



**ARLINGTON COUNTY, VIRGINIA
OFFICE OF THE PURCHASING AGENT
2100 CLARENDON BOULEVARD, SUITE 500
ARLINGTON, VA 22201
(703) 228-3410**

**INVITATION TO BID NO. 23-DES-ITBPW-502
PROJECT NO.: 6721-000-R59**

ELECTRONIC SEALED BIDS WILL BE RECEIVED BY ARLINGTON COUNTY VIA VENDOR REGISTRY UNTIL 4 P.M. ON THE 20TH DAY OF FEBRUARY 2023.

**FOR THE PROVISION OF
CAPITAL IMPROVEMENT PROJECT WORK TO CONSIST OF NEW PEDESTRIAN BRIDGE ACROSS FOUR MILE RUN, APPROACH TRAIL, AND STREETLIGHTS. WORK SHALL INCLUDE CONSTRUCTION OF: SIDEWALKS, ACCESSIBLE RAMPS, PAVEMENT MARKINGS AND SIGNAGE, TRAFFIC CONTROLS, EROSION AND SEDIMENT CONTROLS, RELATED SITE WORK, AND ALL OTHER RELATED INCIDENTAL WORK DESCRIBED AND REQUIRED IN THE CONTRACT DOCUMENTS.**

VENDORS ARE REQUIRED TO REGISTER ON [VENDOR REGISTRY](#) IN ORDER TO SUBMIT A RESPONSE TO THIS INVITATION TO BID. NO RESPONSES WILL BE ACCEPTED AFTER THE BID DUE DATE AND TIME.

The County will conduct a virtual bid opening via Microsoft Teams Application (APP). Bidders interested in viewing the public bid opening must download the APP and join the meeting via the Microsoft Teams APP and enable audio, video or both. The link to join the virtual bid opening is provided below:

[Click here to join the meeting](#)
[+1 347-973-6905](#) United States, New York City (Toll)
Conference ID: 370 362 326#

Bid Surety in the amount of not less than 5% of the bid must be submitted with the bid. Performance and Payment Bonds in the amount of 100% of the award will be required of the successful bidder.

PREBID CONFERENCE

A virtual prebid conference will be held at 10:00 a.m., January 31, 2023, on Microsoft Teams to allow potential Bidders an opportunity to obtain clarification of the specifications and requirements of the solicitation. To join the meeting, please click the following link [Click here to join the meeting](#), or join by dialing +1 347-973-6905 and enter Conference ID 867 030 033#. ATTENDANCE AT THE PREBID CONFERENCE IS OPTIONAL. Minutes of the prebid conference will be recorded by the County and may be

incorporated into the solicitation documents through an Addendum. Interested Bidders are, however, urged to attend.

NOTICE: ANY BIDDER ORGANIZED AS A STOCK OR NONSTOCK CORPORATION, LIMITED LIABILITY COMPANY, BUSINESS TRUST, OR LIMITED PARTNERSHIP OR REGISTERED AS A LIMITED LIABILITY PARTNERSHIP MUST BE AUTHORIZED TO TRANSACT BUSINESS IN THE COMMONWEALTH OF VIRGINIA BEFORE CONTRACT AWARD (REFER TO AUTHORITY TO TRANSACT BUSINESS SECTION IN THE SOLICITATION FOR FURTHER INFORMATION)

Arlington County reserves the right to reject any and all bids, cancel this solicitation, and to waive any informalities or irregularities in procedure. A bidder's submission of a bid indicates acceptance of these terms.

Arlington County, Virginia
Office of the Purchasing Agent

Kaylin Schreiber
Procurement Officer
kschreiber@arlingtonva.us

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I. INFORMATION FOR BIDDERS

1. QUESTIONS AND ADDENDA

BIDDERS MUST BE REGISTERED IN VENDOR REGISTRY TO SUBMIT A QUESTION FOR THIS INVITATION TO BID.

All communications relating to this solicitation must be submitted online using Vendor Registry. For a question to be considered, the question must be entered in the Question Section of the **ITB No. 23-DES-ITBPW-502**. Prior to the award of a contract resulting from this solicitation, bidders are prohibited from contacting any County staff other than those assigned to the Office of the Purchasing Agent.

QUESTIONS REGARDING THE ORIGINAL SOLICITATION MUST BE SUBMITTED BY FEBRUARY 2, 2023, AT 5:00 PM EASTERN TIME TO BE CONSIDERED FOR AN ADDENDUM. ALL QUESTIONS RECEIVED BY THE QUESTION DEADLINE WILL BE RESPONDED TO WITHIN VENDOR REGISTRY AND POSTED FOR ALL BIDDERS. THE SYSTEM WILL NOT ACCEPT ANY QUESTIONS AFTER THIS DATE AND TIME.

If any questions or responses require revisions to this solicitation, such revisions will be by formal Addendum only. Bidders are cautioned not to rely on any written, electronic, or oral representations made by any County representative or other person, including the County's technical contact, that appear to change any portion of the solicitation unless the change is ratified by a written Addendum to this solicitation issued by the Office of the Purchasing Agent.

