be full compensation for clearing, grubbing, and disposal of cleared and grubbed Materials. Payment shall include all Materials, labor, equipment, tools, stockpiling, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the City of Harrisonburg and/or Engineer.

# ***Section 3: Stream Construction***

## Special Provision 9:Earthwork

### 1. Description

Earthwork shall consist of performing all operations necessary to excavate and transport all cut and fill material, process material as required, and deposit, place, and compact material in accordance with the grades as shown on the plans, or as directed by the City of Harrisonburg and/or Engineer. Such earthwork shall include the loosening, removing, loading, transporting, stockpiling, depositing, and compacting of all Materials (including topsoil) wet and dry, as required for the purposes of completing the work. Earthwork also includes the offsite disposal/haul off of excess cut material that meets the criteria of excavated material as specified below. Every effort shall be made to minimize soil compaction in planting areas.

### 2. Materials

A. Excavated material shall consist of material excavated within the limits of the project. If material will not meet the criteria below for suitable fill it will be hauled off to an approved disposal site at the expense of the Contractor. If excavated material meets the criteria specified below for fill material, then it shall be stockpiled and used as necessary with furnished fill material.

B. Furnished fill material shall consist of material used to raise the site elevations to those specified in the grading plan. If sufficient satisfactory soil Materials for use as earth fill are not available from onsite excavations, it shall be the Contractor's responsibility to provide suitable earth fill material. Soils sufficient for use as earth fill include ASTM D 2487 Soil Classification Groups GW, GP, GM, GC, SW, SP, SM, and SC, or combination of these groups, or as approved by the City of Harrisonburg and/or Engineer. Earth fill shall be free of debris, waste, frozen Materials, vegetation, invasive species, pathogens, and any other deleterious matter.

C. Class A topsoil – See Special Provision – Topsoil

D. Class B topsoil – See Special Provision - Topsoil

### 3. Construction

A. 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 earthwork as necessary at no additional cost to the City of Harrisonburg and/or Engineer.

B. All erosion and sediment control devices shall be in place prior to commencement of earthwork activities.

C. All excess material shall be removed from the site and disposed of at a properly

permitted disposal site at the expense of the Contractor.

**4. Measurement and Payment**

Earthwork will be paid for through two line items, Furnished Fill Material and Excavated Material (Haul Off) and measured on a per cubic yard (CY) basis. The Contractor shall will be paid in full compensation for all earthwork required to install the measures in accordance with the plans and specifications, including, but not limited to, accessing the site, light bank grading, channel bank excavation, over excavating unsuitable Materials, placing and compacting select material, placing topsoil, mixing topsoil, backfilling undercut areas, channel bank sloping, hauling of suitable excavated material to locations within the project limits for use, and hauling of suitable or unsuitable excavated material to a satisfactory off-site location for disposal.

## Special Provision 10: Natural Fiber Matting

**1. Description**

This work shall consist of furnishing, transporting, maintaining, stockpiling, and properly installing natural fiber matting (secured with biodegradable stakes) on areas of stream bank grading and soil lifts which will not receive additional stabilization techniques, and at other locations designated in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

**2. Materials**

Natural fiber matting for both stream bank grading and soil lifts shall meet the specifications shown in the Construction plans. Biodegradable stakes used to secure natural matting shall be made of native hardwood species and meet the specifications shown in the Construction Drawings. The source of natural fiber matting and stakes shall be submitted to the City of Harrisonburg and/or Engineer for review and approval prior to beginning Construction. Installation shall be in accordance with the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

**3. Construction**

A. The Contractor shall place natural fiber matting along the stream edge as shown in the Construction Documents or as directed by the City of Harrisonburg and/or Engineer. The natural fiber matting shall be unrolled along the top of bank and across the full width of any bankfull or low flow benches, if present and shown in the Construction Drawings. Matting shall be placed in full contact with the soil. All exterior edges (those edges not overlapping with an adjacent natural fiber matting roll) shall be "keyed" into the ground a minimum of 6 inches in such a way that a seamless grade is created (<u>no humps or bulges in fabric will be permitted</u>).

B. Natural fiber matting edges (matting installed side by side at any given elevation) shall be overlapped a minimum of 6 inches and staked down using biodegradable stakes at maximum distance apart of 3-feet.

C. Natural fiber matting ends (where upstream roll abuts downstream roll) shall be placed such that the upstream roll overlaps the downstream roll a minimum of 6 inches and staked down using biodegradable stakes at a maximum distance apat of 3-feet.

D. Natural fiber matting ends (matting installed where ends of matting abut in-stream structures) shall be 'keyed-in' a minimum of 6 inches in such a way that a seamless grade, or transition, is created. (No humps or bulges will be accepted.) These edge areas shall be staked as specified on Construction Drawings.

**4. Measurement and Payment**

Natural Fiber Matting, including biodegradable stakes, for stream bank grading and soil lifts shall be measured and paid for on a per square yard (SY) basis. Payment for natural fiber matting shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 11: Geotextile Fabric

**1. Description**

This work shall consist of furnishing, transporting, maintaining, stockpiling, and properly installing Geotextile Fabric in the stream channel as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

**2. Materials**

Geotextile Fabric shall be Class D non-woven polypropylene. The fabric shall have a typical weight of 8 oz/sy (ASTM D-5261), apparent maximum opening size of 0.212 mm (ASTM D4751), minimum grab tensile strength of 120 lbs. (ASTM D-4632), and minimum puncture strength of 65 lbs. (ASTM D-4833). Specifications are also shown on plans.

**3. Measurement and Payment**

Payment for geotextile fabric shall be incidental to the installation of Boulder Cross Vanes, Log J-hooks, Boulder J-hooks, and Riffles as specified in the Contract Documents, or as directed by the City of Harrisonburg.

## Special Provision 12: Stream Bed Material

### 1. Description

This work shall consist of furnishing, transporting, stockpiling, maintaining, and placing stream bed material to be utilized for Construction of Riffles, Boulder J-Hook, Boulder Cross Vanes, Boulder Step Pools, and at other locations as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

### 2. Materials

A. Stream bed material shall consist of natural field Boulder, natural river Boulder, or crushed Boulder. 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.

B. Source of stream bed material shall be from an approved mining operation with up-to-date regulatory permits and/or the project site. Stream bed material shall NOT be indiscriminately mined from active streams and rivers other than the project site.

C. Stream bed material shall be a mixture that matches as closely as possible the gradation provided in the Construction plans.

D. Stream bed material may be salvaged on-site. Salvaged material must be determined to meet as closely as possible the gradation provided in the Construction plans or mixed with imported material until it meets this gradation.

E. Samples of stream bed material, imported or salvaged, shall be reviewed and approved by the City of Harrisonburg and/or Engineer, prior to its use in the project. Any unsuitable material brought onsite shall be removed at the Contractor's expense.

### 3. Construction

The Contractor shall install stream bed material as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

### 4. Measurement and Payment

Payment for streambed material shall be incidental to the installation of Boulder Cross Vanes, Log J-hooks, Boulder J-hooks, and Riffles as specified in the Contract Documents, or as directed by the City of Harrisonburg.

## Special Provision 13: Boulder Material

### 1. Description

This work shall consist of furnishing, transporting, stockpiling, maintaining, and placing of Boulder for the Imbricated Wall, Boulder Toe, Boulder Cross Vane, Boulder J-hook, and Boulder Step Pools as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

### 2. Materials

A. Boulder shall consist of angular flat boulders of appropriate color (e.g., green/gray, brown/gray, dark gray, and/or dark brown in color) obtained from an approved source. Boulder shall NOT be harvested from streams or rivers outside a commercial quarry operation. All boulder shall be free from laminations and weak cleavages, and shall not disintegrate from the action of air, salt water, or in handling and placing. Granular sedimentary boulder shall generally be unacceptable. Concrete shall not be considered as an alternative for boulders. White boulder is not acceptable.

B. Boulder sizes shall be as specified in the Construction Drawings for structures.

C. The boulder shall have a minimum unit weight of 160 pounds per cubic foot and meet the dimensions specified in the Construction Drawings.

D. The Contractor shall obtain from the quarry and submit to the City of Harrisonburg and/or Engineer a certificate verifying that the following meet all the above specifications – 1) Boulder, 2) Classification, 3) Weight per cubic foot, 4) Weight of boulder being supplied, and 5) Boulder quantity.

E. Due to the anticipated quarry preparatory time, and/or demand for the Boulder as specified in the Construction Drawings, it shall be the Contractor's responsibility to make all necessary arrangements with the source of supply in a timely fashion. This action shall ensure that the Contractor maintain an adequate supply of boulder material and that work shall not be unnecessarily delayed due to insufficient supply.

### 3. Construction

The Contractor shall install Boulder Material as specified in Construction Drawings.

### 4. Measurement and Payment

Payment for boulder material shall be incidental to the installation of Boulder Cross Vanes, Log J-hooks, Boulder J-hooks, and Riffles as specified in the Contract Documents, or as directed by the City of Harrisonburg.

## Special Provision 14: Logs

### 1. Description

This work shall consist of furnishing, transporting, stockpiling, maintaining and placing of logs in Log Cross Vanes, Log J-hook, and Brush Toe as specified in the Contract Documents, or as directed by the City of Harrisonburg.

### 2. Materials

A. Logs shall consist of on-site hardwood trees harvested during the clearing and grubbing process or imported logs. Logs shall be green timber, free of branches (except as noted in the Contract Documents for in- stream woody debris, free of roots, and rotted areas. Logs shall be one solid piece extending the entire vane arm or sill length unless otherwise noted in Contract Documents.

