



**CITY OF HARRISONBURG  
DEPARTMENT OF FINANCE  
AND PURCHASING  
409 SOUTH MAIN STREET,  
THIRD FLOOR  
HARRISONBURG, VA 22801**

**INVITATION TO BID (ITB) COVER PAGE**

<b>ISSUE DATE:</b> August 30, 2016	<b>INVITATION TO BID NUMBER:</b> 2017005-PW-B	<b>FOR:</b> Harrisonburg Solid Waste Transfer Station
<b>DEPARTMENT:</b> Public Works	<b>DATE/TIME OF CLOSING:</b> September 28, 2016 at 2:00pm local time	<b>CONTRACT ADMINISTRATOR:</b> Thomas Hartman, PE, Assistant Director of Public Works
<b>DATE/TIME LAST DAY FOR QUESTIONS:</b> September 21, 2016 at 12:00pm (noon) local time	<b>DATE/TIME PRE-BID MEETING:</b> September 8, 2016 at 10:00 AM local time	<b>PRE-BID MEETING MANDATORY:</b> <u> X </u> 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 #: \_\_\_\_\_  
 \_\_\_\_\_ State Corporation Commission #: \_\_\_\_\_  
 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:

- City of Harrisonburg Website     eVA Website     Bid Room (Please List) \_\_\_\_\_  
 The Daily News Record Newspaper     Notified by City Directly  
 Other (Please List) \_\_\_\_\_

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

**PROJECT MANUAL**  
**FOR**  
**CITY OF HARRISONBURG, VIRGINIA**

**HARRISONBURG SOLID WASTE TRANSFER STATION**

**PROJECT:**  
**2017005-PW-B**

**CITY OF HARRISONBURG, VIRGINIA**  
**DEPARTMENT OF PUBLIC WORKS**

**August 30, 2016**

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

Harrisonburg Solid Waste Transfer Station for the City of Harrisonburg, VA

2. DESCRIPTION OF WORK

This project will consist of the construction of a solid waste transfer facility totaling approximately 19,300 square feet. The buildings will consist of a Pre-engineered Metal Building (PEMB) approximately 175 feet in length by 100 feet in width with an eave height of 35 feet (175ft X 100ft X 35ft), and a two-story support building with a first floor office and second floor mezzanine area measuring approximately 30 feet in width by 30 feet in length with an eave height of 30ft (30ft X 30ft X 30ft). Site improvements are also included with this project and will consist of site grading, concrete, asphalt, storm sewer, water and sanitary sewer construction. Entire project must be completed by September 30, 2017

3. DOCUMENTS

Bid documents are available for viewing on the internet at [www.harrisonburgva.gov/bids-proposals](http://www.harrisonburgva.gov/bids-proposals) and also on the eVA website at [www.eva.virginia.gov](http://www.eva.virginia.gov). Bid documents are available for purchase at DTS Reprographics 4803 South Valley Pike, Harrisonburg VA, 22801, (540) 433-8373.

4. MANDATORY PRE-BID CONFERENCE

September 8, 2016 at 10:00 AM EST at the Public Works Department, 320 East Mosby Road, Harrisonburg, VA. There will be a site visit after the Pre-Bid Meeting. Attendance for the entire pre-bid conference and site visit is mandatory. Questions will be received up until September 21, 2016 at 12:00 PM EST and posted as addenda on the City's website at [www.harrisonburgva.gov/bids-proposals](http://www.harrisonburgva.gov/bids-proposals) as well as on the eVA website at [www.eva.virginia.gov](http://www.eva.virginia.gov).

5. BID BOND

Bids shall be accompanied by a 5% bid security. Bid bond must be in the form of a cashier's check, certified check or a bid bond issued by a surety.

6. BIDS DUE

September 28, 2016 at 2:00 PM EST at the City of Harrisonburg, Purchasing Office, 409 South Main Street, Third Floor, Harrisonburg VA, 22801.

7. BID OPENING

Bids will be opened and read publicly at City Hall, 409 South Main Street, Room 11 and 12.

8. OWNER

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

9. CONTRACT ADMINISTRATOR

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

SECTION 0100  
INSTRUCTIONS TO BIDDERS

1. SECURING DOCUMENTS

Bid documents are available for viewing at the following Harrisonburg locations: Department of Public Works, 320 East Mosby Road, Harrisonburg, VA 22801.

Bid documents are available for viewing on the internet at [www.harrisonburgva.gov/bids-proposals](http://www.harrisonburgva.gov/bids-proposals) and also on the eVA website at [www.eva.virginia.gov](http://www.eva.virginia.gov).

Bid documents are available for purchase at DTS Reprographics 4803 South Valley Pike, Harrisonburg VA, 22801, (540) 433-8373.

2. BIDDER ELIGIBILITY

A. Bids

Bids will only be accepted from Contractors who are experienced in and actively engaged in the type of construction of the item(s) called for in the bid. No bid will be 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 City or has failed to perform faithfully any previous contract with the City. 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. Contractor shall submit subcontractor's list with the bid.

B. 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.

C. Bidders certify by submitting a bid that they are not currently barred from bidding on contracts by any agency of the Commonwealth of Virginia or any federal agency.

3. 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.

B. Address bids to the Owner, and deliver to the address specified in the invitation to bid on or before the day and hour set for opening the bids. Enclose each bid in an opaque, sealed envelope or box bearing the title of the Work, the project number(s), the ITB number, the name of the bidder, Virginia contractor registration number and the date and hour of the bid opening. Submit only the original signed copy of the bid. 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. It is the sole responsibility of the bidder to see that his bid is received on time. No faxed or emailed bid will be considered. No bids received after the time fixed for receiving them will be considered. Late or incomplete bids may be returned to the bidder. All expenses for making bids to the City shall be borne by the bidder.

- C. Indicate receipt of issued addenda. All Bidders are cautioned to check at [www.harrisonburgva.gov/bids-proposals](http://www.harrisonburgva.gov/bids-proposals) or at [www.eva.virginia.gov](http://www.eva.virginia.gov) to assure that all Addenda have been received and that the cost consequences thereof have been included in the bid.
- D. Although the bid is based upon unit prices, many items are to be priced under lump sum designations. It is the bidder's responsibility to verify the exact scope of work for all items in order to establish a bid price.
- E. The following documents fully completed and signed where appropriate are required for a responsive bid:
  - i) Signed Cover Sheet
  - ii) Bid Form (0300)
  - iii) Bid Security (0301)
  - iv) Contractor Eligibility and Registration (0302)
  - v) State Corporation Commission Registration (0303)
  - vi) Non-Collusion Affidavit (0304)
  - vii) Insurance Requirements for the City of Harrisonburg
  - viii) Signed Addenda, if applicable
  - ix) Attachment A – Reference List
  - x) Attachment B - Proprietary/Confidential Information Identification Form
  - xi) Attachment C - Notice of Exceptions Form
  - xii) List of Subcontractors

#### 4. BONDS

- A. Bid security in the amount stated in the Invitation to Bid must accompany each bid. 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 Labor and Materials 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.

## 5. 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. The submission of a bid will be considered as conclusive evidence that the bidder has made such examination.

## 6. INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO BIDDING

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 to Ms. Pat Hilliard, Procurement Manager, by email to [Purchasing@harrisonburgva.gov](mailto:Purchasing@harrisonburgva.gov) or by fax to 540-432-7779. Oral questions will not be permitted. All questions must be received by September 21, 2016 at 12:00pm (noon) EST. The person submitting the request shall be responsible for any other interpretations of the proposed Contract Documents. Questions will be answered in Addendum format and posted as outlined in the invitation to bid, at [www.harrisonburgva.gov/bids-proposals](http://www.harrisonburgva.gov/bids-proposals) and at [www.eva.virginia.gov](http://www.eva.virginia.gov). 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. AWARD OF CONTRACT

The Contract, if awarded, will be awarded 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.

## 8. EXECUTION OF AGREEMENT

- A. The form of the Agreement which the successful bidder will be required to execute is included in the Project Manual.
- B. The bidder to whom the Contract is awarded shall, within ten (10) calendar days after notice of award and receipt of Agreement forms from the Owner, sign and deliver required copies to the Owner.
- C. At or prior to delivery of the signed Agreement, the bidder to whom the Contract is awarded shall deliver to the Owner those Certificates of Insurance and Endorsement required by the Contract Documents and such Labor and Materials Payment Bonds and Performance Bond and City Business License, as are required by the Owner.

D. Bonds and Certificates of Insurance shall be approved by the Owner before the successful bidder may proceed with the Work. Failure or refusal to provide Bonds or Certificates of Insurance and Endorsement in a form satisfactory to the Owner shall subject the successful bidder to loss of time from the allowable construction period equal to the time of delay in furnishing the required material.

9. CONSTRUCTION TIME AND LIQUIDATED DAMAGES

A. 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 assessed 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.

## 10. INSURANCE REQUIREMENTS

**This form must be signed and returned with your bid submission.**

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. 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.

With all policies listed above, the insurer or agent of the insurer must issue a certificate of insurance to show evidence of coverage.

### BIDDER/OFFEROR 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: \_\_\_\_\_

## 11. CITY BUSINESS LICENSE

- A. City of Harrisonburg Business License is required for successful award of this project. At or prior to delivery of the signed Agreement/Contract, the bidder to whom the Contract is awarded shall deliver to the Owner a copy of their City Business License. The bidder shall ensure that the Business License indicates a basis amount equal to or greater than the awarded Contract value. For information on City Business Licenses contact the Harrisonburg Commissioner of Revenue office at 540-432-7704.

## 12. STANDARD 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, the City of Harrisonburg Design and Construction Standards Manual, and all building codes referenced in the building narrative appendix.

## 13. CONSIDERATION OF PROJECT COMPLEXITIES

- A. In preparing this bid, Contractor shall understand and account in his costs for the complexities involved in administering 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**



Mr. James Baker  
Director  
Department of Public Works  
320 East Mosby Road  
Harrisonburg, Virginia 22801

Dear Sir:

The undersigned, having visited and examined the site and having carefully studied the drawings and project manual for the City of Harrisonburg, Harrisonburg Solid Waste Transfer Station, hereby proposes to furnish all plant, 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 drawings dated August 29, 2016 and the project manual dated August 30, 2016, together with addenda numbered \_\_\_\_\_, issued during bidding period and hereby acknowledged subject to the terms and conditions of the Agreement for the following sums of money:

**BASE BID PROPOSAL**

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).

\_\_\_\_\_ (\$\_\_\_\_\_)

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.

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

### 0301 BID SECURITY

We are properly equipped to execute work of the character and extent indicated by the bidding documents and so covered by this bid and will enter into agreement for the execution and completion of the work in accordance with the drawings and project manual and this bid; and we further agree that if awarded the contract, we will commence the work on the date stated in the "Notice to Proceed" document and prosecute the work and all obligations by the specified completion dates.

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

Certified check or Cashier's check for the sum of

\$ \_\_\_\_\_

\_\_\_\_\_  
Name of Bank

Bidder's Bond in the amount of

\$ \_\_\_\_\_

\_\_\_\_\_  
Bond issued by

The undersigned further agrees that in case of failure on his part to execute the said agreement within the ten consecutive calendar days after written notice being given on the award of the contract, the monies payable by the security accompanying this bid shall be paid to the City of Harrisonburg, Virginia as bid bond shall be forfeited for such failure, otherwise, the security accompanying this bid shall be returned to the undersigned.

This bid is subject to acceptance within a period of 60 days from this date.

Respectfully submitted,

\_\_\_\_\_  
Company Name

By \_\_\_\_\_  
Signature of Authorized

Printed Name \_\_\_\_\_

Date \_\_\_\_\_

## 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

**Virginia State Corporation Commission (“SCC”) registration information:**

**The undersigned Offeror:**

is a corporation or other business entity with the following SCC identification number:  
\_\_\_\_\_ **-OR-**

is not a corporation, limited liability company, limited partnership, registered limited liability partnership, or business trust **-OR-**

is an out-of-state business entity that does not regularly and continuously maintain as part of its ordinary and customary business any employees, agents, offices, facilities, or inventories in Virginia (not counting any employees or agents in Virginia who merely solicit orders that require acceptance outside Virginia before they become contracts, and not counting any incidental presence of the Offeror in Virginia that is needed in order to assemble, maintain, and repair goods in accordance with the contracts by which such goods were sold and shipped into Virginia from bidder’s out-of-state location) **-OR-**

is an out-of-state business entity that is including with this bid an opinion of legal counsel which accurately and completely discloses the undersigned Offeror’s current contacts with Virginia and describes why those contacts do not constitute the transaction of business in Virginia within the meaning of § 13.1-757 or other similar provisions in Titles 13.1 or 50 of the Code of Virginia. **Attach opinion of legal counsel to this form.**

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

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Name:** \_\_\_\_\_  
Print

**Title:** \_\_\_\_\_

**Name of Firm:** \_\_\_\_\_

***\*This document must be completed 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.***

## 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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### DEFINITIONS

**ADDENDUM/ADDENDA:** Addition(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:** 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 service disabled veteran, or any other basis prohibited by state law relating to discrimination in employment. The City encourages the participation of SWAM and Veteran-Owned businesses (as defined in 2.2-4310(F) in public procurement activities. Towards that end, the City encourages contractors to provide for the participation of SWAM/Veteran-Owned businesses 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 its 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 City of Harrisonburg's web site, [www.harrisonburgva.gov/bids-proposals](http://www.harrisonburgva.gov/bids-proposals). 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. The City posts all Notice of Awards on its website at [www.harrisonburgva.gov/bids-proposals-award-notifications](http://www.harrisonburgva.gov/bids-proposals-award-notifications) and also on eVA at [www.eva.virginia.gov](http://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** Except as prohibited by the current Code of Virginia 2.2-4304, all resultant contracts will be extended, with the authorization of the contractor, to other public bodies to permit their ordering of supplies and/or services at the prices and terms of the resulting contract. If any other public body decides to use the final contract, the Contractor must deal directly with that public body concerning the placement or orders, issuance of the purchase order, contractual disputes, invoicing and payment. The City acts only as the "Contracting Officer" for these public bodies. Any resulting contract with other public bodies shall be governed by the laws of that specific entity. It is the Contractor's responsibility to notify the public bodies of the availability of the contract. The City shall not be held liable for any costs or damage incurred by another public body as a result of any award extended to that public body by the Contractor.

**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 from any claims, damages and actions of any kind or nature, whether at law or in equity, arising from or caused by the use of any materials, goods, or equipment of any kind or nature furnished by the contractor/any services of any kind or nature furnished by the contractor, provided that such liability is not attributable to the sole negligence of the using agency or to failure of the using agency to use the materials, goods, or equipment in the manner already and permanently described by the contractor on the materials, goods or equipment delivered.

**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.

**STATE CORPORATION COMMISSION IDENTIFICATION NUMBER:** Pursuant to Code of Virginia **2.2-4311.2** subsection B, a bidder/offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 is required to include in its bid/proposal the identification number issued to it by the State Corporation Commission (SCC) and shall not allow the identification number to lapse, be revoked or cancelled at any time during the term of the contract. Any

bidder/offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law is required to include in its bid/proposal a statement describing why the bidder/offeror is not required to be so authorized. A link to the SCC site is at <http://www.scc.virginia.gov>.

**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.

## **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 will consist of the construction of a solid waste transfer facility totaling approximately 19,300 square feet. The buildings will consist of a Pre-engineered Metal Building (PEMB) approximately 175 feet in length by 100 feet in width with an eave height of 35 feet (175ft X 100ft X 35ft), and a two-story support building with a first floor office and second floor mezzanine area measuring approximately 30 feet in width by 30 feet in length with an eave height of 30ft (30ft X 30ft X 30ft). Site improvements are also included with this project and will consist of site grading, concrete, asphalt, storm sewer, water and sanitary sewer construction.

### **ARTICLE 2. CONTRACT ADMINSTRATOR**

This Project has been designed by Valley Engineering 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 September 30, 2017.

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 9 of this Project Manual.

**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 1<sup>st</sup> 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, less 2% for seeding per Supplementary Specification 1000, 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 ADMINISTRATOR 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 ADMINISTRATOR written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by CONTRACT ADMINISTRATOR 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)
- 8.7 Drawings, consisting of a cover sheet and sheets numbered 1 through 12
- 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 ADMINISTRATOR. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by CONTRACT ADMINISTRATOR on their behalf.

OWNER: City of Harrisonburg

CONTRACTOR:\_\_\_\_\_

Signature\_\_\_\_\_

Signature\_\_\_\_\_

Name & Title: Kurt Hodgen, City Manager

Name & Title:\_\_\_\_\_

Attest \_\_\_\_\_

Attest\_\_\_\_\_

Address for giving notices:

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 Project: Application No.:  
 320 E. Mosby Rd. Period To:  
 Harrisonburg, VA 22801 Contract Date:

From Contractor:

CHANGE ORDER SUMMARY		Additions	Deductions
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	\$		
<b>Net Changes by Change Order</b>			

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 LINE NO.	B WORK DESCRIPTION	C SCHEDULED VALUE			D COMPLETED WORK PREVIOUS PERIOD		E COMPLETED WORK THIS PERIOD		F STORED MATERIAL (not in D or E)	G TOTAL WORK COMPLETED TO DATE		H 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			\$200.00		\$0.00

**SECTION 1000**  
**SUPPLEMENTARY PROVISIONS**  
**INDEX**

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## 1000 – Seed Specification

The Contractor shall use the following seed mixture on all areas to be seeded.