2. INTEREST IN MORE THAN ONE BID AND COLLUSION

Reasonable grounds for believing that a Bidder is interested in more than one bid for a solicitation, including both as a Bidder and as a subcontractor for another Bidder, or that collusion exists between two or more Bidders, will result in rejection of all affected bids. However, an individual or entity acting only as a subcontractor may be included as a subcontractor on bids of two or more different Bidders. Bidders rejected under the above provision will also be disqualified if they respond to a re-solicitation for the same work.

3. TRADE SECRETS OR PROPRIETARY INFORMATION

Trade secrets or proprietary information that a bidder or contractor submits in connection with a procurement transaction may be exempted from public disclosure under the Virginia Freedom of Information Act ("VFOIA"). However, the bidder or contractor must invoke VFOIA protection clearly and in writing on the Bid Form for County review. The Bid Form must include at least the following: (1) the data or other materials sought to be protected and (2) specific reasons why the material is confidential or proprietary. It is the bidder's sole responsibility to defend such exemptions if challenged in a court of competent jurisdiction.

4. DEBARMENT STATUS

The Bidder must indicate on the Bid Form whether it or any of its principals is currently debarred, enjoined, or suspended from submitting bids to the County or to any other state or political subdivision and whether the Bidder is an agent of any person or entity that is currently debarred, enjoined or suspended from submitting bids to the County or to any other state or political subdivision. An affirmative response may be considered grounds for rejection of the bid.

5. AUTHORITY TO TRANSACT BUSINESS

Any Bidder organized as a stock or nonstock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership must be authorized to transact business in the Commonwealth of Virginia as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia, or as otherwise required by law. The proper and full legal name of the entity and the identification number issued to the Bidder by the Virginia State Corporation Commission must be included on the Bid Form. Any Bidder that is not required to be authorized to transact business in the Commonwealth must include in its bid a statement describing why the Bidder is not required to be so authorized. The County may require a Bidder to provide documentation that 1) clearly identifies the complete name and legal form of the entity and 2) establishes that the entity is authorized by the State Corporation Commission to transact business in the Commonwealth of Virginia. Failure of a Bidder to provide such documentation will be a ground for rejection of the bid or cancellation of any award. For further information refer to the Commonwealth of Virginia State Corporation Commission website at: www.scc.virginia.gov.

The County reserves the right to waive this requirement at any time, for any reason.

6. ARLINGTON COUNTY BUSINESS LICENSES

The successful Bidder must comply with the provisions of Chapter 11 ("Licenses") of the Arlington County Code, if applicable. For information on the provisions of that Chapter and its applicability to this solicitation, contact the Arlington County Business License Division, Office of the Commissioner of the Revenue, at 2100 Clarendon Blvd., Suite 200, Arlington, Virginia, 22201, tel. (703) 228-3060, or e-mail business@arlingtonva.us.

7. COVID-19 VACCINATION POLICY FOR CONTRACTORS

Due to the ongoing COVID-19 pandemic, the County has taken various steps to protect the welfare, health, safety, and comfort of the workforce and public at large. As part of these steps, the County has implemented various requirements with respect to health and safety including policies with respect to social distancing, the use of face-coverings and vaccine mandates. To protect the County's workforce and the public at large, all employees and subcontractors of the Contractor who are assigned to this Contract, should be fully vaccinated against COVID-19. Any contractor employee or subcontractor who is not fully vaccinated should follow a weekly testing protocol as established by the Contractor, unless exempt pursuant to a valid reasonable accommodation under state or federal law.

8. VIRGINIA CONTRACTOR LICENSE

For all work that is classified as being performed by "Contractors" as defined by the Virginia State Board for Contractors, a Class A, B, or C License is required.

If a contract for performing or managing construction, removal, repair or improvements is for \$120,000 or more, or if the total value of all such construction, removal, repair, or improvements undertaken by the bidder within any twelve-month period is \$750,000 or more, the bidder is required under Title 54.1, Chapter 11, Code of Virginia, as amended, to be licensed as a "CLASS A CONTRACTOR."

If a contract for performing or managing construction, removal, repair or improvements is for \$10,000 or more, but less than \$120,000, or if the total value of all such construction, removal, repair, or improvements undertaken by the bidder within any twelve-month period is \$150,000 or more, but less than \$750,000, the bidder is required under Title 54.1, Chapter 11, Code of Virginia, as amended, to be licensed as a "CLASS B CONTRACTOR."

If a contract for performing construction, removal, repair or improvements is for \$1,000 or more, but no more than \$10,000 or if the total value of all such construction, removal, repair, or improvements undertaken by the bidder within any twelve-month period is less than \$150,000, the bidder is required under Title 54.1, Chapter 11, Code of Virginia, as amended, to be licensed as a "CLASS C CONTRACTOR." Class C contractors shall not include electrical, plumbing, and heating, ventilation and air conditioning contractors.