B. Log sizes shall be as specified in the Contract Documents.

C. Any unsuitable material shall be removed at the Contractor's expense.

D. The Contractor shall not be granted an extension of time or extra compensation due to delay caused by sampling, testing, approval or disapproval of log material under the requirements of these Specifications. It shall be the contractor's responsibility to make all necessary arrangements to save on-site material during clearing and grubbing and to maintain an adequate supply of log material and that work shall not be unnecessarily delayed due to inadequate supply.

### 3. Construction

The Contractor shall install logs as specified in Construction Drawings.

### 4. Measurement and Payment

Payment for logs shall be incidental to the installation of Log Cross Vane, Log J-hook, and Brush Toe as specified in the Contract Documents, or as directed by the City of Harrisonburg.

## Special Provision 15: Brush toe

### 1. Description

This work shall consist of furnishing, transporting, stockpiling, maintaining and placing of logs in Log Vanes, Log Steps, Log Vane Boulder J-Hooks, and Riffles as specified in the Contract Documents, or as directed by the City of Harrisonburg.

The work covered by this specification includes, but is not limited to, furnishing, stockpiling,placing, excavating, and maintaining approved rootwads, logs, brush material, natural fiber matting, live branch cuttings, and soil to be used in the Construction of the

Brush Toe structure, as specified in the Construction Drawings, or directed by the City and/or Engineer. Brush Toe is used to create stable, reinforced banks and undercut bank habitat.

**2. Materials**

A. Natural Fiber Matting

Natural Fiber Matting – See Special Provision Natural Fiber Matting and Contract Documents

B. Soil

Soil to be utilized for the Construction of the soil lift(s), shall meet the specification for Furnished Fill Material (See Engineering Plans).

C. Live branches

Live branches shall be as specified in the Contract Documents. shall be cut from fresh, green, healthy, dormant parent plants which are adapted to the site conditions when possible with the following guidelines; woody branches up to 1" in diameter and 3 to 5 feet (minimum) in length can be used for the Brush Toe. Live cut species types are indicated in the Construction details. Live branch cuttings shall be harvested within a 200-mile radius of the job site unless otherwise approved by the City and/or Engineer.

While plants are being transported to and from heeling-in beds, or are being distributed in planting beds, or are awaiting planting after distribution, the Contractor shall protect the plants from drying out by means of wet canvas, burlap, or straw, or by other means acceptable to the City and/or Engineer and appropriate to weather conditions and the length of time the roots will remain out of the ground. Live branches shall be oriented with the butt ends touching the soil in the back of each soil lift. If grading in the immediate area is completed during the dormant season, Brush Toe shall be installed immediately. If grading in the immediate area is completed during the growing season, the Brush Toe shall be planted with temporary seed and matting until the dormant season, at which time the Brush Toe shall be installed.

D. Brush and Log Material

This material shall consist of logs, rootwads, and all other wood debris from native hardwood species available onsite or imported from offsite.

**3. Construction**

The Contractor shall install logs as specified in Construction Drawings. The Contractor shall place rootwads, logs, brush material, natural fiber matting, soil, and live branches in locations shown on the plans, to the thickness, widths, and lengths shown on the plans and described in the details, or as directed by the City and/or Engineer. All rootwads, logs, brush material, coir fiber matting, live branch cuttings, and soil shall be placed to form an instream structure in accordance with the plans, neatly and uniformly, and shall meet the

approval of the City and/or Engineer.

**4. Measurement and Payment**

Brush Toe shall be measured and paid for on a per linear foot (LF) basis. Payment for brush toe shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 16: Boulder Cross Vane

**1. Description**

This work shall consist of furnishing, stockpiling, transporting, installing and maintaining Boulder cross vanes (including modified [differing arm lengths] or stepped structures) within the stream channel as specified in the Contract Documents, or as directed by the City and/or Engineer.

**2. Materials**

A. Footer Boulder

Footer Boulder shall meet the Specifications for 'Boulder Material' contained in the Contract Documents. Footer Boulder consists of Boulder placed below the invert of the proposed channel to provide support for the top Boulder and prevent downstream scour.

B. Header (Top) Boulder

Top Boulder (header Boulder) shall meet the Specifications for 'Boulder Material' contained in the Contract Documents. Top Boulder consists of Boulder placed upon the footer Boulder.

C. Sill Boulder

Sill Boulder shall meet the Specifications for 'Boulder Material' contained in the Contract Documents. Sill Boulder consists of a single row of Boulder at the ends of the structure arms. These Boulders shall be installed flush with grade and extend into existing bank Materials in a direction perpendicular to main channel flow.

D. Geotextile Fabric

See Special Provision for Geotextile fabric and the Contract Documents.

E. Stream Bed Material

See Special Provision for Stream Bed Material –and the Contract Documents.

## 3. Construction

A. Installation

1. Boulder cross vanes shall be constructed in a "V" formation so that adjoining Boulders taper up in elevation towards the stream bank in a downstream direction. Contractor shall install structures per Construction details and stakeout information provided in the Contract Documents, and as directed by the Town of Christiansburg.

2. The footer Boulders shall be installed by excavating a trench to accommodate both the footer Boulders and a 2-foot area upstream. The bottom of all footer Boulders shall be below (typically 18" or as otherwise specified in Contract Documents) the elevation of the deepest part of the pool associated with the structure. In the event that bedrock is present in the area of installation, footer Boulder shall still be required unless approval for elimination of footer Boulder is obtained from the City of Harrisonburg. For example, where bedrock is friable and weathered and can be trenched, footer Boulder will be required. In areas where bedrock is resistant and blasting would be required, the City of Harrisonburg shall determine whether or not to eliminate the footer Boulder.

3. Geotextile fabric shall be placed in the bottom and upstream side of the trench across the entire structure. Footer Boulders shall be placed at the bottom and downstream side of the trench so that a minimum of one (1) foot of geotextile fabric lies under the Boulder. The Boulders shall abut one another. The top elevation of the footer Boulder placed at the centerline of the stream shall be flush with the proposed stream grade immediately below the step structure. Footer Boulders shall be firmly embedded into the trench bottom.

4. In the event that installation of the Boulder modified cross vane may damage tree roots, excavation shall be minimized. This may include reducing the length of the vane or eliminating trenching for footer Boulders and reinforced stream bed material. This decision shall be field determined and authorized by the Town of Christiansburg.

5. Top Boulders shall be placed tightly together (touching) on top of the footer Boulders, but offset slightly upstream (approx. 1/3rd of the Boulder diameter), as shown in the Construction details of the Contract Documents. Any remaining gaps present between the Boulders shall be filled-in ("chinked") with appropriately sized Boulder. The seams between top Boulders shall not line up with the seams of footer Boulders. Top Boulder elevations and locations shall be set according to the structure stakeout tables and structure points within the vertical and horizontal tolerances specified in the Contract Documents. The top elevation of the top Boulders placed at the thalweg shall be equal to the elevation of the thalweg, as specified on the profile and structure stakeout tables. Starting at the thalweg, adjacent Boulders shall taper up at a consistent slope (which is specified in stakeout and structure details) until reaching bankfull or an otherwise specified elevation. Consistent vane arm slope is important and undulations along the arm shall be unacceptable. Contractor shall install the structures as described in the stakeout locations and elevations specified in the Contract documents, and as directed by the City of Harrisbonburg.

6. The outermost top Boulders on each end of the cross vane shall be installed with at least one top Boulder buried into the stream bank. The trench behind the top Boulders shall be backfilled with reinforced stream bed material, taking care to fill all voids underneath and between the Boulders.

7. The trench behind the top Boulders shall be backfilled with reinforced stream bed material with the geotextile fabric between the reinforced stream bed material and top Boulders. The geotextile fabric shall be left so that it is visible above the top Boulders until the Boulders and reinforced stream bed material have been installed and inspected.

8. Sill Boulder consists of a single row of Boulder, underlain by geotextile fabric, beginning at the ends of the structure arms and extending into the floodplain or bankfull bench as shown in the grading plan of the Contract Documents or until extending fully across any fill areas, unless otherwise noted on the plan sheets or directed by the Town of Christiansburg. Sill Boulders shall be aligned perpendicular to the stream, with each Boulder abutted tightly against each other and the top face installed flush with proposed grade.

9. Reinforced stream bed material shall be placed to a depth of one (1) foot along the entire restored channel upstream and downstream of the Boulder modified cross vanes. Reinforced stream bed material shall be placed to the proposed invert elevation as shown in the Contract Documents.

10. After inspection, trim the geotextile fabric flush with the top Boulders and reinforced stream bed material.

B. Cleanup

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

2. Remove unsuitable and surplus Boulders and excavated Materials to fill areas or approved off-site locations.

**4. Measurement and Payment**

Payment for Boulder Cross Vanes shall be measured and paid for at the Contract unit price per each (EA). Payment for structure shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 17: Log Cross Vane

### 1. Description

This work shall consist of furnishing, stockpiling, transporting, installing and maintaining log cross vanes (including modified [differing arm lengths] or stepped structures) within the stream channel as specified in the Contract Documents, or as directed by the City and/or Engineer.

### 2. Materials

A. Footer Log

Footer logs shall meet the Specifications for 'Logs' contained in the Contract Documents. Footer log consists of log placed below the invert of the proposed channel to provide support for the top log and prevent downstream scour.