### Rockingham Sun and Shade Lawn Mixture

% Seed	Variety
38.3	Home Run Perennial Ryegrass – Turf Type
19.4	Creeping Red Fescue
14.7	Kentucky Bluegrass
14.7	Cardinal Creeping Red Fescue
9.7	Navigator Creeping Red Fescue
3.2	Annual Rye Seed – VNS

### Seeding Rate:

New Lawn – 4 lbs per 1,000 SF

Overseeding – 2 lbs per 1,000 SF (only as directed by Engineer/Project Manager)

Lime and Fertilizer shall be applied per VDOT Specification 603

Fertilizer – 300 lbs per Acre

Lime – 2 tons per Acre

The seeded areas shall be maintained by the Contractor until project close-out. Maintenance shall consist of providing protection against traffic, re-seeding, weeding, re-fertilizing, watering and mowing as necessary to produce a uniform and vigorous stand of grass. At the beginning of the next planting season after that in which permanent crop is sown, the seeded areas will be inspected. Any section not showing vigorous growth at that time shall be promptly re-seeded by the Contractor at his own expense. One (2%) percent of retainage will be held, after the final completion date, until all seeded areas have been inspected and approved by the City. The work under this area will be accepted only after a uniform stand of grass has been established, regardless of final completion date. Grass establishment is the Contractor's responsibility. Therefore, supplemental seeding and mulching will not be paid for.

**ATTACHMENTS**

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## ATTACHMENT A. 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.

### **Reference #4**

Company: \_\_\_\_\_ Contact Person: \_\_\_\_\_

Phone #: \_\_\_\_\_ Email: \_\_\_\_\_

Project: \_\_\_\_\_ Dates of Service: \_\_\_\_\_

### **COMPANY BACKGROUND**

Number of Years in Business: \_\_\_\_\_

Overview of Work History, Experience & Background of Company:

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



## ATTACHMENT B - PROPRIETARY/CONFIDENTIAL INFORMATION IDENTIFICATION

Name of Firm/Offeror: \_\_\_\_\_

Trade secrets or proprietary information submitted by an offeror shall not be subject to public disclosure under the Virginia Freedom of Information Act; however, the offeror must invoke the protections of §2.2-4342F of the Code of Virginia, in writing, either before or at the time the data or other material is submitted. The written notice must specifically identify the data or materials to be protected, including the section of the proposal in which it is contained, as well as the page number(s), and state the reasons why protection is necessary. The proprietary or trade secret material submitted must be identified by some distinct method such as highlighting or underlining and must indicate only the specific words, figures, or paragraphs that constitute a trade secret or proprietary information. In addition, a summary of proprietary information provided shall be submitted on this form. The designation of an entire bid document, line item prices, and/or total bid prices as proprietary or trade secrets is not acceptable. If, after being given reasonable time, the offeror refuses to withdraw such a classification designation, the bid will be rejected.

SECTION/TITLE	PAGE NUMBER(S)	REASON(S) FOR WITHHOLDING FROM DISCLOSURE

Check this box if there are none.

[Note: If proprietary/confidential information is identified, Offeror is required to submit a redacted copy of their bid in addition to the required number of bids requested.](#)

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

**ATTACHMENT C: NOTICE OF EXCEPTIONS**

Comments and exceptions substantially altering the terms and conditions will not be considered after conclusion of the bid process and the award of a contract. Failure to submit a marked-up copy of the terms and conditions with a bid proposal will be interpreted by the Public Works Department as the offeror's acceptance of the terms and conditions provided herein.

**List exceptions to any portions of ITB (General Terms & Conditions, Federal Terms & Conditions, Special Terms & Conditions):**

**Check this box if there are none.**

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

# **BUILDING NARRATIVE**

## **INDEX**

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## **BUILDING NARRATIVE – prepared by Valley Engineering:**

### **Overview:**

This project will consist of a solid waste transfer facility totaling approximately 19300 square feet. The buildings will consist of a Pre-engineered Metal Building (PEMB) approximately 175 feet in length by 100 feet in width with an eave height of 35 feet (175ft X 100ft X 35ft), and a two-story support building with a first floor office and second floor mezzanine area measuring approximately 30 feet in width by 30 feet in length with an eave height of 30ft (30ft X 30ft X 30ft). There will be a drive/under thru cantilevered canopy attached to the PEMB approximately 58 feet in length by 25 feet in width with an eave height of 27 feet (58ft X 25ft X 27ft). (Preliminary PEMB and Support Building floor plans are attached)

### **Structural Narrative**

#### **General:**

The facility shall be classified as an Occupancy Category II, and designed for loading prescribed by the IBC and ASCE-7. All structural system sizes, quantities, types, etc. indicated in the following sections are for estimating and bidding purposes only. The design of all structural systems shall be delegated to the Contractor's engineer who shall be licensed to practice in the Commonwealth of Virginia. Final building details, doors, equipment locations, push walls, bollards, canopies, and similar requirements shall be coordinated with the Owner and incorporated into the final design.

The Structural systems design will incorporate the requirements of the following building codes and guidelines:

- 2012 Virginia Uniform Statewide Building Code  
Including the all adopted codes and standards, some of which are shown below.
- 2012 ICC International Building Code
- ASCE/SEI 7-10
- AISC Steel Construction Manual, 14<sup>th</sup> Edition

A subsurface geotechnical investigation was completed and a report issued by Froehling & Roberson, INC. dated July 22, 2016 (See attached report). The recommendations provided in this report shall be used to design the foundation systems for the buildings.

#### **Pre-Engineered Metal Building:** (See preliminary floor plan)

The PEMB shall utilize clear span frames with no interior columns. The foundations shall bear 3 feet minimum below finish grade, and shall consist of 8 feet square by 16-inch-thick reinforced concrete spread footings at frame columns, and a continuous 3-foot-wide wall footing to support foundation walls. Foundation walls shall be 12-inch-thick reinforced concrete walls.

The floor slab shall be a 10-inch-thick reinforced concrete slab, and the tipping floor shall include #4 wearing bars at 16 inches on center 2 inches below the top of the slab. 8-foot-high reinforced concrete push walls will be required where indicated.

The PEMB exterior wall construction will have a R-19 value and the roof construction will have a R-30 value

**Canopy:** (See preliminary floor plan)

There will be a cantilevered drive/under thru canopy attached to the PEMB approximately 58 feet in length by 25 feet in width with an eave height of 27 feet (58ft X 25ft X 27ft) along the side of the building with the entry door(s) and adjacent dock door measuring 14 feet X 14 feet. (See attached plans)

**Roll-up Doors:**

This facility will require five (5) industrial grade roll-up doors. (See preliminary floor plan for locations)

- (1) 14FT X 14FT Roll-up Doors
- (2) 10 FT X 10 FT Roll-up Doors
- (2) 24 FT X 24 FT Roll-up Doors

**Support Building:** (See preliminary floor plans)

The support building will be structurally separate from PEMB, and shall be constructed with 8-inch concrete masonry unit (CMU) load bearing walls, reinforced with #5 bars at 32 inches on center. The wall will be supported on 4-foot-wide 12 in thick continuous reinforced concrete footings. The building's first floor will be slab-on-grade consisting of 4-inch thick cast-in-place concrete. The slab will be placed on a 15-mil vapor barrier over 6" of compactable crushed aggregate. The slab will be reinforced with #4 bars at 16 inches on center each way in the middle of the slab. Control joints will be cut by an early entry dry-cutting system equal to "Soff-Cut" such that:

1. Each area bounded by control joints does not exceed 324 sf.
2. The distance between control joints does not exceed 18 feet in either direction.
3. The ratio of length to width of any area bounded by control joints does not exceed 2 to 1.

The building's second floor will consist of 4 inches of concrete on 0.6C (9/16 inch) 22-gauge steel floor deck, supported by 20K5 steel joists at 3 feet (maximum) on center.

The roof structure for the support building will consist of 1.5 inch 20-gauge steel deck on a 20K6 steel joists at 6 feet on center.

The lateral force resisting system for the support building will consist of reinforced masonry bearing walls.

Miscellaneous structural bracing and deck edge angle will be required.

**Structural Specification Items:**

Concrete:

Install concrete work in conformance with the requirements of the American Concrete Institute Standard ACI-318 (current edition). Provide concrete conforming to the following:

Minimum 28-day compressive strength:

Footings:	3,000 psi
Walls:	4,000 psi

Slabs on grade:	4,000 psi
Walks:	4,000 psi
Air entrainment:	4 to 6 % (Exterior Concrete only)
Bar Reinforcing Steel:	Grade 60
Welded Wire Reinforcing:	ASTM A185

#### Structural Steel:

Provide structural steel conforming to the requirements of the American Institute of Steel Construction (AISC) specification (current edition) and conforming to the following:

W-Shapes:	ASTM A992, Grade-50
Channels and Angles:	ASTM A36 or ASTM A572, Grade-50
Plates and Bars:	ASTM A36 or A572, grade-50
Steel Tubing (HSS):	ASTM A500, Grade B
Steel Pipe:	ASTM A53, E or S, Grade B
Round HSS:	ASTM A500, Grade B
Structural Bolts:	ASTM A325
Anchor Rods:	ASTM F1554, Grade 36/55, Weld-ability Supplement S1
Anchor Bolts:	ASTM F1554, Grade 36 L-bolts
Shear Studs:	ASTM A108 & AWS D1.1 - 7.3.1 Type-B

Provide shop priming only for steel surfaces scheduled to receive High Performance Coatings or for structure located outside of the conditioned building envelope. Provide surface preparation SSPC-SP3 Power Tool Cleaning unless indicated otherwise for high performance coatings.

#### Steel Joists:

Manufacture steel joists according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.

#### Steel Deck:

Provide steel deck design, fabrication, and erection in conformance with the specifications of the Steel Deck institute (SDI) and the American Iron and Steel Institute (AISI).

#### Design Loads:

Live Loads:	
Roof	30 psf
First Floor	100 psf
Elevated Floors	100 psf
Elevated Corridors	80 psf
Partition Allowance	15 psf (unreduced)
Snow Loads:	
Ground Snow Load	42.5 psf
Wind Loads:	
Design Wind Speed (Ultimate)	115 MPH

#### Special Inspections:

Special Inspections will be required per Chapter 17 of the International Building Code. Special inspectors shall be employed by the Owner. The Contractor shall coordinate the inspections during construction.

**MECHANICAL NARRATIVE** - prepared by Valley Engineering:

**Overview:**

The project will consist of a solid waste transfer facility approximately 19300 square feet.

The project will consist of a single-story solid waste transfer building, which will have approximately 17,500 square feet (GSF) and an attached two-story support building which will have approximately 900 square feet (GSF) office on the first floor and an equipment mezzanine on the second floor.

Mechanical systems for the Solid Waste Transfer Facility are described in the following section of this schematic narrative.

The MEP systems design will incorporate the requirements of the following building codes and guidelines:

- 2012 Virginia Uniform Statewide Building Code  
Including the all adopted codes and standards, some of which are shown below.
- 2012 ICC International Building Code
- 2012 ICC International Mechanical Code
- 2012 ICC International Plumbing Code
- 2012 ICC International Energy Conservation Code
- 2012 ICC International Fire Code
- 2011 National Electrical Code NFPA 70
- 2010 National Fire Alarm Code NFPA 72
- 2009 Life Safety Code Handbook NFPA 101
- ASHRAE Standard 62.1-2010: Ventilation for Acceptable Indoor Air Quality
- NFPA 90A Standard for the Installation of Air conditioning and Ventilating Systems, 2015 Edition
- SMACNA HVAC Duct Construction Standards: Metal and Flexible 2005, 3<sup>rd</sup> Edition.
- ASHRAE Standard 90.1-2010: Energy Standard for Buildings Except Low-Rise Residential Buildings
- Applicable State and Local Ordinances

**Heating Ventilating and Air Conditioning Systems:**

The HVAC design shall provide a slight positive pressurization of the building to prevent infiltration of unconditioned outdoor air.

The wall construction will have a R-19 value and the roof construction will have a R-30 value

The heating, ventilating and air conditioning systems shall be designed to produce the desired space temperature, humidity, pressurization, and air quality conditions while employing the following design criteria.

**Weather Conditions:**

Site Location: Harrisonburg, Virginia

1325 ft. Elev.

Climatic Location: Roanoke, Virginia

Summer Dry Bulb Temperature<sup>1</sup>: 91° F  
Wet Bulb Temperature<sup>1</sup>: 74° F

<sup>1</sup> Source: ASHRAE 2013 Fundamentals 99.0% Design Condition

Winter Dry Bulb Temperature<sup>2</sup>: 16° F

<sup>2</sup> Source: ASHRAE 2013 Fundamentals 1.0% Design Condition

Wind Speed 17.9 mph wind<sup>3</sup>

<sup>3</sup> Source: ASHRAE 2013 Fundamentals 1.0% Design Condition

### **Building Operating Schedule**

The facility is expected to operate twelve (12) hours per day, five days a week.

### **Internal Heat Gains**

Lighting loads will be based on the design standards defined hereinafter and the minimum requirements of ASHRAE/IESNA 90.1 2010.

- a. Office Lighting – 1.5 Watts per square foot minimum or as required by lighting design.
- b. General Lighting – 2.0 Watts per square foot minimum or as required by lighting design.
- b. General Equipment – 0.5 Watts per square foot or as determined by specific equipment in each room

The proposed material handling area is not conditioned. Ventilation will be provided with sidewall propeller exhaust fans and intake louvers on opposite walls.

The proposed office area HVAC to be supplied a 2.5-ton heat pump system with auxiliary electric heat coil. Exterior condenser unit and indoor A-Coil with blower. Supply duct shall be galvanized steel; 2-inch pressure class. Ductwork trunk shall be sized to accommodate future capacity for the second floor and a blanked off future connection point shall be provided.

Low pressure ductwork shall convey air to ceiling diffusers.

Ceiling diffusers shall be aluminum construction. Supply registers shall be aluminum construction, double deflection type. Return and exhaust grilles shall be aluminum construction with a perforated face.

Return ductwork shall be low pressure galvanized steel. A return plenum shall be utilized; however, ducted transfers will be required at each room to allow airflow into central corridor plenums.

Exhaust ductwork shall be low pressure galvanized steel.

All supply ductwork shall be externally wrapped with 2.2" thick fiberglass blanket insulation with aluminum skin vapor barrier facing and 0.27 K factor. Exhaust ductwork shall be un-insulated except for 5' of duct from the roof deck and the 5' section of insulated duct shall match the return duct insulation specifications.

Toilets and janitors' closets shall be exhausted to the outdoors through a ducted central exhaust system. Electrical rooms shall be provided with conditioned air to offset heat gains from electrical equipment.

Condensate Piping:

Condensate piping at Rooftop Units shall be Type L hard copper. Fittings shall be copper solder joint fittings, 150 pound ANSI B16.22-73. Joints shall be solder, ASTM B32-78 tin-antimony 95-5.

## **ELECTRICAL NARRATIVE** - prepared by Valley Engineering:

### **Overview:**

The project will consist of a single-story solid waste transfer building, which will have approximately 17,500 square feet (GSF) and an attached two-story office building which will have approximately 900 square feet (GSF) per floor.

Electrical systems for the Solid Waste Transfer Facility are described in the following section of this schematic narrative. The narrative accounts for the base electrical systems of the Shell and Core of the building.

The design of the electrical systems for this building shall comply with the building codes and guidelines listed below:

- 2012 ICC International Building Code
- 2012 ICC International Energy Conservation Code
- 2012 ICC International Fire Code
- 2012 Virginia Uniform Statewide Building Code
- 2011 National Electrical Code NFPA 70
- 2007 National Fire Alarm Code NFPA 72
- 2009 Life Safety Code Handbook NFPA 101

### **Main Service:**

A new 600A, 480/277V, 3-phase, 4-wire service will be installed on the mezzanine located above the office inside the space. The new service will be fed underground from the power company transformer to the power company service equipment located on the exterior of the building. A single building meter will be provided on the exterior of the building located next to the power company service equipment.

**Normal Power Distribution:**

A new 600A, 480/277V, 3-phase, 4-wire, service entrance rated, main circuit breaker "MDP" panel will be located on the mezzanine. This panel shall have a short-circuit rating of 65 KAIC. This panel will provide power to a 45 kVA 480 to 208/120V, 3-phase, 4 wire step down transformer and also serve as the power panel for all 480/277V circuit requirements. The mezzanine 208/120V power panel "M-1" (150 amperes, 3-phase, 4-wire) shall be fed by the 45Kva transformer. The first floor office power panel "P-1", will be fed by the mezzanine power panel "M-1."