For further information, contact the State Board for Contractors, 2 South Ninth Street, Richmond, VA 23219, (804) 367-8511.

9. ESTIMATED QUANTITIES/NON-EXCLUSIVITY OF CONTRACTOR

The contract that will result from this solicitation will not obligate the County to purchase a specific quantity of items or services during the Contract Term. Any quantities that are included in the contract documents are the present expectations the County for the period of the contract, and the County is under no obligation to buy that, or any, amount as a result of having provided this estimate or of having had any normal or otherwise measurable requirement in the past. The County may require more goods and/or services than the estimated annual amount, and any such additional quantities will not give rise to any claim for compensation other than at the unit prices and/or rates specified in the contract.

The items or services covered by this contract may be or become available under other County contract(s), and the County may determine that it is in its best interest to procure the items or services through such other contract(s). The County does not guarantee that the selected contractor will be the exclusive provider of the goods or services covered by the resulting contract.

10. PREVAILING WAGE CONTRACT FOR CONSTRUCTION SERVICES

This solicitation and the resulting contract are subject to Prevailing Wage provisions covered under Article 4-104 of the Arlington County Purchasing Resolution. All employees of any contractor or any subcontractor working on the contract shall be paid wages, salaries, benefits, and other remuneration at or above the craft or trade category prevailing wage rate indicated by Virginia Commissioner of Labor and Industry (DOLI) and as listed in the contract. The County will request from DOLI a wage determination at bid posting and a final wage determination at contract award. If the final wage determination changes at contract award, the Bidder shall submit their revised bid pricing to comply with the final wage determination from DOLI. By submitting a response to the solicitation, the Bidder certifies that it will comply with this provision and will ensure that its subcontractors, if any, also comply with the prevailing wage provisions. (Refer to draft Contract Terms and Conditions for further Prevailing Wage details specific to this solicitation/contract.)

11. BID FORM SUBMISSION

The submitted Bid Form must be signed and fully executed. The Bid Form must be submitted electronically via Vendor Registry no later than the date and time specified in this solicitation. The Vendor Registry system will not accept bids after the close date and time. The County will not accept emailed or faxed bid

The Bidder name on the electronic bid submittal shall be the same as the Contractor/Vendor name as the registration in Vendor Registry for the upload to be considered a valid bid. **ONLY ELECTRONIC SUBMISSION IS ALLOWED, NO BID SUBMITTED OTHER THAN A VENDOR REGISTRY ELECTRONIC UPLOAD WILL BE ACCEPTED. Arlington County is not responsible for late submissions, missed Addendums, or questions not submitted before the end date and time.**

Timely submission is solely the responsibility of the Bidder. The Vendor Registry System will not accept applications after the publicly posted date and time. A bid may be rejected if the Bid Form is not signed in the designated space by a person authorized to legally bind the Bidder.

Modification of or additions to the Bid Form may be cause for rejection of the bid; however, Arlington County reserves the right to decide, in its sole discretion, whether to reject such a bid as nonresponsive. As a precondition to bid acceptance, Arlington County may request the bidder to withdraw or modify any such modifications or additions, if it does not affect quality, quantity, price, or delivery.

Bids and all documents uploaded/submitted to Arlington County by an Bidder become the property of the County upon receipt.

12. BIDDER CERTIFICATION

Submission of a signed Bid Form is certification by the respective bidder that it is registered with the Virginia State Corporation Commission (SCC), if applicable, it is the legal entity authorized to enter into an agreement with the County, and that it will accept any award made to it as a result of the submission. Entry of a Bidder's SCC number may be required at Vendor Registration.

13. ERRORS IN EXTENSION

If the unit price and the extension price differ, the unit price will prevail.

14. EXCEPTIONS

Conditional or qualified bids containing exceptions, unless specifically allowed in the solicitation, are subject to rejection in whole or in part as nonresponsive.

15. NONCONFORMING TERMS AND CONDITIONS

If a bid contains alternate terms and conditions that do not conform to the terms and conditions in this solicitation, the bid will be subject to rejection for nonresponsiveness. The County reserves the right to permit a bidder to withdraw nonconforming terms and conditions from its bid prior to the County's determination of nonresponsiveness.

16. BIDDERS' RESPONSIBILITY TO INVESTIGATE

Before submitting a bid, each bidder must make all investigations necessary to ascertain all conditions and requirements affecting the full performance of the contract and to verify any representations made by the County upon which the bidder will rely. No pleas of ignorance of such conditions and requirements will relieve the successful bidder from its obligation to comply in every detail with all provisions and requirements of the contract or will be accepted as a basis for any claim for any monetary consideration on the part of the successful bidder.

17. SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK

Each bidder is responsible for ascertaining the nature and locations of the Work of the solicitation, and for investigating the general and local conditions and factors which can affect the work or its cost, including but not limited to:

- a. conditions bearing upon transportation, disposal, handling, and storage of materials;
- b. the availability of labor, water, electric power, and roads;
- c. uncertainties of weather, river stage, tides, or similar physical conditions at the site;
- d. the conformation and conditions of the ground; and
- e. the character of equipment and facilities needed before and during work performance.