B. Header (Top) Log

Top logs (header logs) shall meet the Specifications for 'Logs' contained in the Contract Documents. Top logs consists of log placed upon the footer log.

C. Sill Boulder

Sill Boulder shall meet the Specifications for 'Boulder Material' contained in the Contract Documents. Sill Boulder consists of a single row of Boulder at the ends of the structure arms. These Boulders shall be installed flush with grade and extend into existing bank Materials in a direction perpendicular to main channel flow.

D. Geotextile Fabric

Geotextile fabric shall meet the Specifications for 'Geotextile Fabric' contained in the Contract Documents.

E. Stream Bed Material

Stream bed material shall meet the Specifications for 'Stream Bed Material' contained in the Contract Documents.

### 3. Construction

A. Installation

1. Log cross vanes shall be constructed in a "V" formation so that header and footer logs taper up in elevation towards the stream bank in a downstream direction. Contractor shall install structures per Construction details and stakeout information provided in the Contract Documents, and as directed by the City and/or Engineer.

2. The footer logs shall be installed by excavating a trench to accommodate both the footer logs and a minimum 2-foot area upstream. The bottom of all footer logs shall be below (typically 18" or as otherwise specified in Contract Documents) the elevation of the deepest part of the pool associated with the structure. In the event that bedrock is present in the area of installation, footer logs shall still be required unless approval for elimination of footer log is obtained from the City. For example, where bedrock is friable and weathered and can be trenched, footer logs will be required. In areas where bedrock is resistant and blasting would be required, the City of Harrisonburg shall determine whether or not to eliminate the footer Boulder.

3. Geotextile fabric shall be placed in the bottom and upstream side of the trench across the entire structure. Footer logs shall be placed at the bottom and downstream side of the trench so that a minimum of one (1) foot of geotextile fabric lies under the Boulder. The logs shall abut one another. The top elevation of the footer log placed at the centerline of the stream shall be flush with the proposed stream grade immediately below the step structure. Footer logs shall be firmly embedded into the trench bottom.

4. In the event that installation of the log cross vane may damage tree roots, excavation shall be minimized. This may include reducing the length of the vane or eliminating trenching for footer logs and reinforced stream bed material. This decision shall be field determined and authorized by the City.

5. Top log shall be placed tightly together (touching) on top of the footer log, but offset slightly upstream (approx. 1/3rd of the log diameter), as shown in the Construction details of the Contract Documents. Top log elevations and locations shall be set according to the structure stakeout tables and structure points within the vertical and horizontal tolerances specified in the Contract Documents. The top elevation of the top logs placed at the thalweg shall be equal to the elevation of the thalweg, as specified on the profile and structure stakeout tables. Starting at the thalweg, log shall taper up at a consistent slope (which is specified in stakeout and structure details) until reaching bankfull or an otherwise specified elevation. Contractor shall install the structures as described in the stakeout locations and elevations specified in the Contract documents, and as directed by the City of Harrisbonburg.

6. The trench behind thelog shall be backfilled with stream bed material, taking care to fill all voids underneath and between the Boulders.

7. The trench behind the top log shall be backfilled with reinforced stream bed material with the geotextile fabric between the stream bed material and top Boulders. The geotextile fabric shall be left so that it is visible above the top Boulders until the Boulders and stream bed material have been installed and inspected.

8. Sill Boulder consists of a single row of Boulder, underlain by geotextile fabric, beginning at the ends of the structure arms and extending into the floodplain or bankfull bench as shown in the grading plan of the Contract Documents or until extending fully across any fill areas, unless otherwise noted on the plan sheets or directed by the City. Sill Boulders shall be aligned perpendicular to the stream, with

each Boulder abutted tightly against each other and the top face installed flush with proposed grade.

9. Stream bed material shall be placed to a depth of one (1) foot along the entire restored channel upstream and downstream of the log cross vanes. Stream bed material shall be placed to the proposed invert elevation as shown in the Contract Documents.

10. After inspection, trim the geotextile fabric flush with the top logs and stream bed material.

B. Cleanup

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

2. Remove unsuitable and surplus material and excavated Materials to fill areas or approved off-site locations.

**4. Measurement and Payment**

Log Cross Vanes shall be measured and paid for on a per each (EA) basis. Payment for log cross vanes shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 18: Riffle

**1. Description**

This work shall consist of furnishing, stockpiling, transporting, and installing a riffle grade control within the stream channel, as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

**2. Materials**

A. Stone to construct the constructed riffle shall adhere to Special Provision – Stream Bed Material.

B. Logs and brush material used shall be any native hardwood species that are sound and free from decay, breakage, or other damages. Minimum diameter and minimum embedded length shall be in accordance with details on the plan set.

**3. Construction**

A. The Contractor shall construct riffles in the areas shown on the plans or as directed by the City of Harrisonburg and/or Engineer, to the thickness, widths, and lengths as shown on the plans and described in the details or directed by the City of Harrisonburg and/or

Engineer. All stone shall be placed to form an in-stream structure in accordance with the plans, neatly and uniformly, and shall meet the approval of the City of Harrisonburg and/or Engineer.

**4. Measurement and Payment**

Payment for Riffles shall be measured and paid for at the Contract unit price per each (EA). Payment for structure shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 19: Cascade

**1. Description**

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

**2. Materials**

A. Boulder Material – See Special Provision

Refer to Boulder Dimension Tables in the Contract Documents.

B. Geotextile Fabric

Geotextile fabric shall meet the Specifications for Special Provision – Geotextile Fabric and as specified in the Construction Drawings.

C. Stream Bed Material

Stream Bed Material shall meet the specifications of Special Provision - Stream Bed Material and as specified in the Construction Drawings.

D. Fill Material – See Special Provision - Earthwork

**3. Construction**

A. Installation

Each cascade structure shall be constructed beginning at the downstream-most extent of the structure. In plan view, the boulders that form the toe and crest cross sections shall follow a parabolic shape to the extent possible, with the center of the arc set in the lowest point (thalweg) along the length of stream channel. Refer to typical sections for width of boulders across channel as shown on Contract

Documents. Boulders shall be interlocked and shall not rock or rotate in position once installed. Boulder placement shall be random in nature as approved by the Engineer.

In areas of cut, fill material under the cascade is not needed. In areas of fill, the existing stream channel shall be filled in 8-inch lifts of fill material to meet subgrade elevation necessary to place cascade materials at the required depth to meet final elevation as shown in the Contract Documents.

In the event that resistant bedrock is present in the area of installation, the bedrock shall be used instead of footer and splash boulders or as directed by the Engineer. If friable and weathered bedrock is present and can be trenched, footer and splash boulders will still be required.

In the event where installation of the structure may damage tree roots, excavation shall be minimized. This may include reducing the length of the structure, minimal root pruning, removing the tree, or eliminating trenching for footer rocks. This decision shall be field determined and authorized by locality representative or engineer.

Excavate a trench into the existing stream bed substrate or fill material at the downstream-most end of the structure to place Geotextile, boulders and stream bed material for the toe cross section. Install Geotextile in the toe cross section on the upstream side of the cascade and footer boulders along the face of the structure and below all splash boulders. Install Geotextile to extend to the height of the cascade boulder and the width of the structure as shown in the Contract Documents. Place cascade, footer, and splash boulders on top of the Geotextile as shown in the Contract Documents. The top of the splash boulder shall be flush with the pool tie-in elevation shown on the profile in the Contract Documents. Place cascade boulders at the thalweg lower than other boulders to form a low flow channel as consistent with the typical cross sections. Starting at the thalweg, adjacent boulders shall taper up to the top of the bank in a parabolic shape. The end cascade boulders shall extend to the tie-out boulders which will extend a minimum of one boulder length (A-axis) into the existing stream bank as shown on Construction Drawings. Where tie-out boulders conflict with existing tree roots, bedrock, or utilities, tie-out boulders may be eliminated or adjusted at the direction of Engineer. Chink and fill all voids with stream bed material using the largest possible stones. Cut any excess Geotextile flush to boulders.

Once the toe cross section has been placed and the subgrade is prepared, place cascade boulders between the toe cross section and the upstream pool at a 12-24 inch spacing. Interlocking boulders shall be placed in concentration at cascade crest and toe, between staggered cascade boulders as shown on Construction Drawings.

Backfill matrix of boulders by installing stream bed material along the cascade as shown in the Construction Documents. To meet proposed grade of the cascade, stream bed material shall be installed in alternating lifts or layers of the two size components of the final steam bed material mixture. Cobble shall be placed first followed by the gravel to allow proper filling of void spaces in each lift using the following steps:

- Place the cobble gradation in a lift (to form a framework) with thickness equal to the largest stone in the gradation. Do not drop stones from a height greater than 2 feet above the finished subgrade.
- Place the gravel gradation on top of each lift (to fill in the void spaces of the framework) and use water to wash the fines into the voids of the stone layer. Apply water sufficient to assure that all void spaces are completely filled with fines.
- Dewater as required during washing so water does not pool in the placement area and wash water does not discharge into the stream.
- Remove any excess fine material (e.g., sand) prior to placing the next lift of the cobble material to assure stone to stone contact and that subsequent lift does not rest on fines.

The depth of stream bed material shall be 18 inches minimum, unless otherwise specified or directed by the Engineer. The grading of stream bed material shall be controlled by visual inspection or as directed by Engineer. Stream bed material shall meet a finish grade tolerance of +/- 2 inches to allow for larger cobble to protrude above the stated finish grade.