**Typical receptacle and tele/data outlet placement:**

## Typical office

Minimum of four duplex receptacles; one on each wall (coordinate exact locations and quantity with owner)

Two telephone/data outlets; on two different walls

## Corridor

Minimum of one duplex receptacle

## Restroom(s)

One duplex GFCI receptacle adjacent to each vanity/sink above counter height

## Tipping Floor/Bale Staging Area

Duplex GFCI receptacles are to be located above the 4 Foot concrete wall so a 50' cord can reach from anywhere along that 4 Foot wall perimeter

No receptacles are to be located around the "Push Wall" perimeter (See Floor Plan)

## Exterior at building entrances

At least one duplex GFCI receptacle located at each entrance

**Lighting Fixtures:**

Occupancy sensors shall be used in rooms for lighting controls. Occupancy sensors shall not be used in janitor's closets, equipment rooms, or any other area critical to employee safety.

## Lighting Fixtures Selections:

## 2'x4' Recessed Direct

Office/Meeting Room/Corridor/Kitchenette/Restroom

Recessed LED

Direct/Indirect

## 4' Industrial Strip

Electrical/Mechanical Mezzanine

Pendant/Surface Fluorescent

Wire Guard

## Exit

Emergency Egress Paths

Surface Mounted  
Single or Double Faced  
High Impact Thermoplastic  
RED LED  
Battery Backup

4' Wall Direct/Indirect  
Stairwells  
Surface LED  
33% Perforated  
Battery Backup for Stairwells

Wall Packs  
Building Exterior  
Surface LED  
Neutral White Color Temperature (4000K)

### **Design Criteria:**

Types of Conduit Systems:

Definitions

- EMT: Electrical metallic tubing.
- FMC: Flexible metal conduit.
- IMC: Intermediate metal conduit.
- LFMC: Liquid tight flexible metal conduit.
- RNC: Rigid nonmetallic conduit.

Conduit Systems:

1. Indoors
  - a. Exposed: EMT.
  - b. Exposed and Subject to Sever Damage: Rigid Steel.
  - c. Concealed: EMT.
  - d. Connection to Vibrating Equipment: FMC, except LFMC in damp or wet locations.
  - e. Damp or Wet Locations: IMC.
2. Outdoors
  - a. Exposed: Rigid Steel.
  - b. Concealed Aboveground: IMC.
  - c. Underground: RNC Schedule 40-PVC.
  - d. Connection to Vibrating Equipment: LFMC

Conductor Systems:

1. Conductors and Cables
  - a. Conductors: Copper.
  - b. Conductor Insulation: Types THHN-THWN.
2. Conductor and Insulation Application
  - a. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
  - b. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway.
  - c. Feeders Concealed in Concrete, below Slabs-On-Grade, and underground: Type THHN-THWN, single conductors in raceway.

- d. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- e. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- f. Branch Circuits Concealed in Concrete, below Slabs-On-Grade, and underground: Type THHN-THWN, single conductors in raceway.
- g. Class 1 & 2 Control Circuits: Type THHN-THWN, in raceway.

**Standards of Design:**

1. Voltage Drop: Conductors for branch circuits are sized to prevent a voltage drop exceeding 3 percent at the farthest outlet of power, heating, and lighting loads, or combination of such loads, and where the maximum total voltage drop on both feeders and branch circuits to the farthest outlet does not exceed 5 percent.
2. Receptacles shall be 20A specification grade.
3. All wiring devices connected to an emergency circuit shall be factory finished red in color and all wiring devices connected to a normal circuit shall be factory finished ivory in color.
4. Device cover plates shall be brushed stainless steel and engraved with the panel name and circuit number.
5. Minimum conduit size shall be 3/4".
6. Minimum wire size shall be #12AWG.
7. All branch circuits shall be provided with dedicated neutrals.
8. All new power distribution equipment shall match the base building distribution equipment manufacturer.

**Grounding:**

1. An equipment grounding conductor sized in accordance with the NEC shall be installed with all feeders and branch circuits.
2. A grounding electrode conductor shall be provided at all separately derived systems and as required by the linear accelerator equipment manufacturer.
3. A 3/4"x10' copper-clad ground rod shall be installed at each new column for the building addition. Connect ground rods to building steel. The new addition shall be connected to the existing building main grounding system.

**Fire Alarm System:**

Fire Alarm system not required pursuant to the 2012 Virginia Construction Code, Section(s) 907.2.2 and 907.2.4

**Cable Television System, Security System, Telecommunication/Data Systems:**

Except as noted below, these systems will be furnished and installed by the Owner or the Owner's vendors. The electrical contractor's scope of work for these systems includes: telephone, data network, security, cable TV, and satellite TV. The electrical contractor will install back-boxes and 3/4" conduit stub-ups to the nearest accessible corridor ceiling space for these systems along with cable supports above corridor ceilings and sleeves through walls to deck. The Contractor will also provide back-boxes and conduits for architecturally specified low voltage systems such as access control (keypads and magnetic locks) and power operated doors (push plates).

## **Wiring Methods:**

### Types of Conduit Systems:

#### Definitions

- EMT: Electrical metallic tubing.
- FMC: Flexible metal conduit.
- IMC: Intermediate metal conduit.
- LFMC: Liquid-tight flexible metal conduit.
- RNC: Rigid nonmetallic conduit.

#### Outdoors

- Exposed: Rigid Steel.
- Concealed Aboveground: IMC.
- Underground: RNC EPC-40-PVC.
- Connection to Vibrating Equipment: LFMC

#### Indoors

- Exposed: EMT.
- Exposed and Subject to Sever Damage: Rigid Steel.
- Concealed: EMT.
- Connection to Vibrating Equipment: FMC, except LFMC in damp or wet locations.
- Damp or Wet Locations: IMC.

### Types of Conductor Systems:

#### Conductors and Cables

- Conductors: Copper.
- Conductor Insulation: Types THHN-THWN.
- Multi-conductor Cable: Metal-clad cable, Type MC with ground wire.

#### Conductor and Insulation Application

- Service Entrance: Type THHN-THWN, single conductors in raceway.
- Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway.
- Feeders Concealed in Concrete, below Slabs-On-Grade, and underground: Type THHN-THWN, single conductors in raceway.
- Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- Branch Circuits Concealed in Concrete, below Slabs-On-Grade, and underground: Type THHN-THWN, single conductors in raceway.
- Class 1 & 2 Control Circuits: Type THHN-THWN, in raceway.

## **Generator:**

At this point in time a generator will not be required.

## **Lightning protection system:**

A lightning protection system (optional) shall be provided for the building. The system, if provided, shall comply with both UL and NFPA.

**PLUMBING NARRATIVE** - prepared by Valley Engineering:

**Overview:**

The project will consist of a single-story solid waste transfer building, which will have approximately 17,500 square feet (GSF) and an attached two-story support building which will have approximately a 900 square feet (GSF) office on the first floor and mezzanine on the second floor.

Plumbing systems for the Solid Waste Transfer Facility are described in the following section of this schematic narrative.

The design of plumbing systems for this building shall comply with the building codes and guidelines listed below:

- 2012 ICC International Building Code
- 2012 ICC International Mechanical Code
- 2012 ICC International Plumbing Code
- 2012 ICC International Fire Code
- 2012 Virginia Uniform Statewide Building Code

**Plumbing Systems:**

The following site utilities shall be provided to the new addition:

1. 6" Sanitary (PEMB)
2. 4" Sanitary (Support Bldg.)
3. 2" Domestic Cold Water
4. 6" Sprinkler System Main

**Sanitary:**

1. PVC DWV above and below grade.
2. PEMB: Connect trench drains (4" each) to 6" sanitary to oil interceptor noted on civil plans.
3. PEMB Provide 6" main with 4" branch connections to floor sinks with removable sediment baskets evenly spaced throughout the tipping floor (50 max between drains). Drain 6" sanitary to oil interceptor noted on civil plans.

**Storm Drainage:**

1. The PEMB will be served by gutter and downspout continuous along the exterior. Gutters shall have multiple short sections of downspout, turning down and into the building just below the eave, for connection to gravity storm mains along both sides of the building. Provide downspout boots/transition fittings as required for complete operable system. Provide watertight seal where downspout/piping transitions into the building. Gravity lines (anticipated height 30' or higher) will drain toward the support building, tie together and turn down into the top of the 12,000 gallon storage tank shown on Civil plans. Provide two first flush filters, one in each corner for the wall adjoining the PEMB and support building. Pipe overflow discharge from first flush filters to the exterior, 24" above grade. See Civil plans for coordination and additional information on rainwater harvesting system.
2. Support Bldg.: Individually piped primary and secondary drainage systems (4" Max) are required. Include roof drains, overflow drains, overflow scuppers, and piping. Primary drain shall be piped in the second floor ceiling to the exterior and turn down into the top of the 12,000 gallon storage tank shown on Civil plans. See Civil plans for coordination and additional information on rainwater harvesting system.

4. Support Bldg.: Secondary storm (overflow) drainage piping will be provided independent multiple leaders running through the building addition and discharging to grade. (Discharge approximately 24" AFG.)
5. PVC DWV above and below grade.

**Domestic Cold Water:**

1. Copper Pipe, Type L hard throughout. Fittings shall be copper solder joint fittings, 150 pound ANSI B16.22-73. Joints shall be lead free solder, ASTM B32-78 tin-antimony 95-5.
2. Backflow prevention – dual 2" Reduced Pressure Zone backflow preventers shall be provided at service entrance.
3. Ball valves, lead free bronze with stainless trim, extended handles where required for insulation thickness.
  - a. Full port throughout.
4. Insulation – ½" heavy density fiberglass pipe insulation with SSL vapor barrier jacket throughout.
5. Recessed nickel bronze wall hydrants every 100' along the building exterior.
6. All piping, valves, backflow preventers, and accessories shall comply with the 2011 Reduction of Lead in Drinking Water Act

**Domestic Hot Water:**

1. Copper Pipe, Type L throughout with cast copper fittings. Solder joints.
2. Ball valves, lead free bronze with stainless trim, extended handles where required for insulation thickness.
  - a. Full port throughout.
3. Insulation – 1" heavy density fiberglass pipe insulation with SSL vapor barrier jacket throughout.
4. 60-gallon electric water heater.
  - a. One (1) ASSE 1070 compliant master mixing valve.
5. All piping, valves, backflow preventers, and accessories shall comply with the 2011 Reduction of Lead in Drinking Water Act

**Wall Hydrants and Hose Bibbs:**

1. Support Bldg.: One (1) ¾" key operated wall hydrant located on the face of the building every 100 feet.
2. Isolation ball valve for each wall hydrant.
3. PEMB: Post/Yard hydrants mounted approximately 3' above floor, every 75 feet along building interior, with crushed stone drainage basin.
  - a. Provide 1" DCW main below frost depth around PEMB perimeter, with above grade shutoff valve, servicing yard hydrants. This system shall be fed from the rainwater harvesting system.
  - b. Provide ASSE 1013 rated backflow preventer for any supplemental makeup water required for the rainwater harvesting system. See Civil plans for coordination and additional information on rainwater harvesting system.
  - c. Provide bollards at each hydrant location for protection from equipment and other damage.
  - d. Drainage basin shall be below slab. Finished slab shall be sealed continuous for waterproof operation. Provide underslab drainage as required.

**Plumbing Fixtures**

1. Plumbing fixtures will be provided where indicated on the architectural drawings. Fixture trim will be consistent with the intended use.
  - a. Vitreous China, Flush Valve Water Closets.
  - b. Vitreous China Wall Mount lavatories, commercial solid brass faucets (Single Toilets).
  - c. Stainless Steel Sinks (double and single bowl), commercial solid brass faucets, (Break Rooms, Work Areas).
  - d. Concrete/marble janitors closet sinks with stainless steel trim, commercial solid brass faucet with bucket hook, mop hangers, hose, hose hanger.
2. Public lavatories and sinks require tempered water and shall be provided with a below deck mixing valve.

**FIRE PROTECTION NARRATIVE** - prepared by Valley Engineering:**Overview:**

The project will consist of a single-story solid waste transfer building, which will have approximately 17,500 square feet (GSF) and an attached two-story office building which will have approximately 900 square feet (GSF) per floor.

Fire protection systems for the Solid Waste Transfer Facility are described in the following section of this schematic narrative.

The design of fire protection systems for this building shall comply with the building codes and guidelines listed below:

- 2012 Virginia Uniform Statewide Building Code
- 2012 Life Safety Code Handbook NFPA 101
- 2010 Standard for the Installation of Sprinkler Systems NFPA 13
- 2011 National Electrical Code NFPA 70
- 2007 National Fire Alarm Code NFPA 72
- 2002 Standard for the Installation of Air-Conditioning and Ventilating Systems NFPA 90A

**Building Hazard Classification:**

Group B/F-1 Business/Factory (Moderate Hazard) Occupancy Group

**Sprinkler System Criteria:**

1. A 6" fire protection main shall be provided for the facility.
2. Sprinkler piping and sprinkler heads shall be provided according to the following criteria:
  - a. Protection area shall not exceed 225 sf per head per Chapter 5 of NFPA 13.
  - b. PEMB: Protection area shall not exceed 120 sf per head per Chapter 5 of NFPA 13.

**Standpipe Criteria:**

Not required.

**Sprinkler Design Densities:**

1. Light hazard - 0.10 gallons per minute (GPM) per SF over the hydraulically most remote 1,500 SF.
  - a. For areas such as exam rooms, office areas, public areas, corridors, lobbies, and public elevator lobbies
2. Ordinary hazard Group II - 0.20 GPM per SF over the hydraulically most remote 3,000 SF.
  - a. For areas such as storage rooms, mechanical rooms, electrical switchgear, and transfer rooms.
  - b. For the PEMB in its entirety.

**HVAC Systems:**

1. Smoke detectors in HVAC systems shall be installed and controlled as required in Chapter 4 of NFPA 90A.

**Incoming Fire Service:**

1. A 6" sprinkler main shall be provided for the facility.
2. Vertical RPDA backflow preventer at service entrance.
3. Remote post mounted Fire Department Connection for alternate supply to PEMB and support building.

**Standpipe:**

Standpipe risers are not required for this project.

**Sprinkler:**

1. Support Bldg.: Fully sprinkled wet sprinkler system.
2. Designed and installed according to NFPA 13.
3. Sprinkler Heads
  - a. Fully recessed sprinklers shall be provided in all hard ceiling areas.
  - b. Semi-recessed sprinklers will be provided in all suspended acoustical tile areas.
  - c. Upright brass pendants will be provided in mechanical areas, and areas without ceilings.
4. PEMB: Dry pipe system according to NFPA 13:
  - a. Provide 3 HP air compressor for pressure maintenance and system recharging.
  - b. Upright brass pendants will be provided in warehouse areas, and areas without ceilings.
5. Materials:
  - a. Wet pipe: Standard-Weight, Black-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. 2" threaded ends for piping 2" NPS or less.
  - b. Wet pipe: Standard-Weight, Black -Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. Cut or rolled grooved ends for piping 2-1/2" NPS or larger.
  - c. Dry pipe: Standard-Weight, Galvanized-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. 2" threaded ends for piping 2" NPS or less.
  - d. Dry pipe: Standard-Weight, Galvanized-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. Cut or rolled grooved ends for piping 2-1/2" NPS or larger.

**FIRE ALARM SYSTEMS NARRATIVE - prepared by Valley Engineering:**

**Overview:**

**Building Hazard Classification:**

Occupancy Group: B Business/Factory (Moderate Hazard)

**Fire Alarm System Overview:**

Fire Alarm system not required pursuant to the 2012 Virginia Construction Code, Section(s) 907.2.2 and 907.2.4.



## Report of Geotechnical Study

### ***Harrisonburg Solid Waste Transfer Station***

*Harrisonburg, Virginia  
F&R Project No. 71U0078*

Prepared For:

***City of Harrisonburg***  
*320 East Mosby Road  
Harrisonburg, Virginia 22801*

Prepared By:

***Froehling & Robertson, Inc.***  
*6181 Rockfish Gap Turnpike  
Crozet, Virginia 23932-3330*

July 22, 2016



FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

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Crozet, Virginia 22932-3330  
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July 22, 2016

City of Harrisonburg  
320 East Mosby Road  
Harrisonburg, Virginia 22801

Attn: Mr. Thomas Hartman, PE, LEED AP

Reference: Report of Geotechnical Study  
Harrisonburg Solid Waste Transfer Station  
Harrisonburg, Virginia  
F&R Project No. 71U0078

Dear Mr. Hartman:

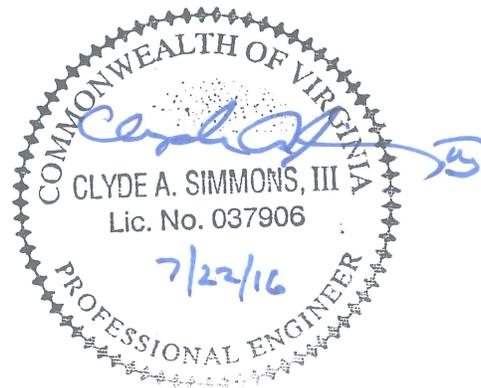
The purpose of this study is to present the results of the subsurface exploration program and geotechnical engineering evaluation undertaken by Froehling & Robertson, Inc. (F&R) in connection with the referenced project. Our services were performed in general accordance with F&R Proposal No. 1771-0084G dated June 6, 2016. The attached report presents our understanding of the project, reviews our exploration procedures, describes existing site and general subsurface conditions, and presents our geotechnical evaluations and recommendations.