Each bidder is responsible for investigating the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work publicly or otherwise available, as well as from the drawings and specifications made a part of this solicitation.

The locations of existing utilities, including underground utilities, which may affect the work are indicated on the drawings or in the specifications insofar as their existence and location were known at the time of preparation of the drawings. However, nothing in these drawings or specifications shall be construed as a guarantee that such utilities are in the location indicated or that they actually exist, or that other utilities are not within the area of operations. The bidder shall make all necessary investigations to determine the existence and locations of such utilities.

The County assumes no responsibility for any conclusions or interpretations made by the bidder based on the information made available by the County. The County assumes no responsibility for any understanding reached or representation made concerning conditions which could affect the work by any of its officers or agents before the execution of the contract, unless that understanding, or representation is expressly stated in the Contract.

18. INCOMPLETE DOCUMENTS

Each bidder is responsible for having determined the accuracy and/or completeness of the solicitation documents upon which it relied in making its bid, and has an affirmative obligation to notify the Arlington County Purchasing Agent immediately upon discovery of an apparent or suspected inaccuracy, error in, or omission of any pages, drawings, sections, or addenda whose omission from the documents was apparent from a reference or page numbering or other indication in the solicitation documents.

If a bidder downloads an electronic version of the solicitation documents, that potential bidder is responsible for determining the accuracy and/or completeness of the electronic documents and ensuring that the electronic documents used in preparing the bid are the most current version of solicitation documents issued by the County.

If the successful bidder proceeds with any activity that may be affected by an inaccuracy, error in, or omission in the solicitation documents of which it is aware but has not notified the Arlington County Purchasing Agent, the bidder hereby agrees to perform any activity described in the missing or incomplete documents at bidder's sole expense and at no additional cost to Arlington County.

19. ERRONEOUS OR INFEASIBLE REQUIREMENTS

Each bidder is responsible for having determined the feasibility of the work required and shall notify the County Purchasing Agent immediately upon discovery of any apparent erroneous, contradictory, incomplete, or infeasible requirements or directions contained in the Solicitation Documents. If a bidder fails to notify the County of such conditions immediately upon discovery, the bidder assumes all responsibility for any and all work required to satisfy the contract requirements at no additional cost to the County and within the Time for Completion.

20. QUALIFICATION OF BIDDERS

In order to be considered responsible and responsive Bidders shall have the experience described below, and provide the supporting documentation as instructed.

COMPANY QUALIFICATIONS:

Bidders shall have seven continuous years of experience conducting public works infrastructure, bridge construction, and street improvement projects in an urban environment. The experience shall be work of similar size and scope, construction, re-construction, and maintenance. The Bidder's obtained project experience shall consist of the following:

- **New Bridge Construction**
- **State and County streets**
- **Curbs and gutters**
- **Sidewalks and walkways**
- **Pavement markings and signage**
- **Electrical conduits**
- **Traffic signals and street lighting**
- **Streetscapes and related site work**

Bidders shall provide a list of three similar projects recently completed projects that involving the same material, equal size, and comparable length. For each project, Bidders shall list the following information:

- Project Name
- Project description and Bidder's scope of work within the project
- Project manager's name, telephone number and email address
- Work start date, scheduled completion, and actual completion date
- Initial contract cost and final contract cost

The experience of the contractor owner(s) may be imputed to a newly formed company/Contractor provided the Contractor owner(s) has/have at least five (5) years of demonstrated experience of reliability and meets the criteria set forth herein.

STAFFING QUALIFICATIONS:

Site Supervisor:

The Contractor shall have a qualified and experienced Site Supervisor who can clearly communicate technical matters on-site at all times when construction activity is occurring or when the site is not in a secure state.

Safety Project Officer:

The Contractor shall have at least one (1) employee certified by VDOT in Basic Work Zone Traffic Control on-site at all times that work is occurring and be responsible for the following:

- Placement, maintenance, and removal of work zone traffic control devices,
- Compliance with permit requirements and conditions, approved plans and specifications, the Virginia Work Area Protection Manual, and the Manual of Uniform Traffic Control Devices.

The flagger shall be certified in accordance with the VDOT Flagger Certification Program, the American Traffic Safety Services Association Flagger Certification Program or any other VDOT approved flagger program. The flagger shall have his/her certification card with them at all times while performing flagging activities.

The Contractor shall have at least one (1) employee certified in OSHA 10 on-site at all times that work is occurring. The employee shall have served as a Safety Project Officer on at least three (3) prior projects. If the Contractor has multiple employees with these requirements, the Contractor shall clearly identify which employee shall serve as the Safety Project Officer.