The cobble component of stream bed material shall be used to form a cobble apron at the downstream end. The cobble apron shall extend a minimum of 2 feet downstream of the splash boulders to form an apron and tie into the pool. The apron depth shall be a minimum of 1.5 feet before tapering into the pool.

**4. Measurement and Payment**

Payment for Cascades shall be measured and paid for at the Contract unit price per each (EA). Payment for structure shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 20: Boulder J-Hook

**1. Description**

The work covered by this specification includes, but is not limited to furnishing, stockpiling, placing, excavating, and maintaining all approved stone, geotextile fabric, logs, boulders, and soil to be utilized to construct the Boulder J-Hook.

**2. Materials**

Footer Boulder - Footer boulders shall meet the specifications for Boulder Material Special Provision. Footer boulder consists of boulder placed below the invert of the proposed channel to provide support for the top boulder and prevent downstream scour.

Top Boulder (Header) - Top boulders shall meet the specifications for Boulder Special Provision. Top boulder consists of boulder placed upon the footer boulder.

Geotextile Fabric - Geotextile fabric shall meet the Specifications for Geotextile Fabric Special Provision and as specified in the Construction Drawings. Any changes to the type of Geotextile Fabric utilized for the Log Vane Boulder J-Hook Construction shall be approved by the City of Harrisonburg and/or engineer.

Stream Bed Material – Stream bed material shall meet the specifications of Stream bed material Special Provision and as specified in the Construction Drawings.

**3. Construction**

A trench shall be dug in such a manner that the hook footer boulders and a minimum of 95 percent of the hook header boulders are buried beneath the bed surface elevation in locations specified on the Construction Drawings. Refer to the Construction Drawings for exact installation guide and locations to be installed.

Hook footer boulders shall be placed first with header boulders placed on top prior to backfilling the trench.

For the vane, footer boulders shall be placed first, followed by header boulders, and positioned such that they abut tightly against the hook boulders (flat smooth surfaces that fit together). The vane arm shall slope upward from the point of contact with the hook boulders until it ties into the outside bank as specified by Construction Drawings.

If bedrock is present at the channel invert, footer boulders shall still be required unless approval for elimination of footer boulder is obtained from the City of Harrisonburg. For example, where bedrock is friable and weathered and can be trenched, footer boulders will be required. In areas where bedrock is resistant and blasting would be required, the City of Harrisonburg shall determine whether to eliminate footer boulders.

If other constraints besides bedrock are encountered which prohibit the structure installation to meet design specifications, adjustments/modifications will be considered. This may include reducing the length of the structure or eliminating trenching for footer boulders and alluvium backfill. This decision shall be field determined and authorized by the City of Harrisonburg in consultation with the Design Engineer.

Geotextile Fabric shall be placed on the upstream side of structure to prevent the washout of sediment through boulder gaps. Fabric shall be secured to the header boulder along the vane with backfill material and stone as shown in Construction detail. Fabric shall extend from the top of the header boulder, down to the bottom of the trench used for structure backfill, and upstream of the structure no less than 4’ along the entire length of the structure. Gaps between boulders shall be filled with stone until plugged. Geotextile Fabric shall be cut neatly at the elevation of backfill.

The area between the streambank and the upstream side of the structure shall be backfilled

with stone (see Stone Special Provision).

The City of Harrisonburg may adjust the number and placement of structures during Construction. Such variations in quantity will not be considered as alterations in the details of Construction or a change in the character of the work.

**4. Measurement and Payment**

Payment for Boulder J-Hook structures shall be measured and paid for on a per each (EA) basis. Payment for boulder j-hook structures shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 21: Imbricated Wall

**1. Description**

This work shall consist of furnishing, transporting, stockpiling, installing and maintaining imbricated walls along the stream channel, as specified in the Contract Documents, or as directed by the City of Harrisonburg and/or engineer.

**2. Materials**

Footer boulder shall meet the specifications for 'Boulder Material' contained in the Contract Documents. Footer boulder consists of boulder placed below the invert of the proposed channel or underneath top boulders (off- channel) to provide support for the top boulder and prevent downstream/toe scour.

A. Top Boulders (Header)

Top boulder (header boulder) shall meet the specifications for 'Boulder Material' contained in the Contract Documents. Top boulder consists of the row(s) of boulder placed upon and above footer boulders.

B. Geotextile Fabric

Geotextile fabric shall meet the Specifications for 'Geotextile Fabric' contained in the Contract Documents.

**3. Construction**

A. Installation

1. The imbricated wall placement shall be constructed along stream banks or in off-channel areas on steep slopes as shown in the Contract Documents.

2. Excavate a trench along the base of the wall. The trench shall be of sufficient depth and

size to accommodate the footer boulders such that when installed, they are below the invert of the stream thalweg (if along the channel) or sufficiently deep to allow placement of top boulders at the specified final elevation (off-channel areas). Minimize over-excavation as much as possible.

3. Place one end of the geotextile fabric in the footer trench. The geotextile fabric shall be cut to a sufficient size such that it will extend from the bottom of the footer trench to the top of the back side of the imbricated wall.

4. Place footer boulders in footer trench directly on top of the geotextile fabric.

5. Place top boulders on footer boulders allowing batter or setback. Each row of top boulders shall be offset, or setback, six (6) inches (min.) from the previous lower row. Top boulders shall be placed so that they lean on the footer boulders and fit tightly against each other (touching). Any remaining gaps present between the boulders shall be chinked and filled with appropriately sized boulder. The seams between top boulders shall not line up with the seams between the footer boulders. Continue placing rows of top boulders until elevation specified in the Contract Documents is achieved.

6. Imbricated walls shall be keyed into the bank by at least two boulders at the upstream and downstream end. Boulders used to key in wall to bank shall include footer boulders.

7. Once the specified imbricated wall height is achieved or high enough to allow a 3:1 bank grade to tie into existing grade, pull the geotextile fabric up against the fill-side or back side of the wall and lay it over the top boulders.

8. Back fill behind the imbricated wall with suitable fill which has been approved by the City of Harrisonburg.

9. Trim any excess geotextile fabric such that it is not visible.

B. Clean-up

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

2. Remove unsuitable and surplus boulders and excavated Materials to approved off-site locations.

## 4. Measurement and Payment

Payment for Imbricated Wall shall be measured and paid for at on a linear foot (LF) basis. Payment for structure shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 22: Boulder Toe with Soil Lift

### 1. Description

This work shall consist of furnishing, transporting, stockpiling, installing and maintaining Boulder toe with soil lifts along the stream channel, as specified in the Contract Documents, or as directed by the City of Harrisonburg and/or engineer.

### 2. Materials

A. Natural Fiber Matting

Natural Fiber Matting – See Special Provision – Natural Fiber Matting and Contract Documents.

B. Soil

Soil to be utilized for the Construction of the soil lift(s), shall meet the specification for Furnished Fill Material (See Special Provision - Earthwork).

C. Live branches

Live branches shall be as specified in the Contract Documents. shall be cut from fresh, green, healthy, dormant parent plants which are adapted to the site conditions when possible with the following guidelines; woody branches up to 1" in diameter and 3 to 5 feet (minimum) in length can be used for the Brush Toe. Live cut species types are indicated in the Construction details. Live branch cuttings shall be harvested within a 200-mile radius of the job site unless otherwise approved by the City and/or Engineer.

While plants are being transported to and from heeling-in beds, or are being distributed in planting beds, or are awaiting planting after distribution, the Contractor shall protect the plants from drying out by means of wet canvas, burlap, or straw, or by other means acceptable to the City and/or Engineer and appropriate to weather conditions and the length of time the roots will remain out of the ground. Live branches shall be oriented with the butt ends touching the soil in the back of each soil lift.

D. Herbaceous Plugs
Herbaceous Plugs – See Special Provision and Contractor Documents.

E. Footer boulder shall meet the specifications for 'Boulder Material' contained in the Contract Documents. Footer boulder consists of boulder placed below the invert of the proposed channel or underneath top boulders (off- channel) to provide support for the top boulder and prevent downstream/toe scour.

F. Top Boulders (Header)

Top boulder (header boulder) shall meet the specifications for 'Boulder Material' contained in the Contract Documents. Top boulder consists of the row(s) of boulder placed upon and

above footer boulders.

G. Geotextile Fabric

Geotextile fabric shall meet the Specifications for 'Geotextile Fabric' contained in the Contract Documents.

**3. Construction**

A. Installation

1. The boulder toe with soil lift placement shall be constructed along stream banks or in as shown in the Contract Documents.

2. Excavate a trench along the base of the boulder toe. The trench shall be of sufficient depth and size to accommodate the footer boulders such that when installed, they are below the invert of the stream thalweg (if along the channel) or sufficiently deep to allow placement of top boulders at the specified final elevation (off-channel areas). Minimize over-excavation as much as possible.

3. Place one end of the geotextile fabric in the footer trench. The geotextile fabric shall be cut to a sufficient size such that it will extend from the bottom of the footer trench to the top of the back side of the imbricated wall.

4. Place footer boulders in footer trench directly on top of the geotextile fabric.

5. Place top boulders on footer boulders allowing batter or setback. Each row of top boulders shall be offset, or setback, six (6) inches (min.) from the previous lower row. Top boulders shall be placed so that they lean on the footer boulders and fit tightly against each other (touching). Any remaining gaps present between the boulders shall be chinked and filled with appropriately sized boulder. The seams between top boulders shall not line up with the seams between the footer boulders. Continue placing rows of top boulders until elevation specified in the Contract Documents is achieved.