We have enjoyed working with you on this project, and we are prepared to assist you with the recommended quality assurance monitoring and testing services during construction. Please contact us if you have any questions regarding this report or if we may be of further service.

Sincerely,  
FROEHLING & ROBERTSON, INC.

Thomas DeGaetano, P.E.  
Staff Geotechnical Engineer

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Clyde A. Simmons, III, P.E.  
Senior Engineer/Branch Manager



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## APPENDICES

### **APPENDIX I**

- Site Vicinity Map (Drawing No. 1)
- Boring Location Plan (Drawing No. 2)

### **APPENDIX II**

- Key to Soil Classification
- Unified Soil Classification System
- Typical Diagram of Limestone Profile
- Rock Sub-Excavation Detail
- Boring Logs
- Subsurface Profile

### **APPENDIX III**

- ASFE Document "Important Information about Your Geotechnical Engineering Report"



## EXECUTIVE SUMMARY

This Executive Summary is provided as a brief overview of our geotechnical engineering evaluation for the project and is not intended to replace more detailed information contained elsewhere in this report. As an overview, this summary inherently omits details that could be very important to the proper application of the provided geotechnical design recommendations. This report should be read in its entirety prior to implementation into design and construction.

- The site was explored by four soil test borings and two offset probes performed on June 17 and 23, 2016. Site subsurface conditions generally consisted of existing fill materials overlying alluvial soils and residual soils. Auger refusal materials were encountered in borings B-3 and B-4, B-4A, and B-4B at depths ranging from 2 feet to 12.5 feet below existing grades.
- Soils considered Fill material were encountered below the surficial gravels in each soil test boring and extended to depths of 2 feet to 8.5 feet below the existing ground surface. We anticipate that portions of the foundations will bear on existing fill materials encountered in the borings. Although excessively soft materials or debris laden materials were not encountered in the borings, given the variability associated with fill materials, it is possible that they could be present between boring locations. Some undercutting could be required if poor quality fill materials are encountered at subgrade levels.
- Based on the subsurface information obtained during our exploration, we expect that the proposed structure can be supported a shallow foundation system bearing on firm natural soils, controlled, compacted fill materials, or approved existing fill materials. We recommend foundations located within the footprint be designed for a net allowable bearing pressure not to exceed 2,000 pounds per square feet (psf). Since records regarding the placement and compaction of the existing fill were not provided to F&R, there are some risks related to structural support on these fill materials. These risks are discussed in section 5.3 of this report.
- The following Seismic Site Class Definition was established per Section 1613.5.2 of the 2012 International Building Code (IBC). Based on our experience in this area and the data from our testing and subsurface exploration, a **Site Classification “D”** should be used for further evaluations relative to earthquake load design.



## 1.0 PURPOSE & SCOPE OF SERVICES

The purpose of the subsurface exploration and geotechnical engineering evaluation was to explore the subsurface conditions on the project site and provide geotechnical engineering evaluation and construction recommendations that can be used during planning process of the proposed structure and site work.

F&R's scope of services included the following:

- Visited the site to observe existing surface conditions;
- Coordinated utility clearance with Miss Utility;
- Reviewed readily available geologic and subsurface information relative to the project site;
- Completion of four soil test borings (and two offset probes) to depths of 2 feet to 15 feet below the existing ground surface;
- Performed laboratory testing on selected soil samples, consisting of water content, wash sieve analysis, and Atterberg Limits;
- Preparation of typed Boring Logs and development of a Subsurface Profile;
- Performing a geotechnical engineering evaluation of the subsurface conditions with regard to their suitability for the proposed construction;
- Provided recommendations for slab on grade design and construction;
- Provided lateral earth pressure parameters for the design of below grade walls;
- Provided recommendations regarding the placement and compaction of fill materials required to achieve building pad or site subgrades, including an assessment of the suitability of the on-site soil for re-use as structural fill.
- Provided a *seismic site class definition*. The *seismic site class definition* was assigned based on the test boring Standard Penetration Test data and correlations provided in the 2012 IBC;
- Preparation of this geotechnical report by professional engineers.

Our scope of services did not include a survey of the boring locations, quantity estimates, preparation of plans or specifications, or the identification and evaluation of wetland or other environmental aspects of the project site.



## **2.0 PROJECT INFORMATION**

### **2.1 Site Description**

The project site is located off of Beery Road and is currently occupied by the existing solid waste management facility. The existing facility is encompassed by gravel filled lots with existing building surrounding proposed new construction. The existing solid waste transfer building, which will be demolished for this project, consists of a 2-story steel framed building with concrete slabs and stone gravel surrounding the facility. A concrete ramp is located south of the building that services the transportation of solid waste into and out of the existing facility. The project site is located east of Blacks Run Creek. Topographically, the area slopes from El 1260 in the east direction down to El 1250 in the west towards Blacks Run Creek.

### **2.2 Proposed Construction**

Project information was provided in email correspondence with you, which included the “Site Plan” by Valley Engineering dated 3/22/16. It is understood that a metal building with a footprint of approximately 17,000 square feet, is planned for the project site. The building will include some concrete “push walls”, up to 8 feet tall. We understand that materials will be piled against these walls, which will be subjected to lateral loading from the material piles, as well as equipment “pushing” against these walls (i.e. a loader bucket) to process these materials. Considering the existing topography, relatively minor grading, with cuts and fills of 5 feet or less, is expected to be needed for this project. Although structural loads were not provided, based on experience with similar projects we anticipate column loads less than 50 kips and wall loads less than 6 kips per linear foot.

## **3.0 EXPLORATION PROCEDURES**

### **3.1 Soil Borings**

The exploration program was performed on June 17 and June 23, 2016, and consisted of four borings designated B-1 through B-4 (and two offset borings designated B-4A and B-4B). The borings were drilled to the planned termination depth of 15 feet, or auger refusal, whichever occurred first. The locations of the borings are shown on the attached Boring Location Plan (Drawing No. 2). The planned boring locations were staked in the field by representatives of the client. Surface elevations at the boring locations were estimated to the nearest foot from the topography indicated on the provided site plans. In consideration of the methods used in their determination, the test boring locations shown on the attached boring location plan and the elevations shown on the boring logs should be considered approximate.



The soil test borings were performed in accordance with generally accepted practice using a truck-mounted CME-55 rotary drill rig equipped with an automatic safety hammer. Hollow-stem augers were advanced to pre-selected depths, the center plug was removed, and representative soil samples were recovered with a standard split-spoon sampler (1 3/8 in. ID, 2 in. OD) in general accordance with ASTM D 1586, the Standard Penetration Test. For these tests, a weight of 140 pounds was freely dropped from a height of 30 inches to drive the split-spoon sampler into the soil. The number of blows required to drive the split-spoon sampler three consecutive 6-inch increments was recorded, and the blows of the last two increments were summed to obtain the Standard Penetration Resistance (N-value). The N-value provides a general indication of in-situ soil conditions and has been correlated with certain engineering properties of soils.

Research has shown that the Standard Penetration Resistance (N-value) determined by automatic hammer is different than the N-value determined by the safety hammer method. Most corrections that are published in the technical literature are based on the N-value determined by the safety hammer method. This is commonly termed  $N_{60}$  as the rope and cathead with a safety hammer delivers about 60 percent of the theoretical energy delivered by a 140-pound hammer falling 30 inches. Several researchers have proposed correction factors for the use of hammers other than the safety hammer. The correction is made by the following equation:

$$N_{60} = N_{\text{field}} \times C_E$$

where  $N_{\text{field}}$  is the value recorded in the field, and  $C_E$  is the drill rod energy ratio for the hammer used. A correction factor ( $C_E$ ) of 1.3 was utilized for the automatic hammer used during the drilling of borings for this site, based on previous energy measurements made for the automatic hammer system. Plotted N-values reported on Boring Logs are the actual, field-derived blow counts ( $N_{\text{field}}$ ). Drilling notes on each Boring Log indicates whether penetration resistances presented on the Boring Log were determined using automatic hammer or conventional hammer systems. Corrected  $N_{60}$  values were used for all analyses.

In some soils it is not always practical to drive a split-spoon sampler the full three consecutive 6-inch increments. Whenever more than 50 blows are required to drive the sampler over a 6-inch increment, or the sampler is observed not to penetrate after 10 blows, the condition is called split-spoon refusal. Split-spoon refusal conditions may occur because of obstructions or because the earth materials being tested are very dense or very hard. When split-spoon refusal occurs, often little or no sample is recovered. The SPT N-value for split-spoon refusal conditions is typically estimated as > 100 blows per foot (bpf). Where the sampler is observed not to penetrate after 10 blows, the N-value is reported as 10/0. Otherwise, the depth of penetration after 50 blows is reported in inches, i.e. 50/5, 50/2, etc.



The test borings were advanced through the soil overburden by soil drilling procedures until the termination depth or auger refusal was reached. Subsurface water level readings were taken in each of the borings during the drilling process. Upon completion of drilling, the boreholes were backfilled with auger cuttings (soil). Periodic observation of the boreholes should be performed to monitor subsidence at the ground surface, as the borehole backfill could settle over time.

Representative portions of the split-spoon soil samples obtained throughout the exploration program were placed in glass jars and transported to our laboratory. In the laboratory, the soil samples were evaluated by a member of our engineering staff in general accordance with techniques outlined in the visual-manual identification procedure (ASTM D 2488). The soil descriptions and classifications discussed in this report and shown on the attached Boring Logs are based on visual observation and should be considered approximate. A copy of the boring logs are provided and classification procedures are further explained in Appendix II.

Split-spoon soil samples recovered on this project will be stored at F&R's office for a period of 60 days. After 60 days, the samples will be discarded unless prior notification is provided to us in writing.

### **3.2 Laboratory Testing**

Representative soil samples were subjected to Water Content (ASTM D 2216), #200 Sieve Wash (ASTM D 1140), and Atterberg Limits (ASTM D 4318) to substantiate the visual classifications and assist with the estimation of the soils' pertinent engineering properties. The results are shown in Section 4.4.

## **4.0 REGIONAL GEOLOGY & SUBSURFACE CONDITIONS**

### **4.1 Regional Geology**

The project site is located in Virginia's Valley and Ridge Geologic Province which is underlain by ancient faulted and folded limestones, dolomites, shales and sandstones of Paleozoic age. Information obtained from publication entitled Geology of Harrisonburg and Bridgewater, Quadrangles, Virginia (Commonwealth Division of Mineral Resources Publication 60, 1986) indicates that this area is located over the Beekmantown Formation which is composed of interbedded layers of Dolomite and Limestone. The Dolomite in the lower section of this formation is also found to contain considerable amounts of Chert layers. The virgin soils encountered in this area are the residual product of in-place chemical and mechanical weathering of the parent bedrock formation that underlies the site. These materials consist of clayey soils near the surface where soil weathering is more advanced, underlain by silty material.



Often, these rocks weather to form a highly variable bedrock surface consisting of troughs and pinnacles that may greatly fluctuate in elevation within short lateral distances. Sometimes, the interbedded layers after weathering will result in alternating rock and soil seam layers that can be oriented near vertical. The varying susceptibility to weathering creates seams of soil sandwiched between weather-resistant rock pinnacles.

From an excavation and support point of view, this near vertical orientation can result in very hard layers that may require blasting to excavate, interbedded with soft clay seams that may require undercutting to some depth to provide adequate structural support. Where soil test borings encountered a vertical bed of auger refusal material, direct interpretation of the field data might lead one to envision a rock surface between the auger refusal points. Likewise, where vertical soil seams are encountered, a deep soft soil profile might be anticipated. However, in the Valley and Ridge physiographic province our experience is that a combination of both conditions may exist. Therefore, the boring data should be viewed as a specific example of the subsurface condition at each explored location rather than a broad interpretation of conditions across the site area.

Limestone and dolomite are composed of calcium carbonate and calcium magnesium carbonate, respectively, with the relative proportion of magnesium to calcium being used to distinguish the two types of rock. Impurities (i.e., silicates, sulfides, and other mineral groups) within these rock formations occur either as distinct beds of shale or siltstone, or may be widely dispersed throughout the rock. Carbonate rocks are susceptible to dissolution in the presence of subsurface water. The mineral residues remaining after the carbonates are eroded are known as residual soils, and typically consist of medium to highly plastic silts and clays.

Continued subsurface dissolution of the carbonate bedrock may lead to development of a highly irregular rock profile that may include underground voids. Over time, the soils overlying a void may subside, in a continual process of subsurface chemical erosion of bedrock and infilling by overburden soils. The resulting ground surface depression is known as a sinkhole. Terrain characterized by sinkholes and other solutional features is known as karst. See attached conceptual model of carbonate geology provided by ATS International in Appendix II.

There are numerous other variations on sinkhole development. Regardless of the mode of development, it is important to note that changes in soil stress and water regime can greatly accelerate sinkhole development. Natural geologic processes that might otherwise occur over thousands of years can occur within several years or even months. Construction activities such as site grading, building construction, change in water flow and water impoundment have reportedly caused sinkholes to develop rapidly or to collapse suddenly. This site lies within a



geologic formation known to contain solutional features; however, the potential for development of sinkholes, along with the rate at which a sinkhole will develop, are not easily determined or accurately predicted.

The transitional term “Hard or Soft Weathered Rock” is normally found overlying the parent bedrock. For engineering purposes, SWR is described as broken and partially weathered rock with Standard Penetration Resistance N-values between 50 blows per 6 inches and 50 blows per inch. HWR is described as broken and partially weathered rock with N values in excess of 50 blows per inch.

Weathering is facilitated by fractures, joints and the presence of less resistant rock types. Consequently, the profile of the SWR or HWR is often quite irregular, even over very short horizontal distances. Also, it is not unusual to find lenses, layers, or zones of less resistant SWR and more resistant HWR, and boulders of hard rock within the soil mantle well above the general bedrock level.

## **4.2 Subsurface Conditions**

### **4.2.1 General**

The subsurface conditions discussed in the following paragraphs and those shown on the attached Boring Logs represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments. The transitions between different soil strata are usually less distinct than those shown on the boring logs. Sometimes the relatively small sample obtained in the field is insufficient to definitively describe the origin of the subsurface material. In these cases, we qualify our origin descriptions with “possible” before the word describing the material’s origin (i.e. possible fill, etc.). Although individual soil test borings are representative of the subsurface conditions at the boring locations on the dates shown, they are not necessarily indicative of subsurface conditions at other locations or at other times. Data from the specific soil test borings is shown on the attached Boring Logs in Appendix II.

A Subsurface Profile has been prepared from the boring data to graphically illustrate the subsurface conditions encountered at the site. The Subsurface Profile can be found after the boring logs in Appendix II. Strata breaks designated on the Boring Logs and Subsurface Profile represent approximate boundaries between soil types. The transition from one soil type to another may be gradual or occur between soil samples. This section of the report provides a general discussion of subsurface conditions encountered within areas of proposed construction at the project site.



Below the existing ground surface, the borings generally encountered gravel, existing fill materials, alluvial soils, residual soils, and auger refusal materials. These materials are generally discussed in the following paragraphs.

#### **4.2.2 Surficial Gravel**

Surficial gravel materials were encountered in each boring, with thicknesses of 3 inches to 24 inches. Actual surficial gravel depths should be expected to vary. Although not encountered in the borings, any surficial organics (topsoil) should be removed from the site.

#### **4.2.3 Existing Fill**

Existing fill includes any materials deposited by man, and were encountered in each boring, extending to depths of up to 8.5 feet below existing grades. The sampled fill materials were classified as lean CLAY (CL) and fat CLAY (CH) soils, with varying amounts of gravel and asphalt fragments. The fill materials were dark brown, dark gray, and orange in color, with moisture contents visually characterized as moist to very moist. The Standard Penetration Test values (N-Values) in the fill ranged from 9 bpf to 50/1.

#### **4.2.4 Alluvial Soils**

Alluvial soils, deposited by flowing water, were encountered in each boring except B-4 and extended to the residual soils. The alluvial soils consisted of lean CLAY (CL) and fat CLAY (CH), with varying amounts of sand and gravel. The alluvial soils were brown, dark brown, and gray in color, with moisture contents visually characterized as moist to wet. The Standard Penetration Test values (N-Values) in the alluvium ranged from 7 bpf to 15 bpf.

#### **4.2.5 Residual Soils**

Residual soil, formed by the in-place weathering of the parent rock, was encountered below the fill or alluvium, at each boring location except B-4, and extended to the boring termination depth or auger refusal. The residual soil was generally described as orange brown, moist to wet, fat CLAY (CH), little sand. The Standard Penetration Test values (N-Values) in the residuum ranged from 6 bpf to 16 bpf.