Environmental Project Officer:

The Contractor shall have at least one (1) employee that has successfully completed the VDOT Erosion & Sediment Control Contractor Certification training. The Contractor employee shall be on-site during all land disturbance activities. The Contractor shall be responsible for ensuring compliance with all applicable local, State, and Federal erosion and sediment control regulations and permits during land disturbance activities.

If the Contractor proposes to deviate from the approved Erosion and Sediment Control Plan, it shall be the Contractor's responsibility to coordinate and obtain approval from the County Project Officer prior to implementing any changes.

In addition, the Purchasing Agent may require a bidder to demonstrate that it has the necessary facilities, ability, and financial resources to comply with the contract and furnish the service, material or goods specified herein in a satisfactory manner before the award of any contract. A bidder may also be required to provide past history and references. Failure to qualify according to the foregoing requirements will result in bid rejection.

21. ALTERNATE BID

Bidders who have other items they wish to offer in lieu of, or in addition to, what is required by this solicitation shall submit a separate bid clearly marked "ALTERNATE BID". Alternate bids will be automatically deemed nonresponsive.

22. INFORMALITIES

The County reserves the right to waive minor defects or variations from the exact requirements of the solicitation in a bid insofar as those defects or variations do not affect the price, quality, quantity, or delivery schedule of the services being procured. If insufficient information is submitted for Arlington County to properly evaluate a bid or a bidder; the County may request such additional information after bid opening, provided that the information requested does not change the price, quality, quantity, or delivery schedule for the services being procured.

23. USE OF BRAND NAMES/ "OR EQUIVALENT" BIDS

Unless identified as a "No Equivalent" item in the solicitation, the name of a certain brand, make or manufacturer does not restrict bidders to that specific brand, make or manufacturer. The use of the brand, make or manufacturer's identification is intended to convey the general type, style, character, and quality of the article described. When a brand name is specified and followed by the phrase "or approved equal," the brand name product may be substituted if a suitable equivalent considering quality, workmanship, economy of operation, and suitability for the intended use, is accepted by the County Purchasing Agent.

The County may accept any equivalent item(s) that it considers suitable for the intended use.

For those items not identified as "No Equivalent", and followed by the phrase "or approved equal," the County has established the following procedure for determining the equivalency of a particular item:

Bidder Submission of Proposed Equivalent Item(s):

- 1) Bidder shall submit to the County its proposed item(s) for determination of their equivalency to the Brand Name(s) specified.
- 2) Each proposed item must be described on a separate page, indicating the appropriate specification section number, product or fabrication or installation method to be replaced, and specifics of the proposed item. Attach any technical information, photographs, brochures and the relevant data listed below that supports the proposed item and will permit the County to fairly determine acceptability of the item proposed:
 - a. Reasons why the specified product cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the product specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of Architects and owners, if requested.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Statement of impact on the construction schedule. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - i. Cost information.
 - j. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
- 3) The County will consider factors provided in the project technical specifications, such as relative costs, equivalency of features, serviceability, and the design of the item proposed.
- 4) All pages of the submission shall be marked with the name, address and contact information of the bidder, and sent via email to the Office of the Purchasing Agent to arrive prior to the question deadline established in Section I., paragraph I. ADDITIONAL INFORMATION. E-mail transmittals will be accepted at kschreiber@arlingtonva.us.

County Review of Proposed Equivalent Item(s):

- 1) Approved item(s) will be added to the solicitation, in the form of an Addendum to the solicitation, and forwarded to all bidders of record.
- 2) Bidders whose item(s) have not been approved will be so advised in writing simultaneously with the issuance of the Addendum.

24. NEW MATERIAL

Unless otherwise provided for in this solicitation, all goods, materials, supplies, or components offered to the County under this bid solicitation must be new, not used or reconditioned, and are not of such age or so deteriorated as to impair their usefulness or safety and that the goods, materials, supplies, or components offered are current production models of the respective manufacturer. If a bidder believes that furnishing used or reconditioned goods, materials, supplies or components will be in the County's interest, the bidder shall notify the County Purchasing Agent in writing no later than fifteen (15) calendar days prior to the date set for opening of bids. The notice shall include the reasons for the request and any benefits which may accrue to the County if the Purchasing Agent authorizes the bidding of used or reconditioned goods, materials, supplies or components.

25. BID WITHDRAWAL PRIOR TO BID OPENING

The Bidder may withdraw a bid from Vendor Registry before the opening date and time. It is the sole responsibility of the Bidder to remove and/or resubmit a bid before the bid deadline.

26. WITHDRAWAL OF BID FROM CONSIDERATION AFTER BID OPENING

After the opening of a bid, a bidder may withdraw its bid from consideration if the price of the bid is substantially lower than other bids due solely to a mistake therein, provided the bid is submitted in good faith, the mistake is a clerical mistake as opposed to a judgment mistake, and is 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 the bid, which unintentional 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. No partial withdrawals of bids will be permitted after the time and date set for the bid opening. The bidder must give an electronic written notice to the Arlington County Purchasing Agent of a claim of right to withdraw a bid and provide all work papers, documents and other materials used in the preparation of the bid sought to be withdrawn, within two (2) business days after the date of bid opening. A bid may also be withdrawn if the County fails to award or issue a notice of intent to award the bid within ninety (90) days after the date fixed for opening bids.