6. Imbricated walls shall be keyed into the bank by at least two boulders at the upstream and downstream end. Boulders used to key in wall to bank shall include footer boulders.

7. Once the specified imbricated wall height is achieved or high enough to allow a 3:1 bank grade to tie into existing grade, pull the geotextile fabric up against the fill-side or back side of the wall and lay it over the top boulders.

8. Back fill behind the imbricated wall with suitable fill which has been approved by the City of Harrisonburg.

9. Trim any excess geotextile fabric such that it is not visible.

10. Install soil lifts in locations as shown on plans to the thickness, width, and lengths specified on the plans and described in the details or as directed by and/or Engineer.

**4. Measurement and Payment**

Payment for Boulder Toe with Soil Lift shall be measured and paid for at on a linear foot (LF) basis. Payment for structure shall be full compensation for furnishing, transporting, maintaining, stockpiling, and properly installing all Materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

# ***Section 4: Infrastructure***

## Special Provision 23: Culvert Removal & Stormwater Infrastructure Installation

**1. Description**

This work shall consist of cutting the existing 15" CMP, installation of manhole, and 15" HDPE and installing a new 15" HDPE pipe as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

**2. Materials**

Materials are to be as specified in the associated details and by reference Section 302 of the VDOT Road and Bridge Standards (latest version).

Certification from the manufacturer is required for each shipment of precast units. Provide a copy of the certification to the Engineer and to the City of Harrisonburg.

**3. Construction**

A. Installation
   1. Cut existing 15" CMP at location indicated.
   2. Install B-2 base.
   3. Install MH-1 and IC-2 (or approved local equivalent cover).
   4. Install 15" HDPE according to PB-1 and as directed by the Engineer.

B. Cleanup
   1. Remove and dispose of 15" CMP at an approved facility.
   2. Dispose of any superfluous debris or material from installation.

**4. Measurement and Payment**

Culvert Removal and Stormwater Infrastructure Installation shall be measured and paid for at the contract unit price per linear foot (LF) of culvert removed and replaced installed. Payment shall be full compensation for the transport of all Materials, excavation, installation, and maintenance, and for all material, labor, equipment, tools, stockpiling, and

incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 24: Joint Utility Duct Bank

### 1. Description

This work shall consist of installing approximately 120 LF of joint utility ductbank and pullboxes as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

### 2. Materials

A. Underground conduit shall be polyvinyl chloride, Schedule 40, UL rated or approved equal.

B. Pull boxes shall be 36"x36" Quazite Model # PG3636BA36 open bottom box with model # PG3636HA00 heavy duty with 2 bolt cover, or approved equal.

C. All conduit and fittings shall be solvent cemented in applications in accordance with instructions from the manufacturer.

D. Material shall comply to NEMA Specification TC-2, TC-3, UL-514, and UL-651 (Standard for rigid nonmetallic conduit).

E. Conduit shall be made from polyvinyl chloride C-300 compound which includes inert modifiers to improve weatherability and heat distortion. Clean rework material, generated by the manufacturer's own conduit production, may be used by the same manufacturer, provided the end products meet the requirements of this specification. Conduit fittings and cement shall be produced by the same manufacturer to assure system integrity.

F. Conduit and fittings shall be tested in accordance with the testing requirements defined in NEMA TC-3, UL-651 and UL-514 (fittings). The acceptance criteria shall be as given in the same standards. All conduit and fittings shall be solvent cemented in applications in accordance with instructions from the manufacturer.

G. Thread lubricant/sealant shall be applied to all screw thread joints in raceway and outlet box systems and shall be Crouse-Hinds type STL except, when required on joints for heat producing elements such as lighting fixtures, it shall be Crouse-Hinds type HTL.

H. Contractor shall provide No. 14 galvanized iron or 5/32" polyethylene rope with 3' of slack at each end, in all empty conduits. Pull string shall have minimum 200 lb tensile strength.

I. Conduit joints shall be staggered by rows and layers to provide a duct line of maximum

strength.

**3. Construction**

A. Installation
   1. The arrangement of the conduit shall be as indicated on the Construction Drawings.
   2. Conduit shall have minimum 2" spacing.
   3. Long sweep 90 degree bends shall be used when turning up at pull boxes. No true 90 degree turns will be allowed.
   4. Contractor shall install pull string in all conduit with minimum 3' of slack at each end.
   5. All conduit shall be bedded in minimum 4" of stone dust bedding.
   6. Contractor shall backfill conduit to minimum 6" above top of largest conduit with flowable fill.
   7. Depth of cover over top of duct bank shall be minimum 18"
   8. Final depth of trench will be driven by required cover and number, size and space of conduit.

B. Cleanup
   1. Upon completion of ductbank installation, contractor shall return site to former state.
   2. Fill excavated areas to finished grade, which will provide adequate surface runoff, generally 4 inches when compacted to 75% maximum density at optimum moisture. Lightly scarify the surface to provide a smooth, loosened seedbed.
   3. Hand broadcast seeding at a rate of 5 lbs. per 1000 sf. Rake seed into soil with broom rake. Overlap new seeding into areas of existing turf.
   4. Apply fertilizer at 1lb. of (N)/1000s.f. (10lbs. blended material/1000 s.f.) for Hand-seeding application.
   5. Seeded areas must have a relatively uniform stand of grass with no bare spots over 6" square at the time of substantial completion. Reseed at the original rate and fertilize with 10-20-20 at the rate of 10lbs. per 1,000 square feet of blended materials. All areas failing to vigorously establish within 90 days after germination or one growing season (whichever is longest), for any reason whatsoever, shall be redone at the Contractor's expense.
   6. All other site features either damaged or destroyed during the execution of this contract shall be repaired to the satisfaction of the Engineer or to the installation specifications of the manufacturer of the approved replacement item. These include but are not limited to walls, sidewalks, curbs, stairways, driveways, etc. Replacement of damaged site features shall be in accordance with all project standards and specifications.

**4. Measurement and Payment**

Joint Utility Duct Bank shall be measured and paid for at the contract unit price per linear foot (LF) installed. Payment shall be full compensation for the transport of all Materials, excavation, installation, and maintenance, and for all material, labor, equipment, tools,

stockpiling, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

# ***Section 5: Planting***

## Special Provision 25: Topsoil

### 1. Description

This work shall consist of furnishing and placing topsoil as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer. Contractor shall provide documentation of furnished topsoil to the City of Harrisonburg and/or Engineer for approval.

### 2. Materials

A. Topsoil furnished by the Contractor shall consist of friable surface soil reasonably free of grass, roots, weeds, sticks, stones, or other foreign Materials. The soil shall have a soil acidity range between a pH 5.0 and pH 7.0.

B. Class A topsoil shall consist of material salvaged on-site during excavation and shall consist of the original layer of the soil profile formed under natural conditions, technically defined as the "A" horizon. It shall be free from refuse and any other Materials toxic to plant growth and subsoil, stumps, viable noxious weeds, roots, brush, Boulders, clay lumps, or similar objects larger than 2 inches in any dimension.

C. Class B topsoil shall be topsoil furnished from sources outside the project limits and shall be the original top layer of a soil profile formed under natural conditions, technically defined as the "A" horizon or a mixed material meeting the following specifications. Class B topsoil shall be a "sandy loam," "loamy sand," or "sandy clay loam" soil as defined by the USDA Soil Textural Classification System with an organic matter content greater than 10%, or as approved in writing by the City of Harrisonburg and/or Engineer. Material shall be free from refuse and any other Materials toxic to plant growth and subsoil, stumps, viable noxious weeds, roots, brush, Boulders, clay lumps, or similar objects larger than 2 inches in any dimension. Topsoil shall be sourced responsibly from producers included in the Qualified Products List maintained by the Administration for Furnished Topsoil.

Excess topsoil shall become the responsibility of the Contractor and shall be completely removed from the project site prior to final site inspection and approval of the project.

### 3. Construction

A. Prior to the start of placing topsoil, all grass, weeds, brush, stumps, and other objectionable material shall be removed from the surface of stockpiles.

B. Placing and spreading of topsoil shall not be done when the ground is frozen, excessively wet, or otherwise in a condition detrimental to the work. Furnished topsoil

shall be placed, spread, and maintained over the areas designated to a depth of at least 6 inches. After settlement, the completed work shall be in conformance with the thickness, lines, grades, and elevations specified in the Construction Drawings.

C. Surfaces designated to be covered shall be lightly scarified just prior to the spreading operation. Compaction of topsoil will not be required. After placement is completed, the surface of the topsoil shall be finished to a reasonably smooth surface.

D. The Contractor shall completely prepare and finish the surface of all areas to be covered with topsoil as specified in the Construction Drawings.

E. Permanent Seeding (see Special Provision Permanent Seeding) should be carried out simultaneously to prevent excessive and undesirable soil compaction.

**4. Measurement and Payment**

Topsoil shall be measured and paid for at the contract unit price per cubic yard (CY) of topsoil installed. Payment shall be full compensation for the transport of all Materials, excavation, installation, and maintenance of topsoil, and for all material, labor, equipment, tools, stockpiling, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 26: Compost

**1. Description**

This work shall consist of furnishing and placing compost as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer. Contractor shall provide documentation of furnished copost to the City of Harrisonburg and/or Engineer for approval.