#### **4.2.6 Auger Refusal Materials**

Auger refusal occurs when materials are encountered that cannot be penetrated by the soil auger and is normally indicative of a very hard or very dense material, such as boulders, rock lenses, rock pinnacles, or the upper surface of rock. Auger refusal was encountered in boring B-3, B-4, B-4A, and B-4B at depths of 2 feet to 12.5 feet below existing grades. Auger refusal conditions with a CME 55 do not necessarily indicate conditions impenetrable to other equipment. Auger refusal conditions will likely vary in unexplored areas of the site. A summary of the auger refusal conditions can be found in the table below.



Boring No.	Existing Grade	Existing Fill Depth (ft)	Auger Refusal Depth (ft)
B-1	1254	6	--
B-2	1250	8.5	--
B-3	1250	6	12.5
B-4	1254	2	2
B-4A	1254	2	2
B-4B	1254	4.6	4.6

Note- borings B-4, B-4A, and B-4B encountered auger refusal within existing fill.

#### 4.3 Subsurface Water

The test borings were monitored during and after drilling operations to obtain short-term subsurface water information. Subsurface water was not encountered during drilling or upon removal of the augers in any of the borings. It should be noted that the location of the subsurface water table could vary by several feet because of seasonal fluctuations in precipitation, evaporation, surface water runoff, local topography, and other factors not immediately apparent at the time of this exploration. Normally, the highest subsurface water levels occur in the late winter and spring and lowest levels occur in the late summer and fall.

#### 4.4 Laboratory Test Results

As discussed in Section 3.2, laboratory testing was performed on selected soil samples collected during our subsurface exploration. The results from the laboratory testing are included in the table below.

Boring No.	Sample Depth (Feet)	Natural Water Content (%)	Liquid Limit/ Plasticity Index	% Passing No. 200 Sieve	USCS Class.
B-1	1.5-3	22.1	--	--	--
B-1	6-7.5	26.4	48/29	87.9	CL
B-2	4-5.5	28.4	--	--	--
B-3	4-5.5	17.1	41/23	60.8	CL
B-3	8.5-10	36.8	--	--	--
B-4	1-2.5	16.6	--	--	--



## **5.0 GEOTECHNICAL DESIGN RECOMMENDATIONS**

### **5.1 General**

The following evaluations and recommendations are based on our observations at the site, interpretation of the field obtained during this exploration, and our experience with similar subsurface conditions and projects. Soil penetration data has been used to evaluate relative consistency and compressibility of the underlying soil stratum using established correlations. Subsurface conditions in unexplored locations may vary from those encountered. If the structure locations, loadings, or elevations are changed, we should be notified and requested to confirm and, if necessary, re-evaluate our recommendations.

Determination of an appropriate foundation system for a given structure is dependent on the proposed structural loads, soil conditions, and construction constraints such as proximity to other structures, etc. The subsurface exploration aids the geotechnical engineer in determining the soil stratum appropriate for structural support. This determination includes considerations with regard to both allowable bearing capacity and compressibility of the soil strata. In addition, since the method of construction greatly affects the soils intended for structural support, consideration must be given to the implementation of suitable methods of site preparation, fill compaction, and other aspects of construction, where applicable.

### **5.2 Foundation Design**

Based on the boring data, we envision that the proposed building can be supported by shallow foundations bearing on firm natural soils, newly placed controlled and compacted fill, or approved existing fill materials. We recommend that foundations be designed for a net allowable bearing pressure not to exceed 2,000 pounds per square feet (psf).

Based on F&R's soil boring data and site observation it appears that the existing fill materials may have been placed in a controlled method; however, records of compaction testing were not provided. Considering the proposed structure and the anticipated loads, and the composition of the fill materials, we envision that the proposed structure can be supported on a shallow foundation system bearing on approved existing fill materials, provided that the risks regarding construction on existing fill materials, as described in Section 5.3 are understood and accepted by the owner and project team.

If soft soils or poor quality existing fill materials are encountered at the footing subgrade level, the materials should be undercut to reach firm bearing soils and replaced with controlled compacted fill, flowable fill, or concrete. If soil backfill is used the excavation should be oversized on each side by an amount equal to the depth of undercut.



In addition, due to the pinnacled nature of the site's underlying geology, it is possible that foundations could bear directly on bedrock materials. At locations where footing support transitions from soil to rock, we recommend that a "rock cushion", consisting of at least 12 inches of compacted soil be placed between the rock and the footing (refer to Rock Sub Excavation Detail, Appendix II). This should reduce the potential for a point loading on the footing.

To reduce the possibility of localized shear failures, column and wall footings should be a minimum of 3 feet and 2 feet wide, respectively. The soils encountered in the borings were classified as lean CLAY (CL) and fat CLAY (CH). It should be understood that clayey soils are considered to be moderately expansive. We recommend that all exterior footings be placed a minimum of 3 feet below finished exterior grades to satisfy shrink-swell considerations, which should be below the zone of seasonal moisture fluctuation, and should also be adequate to protect exterior footings against the effects of frost.

### **5.3 Support on Existing Fill**

In order to eliminate risk associated with foundation support on existing fill materials, the existing materials could be completely removed and replaced with new controlled structural fill or deep foundations could be utilized. Based on boring data and given the relatively light structural loading, structural support on existing fill is possible, provided that the recommended engineering evaluations are performed during construction and the owner is willing to accept some risk. The risks associated with structural support in the short term include additional support related costs (i.e. undercutting) should unforeseen conditions be encountered during construction. Long-term risks (i.e. excessive settlement) can be reduced by requesting an F&R engineer to perform the recommended subgrade evaluations during construction.

### **5.4 Ground Floor Slabs**

Ground floor slabs may be designed as a slab-on-grade supported by controlled compacted fill or approved existing fill materials. Any loose/soft or otherwise unsuitable materials should be remediated as judged necessary by the Geotechnical Engineer. We recommend that the slab-on-grade be underlain by 4-inches of well-compacted granular materials, which should conform to an open graded aggregate (such as VDOT No. 57 Stone). This granular material provides a capillary break between the subgrade and slab-on-grade; while also providing a uniform bearing surface. A vapor retarder should be used beneath ground floor slabs that will be covered by tile, wood, carpet, impermeable floor coatings, and/or if other moisture-sensitive equipment or materials will be in contact with the floor. However, the use of vapor retarders may result in excessive curling of floor slabs during curing. We refer the floor slab designer to ACI 302.1R-96, Sections 4.1.5 and 11.11, for further discussion on vapor retarders, curling, and the means to minimize concrete shrinkage and curling.



Proper jointing of the ground floor slab is also essential to minimize cracking. ACI suggests that unreinforced, plain concrete slabs may be jointed at spacings of 24 to 36 times the slab thickness, up to a maximum spacing of 18 feet. Floor slab construction should incorporate isolation joints along bearing walls and around column locations to allow minor movements to occur without damage. Utility or other construction excavations in the prepared floor subgrade should be backfilled to a controlled fill criteria to provide uniform floor support.

Structural analyses and design of floor slab foundation may require the use of a vertical modulus of subgrade reaction ( $k$ ). We note that typical practice for slab-on-grade and pavement design is to provide a “ $k$ ” value based on published correlation with soil types and California Bearing Ratio (CBR) test values. Such correlations are based on empirical data from plate load tests. The plate load test sufficiently models typical floor and wheel loads that exert stresses on the order of 3 to 5 feet. Based on published correlations, we estimate that a design modulus of subgrade reaction ( $k$ ) = 150 pci is appropriate for floor slab design calculations, provided that the recommended 4-inch subbase is utilized.

## **5.5 Lateral Earth Pressures**

We understand that the structure could have some loading dock walls or retaining walls. We also understand that there will be a series of “push walls”. All below-grade walls should be designed to resist the lateral earth pressure. The at-rest and active earth pressure coefficients given herein are not applicable to the push walls, since the types of materials to be piled against these walls was not provided, and these walls will also have additional lateral loading from equipment. However, we expect that these lateral loads will be resisted by passive earth pressure and base friction, and those coefficients listed below can be used in this analysis.

Earth pressures on walls below grade are influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction, and the strength of the materials being restrained. The most common conditions assumed for earth retaining wall design are the active and at-rest conditions. Active conditions apply to relatively flexible earth retention structures, such as freestanding walls, where some movement and rotation may occur to mobilize soil shear strength. Walls that are rigidly restrained, such as basement, pit, pool and tunnel walls, should be designed for the structure requiring the use of at-rest earth pressures.

A third condition, the passive state, represents the maximum possible pressure when a structure is pushed against the soil, and is used in wall foundation design to help resist active or at-rest pressures. Because significant wall movements are required to develop the passive pressure, the total calculated passive pressure should be reduced by one-half to two-thirds for design purposes.



The fat CLAY (CH) and lean CLAY (CL) soils that were encountered in each of the borings are not considered suitable for use as below grade wall backfill due to the relatively high earth pressures they exhibit, poor drainage properties, and potential excess pressures due to swelling. We recommend that VDOT No. 21B Stone be used as below grade wall backfill. The recommended lateral earth pressure coefficients and equivalent fluid pressure parameters for design of retaining or below grade walls using these soils are provided in the following table.

Soil Type	Base Friction Coefficient	Lateral Earth Pressure Coefficient (k)		Equivalent Fluid Unit Weight ( $\gamma_{eq}$ , pcf)		
		At-rest	Active	At-rest	Active	Passive
VDOT No. 21B Stone	0.34	0.36	0.22	51.8	31.5	200

A moist unit weight of 145 pcf for soil should be used for design calculations using the No. 21B Stone. The backfill material should be extended a minimum distance of 0.5 times the wall height laterally from the back face of the wall, or for a cantilevered wall, from the heel of the wall footing.

Our recommendations were given assuming that the ground surface above the wall is level. The recommended equivalent fluid pressures were provided assuming that constantly functioning drainage systems, consisting of slotted 4 inch diameter PVC pipe, are installed between walls and crushed stone backfill to prevent the accidental buildup of hydrostatic pressures and lateral stresses in excess of those stated. If a functioning drainage system is not installed, then lateral earth pressures should be determined using the buoyant weight of the soil. Hydrostatic pressures calculated with the unit weight of water (62.4 pcf) should be added to these earth pressures to obtain the total stresses for design.

Heavy equipment should not operate within 5 feet of below grade walls to prevent lateral pressures in excess of those cited. Adjacent footings or other surcharge loads located a short distance outside below grade walls will also exert appreciable additional lateral pressures. Surcharge loads should be evaluated using the appropriate active or at-rest pressure coefficients provided above. The effect of surcharge loads should be added to the recommended earth pressures to determine total lateral stresses.



## 5.6 Seismic Considerations

The following Seismic Site Class Definition was established per Section 1613.3.2 of the 2012 International Building Code (IBC) and Chapter 20 of ASCE 7. Our scope of services did not include a seismic conditions survey to determine site-specific shear wave velocity information. This method requires averaging N-values over the top 100 feet of the subsurface profile. Based on our experience in this area and the data from our testing and subsurface exploration and in general accordance with Section 1613.3.2 of the 2012 International Building Code (IBC) and Chapter 20 of ASCE 7, a **Site Classification “D”** should be used for further evaluations relative to earthquake load design.

## 6.0 GEOTECHNICAL CONSTRUCTION RECOMMENDATIONS

### 6.1 Site Preparation

Before proceeding with construction, existing structures, utilities, surficial organic soils, asphalt, concrete and crushed stone, and other deleterious non-soil materials (if any) should be stripped or removed from the proposed construction area. Attention should be given to these areas to ensure all unsuitable material is removed prior to continuing with construction. During the site preparation operations, positive surface drainage should be maintained to prevent the accumulation of water. Existing underground utilities should be re-routed to locations a minimum of 10 feet outside of any proposed structures or abandoned in place with flowable fill.

After stripping, areas intended to support ground floor slabs or new fill should be carefully evaluated by a geotechnical engineer. At that time the engineer may require proofrolling of the subgrades with a 20 to 30-ton loaded truck or other pneumatic-tired vehicle of similar size and weight. Proofrolling should be performed during a time of good weather and not while the site is wet, frozen, or severely desiccated. The purpose of the proofrolling is to locate soft, weak, or excessively wet soils present at the time of construction.

The proofrolling observation is an opportunity for the geotechnical engineer to locate inconsistencies intermediate of our boring locations and evaluate the stability of the existing subgrade materials. Any unsuitable materials observed during the evaluation and proofrolling operations should be undercut and replaced with compacted or flowable fill, or stabilized in-place. The existing fill materials may be left in place, as outlined in sections 5.2 and 5.3, for support of structural fill or foundation support, provided they are evaluated by the geotechnical engineer and found to be stable during proofrolling and do not include an excessive amount of organics or debris. The possible need for, and extent of, undercutting and/or in-place stabilization required can best be determined by the geotechnical engineer at the time of construction. Once the site has been properly prepared, at-grade construction may proceed.



## 6.2 Excavation Conditions

Auger refusal materials were encountered in borings B-3 and B-4, B-4A, and B-4B at depths of 2 feet to 12.5 feet. The relatively shallow refusals at borings B-4, B-4A, and B-4B were recorded in existing fill materials, and it is not known whether the refusal was the result of a large obstruction within the fill or bedrock. In addition, F&R notes that the profile of the bedrock surface will be highly irregular, and that bedrock could be encountered at higher elevations between test boring locations. Therefore, it is possible that difficult excavation conditions could be encountered at this site.

In mass excavations for general sitework, hard or dense soils (soils with standard penetration resistances of 30 or more blows per foot) can usually be removed by ripping with a single-tooth ripper attached to a large crawler tractor or by breaking it out with a tracked excavator or large front-end loader. Blasting is not anticipated to be necessary at this site, based on the borings, and is not recommended due to the proximity of existing structures. In confined excavations such as foundations, utility trenches, etc., removal of partially weathered rock typically requires use of large backhoes, pneumatic spades, or hoe rams. The gradation of the material removed by ripping or hoe ramming is typically erratic, making it unsuitable for use as structural fill.

The definition of rock can be a source of conflict during construction. The following definitions have been incorporated into specifications on other projects and are provided for your general guidance:

### GENERAL EXCAVATION:

Rip Rock - Any material that cannot be removed by scrapers, loaders, pans, dozers, or graders; and requires the use of a single-tooth ripper mounted on a crawler tractor having a minimum draw bar pull rated at not less than 56,000 pounds.

Blast Rock - Any material which cannot be excavated with a single-tooth ripper mounted on a crawler tractor having a minimum draw bar pull rated at not less than 56,000 pounds (Caterpillar D-8K or equivalent) or by a Caterpillar 977 front-end loader or equivalent; and occupying an original volume of at least one (1) cubic yard.

### TRENCH EXCAVATION:

Blast Rock - Any material which cannot be excavated with a backhoe having a bucket curling force rated at not less than 25,700 pounds (Caterpillar Model 225 or equivalent), and occupying an original volume of at least one-half (1/2) cubic yard.



### **6.3 Foundation Construction**

All foundation subgrades should be observed, evaluated, and verified for the design bearing pressure by the geotechnical engineer after excavation and prior to reinforcement steel placement. If low consistency soils are encountered during foundation construction, localized undercutting and/or in-place stabilization of foundation subgrades will be required. Existing fill materials were encountered in the borings and will require careful evaluation by the geotechnical engineer. Considering these existing fill materials and the variability associated with existing fills, it is possible that some undercutting could be needed. The actual need for, and extent of, undercutting should be based on field observations made by the geotechnical engineer at the time of construction.

Excavations for footings should be made in such a way as to provide bearing surfaces that are firm and free of loose, soft, wet, or otherwise disturbed soils. Foundation concrete should not be placed on frozen or saturated subgrades. If such materials are allowed to remain below foundations, settlements will increase. Foundation excavations should be concreted as soon as practical after they are excavated. If an excavation is left open for an extended period, a thin mat of lean concrete should be placed over the bottom to minimize damage to the bearing surface from weather or construction activities. Water should not be allowed to pond in any excavation.

### **6.4 Structural Fill Placement and Compaction**

Fill materials may consist of the non-organic on-site soils, or an off-site borrow having a classification of CL or more granular, as defined by the Unified Soil Classification System. Controlled structural fill should have a maximum particle size of 4 inches, should be free of organics or other deleterious materials, and should have a minimum standard Proctor (ASTM D 698) maximum dry density of 90 pounds per cubic foot. Recommendations and additional restrictions for backfilling the below grade walls were provided in Section 5.5 of this report.

Based on our visual classifications and the laboratory testing, we anticipate that the on-site soils should serve satisfactorily as fill provided that the moisture contents can be maintained within acceptable limits. In addition, although not encountered in the borings, it is possible that the existing fill materials could contain organics or other debris, making them unsuitable for re-use as controlled, compacted fill. The on-site soils are considered moisture sensitive and may be difficult to work with when they are wet of the optimum moisture content. The laboratory tests indicate that some of the samples were above their optimum water contents, while others were below the optimum water content. Therefore, some wetting or drying of the on-site soils should be anticipated.

Predicated on the boring and laboratory results, and the recommendations provided above, the best time for construction of the structural fills and compacted subgrades would be during the warmer, drier months of the year, such as from late April through early October. During this



time frame, on-site soils that are wet of optimum can usually be dried to near optimum levels with relatively little effort. If grading is performed during the colder, wetter months of the year, such as late October through early April, and suitable dry materials are not available on site, then off-site drier borrow sources will likely be necessary.