27. METHOD OF AWARD

The County will award to the lowest responsive and responsible bidder. The lowest bidder will be determined by Grand Total.

28. NOTICE OF DECISION TO AWARD

When the County has made a decision to award a contract(s), the County will post a Notice of Award or Intent to Award to [Vendor Registry](#).

29. INSURANCE REQUIREMENTS

Each bidder must be able to demonstrate proof of the specific coverage requirements and limits applicable to this solicitation. If the bidder is not able to do so, it may propose alternate insurance coverage for consideration by the County. Written requests for consideration of alternate coverage must be received by the County Purchasing Agent at least 10 working days prior to bid due date. If the County permits alternate coverage, an amendment to the Insurance Checklist will be issued prior to the time and date set for receipt of bids.

30. SURETY REQUIRED

Companies who wish to implement digital signatures during the COVID-19 public health emergency may do so, along with a SURETY BOND SEAL ADDENDUM which contains an electronic corporate seal and states the following:

“Due to logistical issues associated with the use of traditional seals during this COVID-19 pandemic, [Surety Company] has authorized its Attorney-in-Fact to affix [Surety Company’s] corporate seal to any bond executed on behalf of [Surety Company] by any such Attorney-in-Fact by attaching this Addendum to said bond.

To the extent this Addendum is attached to a bond that is executed on behalf of [Surety Company] by its Attorney-in-Facts, [Surety Company] hereby agrees that the seal below shall be deemed affixed to said bond to the same extent as if its raised corporate seal was physically affixed to the face of the bond.”

A. BID SURETY:

A fully completed and properly executed original Bid Bond, cashier's check, certified check, money order, or cash escrow in the amount of 5% of the amount of the bid made payable to the Treasurer of Arlington County shall accompany each bid. The Bid Surety will be retained until after the award to the successful bidder. The Bid Surety of the successful bidder will be retained until completion of the Contract or the posting of a Performance Bond, whichever occurs sooner. A bid submitted without a proper bid surety will be rejected.

B. FAILURE TO EXECUTE:

The failure of a bidder to accept an award and file acceptable Performance and Payment Bonds within ten (10) days after award notice will cause cancellation of the award and the forfeiture of the Bid Surety to the County.

C. PERFORMANCE SURETY:

A fully completed and properly executed original Performance Bond in the amount of 100% of the amount of the bid will be required of the successful bidder to ensure satisfactory completion of the work. The bond shall be a corporate surety bond issued by a surety company authorized to do business in the Commonwealth of Virginia and acceptable to the County. Where applicable, the Performance Bond shall be renewable annually in the original amount through the completion of the Contract, including all warranty and guarantee periods.

D. PAYMENT BOND:

A fully completed and properly executed original Payment Bond in the amount of 100% of the amount of the bid, will be required of the successful bidder to ensure payment of all persons who have and fulfill contracts for the Contractor for performing labor, providing equipment, or providing material in the performance of the work provided for in the Contract. The Bond shall be a corporate surety bond issued by a surety company authorized to do business in the Commonwealth of Virginia and acceptable to the County. Where applicable, the Payment Bond shall be renewable annually in the original amount for the duration of the Contract.

31. EXECUTION OF CONTRACT

Within three days after the Contract is presented to the successful Bidder for signature, the Contractor must submit to the County Purchasing Agent the original of the executed Agreement. Within ten days the Contractor must submit executed performance and payment bonds and required certificate of insurance. Failure to do so shall constitute a default, and the County may award the Contract to the next lowest responsive and responsible bidder or solicit new bids. The County may then charge against the Contractor

the difference between the amount of the Contract award and the amount for which a Contract is subsequently executed, up to the total amount of the Contractor's bid security.

32. EXPENSES INCURRED IN PREPARING BID

All expenses related to a bid are the sole responsibility of the bidder.

33. NEGOTIATIONS WITH LOWEST RESPONSIVE AND RESPONSIBLE BIDDER

If the bid by the lowest responsive and responsible bidder exceeds available funds, the County reserves the right to negotiate with the apparent low bidder to obtain an acceptable price. Negotiations with the apparent low bidder may involve discussions of reduction of quantity, quality, or other cost saving mechanisms. The final negotiated contract shall be subject to final approval of the County, in its sole discretion.

34. ELECTRONIC SIGNATURE

If awarded, the Bidder may be required to accept an agreement and sign electronically through the County's e-signature solution, DocuSign.

FOLLOWING THIS PAGE IS THE AGREEMENT THAT WILL BE ENTERED INTO BETWEEN THE COUNTY AND THE CONTRACTOR. THE AGREEMENT IS PART OF THIS SOLICITATION. THIS AGREEMENT IS SUBJECT TO REVIEW BY THE COUNTY ATTORNEY PRIOR TO BEING SUBMITTED FOR CONTRACTOR'S SIGNATURE.