**2. Materials**

A. The compost shall be the result of the biological degradation and transformation of plant derived Materials under conditions that promote anaerobic decomposition. The material shall be well composted, free of viable weed seeds, and stable with regard to oxygen consumption and carbon dioxide generation. The compost shall have a moisture content that has no visible free water or dust produced when handling the material. It shall meet the following criteria, as reported by the U.S. Composting Council STA Compost Technical Data Sheet provided by the vendor:

1. 100% of the material must pass through a half inch screen
2. The pH of the material shall be between 6 and 8
3. Manufactured inert material (plastic, concrete, ceramics, metal, etc.) shall be less than 1.0% by weight
4. The organic matter content shall be between 35% and 65%
5. Soluble salt content shall be less than 6.0 mmhos/cm

6. Maturity should be greater than 80%
7. Stability shall be 7 or less Carbon/nitrogen ratio shall be less than 25:1
8. Trace metal test result = "pass"
9. The compost must have a dry bulk density ranging from 40 to 50 lbs./cu. ft3

**3. Construction**

A. Prior to the start of placing compost, all weeds, brush, stumps, and other objectionable material shall be removed from the surface of stockpiles.

B. Placing and spreading of compost shall not be done when the ground is frozen, excessively wet, or otherwise in a condition detrimental to the work.

C. Prior to the placement of topsoil when the subsoil is at final grade, surfaces designated to be covered shall be tilled to a minimum depth of 8". A 6" lift of compost shall be placed over the tilled areas and tilled into the subsoil. This area shall be worked until the subsoil and compost are well blended. The area does not require compaction, but may be tamped or lightly pressed to assist with soil stability.

D. The topsoil noted above in Special Provision-Topsoil shall also receive an amendment of compost, either mixing prior to installation or tilled in after the placement of topsoil. An equivalent 3" lift of compost shall be added to the topsoil layer and shall be thoroughly mixed.

**4. Measurement and Payment**

Compost shall be measured and paid for at the contract unit price per cubic yard (CY) of compost installed. Payment shall be full compensation for the transport of all Materials, excavation, installation, and maintenance of compost, and for all material, labor, equipment, tools, stockpiling, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 27: Planting Trees, Shrubs, & Herbaceous Plugs

**1. Description**

A. This work shall consist of furnishing, transporting, storing, and installing bare roots, herbaceous plugs, and landscape stone to complete the work for the planting plan as specified in the Construction Drawings, or as directed by City of Harrisonburg and/or Engineer.

B. Prior to start of work, the Contractor shall submit a proposed planting schedule, including species and quantities, anticipated planting dates, and the source of plant material to the City of Harrisonburg and/or Engineer for review. No work shall be performed until this information has been reviewed and approved by the City of Harrisonburg and/or Engineer.

C. The City of Harrisonburg and/or Engineer may request the Contractor to stake the location of individual plants and landscape stone within the approved Planting Zones.

D. The Contractor shall coordinate planting with the City of Harrisonburg and/or Engineer.

**2. Materials**

A. Plant Material

1. All plant material shall conform to the current issue of the American Standard for Nursery Stock published by the American Association of Nurserymen.
2. Plant Materials must be selected from certified nurseries that have been inspected by state and/or federal agencies. Nursery inspection certificates shall be furnished to the City of Harrisonburg and/or Engineer upon request.
3. The nursery supply source shall certify that the origin of the seeds from which the trees, shrubs, and grasses were produced is Hardiness Zone 6 or 7, east of the Mississippi River. Stock from different zones may be accepted, subject to approval by the City of Harrisonburg and/or Engineer.
4. Plant material collected from the wild is prohibited unless approved by City of Harrisonburg and Consultant.
5. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil. Roots shall visibly extend to the inside face of the growing container. All container grown plants shall be grouped and kept moist and cool until they are planted. Plants left to dry in the sun prior to planting may be rejected on-site by the Inspector.
6. Bare Root grown stock shall be freshly dug. The packing material must be moist when delivered to the site. All bare root plants shall be dormant when planted.
7. The City of Harrisonburg and/or Engineer may reject plants damaged in handling or transportation.
8. No plants shall be installed unless the City of Harrisonburg and/or Engineer approves both the condition of the plantings and the process of installation.

B. Substitute Plant Material

1. Prior to Contractor mobilization, the City of Harrisonburg and/or Engineer must approve all plant substitutions.
2. If a substitute is selected, it must be native to the Ridge & Valley physiographic province of Virginia and of the same size, value, and quality as the original plant.

C. Water

Water used in the establishment or caring of plants and seed shall be free from any substance that is injurious to plant life.

D. Fertilizer

1. No broadcast fertilization shall be permitted on stream restoration projects unless specifically noted in Construction Drawings.
2. The Contractor shall use organic fertilizers in lieu of petroleum-based fertilizers.

Suitable products that are commercially available are marketed and certified as 'organic' or 'natural' fertilizers. Organic Materials shall include such items as sea grasses/kelp, Boulder powder, bone meal, whey, bean meal, blood meal, composted manure, etc. Product nutrient content shall be identified in the standard form of Nitrogen (N), Phosphorous (P), and Potassium (K) ratios. Fertilizer nutrient content shall be 20-10-5. The application rate shall be equivalent to a 5-gram tablet per plant. Contractor shall submit the label to the City of Harrisonburg and/or Engineer for review prior to installation. The City of Harrisonburg and/or Engineer must approve any proposed substitution to this nutrient content.

E. Mycorrhizal Fungi

All bare root seedlings shall be treated with root dip absorbent polymers and mycorrhizal root dip inoculates in accordance with the manufacturer's recommendations.

F. Straw Mulch

Straw mulch shall consist of un-rotten, small grain straw.

G. Topsoil – See Special Provision – Topsoil

H. Compost – See Special Provision - Compost

**3. Construction**

A. All areas shall be planted in accordance with the composition and planting schedules for each designated planting zone. Areas within designated planting zones not disturbed by Construction shall be supplemented with trees and shrubs to meet the acre quantities specified in the schedule.

B. The Contractor shall refer to the planting plan, vegetation schedule, planting details, and notes in the Construction Drawings for specific spacing requirements.

C. The Contractor shall use the overall spacing requirements and the Planting Notes and Details in the Construction Drawings to determine the spacing between each species of vegetation and among the same species of vegetation.

D. Immediately after site preparation and approval , container trees and shrubs and herbaceous plugs shall be planted. Containerized plants shall be installed between September 30 and March 31, or as directed by the City of Harrisonburg and/or Engineer. Herbaceous Plugs shall be planted between September 30 and March 31. No planting shall occur when soil is frozen.

E. Root stock of the plant material shall be kept moist during transport from the source to the job site and until planted.

F. The Contractor may be required to flag and label individual planting pits at specific locations. Upon planting a typical area within each planting zone, the Contractor shall

have the City of Harrisonburg and/or Engineer inspect and approve plant spacing and planting techniques before proceeding.

G. All planting pits shall be dug by hand. Walls of planting pits shall be dug so that they are vertical or sloping outward in heavy soils. Scarify the walls of the pit after digging.

H. Excavate the planting pit to a depth of 1 foot plus the container depth in which the plant was grown and 2 feet wider than the container.

I. Planting holes for bare root trees shall be 1-2 inches deeper than the root collar (i.e. 1-2 inches deeper than they were growing in the nursery). Bare root seedlings shall be installed with the use of a "dibble planting method".

J. Remove all non-organic debris from the pit and tamp loose soil in the bottom of the pit by hand.

K. Remove the plant either by cutting or inverting the container.

L. Do not handle the plant by the branches, leaves, trunk, or stem.

M. Place the plant straight in the center of the planting pit, carrying the plant by the root mass. Never lift or carry a plant by the trunk or branches.

N. Place controlled release fertilizer in the planting hole in accordance with Section 16.2.D of these specifications (above).

O. Treat all bare root seedlings with root dip absorbent polymers and mycorrhizal root dip inoculates in accordance with the manufacturer's recommendations.

P. Backfill planting pit with existing soil and hand tamp as pit is being backfilled to completely fill all voids and air pockets. Do not over compact soil. Make sure plant remains straight during backfilling/tamping procedure.

Q. Do not cover the top of the root mass with soil.

R. An additional 18-inch diameter area of topsoil shall be placed around each tree and shrub. Topsoil shall be 2 inches thick.

S. Water plants thoroughly immediately after planting, unless otherwise directed by the City of Harrisonburg and/or Engineer.

T. City of Harrisonburg and/or Engineer reserves the right to require supplemental watering during Construction or during the first growing season after substantial completion, at their sole discretion. Such watering may be required, for example, if plant Materials are installed outside the approved planting window or in areas where vegetative establishment does not provide adequate cover (85% min.) to protect against erosion. Supplemental watering shall be done using a submersible-style pump to pump water from an adjacent pool whenever possible to avoid damage associated

with vehicular access. Any such supplemental watering shall be at the Contractor's expense, not subject to change order requests.

U. The Contractor shall leave no open planting pits at the close of each day.

V. Remove all tags, labels, strings, and wire from the plant Materials, unless otherwise directed by the City of Harrisonburg and/or Engineer.

**4. Warranty**

A. The Contractor shall maintain a one (1) year care and replacement warranty of 85% on all B&B, container grown, and Herbaceous Plugs.

B. The period of care and replacement shall begin after final inspection and approval of the initial installation of all plants and continue for 1 year, with a potential plant replacement period after the year warranty inspection.