The fill should be placed in horizontal lifts, 8 inches in loose thickness, and compacted to at least 95 percent of the maximum dry density as determined by the Standard Proctor compaction test (ASTM D 698). Where portable compaction equipment is used, such as utility trenches, the lift thickness may need to be reduced to 4 inches to achieve the required degree of compaction. Excessively wet or dry soils should not be used as fill materials without proper drying or wetting. A moisture content range of plus or minus 3 percentage points from the optimum moisture of the fill material is recommended. We recommend that the contractor have equipment on site during earthwork for both drying and wetting of fill soils.

Where construction traffic or weather has disturbed the subgrade, the upper 8 inches of soils intended for structural support should be scarified and re-compacted. Field density tests to determine the degree of compaction should be performed, with a minimum of two tests per lift.

#### **6.5 Surface Water/Groundwater Control**

Subsurface water for the purposes of this report is defined as water encountered below the existing ground surface. Based on the subsurface water data obtained during our exploration program, we do not generally anticipate that subsurface water will be encountered during anticipated earthwork or shallow foundation excavations at the site. However, considering the proximity of Blacks Run, it is possible that water could be encountered in deeper excavations on the site. The contractor should be prepared to dewater should water levels vary from those encountered during the drilling program. Fluctuations in subsurface water levels and soil moisture can be anticipated with changes in precipitation, runoff, and season.

An important aspect to consider during development of this site is surface water control. During the construction, we recommend that steps be taken to enhance surface flow away from any excavations and promote rapid clearing of rainfall and runoff water following rain events. It should be incumbent on the contractor to maintain favorable site drainage during construction to reduce deterioration of otherwise stable subgrades.

#### **6.6 Temporary Excavation Recommendations**

Mass excavations and other excavations required for construction of this project must be performed in accordance with the United States Department of Labor, Occupational Safety and Health Administration (OSHA) guidelines (29 CFR 1926, Subpart P, Excavations) or other applicable jurisdictional codes for permissible temporary side-slope ratios and/or shoring requirements. The OSHA guidelines require daily inspections of excavations, adjacent areas



and protective systems by a “competent person” for evidence of situations that could result in cave-ins, indications of failure of a protective system, or other hazardous conditions. All excavated soils, equipment, building supplies, etc., should be placed away from the edges of the excavation at a distance equaling or exceeding the depth of the excavation. F&R cautions that the actual excavation slopes will need to be evaluated frequently each day by the “competent person” and flatter slopes or the use of shoring may be required to maintain a safe excavation depending upon excavation specific circumstances. The contractor is responsible for providing the “competent person” and all aspects of site excavation safety. F&R can evaluate specific excavation slope situations if we are informed and requested by the owner, designer or contractor’s “competent person”.

### **6.7 Seepage Erosion**

Our subsurface exploration did not find indication of existing karst features such as sinkholes or extensive zones of soft compressible soils. However, karst features are common in this formation. As a result there is some concern for development of a sinkhole at this site. Man-made changes in soil stress and water regime can cause formation of sinkholes by loss of erodible soils that are exposed to ponded or flowing water during grading and other construction activities. We recommend that karst features that become evident during construction and are located outside the proposed building, be remediated as described in the paragraph below.

If stiff overburden soils are removed during site grading, it is possible that sinkholes or solution features may be discovered or that highly erodible soils adjacent to pinnacle rock will be exposed to stormwater runoff. These soils can then be washed into solution cavities in the rock. Consideration must then be given to methods for arresting continued growth of the sinkhole. Support of a structure may require significant redesign where karst features are uncovered in the vicinity of a structure’s location. At locations away from structures, we recommend that the raveling over-burden be excavated to expose throats (i.e. solution channels) in the underlying bedrock. Once the contributing throats are exposed by excavation, a concrete or flowable fill plug can be constructed to inhibit future drainage of groundwater and/or overburden into the solution channel. The excavation should then be backfilled to the line and grade of the project plans with acceptable structural fill and properly compacted to reduce the permeability of the backfill soils. Geosynthetics and compacted structural fill may also be required above the plug of the sinkhole.



## 7.0 CONTINUATION OF SERVICES

We recommend that we be given the opportunity to review the foundation plan, grading plan, and project specifications when construction documents approach completion. This review evaluates whether the recommendations and comments provided herein have been understood and properly implemented. We also recommend that Froehling & Robertson, Inc. be retained for professional and construction materials testing services during construction of the project. Our continued involvement on the project helps provide continuity for proper implementation of the recommendations discussed herein.

The Geotechnical Engineer of Record should be retained to monitor and test earthwork activities, and subgrade preparations for foundations, excavations and floor slabs. It should be noted that the actual soil conditions at the various subgrade levels and footing bearing grades will vary across this site and thus the presence of the Geotechnical Engineer and/or his representative during construction will serve to validate the subsurface conditions and recommendations presented in this report. We recommend that F&R be employed to monitor the earthwork and foundation construction, and to report that the recommendations contained in this report are completed in a satisfactory manner. Our involvement on the project will aid in the proper implementation of the recommendations discussed herein. The following is a recommended scope of services:

- Review of project plans and construction specifications to verify that the recommendations presented in this report have been properly interpreted and implemented;
- Observe all foundation excavations and footing bearing grades for compliance with the geotechnical recommendations.

These services are not included in our current scope of services and can be rendered for an additional cost.



## 8.0 LIMITATIONS

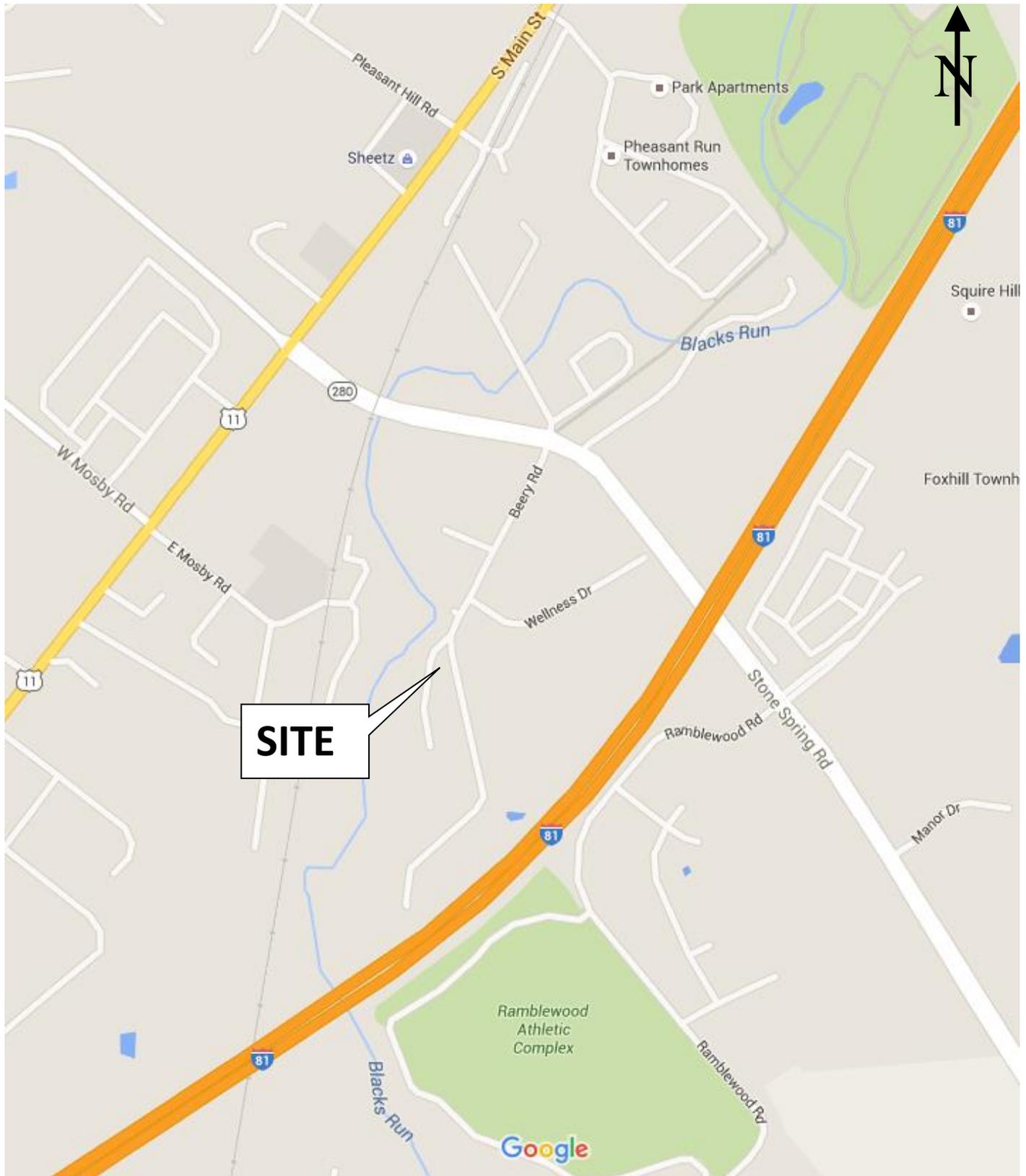
This report has been prepared for the exclusive use of the City of Harrisonburg, or their agent, for specific application to the Harrisonburg Solid Waste Transfer Station project, in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. Our evaluations and recommendations are based on design information furnished to us; the data obtained from the previously described subsurface exploration program, and generally accepted geotechnical engineering practice. The evaluations and recommendations do not reflect variations in subsurface conditions which could exist intermediate of the boring locations or in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our recommendations based upon on-site observations of the conditions.

There are important limitations to this and all geotechnical studies. Some of these limitations are discussed in the information prepared by ASFE, which is included in Appendix III. We ask that you please review this ASFE information.

Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions between borings will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced geotechnical engineers should evaluate earthwork, pavement, and foundation construction to verify that the conditions anticipated in design actually exist. Otherwise, we assume no responsibility for construction compliance with the design concepts, specifications, or recommendations.

In the event that changes are made in the design or location of the proposed structure, the recommendations presented in the report shall not be considered valid unless the changes are reviewed by our firm and conclusions of this report modified and/or verified in writing. If this report is copied or transmitted to a third party, it must be copied or transmitted in its entirety, including text, attachments, and enclosures. Interpretations based on only a part of this report may not be valid.

# APPENDIX I



**FROEHLING & ROBERTSON, INC.**

*Engineering Stability Since 1881*

6181 Rockfish Gap Turnpike  
 Crozet, Virginia 22932-3330  
 T 434.823.5154 | F 434.823.4764

Site Location Plan

Client: City of Harrisonburg

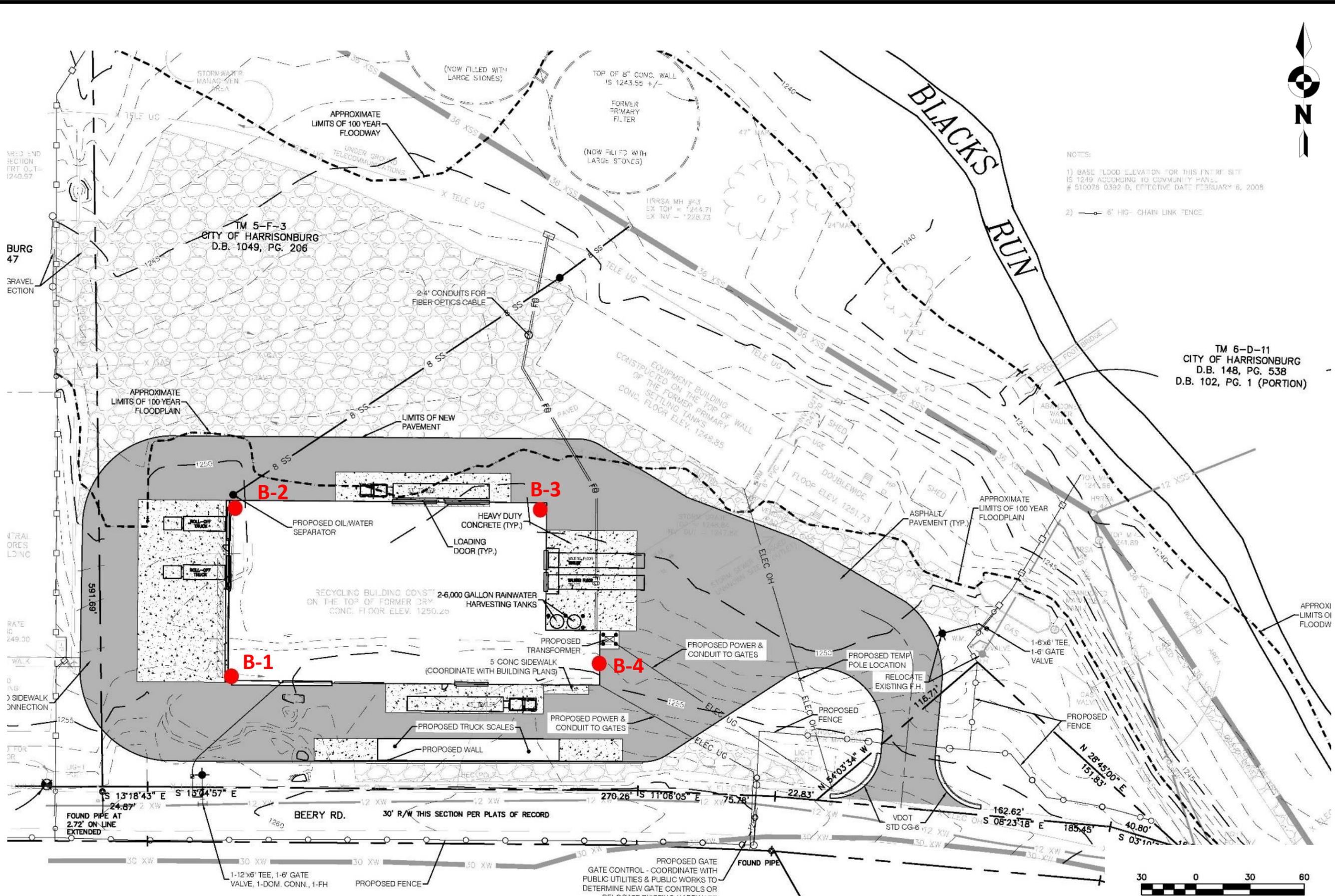
Project: Harrisonburg Solid Waste Transfer Station

F&R Project No. 71U0078

Date: July, 2016

Scale: No Scale

Drawing No.: 1



**FROEHLING & ROBERTSON, INC**  
Engineering Stability Since 1881

6181 Rockfish Gap Turnpike, Crozet, VA 22932  
T 434.823.5154 | F 434.823.4764



<b>Boring Location Plan</b>	
Client: City of Harrisonburg	
Project: Harrisonburg Solid Waste Transfer Station	
F&R Project No.: 71U0078	
Date: July, 2016	Scale: 1" = 50' (approx.)

Drawing No.  
**2**

## **APPENDIX II**

## KEY TO BORING LOG SOIL CLASSIFICATION

### Particle Size and Proportion

Verbal descriptions are assigned to each soil sample or stratum based on estimates of the particle size of each component of the soil and the percentage of each component of the soil.

Particle Size		Proportion		
Descriptive Terms		Descriptive Terms		
Soil Component	Particle Size	Component	Term	Percentage
Boulder	> 12 inch	Major	Uppercase Letters (e.g., SAND, CLAY)	>50%
Cobble	3 – 12 inch	Secondary	Adjective (e.g. sandy, clayey)	20%-50%
Gravel-Coarse	¾ - 3 inch			
-Fine	#4 – ¾ inch			
Sand-Coarse	#10 - #4	Minor	Some	15%-25%
-Medium	#40 - #10			
-Fine	#200 - #40			
Silt (non-cohesive)	< #200		Little	5%-15%
Clay (cohesive)	< #200		Trace	0%-5%

Notes:

1. Particle size is designated by U.S. Standard Sieve Sizes
2. Because of the small size of the split spoon sampler relative to the size of gravel, the true percentage of gravel may not be accurately estimated.

### Density or Consistency

The standard penetration resistance values (N-values) are used to describe the density of coarse-grained soils (GRAVEL, SAND) or the consistency of fine-grained soils (SILT, CLAY). Sandy silts of very low plasticity may be assigned a density instead of a consistency.