II. AGREEMENT AND CONTRACT TERMS AND CONDITIONS



**ARLINGTON COUNTY, VIRGINIA
OFFICE OF THE PURCHASING AGENT
SUITE 500, 2100 CLARENDON BOULEVARD
ARLINGTON, VA 22201**

AGREEMENT NO. 23-DES-ITBPW-502

THIS AGREEMENT is made, on _____, between Contractor's name,
Contractor's address ("Contractor") a name of state type of entity
authorized to do business in the Commonwealth of Virginia, and the County Board of Arlington County,
Virginia ("County"). The County and the Contractor, for the consideration hereinafter specified, agree as
follows:

1. CONTRACT DOCUMENTS

The Contract Documents consist of:

- Agreement No. 23-DES-ITBPW-502 and all modifications properly incorporated into the Agreement
- Exhibit A – Arlington County Invitation to Bid No. 23-DES-ITBPW-502, including DES General Conditions, incorporated by reference
- Exhibit B – Virginia Department Of Labor And Industry Wage Determination Decision
- Exhibit C – Price Bid of Contractor
- Exhibit D – Contractor Performance Evaluation Form
- Exhibit E – Special Conditions
- Exhibit F – Geotechnical Report
- Exhibit G – Construction Drawings
- Exhibit H – Arlington County Master Transportation Plan
- Exhibit I – Arlington County Materials Testing Specification Reference
- Exhibit J – VDOT Lane Closure Guidelines
- Exhibit K – State and Federal Roads in Arlington County, VA
- Exhibit L – County RFI Form Template

Where the terms and provisions of this Agreement vary from the terms and provisions of the other Contract Documents, the terms and provisions of this Agreement will prevail over the other Contract Documents, and the remaining Contract Documents will be complementary to each other. If there are any conflicts, the most stringent terms or provisions will prevail.

The Contract Documents set forth the entire agreement between the County and the Contractor. The County and the Contractor agree that no representative or agent of either party has made any

representation or promise with respect to the parties' agreement that is not contained in the Contract Documents. The Contract Documents may be referred to below as the "Contract" or the "Agreement".

2. SCOPE OF WORK

The Contractor will furnish all labor, materials, and equipment for the construction of the Shirlington Road Pedestrian Bridge project, which includes building a new bicycle and pedestrian prefabricated bridge across Four Mile Run to provide for an effective and safe bicycle and pedestrian access. The other improvements include new streetlighting, median, sidewalk and crosswalk retrofits, as well as a new Rectangular Rapid Flashing Beacon (RRFB). (the "Project") and all other work shown, described, and required by the Contract Documents (hereinafter "the Work").

The Work shall be performed according to the standards established by the Contract Documents read together as a single specification. It shall be the Contractor's responsibility, at solely the Contractor's cost, to provide sufficient services to fulfill the purposes of the Work. Nothing in the Contract Documents shall be construed to limit the Contractor's responsibility to manage the details and execution of its Work.

3. PROJECT OFFICER

The performance of the Contractor is subject to the review and approval of the County Project Officer identified in Section 53, Notices, unless the Contractor is otherwise notified in writing.

4. TIME FOR COMPLETION

Work under this Agreement shall achieve Substantial Completion no later than three hundred sixty-five (365) consecutive calendar days after the commencement date given in a Notice to Proceed provided by the County to the Contractor, subject to any modifications made as provided for in the Contract Documents. This three hundred sixty-five (365) day period shall be the Period of Performance for Substantial Completion. No Work shall be deemed Substantially Complete until it meets the requirements of Substantial Completion set forth in the General Conditions. Final Completion of the Work shall be completed no later than thirty (3) calendar days after the date of acceptance of Substantial Completion by the County Project Officer. Work will not reach Final Completion until it meets the requirements set forth in the General Conditions.

Unless otherwise provided, no claims for early completion are allowed.

5. CONTRACT AMOUNT

The County will pay the Contractor in accordance with the terms of the Progress Payments and Payment Terms sections below and at the prices shown in Exhibit C, but not more than \$_____ for the Contractor's completion of the Work as required by the Contract Documents provided the Work is performed to the satisfaction of and is accepted by the Project Officer. The Contractor will complete the Work for the total amount specified in this section ("Contract Amount") unless such amount is modified as provided in this Agreement. The Contract Amount includes all of the Contractor's costs and fees (profit) and is inclusive of all anticipated or known site conditions, anticipated or known materials, labor, and equipment costs, or any other costs which should reasonably have been expected by the Contract Documents.

6. PROGRESS PAYMENTS

The County will make monthly progress payments to the Contractor upon written application by the Contractor, on the basis of a written estimate of the work performed during the preceding calendar month as approved by the Project Officer.

All material and work covered by partial payments will become the property solely of the County at the time the partial payment is made. However, the Contractor will have the sole responsibility, care and custody for all materials and work upon which payments have been made until Substantial Completion. When calculating payment for materials on-site, the County shall not pay for materials which are not scheduled for incorporation into the Work within sixty (60) days from the date of application for payment.