C. Plant warranty replacements shall be performed in accordance with the Construction Drawings and these specifications.

**5. Measurement and Payment**

Planting trees, shrubs, and herbaceous plugs shall be measured and paid for at the Contract unit price per each (EA) plant in accordance with the plant schedule and planting plan. Payment shall be full compensation for furnishing, installing, maintenance, and warranty, including all Materials, labor, equipment, stockpiling, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 28: Live Stakes

**1. Description**

A. This work shall consist of furnishing, transporting, storing, and installing live stakes to complete the work for the planting plan as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

**2. Materials**

A. Live staking plant material shall consist of species shown in the contract drawings.

B. All plant material shall be harvested locally (within the same physiographic Ecoregion and plant hardiness zone) or purchased from a local nursery, with the approval of the City of Harrisonburg and/or Engineer.

C. During preparation, the basal ends of the live stakes shall be cleanly cut at an angle to facilitate easy insertion into the soil, and the tops shall be cut square or blunt for tamping. All limbs shall be removed from the sides of the live cutting prior to

installation.

**3. Construction**

A. Live stakes shall be harvested in a manner such that they are cut and then planted immediately. Cuttings shall remain wet until they are planted. Outside storage locations should be continually shaded and protected from wind and direct sunlight.

B. Live stakes shall be tamped perpendicularly into the finished bank slope with a dead blow hammer, with buds oriented in an upward direction. Stakes shall be installed with approximately 3" of stake remaining above ground.

C. The area around each live stake shall be compacted by foot after the live stake has been installed.

D. Live stakes shall be installed according to the configuration presented in the details of the plan sheets.

E. Any stakes that are split or damaged during installation shall be removed and replaced.

**4. Warranty**

A. The Contractor shall maintain a one (1) year care and replacement warranty of 85% on all live stakes.

B. The period of care and replacement shall begin after final inspection and approval of the initial installation of all plants and continue for 2 years, with a potential plant replacement period after the year warranty inspection.

C. Plant warranty replacements shall be performed in accordance with the Construction Drawings and these specifications.

**5. Measurement and Payment**

Planting live stakes shall be measured and paid for at the Contract unit price per each (EA) plant in accordance with the plant schedule and planting plan. Payment shall be full compensation for furnishing, installing, maintenance, and warranty, including all Materials, labor, equipment, stockpiling, tools, and incidentals necessary to complete the work as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

## Special Provision 29: Permanent Seeding & Temporary Seeding

**1. Description**

A. This work shall consist of furnishing, transporting, storing, and installing temporary and permanent seeding for the Planting Zones as specified in the Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer.

B. Prior to start of work on this item, the Contractor shall submit temporary and permanent seeding paperwork, to include shipping invoices, seed bag tickets for the seed mixes to be installed, and the source of the seed to the City of Harrisonburg for review. No work shall be performed until the seeding paperwork is approved by the City of Harrisonburg and/or Engineer.

**2. Materials**

A. Seed Mix

Seed Mix shall consist of the varieties specified in the vegetation schedule located within the Construction Drawings for all planting zones. All seed and seed varieties shall be free from State and Federal prohibited noxious weed seeds.

B. Topsoil – See Special Provision- Topsoil.

C. Straw Mulch

Straw mulch shall consist of un-rotten small grain straw.

D. Water

Water used in the establishment or caring of plants and seed shall be free from any substance that is injurious to plant life.

**3. Construction**

A. All areas disturbed by Construction shall be seeded in accordance with the planting plans and schedules. The riparian and non-riparian temporary and permanent seeding seeding is specified on the planting schedules in the Construction Drawings. Areas not disturbed, shall not be seeded.

B. All areas to be seeded shall conform to the finished grades as specified on the plans and be free of all weeds, trash, debris, brush, clods, loose Boulders, and other foreign that would interfere with seeding. All gullies, washes, or disturbed areas that develop after final dressing shall be repaired prior to seeding.

C. Seed shall be spread immediately following fine grading of an area, as Construction progresses, to achieve rapid germination and stabilization. After seeding and raking, the Contractor shall cover the seeded areas with straw mulch, as indicated in the Construction Drawings. No seed shall be spread on top of straw or natural fiber matting.

D. At the sole discretion of the City of Harrisonburg and/or Engineer, additional seeding may be required in areas where poor vegetative establishment is observed (less than 85% surface coverage). Additional seeding may be requested at any time prior to substantial completion or in association with planting inspections during the two-year warranty period. Additional seeding shall be considered within the original contract scope and shall not be subject to change order request.

**4. Warranty**

A. The period of care and replacement shall begin after final inspection and approval of the initial installation of all plants and continue for one (1) year.

B. Riparian and non-riparian temporary and permanent seeding warranty replacements shall be performed in accordance with the Construction Drawings and these specifications.

**5. Measurement and Payment**

Permanent seeding and temprorary seeding shall be measured and paid for on a per acre (AC) basis. 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 Construction Drawings, or as directed by the City of Harrisonburg and/or Engineer. The Contractor shall maintain a minimum 85% aerial coverage of herbaceous seeding for one (1) year after final inspection. This shall include necessary care and replacement to achieve the required coverage.

## Special Provision 30: Invasive Species Removal

**1. Description**

A. To prevent the spread or establishment of invasive species the Contractor shall remove invasive plant species within specified areas of the Limits of Disturbance (LOD) as depicted in the Construction plans during the clearing operations. Species to be treated include but are not limited to Japanese Hops (*Humulus japonicus*) and Chinese Privet (*Ligustrum sinense*).

B. The scope of work for this item shall include:

1. Existing invasive plant species will be removed within the limits of disturbance (LOD) as depicted on the Construction plans.

2. The bid for this contract item should include all resources necessary to control non-native invasive species within the project limits of disturbance in accordance with the standards set forth below.

**2. Implementation**

A. Identification - The approximate locations of observed Invasive and Highly Invasive plant species, specified above, and their relative abundance will be identified on a site map.

B. Control - Specific methods to control the invasive plant species specified above and on the Virginia Department of Conservation and Recreation Natural Heritage Program Virginia Invasive Plant Species List, will be dependent upon the relative abundance of the species identified. Proposed control methods may include manual, mechanical, biological, and/or chemical methods. Manual removal with the excavator during clearing operaions is acceptable.

C. Control Plan - The proposed control plan shall be submitted to Town staff for authorization prior to its implementation. The recommended method of control for an identified invasive plant species will then be performed by the Contractor, as needed based on current accepted and effective control methods. If chemical or biological control methods are to be implemented, the Contractor shall ensure all required applicator certifications and regulations are followed. If physical removal is implemented, the Contractor shall ensure the plant Materials are disposed of completely and responsibly.

**3. Warranty**

A. The warranty period shall be equal to that for planted Materials.

B. For the purposes of this warranty, one year shall include one full growing season. For example, if the Contractor plants in the fall/winter 2019, the warranty period runs through fall/winter 2020. However, in no case shall the warranty period be less than twelve (12) full months beginning with the date of final planting inspection and approval.

**4. Measurement and Payment**

Invasive Species Removal shall be measured and paid for as a lump sum (LS) item. The payment will be full compensation for transport of all Materials, excavation, 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 Harrisonburg and/or Engineer.

# ***Section 6:*** ***Construction Tolerances and Oversight***

## Special Provision 31: Construction Tolerances

**1. Description**

All stream work shall be performed such that the finished product adheres to the stream restoration Construction tolerances contained herein. The Contractor is solely responsible for ensuring the finished product meets the tolerances. The City of Harrisonburg and/or Engineer staff shall issue final approval and acceptance.

**2. Specifications**

A. Locations, elevations, and dimensions of all structures and channel features shall constructed within the tolerances provide below:

| | |
|---|---|
| Vertical tolerance | +/- 0.1 ft maximum |
| Horizontal tolerance | +/- 0.5 ft maximum |

B. It is recognized that field conditions may warrant adjustments to design elements (such an adjustment requires the prior written approval of the City of Harrisonburg and/or Engineer staff). In addition, certain design elements that fail to meet the above listed tolerances may be acceptable. Such acceptance will be on a case-by-case basis by the City of Harrisonburg and/or Engineer staff. The Contractor is encouraged to identify these cases with the Consultant during Construction and keep a record of changes or modifications.

## Special Provision 32: Construction Oversight

**1. Description**

Construction Oversight shall be conducted by both the City of Harrisonburg and/or Engineer and the firm which produced the Construction Drawings, Ecosystem Services (ES).

**2. Measurement and Payment**

Construction oversight and management services shall be performed under a separate contract and shall not be a pay item paid to the Contractor.

## Special Provision 33: As-Built Survey

**1. Description**

The Contractor shall prepare and submit a certified as-built survey of the completed stream restoration Construction to fully illustrate all completed Construction within the established LOD. The contractor shall also submit daily, non-certified, as-built surveys and

field Construction notes for all in-stream structures and channel dimensions at each proposed cross section extended from the channel to the LOD on both sides of the proposed channel.