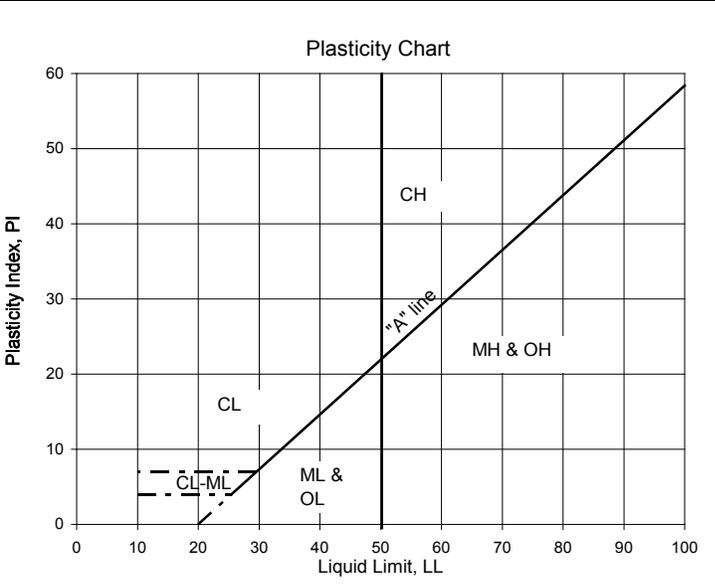
DENSITY		CONSISTENCY	
Term	N-Value	Term	N-Value
Very Loose	0 – 4	Very Soft	0 – 1
Loose	5 – 10	Soft	2 – 4
Medium-Dense	11 – 30	Medium Stiff	5 – 8
Dense	31 – 50	Stiff	9 – 15
Very Dense	> 50	Very Stiff	16 – 30
		Hard	>30

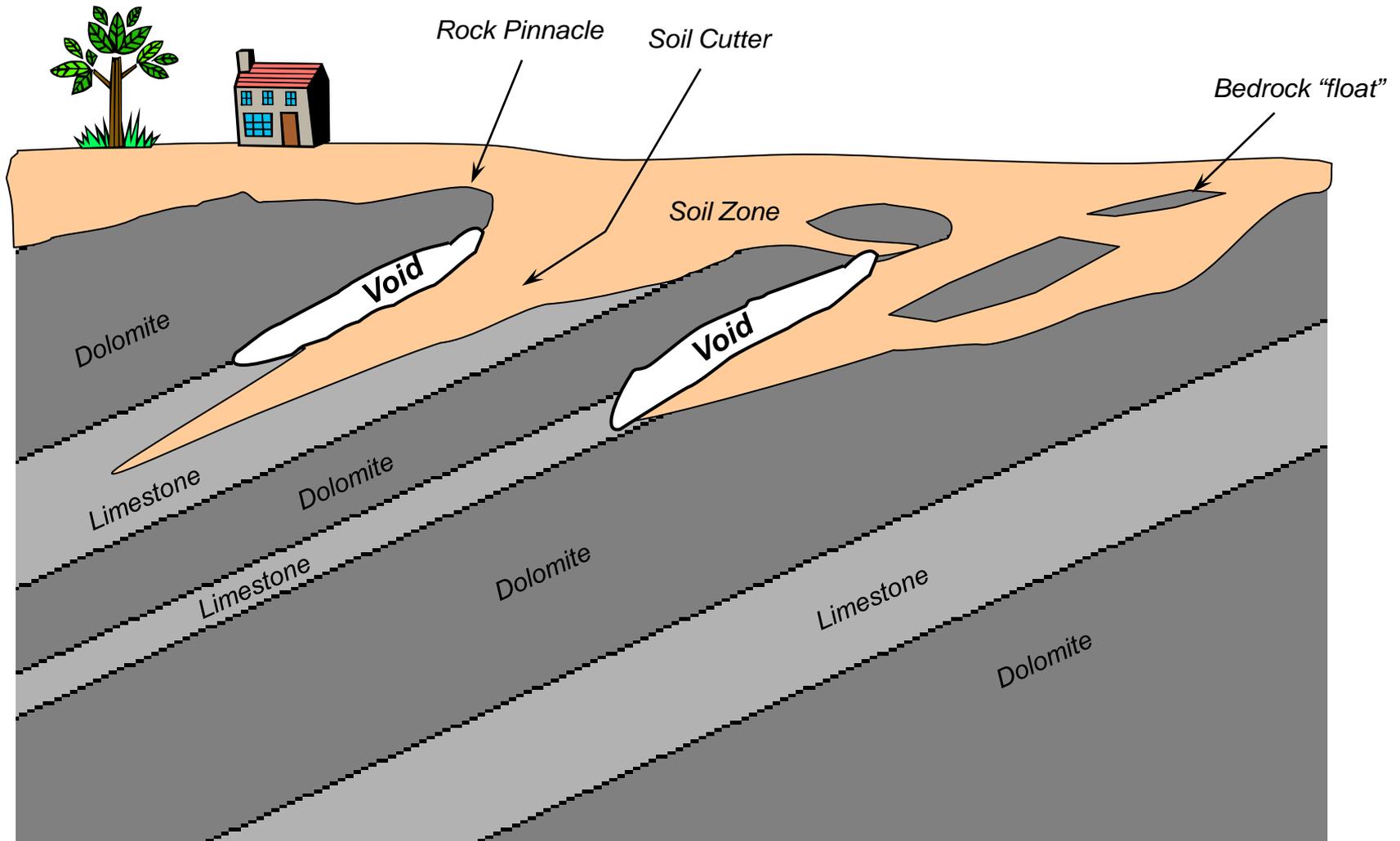
Notes:

1. The N-value is the number of blows of a 140 lb. hammer freely falling 30 inches required to drive a standard split-spoon sampler (2.0 in. O.D., 1-3/8 in. I.D.) 12 inches into the soil after properly seating the sampler 6 inches.
2. When encountered, gravel may increase the N-value of the standard penetration test and may not accurately represent the in-situ density or consistency of the soil sampled.

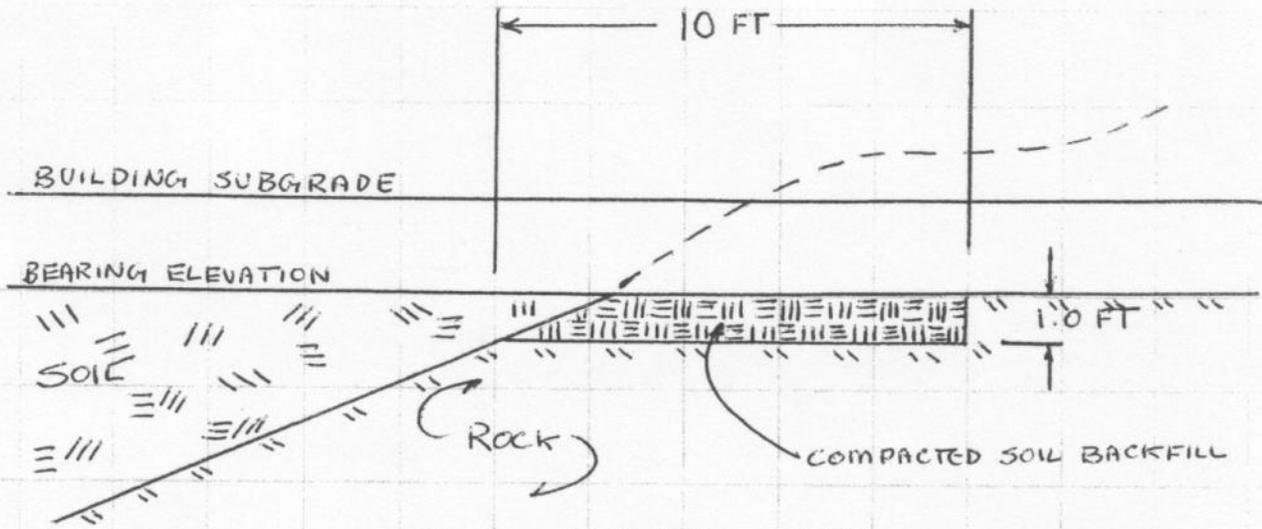
## UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

Major Divisions		Group Symbols	Typical Names	Laboratory Classification Criteria				
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 Sieve), coarse-grained soils are classified as follows: Less than 5 per cent More than 12 per cent 5 to 12 per cent	GW, GP, SW, SP GM, GC, SM, SC Borderline cases requiring dual symbols		
		Poorly graded gravels, gravel-sand mixtures, little or no fines	GP	Not meeting all gradation requirements for GW				
		Gravels with fines (Appreciable amount of fines)	Silty gravels, gravel-sand-silt mixtures	GM			Atterberg limits below "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
			Clayey gravels, gravel-sand-clay mixtures	GC			Atterberg limits below "A" line or PI greater than 7	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (little or no fines)	Well-graded sands, gravelly sands, little or no fines	SW			$C_u = D_{60}/D_{10}$ greater than 4; $C_c = (D_{30})^2 / (D_{10} \times D_{60})$ between 1 and 3	
			Poorly graded sands, gravelly sands, little or no fines	SP			Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	Silty sands, sand-silt mixtures	SM			Atterberg limits above "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
			Clayey sands, sand-clay mixtures	SC			Atterberg limits above "A" line or PI greater than 7	

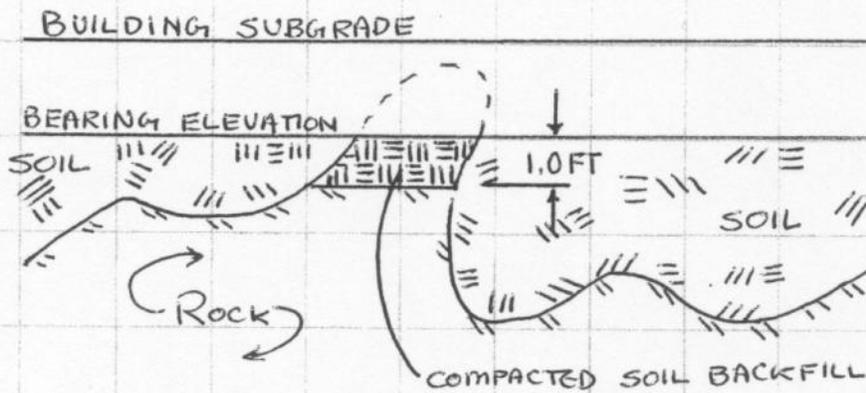




*Conceptual model of the site geology including alternating limestone and dolomite beds undergoing differential weathering. The weathering results in deep soil cutters in the limestone, tabular pinnacles of dolomite, and detached rock fragments often called "float". Voids form primarily in the limestone beds at the interface with the dolomite beds. (Adapted from report by ATS International)*



SOIL TO ROCK TRANSITION



ISOLATED ROCK PINNACLE



**FROEHLING & ROBERTSON, INC.**  
 GEOTECHNICAL • ENVIRONMENTAL • MATERIALS  
 ENGINEERS • LABORATORIES  
 "OVER ONE HUNDRED YEARS OF SERVICE"

DATE:

SCALE: NOT TO SCALE

DRWN:

ROCK SUB-EXCAVATION DETAIL

DWG. NO.



**Project No:** 71U0078

**Elevation:** 1254 ±

**Drilling Method:** HSA

**Client:** City of Harrisonburg

**Total Depth:** 15.0'

**Hammer Type:** Automatic

**Project:** Harrisonburg Solid Waste Transfer Station **Boring Location:** See Boring Location Plan

**Date Drilled:** 6/17/16

**City/State:** Harrisonburg, VA

**Driller:** S. Sequist

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1253.5	0.5	6-INCHES, CRUSHED STONE	5-5-7	0.0		Subsurface water was not encountered during drilling or upon removal of augers.
1252.0	2.0	Dark Brown, Moist, Stiff, Sandy Lean CLAY (CL), Little Gravel	4-7-7	1.5	12	
		<b>FILL</b>		3.0	14	
		Dark Gray and Orange Brown to Dark Brown, Moist, Stiff, Fat CLAY (CH), Little Gravel	3-4-6	4.0		
		<b>FILL</b>		5.5	10	
1248.0	6.0	Dark Brown, Moist, Stiff, Lean CLAY (CL), Little Sand	2-6-9	6.0		
		<b>ALLUVIUM</b>		7.5	15	
1245.5	8.5	Dark Orange Brown, Moist, Stiff, Fat CLAY (CH), Little Sand	3-6-8	8.5		
		<b>RESIDUUM</b>		10.0	14	
			3-6-7	13.5		
1239.0	15.0	Terminated Test Boring at 15 Feet		15.0	13	

BORING LOG 71U-0078 BORING LOGS.GPJ F&R.GDT 7/22/16

\*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



**Project No:** 71U0078

**Elevation:** 1250 ±

**Drilling Method:** HSA

**Client:** City of Harrisonburg

**Total Depth:** 15.0'

**Hammer Type:** Automatic

**Project:** Harrisonburg Solid Waste Transfer Station **Boring Location:** See Boring Location Plan

**Date Drilled:** 6/17/16

**City/State:** Harrisonburg, VA

**Driller:** S. Sequist

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1248.0	2.0	24-INCHES, CRUSHED STONE	18-14-20	0.0	34	Subsurface water was not encountered during drilling or upon removal of augers.
		Dark Brown and Gray, Moist, Very Stiff to Stiff, Fat CLAY (CH), Little Sand, Contains Rock Fragments, Quartz Fragments, and Asphalt Fragments <b>FILL</b>	17-15-11	1.5		
				3.0		
			3-4-5	4.0		
			4-5-5	5.5		
				6.0		
1241.5	8.5	Dark Gray and Brown, Moist to Wet, Medium Stiff, Sandy Lean CLAY (CL), Trace Gravel, Organic Odor <b>ALLUVIUM</b>	2-3-4	7.5	10	
				8.5		
				10.0		
1236.5	13.5	Orange Brown, Moist to Wet, Medium Stiff, Fat CLAY (CH), Little Sand <b>RESIDUUM</b>	3-3-3	13.5	6	
1235.0	15.0	Terminated Test Boring at 15 Feet		15.0		

BORING LOG 71U-0078 BORING LOGS.GPJ F&R.GDT 7/22/16

\*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



**Project No:** 71U0078

**Elevation:** 1250 ±

**Drilling Method:** HSA

**Client:** City of Harrisonburg

**Total Depth:** 12.5'

**Hammer Type:** Automatic

**Project:** Harrisonburg Solid Waste Transfer Station

**Boring Location:** See Boring Location Plan

**Date Drilled:** 6/17/16

**City/State:** Harrisonburg, VA

**Driller:** S. Sequist

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1248.0	2.0	24-INCHES, CRUSHED STONE	14-15-31	0.0	46	Subsurface water was not encountered during drilling or upon removal of augers.
			6-11-12	1.5		
1246.0	4.0	Dark Brown and Orange Brown, Moist, Very Stiff, Sandy Lean CLAY (CL), Little Gravel, Contains Rock Fragments and Asphalt Fragments		3.0	23	
		<b>FILL</b>	6-5-6	4.0		
1244.0	6.0	Dark Brown, Moist, Stiff, Sandy Lean CLAY (CL), Little Sand and Gravel		5.5	11	
		<b>FILL</b>	3-4-5	6.0		
1241.5	8.5	Dark Brown, Moist, Stiff, Sandy Fat CLAY (CH), Trace Rounded Gravel		7.5	9	
		<b>ALLUVIUM</b>	2-4-5	8.5		
		Orange Brown, Moist to Wet, Stiff to Very Stiff, Fat CLAY (CH), Little Sand		10.0	9	
		<b>RESIDUUM</b>	4-8-8	11.0		
1237.5	12.5	orange brown and gray		12.5	16	Sampler Spoon bent.
		Auger Refusal at 12.5 Feet				

BORING LOG 71U-0078 BORING LOGS.GPJ F&R.GDT 7/22/16

\*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



**Project No:** 71U0078

**Elevation:** 1254 ±

**Drilling Method:** HSA

**Client:** City of Harrisonburg

**Total Depth:** 1.6'

**Hammer Type:** Automatic

**Project:** Harrisonburg Solid Waste Transfer Station

**Boring Location:** See Boring Location Plan

**Date Drilled:** 6/17/16

**City/State:** Harrisonburg, VA

**Driller:** S. Sequist

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1253.5	0.5	6-INCH, CRUSHED STONE		0.0		
1252.0	2.0	Dark Brown, Moist, Sandy Fat CLAY (CH), Little Gravel <b>POSSIBLE FILL</b> Auger Refusal at 2 Feet		1.5		Subsurface water was not encountered during drilling or upon removal of augers.

BORING LOG 71U-0078 BORING LOGS.GPJ F&R.GDT 7/22/16

\*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



**Project No:** 71U0078

**Elevation:** 1254 ±

**Drilling Method:** HSA

**Client:** City of Harrisonburg

**Total Depth:** 2.0'

**Hammer Type:** Automatic

**Project:** Harrisonburg Solid Waste Transfer Station **Boring Location:** 14 ft east of B-4

**Date Drilled:** 6/17/16

**City/State:** Harrisonburg, VA

**Driller:** S. Sequist

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1252.0	2.0	Auger probed to 2 Feet.				
		Auger Refusal at 2 Feet				Subsurface water was not encountered during drilling or upon removal of augers.

BORING LOG 71U-0078 BORING LOGS.GPJ F&R.GDT 7/22/16

\*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



**Project No:** 71U0078

**Elevation:** 1254 ±

**Drilling Method:** HSA

**Client:** City of Harrisonburg

**Total Depth:** 4.6'

**Hammer Type:** Automatic

**Project:** Harrisonburg Solid Waste Transfer Station **Boring Location:** 10 ft east of B-4A

**Date Drilled:** 6/23/16

**City/State:** Harrisonburg, VA

**Driller:** S. Sequist

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1253.8	0.3	3-INCHES, CRUSHED STONE	5-7-9	0.0	16 9	Subsurface water was not encountered during drilling or upon removal of augers.
		Dark Brown, Moist, Very Stiff to Medium Stiff, Fat CLAY (CH), Contains Rock Fragments, Trace Gravel and Sand	4-4-5	1.5		
		<b>POSSIBLE FILL</b>		3.0		
				4.0		
1249.4	4.6	Auger Refusal at 4.6 Feet	48-50/1"		100+	Sampler Spoon bent

BORING LOG 71U-0078 BORING LOGS.GPJ F&R.GDT 7/22/16

\*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



SUBSURFACE PROFILE

Plot Based on Elevation

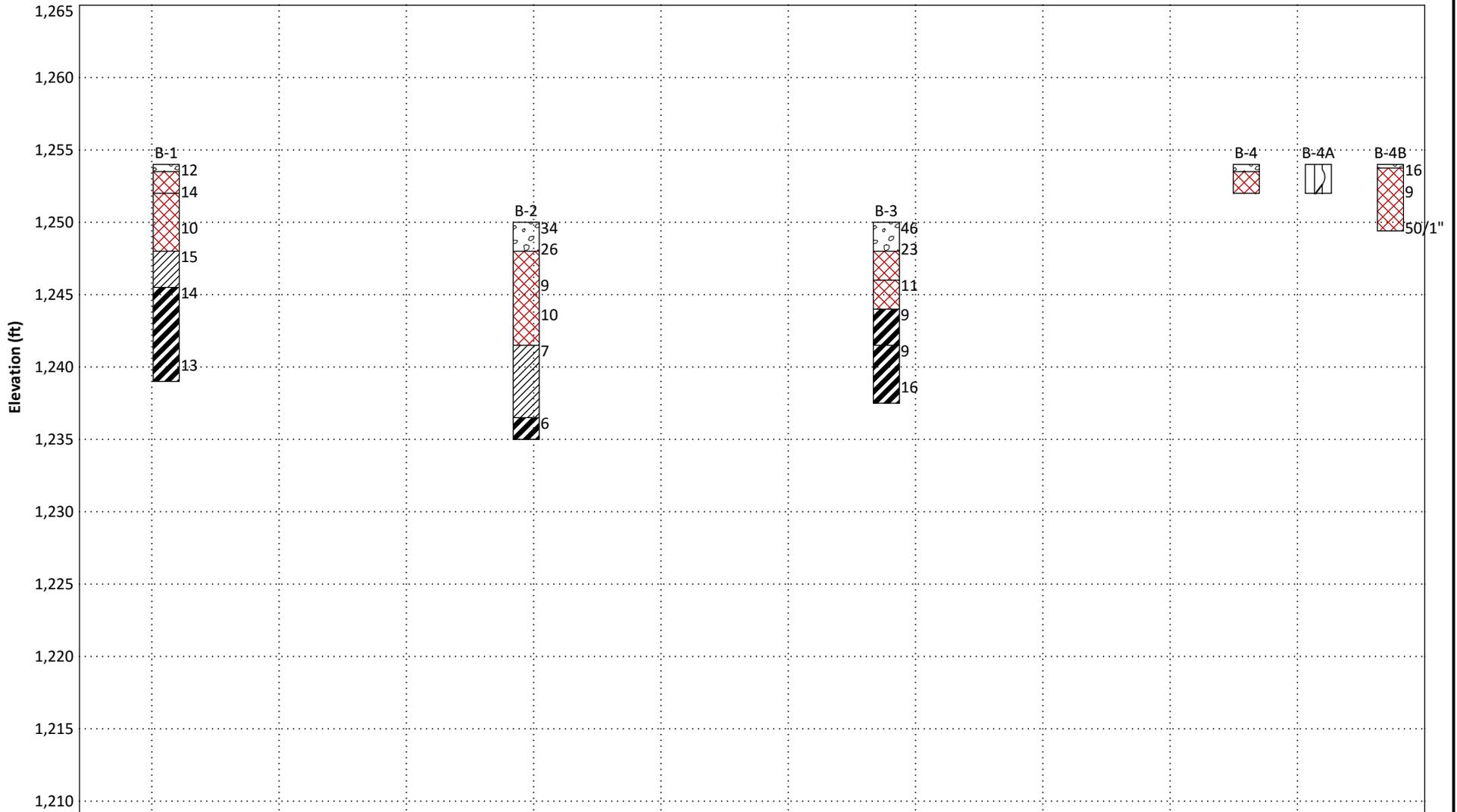
Profile Name: 1

Project No: 71U0078

Client: City of Harrisonburg

Project: Harrisonburg Solid Waste Transfer Station

City/State: Harrisonburg, VA



## **APPENDIX III**

# Important Information about Your Geotechnical-Engineering Report

*Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.*

*While you cannot eliminate all such risks, you can manage them. The following information is provided to help.*

## **Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects**

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

## **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## **A Geotechnical-Engineering Report Is Based on a Unique Set of Project-Specific Factors**

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

## **Subsurface Conditions Can Change**

A geotechnical-engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical-engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## **Most Geotechnical Findings Are Professional Opinions**

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## **A Report's Recommendations Are *Not* Final**

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

### **A Geotechnical Engineering Report Is Subject to Misinterpretation**

Other design team members' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical-engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### **Do Not Redraw the Engineer's Logs**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

### **Give Contractors a Complete Report and Guidance**

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold-prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

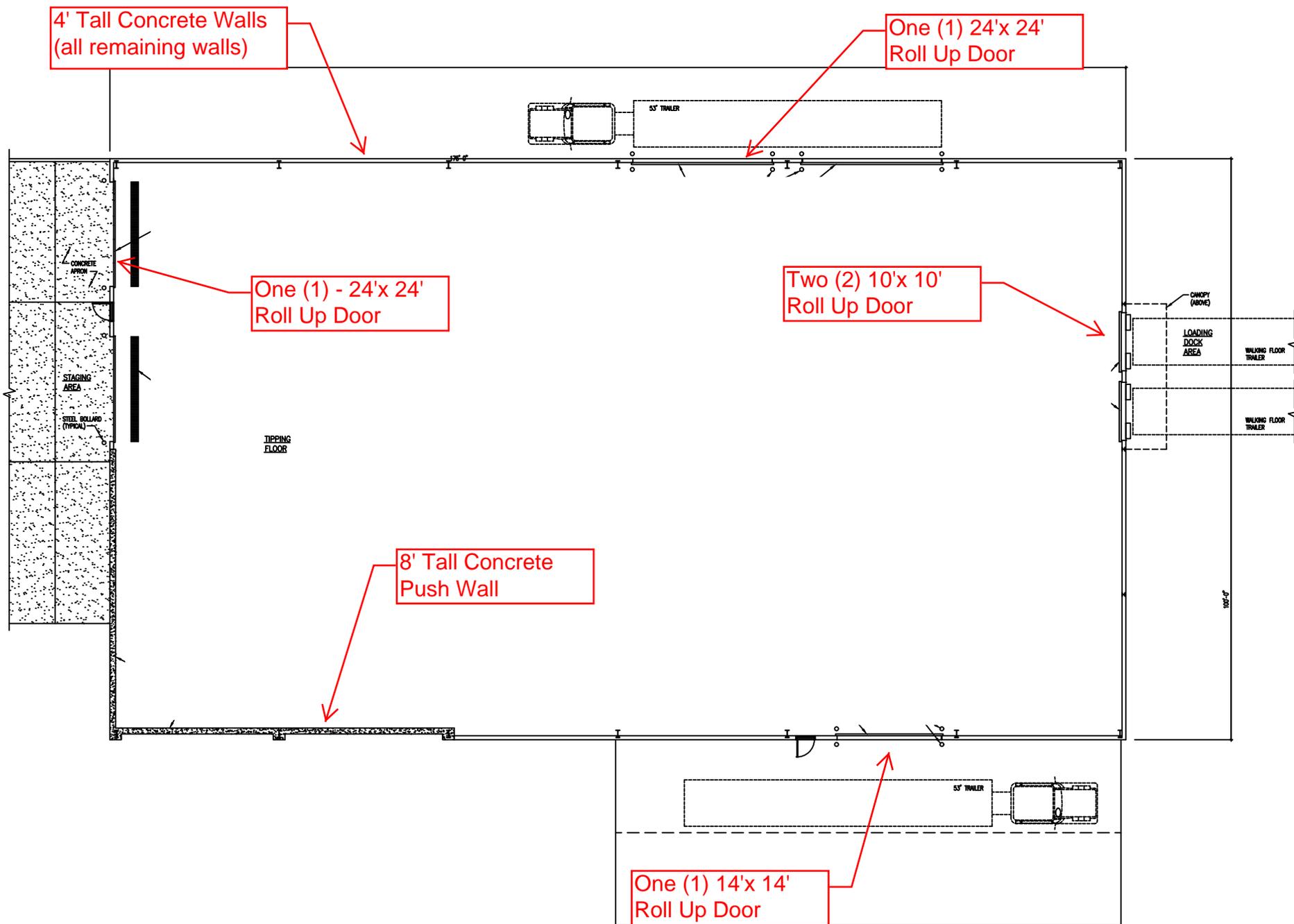
### **Rely on Your GBA-Member Geotechnical Engineer for Additional Assistance**

Membership in the GEOPROFESSIONAL BUSINESS ASSOCIATION exposes geotechnical engineers to a wide array of risk confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBA-member geotechnical engineer for more information.

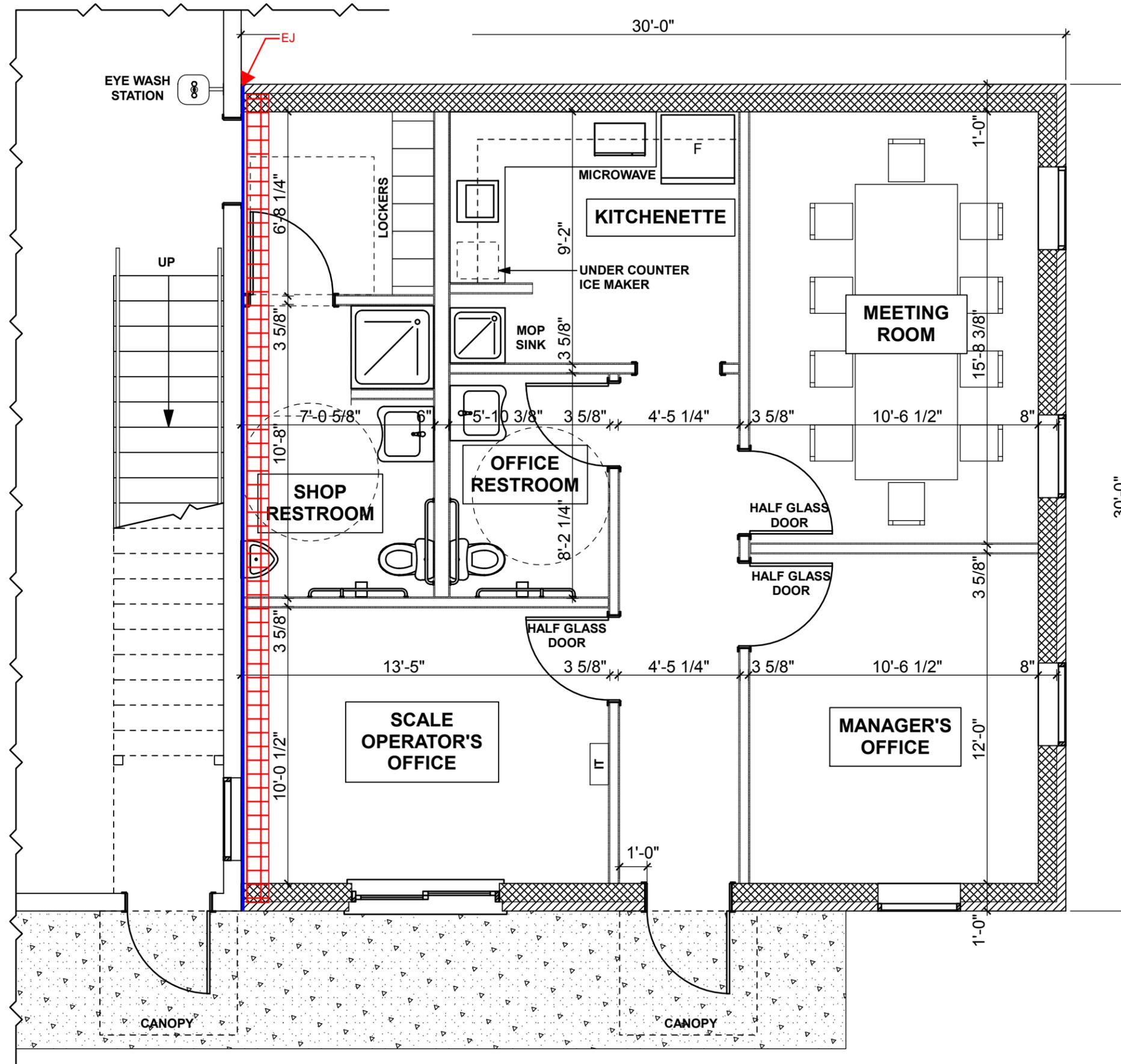


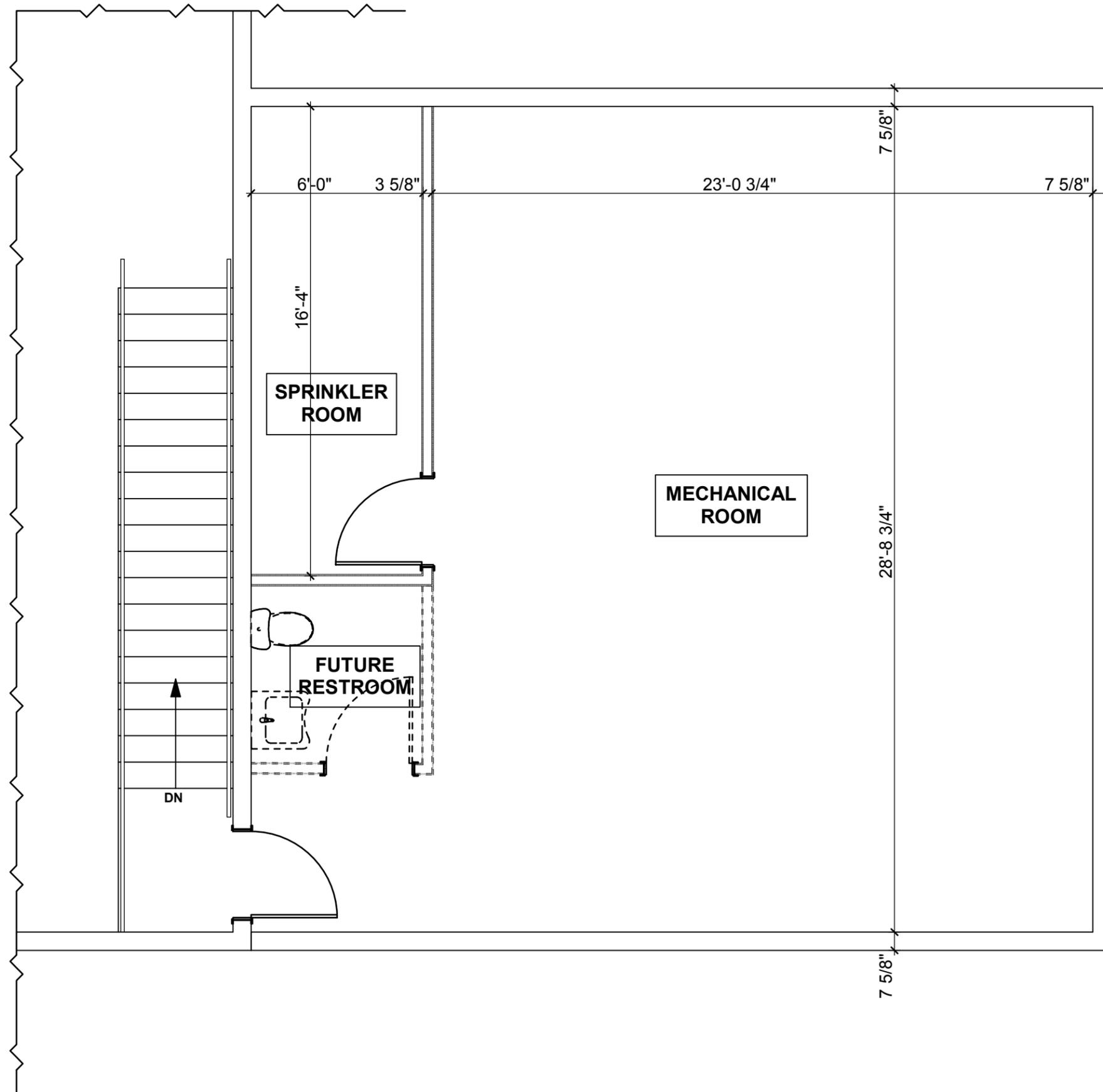
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Solid Waste Transfer Building Door and Wall Configuration Layout





SCALE: 1/4" = 1'-0"  
6/29/16