**Survey and preparation of final certified as-built documents may be contracted with a third-party consultant. This does not relieve the Contractor of daily non-certified as-built survey obligations/grade check notes and notifications as described in the Construction section below.**

**2. Materials**

A. During Construction, the Contractor shall adhere to tolerances noted in the "Stream Construction Tolerances" section of this document.
B. The as-built survey shall be a reproducible mylar copy of the approved Contract Documents (existing base files to be obtained electronically from the City of Harrisonburg). The as-built survey shall be certified by a Land Surveyor licensed to practice in the Commonwealth of Virginia. The as-built survey shall include the following features:

1. Verification of information in geometry plan and notation of any changes.

2. Verification of information in structure tables to include horizontal and vertical as-built condition of all in-stream structures, including perimeter of each structure, 3 dimensional locations (x, y, and z) of each node called out on design plans (as per the structure placement tables) of each in-stream structure, and any difference between the proposed and as-built vertical and horizontal condition.

3. Topographic as-built survey over the extent of all constructed bank stabilization/restoration and grading. Shots shall be sampled and reported at no less density than 50' grid, and sufficient to show break lines and grade changes at 1foot contour intervals.

4. Vertical as-built survey of the proposed longitudinal profile of the stream thalweg (or design centerline alignment) at grade breaks to show the as-built riffle, run, pool, and glide elevations of the restored channel, as shown in the proposed longitudinal profile and cross sections, and at design stations and locations of revisions approved during Construction.

5. Horizontal and vertical as-built survey of each proposed cross section, to include all proposed in-channel grading and structures, top of bench and bench limits (if in bench section), top of stream bank, and all topographic features outside of the stream channel extended to the LOD on both sides of the channel at the station of every proposed cross section and at a minimum of every fifty (50) feet along the proposed stream stationing.

C. The signed, sealed and certified reproducible mylar of the as-built survey drawings along with 3 print copies shall be generated by the Contractor and submitted to the City of Harrisonburg.

**3. Construction**

A. The Contractor shall provide daily, non-certified, as-built surveys in the form of "Construction Foreman's GRADE CHECK NOTES" to the CMD Inspector and/or City Staff on site. The GRADE CHECK NOTES shall show the as-built elevations are in conformance (within specified tolerances) with the proposed elevations at all nodes shown in the structure tables and all proposed in-channel grading, top of bench and bench limits (if in bench section), top of stream bank, and all proposed topographic features outside of the stream channel extended to the LOD on both sides of the channel, as shown in the grading plans, proposed cross sections and longitudinal profile.

B. The Contractor shall notify the City of Harrisonburg a minimum of 2 weeks prior to completion of Construction activities.

C. The Contractor shall document the certified as-built condition of the constructed design concurrent with Construction so that the certified as-built survey is complete and submitted to the City of Harrisonburg for approval prior to demobilization, no longer than four (4) weeks following final Construction activities.

D. Any errors or omissions found during the course of the as-built survey and determined by the City of Harrisonburg, who shall be the sole judge, to have occurred during Construction shall be repaired by the Contractor to the satisfaction of the City of Harrisonburg at no additional expense to the Ctiy. The Contractor shall make any necessary repairs or corrections required by the City of Harrisonburg including grading, adjustment of stream restoration structures, etc. Upon completion of corrective action, the Contractor shall re-survey the problem area showing the original as-built information and any modification highlighted and noted. A Land Surveyor licensed to practice in the Commonwealth of Virginia shall also seal the re-survey.

E. Final acceptance of the project by the City of Harrisonburg shall not occur until the certified as-built has been completed for the entire project and approved by the City of Harrisonburg.

**4. Maintenance**

A. The Contractor will be held fully responsible for maintaining the project during Construction including the period of the as-built certification.

B. The Contractor shall be held responsible for maintaining the integrity of the project until final acceptance of the as-built survey and a determination by the City of Harrisonburgthat no errors or omissions have been made by the Contractor during the course of Construction. The City of Harrisonburgshall make every effort to notify the Contractor within 3 weeks of receipt of the as- built survey as to the acceptability or rejection of the Construction of the stream restoration project; however, lapse of this time frame does not relieve the Contractor of responsibility for maintaining the integrity of the project or for correcting any errors/omissions until final acceptance of the certified as-built for the entire stream restoration project.

**5. Measurement and Payment**

Preparation of the as-built survey and certification will be measured and paid for as a lump sum (LS) item. The payment will be full compensation for surveying, preparation of as-built survey, and for the Licensed Surveyor to seal the as-built survey. Payment shall include all Materials, labor, equipment, stockpiling, tools, maintenance, additional as-built survey required upon completion of corrective action as noted in section 3.D, and any incidental costs necessary to complete the work specified in the Contract Documents, or as directed by the Town of Christiansburg.

## Appendix A: Mt. View Drive Stream Restoration Engineering Plans

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## Appendix B: Invasive Species Map

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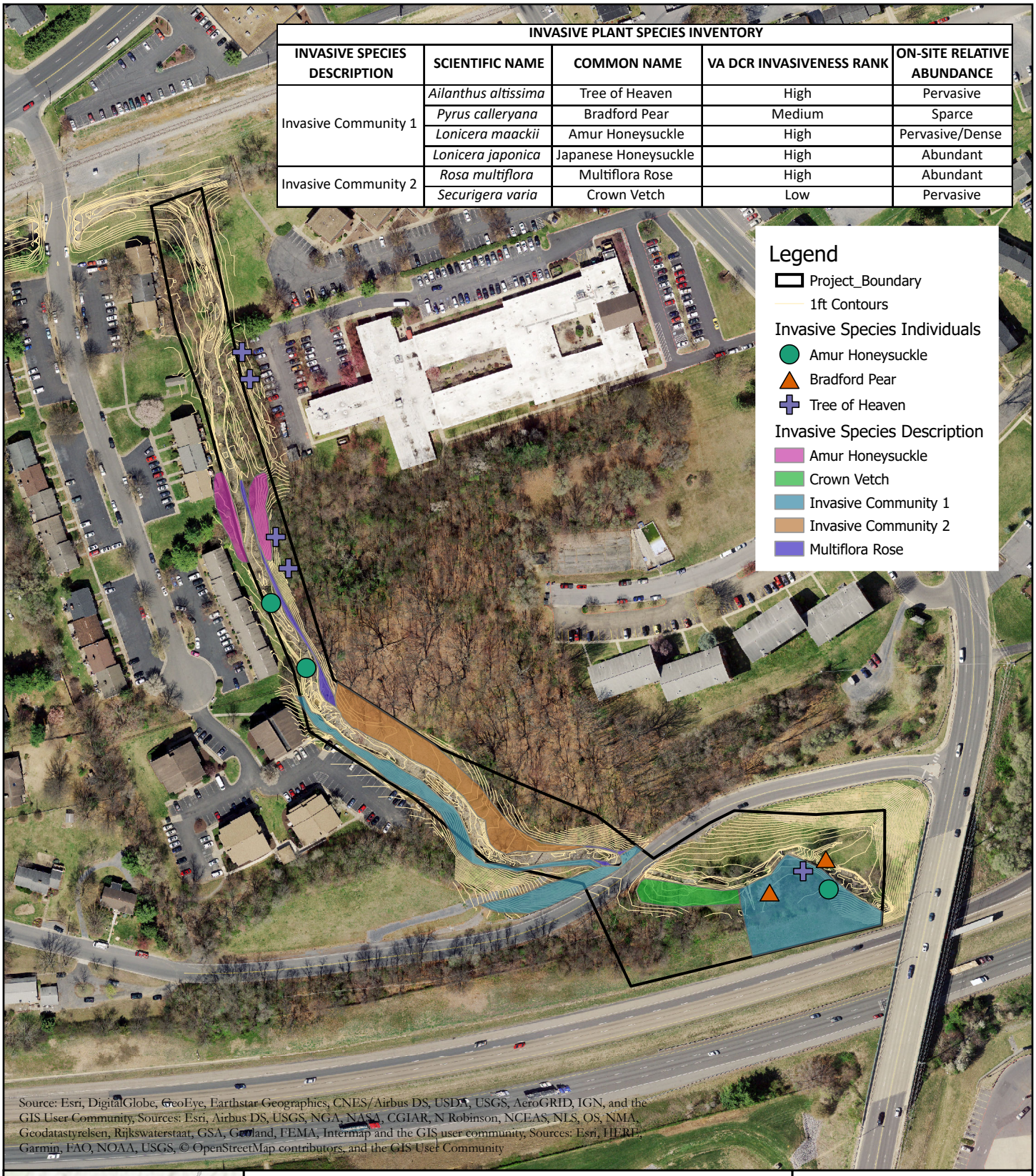
| INVASIVE PLANT SPECIES INVENTORY | | | | |
|---|---|---|---|---|
| INVASIVE SPECIES DESCRIPTION | SCIENTIFIC NAME | COMMON NAME | VA DCR INVASIVENESS RANK | ON-SITE RELATIVE ABUNDANCE |
| Invasive Community 1 | *Ailanthus altissima* | Tree of Heaven | High | Pervasive |
| | *Pyrus calleryana* | Bradford Pear | Medium | Sparce |
| | *Lonicera maackii* | Amur Honeysuckle | High | Pervasive/Dense |
| | *Lonicera japonica* | Japanese Honeysuckle | High | Abundant |
| Invasive Community 2 | *Rosa multiflora* | Multiflora Rose | High | Abundant |
| | *Securigera varia* | Crown Vetch | Low | Pervasive |



# INVASIVE SPECIES MAP

## Mountain View Drive Stream Restoration

ECOSYSTEM SERVICES | HARRISONBURG, VA

N

0 100 200 US Feet

1739A Allied Street Charlottesville, VA 22903 | 540.239.1428 | www.ecosystemservices.us

Appendix C: Joint Utility Duct Bank Plan & Detail

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