7. PAYMENT TERMS

The Contractor must submit invoices to the County's Project Officer, who will either approve the invoice or require corrections. The County will pay the Contractor 45 days after approval of an invoice for completed work which is reasonable and allocable to the Contract. All payments will be made from the County to the Contractor via ACH. The number of the County Purchase Order pursuant to work has been performed must appear on all invoices.

8. PAYMENT OF SUBCONTRACTORS

The Contractor is wholly responsible for the entire amount owed to any subcontractor with which the Contractor contracts in the performance of this Agreement, regardless of whether the Contractor has received payment from the County. The Contractor is not liable for amounts that are not owed as a result of the subcontractor's breach of its agreement with the Contractor, in which case the Contractor must notify the subcontractor in writing of its intention to withhold payment, in full or in part, and the reason for doing so.

The Contractor is obligated to take one of the two following actions within seven days after receipt of payment by the County for work performed by any subcontractor under this Contract:

- a. Pay the subcontractor for the proportionate share of the total payment received from the County attributable to the work performed by the subcontractor under this Contract; or
- b. Notify the County and the subcontractor, in writing, of the Contractor's intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.

The Contractor is obligated to pay interest to the subcontractor on all amounts owed by the Contractor to the subcontractor that remain unpaid after seven days following receipt by the Contractor of payment from the County for work performed by the subcontractor under this Contract, except for amounts withheld as allowed in subsection b., above. Unless otherwise provided under the terms of this Contract, interest will accrue at the rate of 1% per month.

The Contractor must include in each of its subcontracts, if any are permitted, 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.

The Contractor's obligation to pay an interest charge to a subcontractor pursuant to this section may not be construed to be an obligation of the County. A Contract modification may not be made for the purpose of providing reimbursement for such interest charge. A cost reimbursement claim may not include any amount for reimbursement for such interest charge.

9. PREVAILING WAGE CONTRACT REQUIREMENTS

- A. Section 4-104 of the Arlington County Purchasing Resolution (regarding “Prevailing Wage”) applies to this Contract. All employees of the Contractor and any subcontractors shall be paid wages, salaries, benefits, and other remuneration at or above the craft or trade category prevailing wage rate indicated by Virginia Commissioner of Labor and Industry (DOLI) and as listed in the contract.

The Contractor and its subcontractors shall submit all certified payrolls and statements of compliance weekly through the [eComply website](#). If the Contractor or any subcontractor does not have an eComply profile, a one-time registration process immediately following the Notice of Award or Notice of Intent to Award and training on system functionality are required for each non-registered entity. The Contractor shall also be responsible for reviewing subcontractor payrolls and ensuring that contract requirements are met.

In addition to applying the prevailing wage rates to its own employees, the Contractor shall include the provisions of this Article 4-104 in every subcontract so that such provisions will be binding upon each subcontractor. The Contractor agrees to assume the obligation that the wage requirements will be observed in fulfilling the requirements of the Contract. The appropriate enforcement sanctions will be invoked against the Contractor and any such subcontractor in the event of such subcontractor’s failure to comply with any of the provisions of this Article 4-104.

All wage rates to be used are listed in this Contract in Exhibit B. While DOLI maintains a list of wage determinations online for reference purposes, only the wage determinations made in an official Wage Determination Decision, sent by DOLI to Arlington County, can be used to ascertain the exact rates to be paid for this Contract.

All rates are determined by DOLI and any appeals of specific classification may be made through the Wage Determination Appeal form available at <http://www.doli.virginia.gov/wp-content/uploads/2021/04/Appeal-for-Wage-Determination-Clarification.pdf>.

- B. Upon award of the Contract, the Contractor shall certify, under oath, to the Virginia Commissioner of Labor and Industry and to the County Prevailing Wage Compliance Manager, the pay scale for each craft and trade to be employed for, or to provide labor for, in the Work by the Contractor and any subcontractors. The Contractor’s certification shall include all information required by the Code of Virginia § 2.2-4321.3G.
- C. The Contractor shall ensure that each individual providing labor as a mechanic, laborer, worker or equivalent shall be accurately classified in confirmation with the Wage Determination.
- D. The Contractor shall post the prevailing wage rate for each craft and classification involved as determined by DOLI, including the effective date, in a prominent and easily accessible place at the work site during the time work is being performed. The posting must be in English and any other language that is primarily spoken by the individuals at the work site. Within 10 days of such posting the Contractor shall certify to the County Prevailing Wage Compliance Manager and DOLI its compliance with this subsection at https://www.doli.virginia.gov/wp-content/uploads/2021/04/PW_Posting_Compliance_Form.pdf;

- E. The Contractor must fully cooperate with the County Prevailing Wage Compliance Manager to ensure contract compliance requirements ,including but not limited to site visits, wage rate signage, contractor employee interviews, and the submission of certified payroll records.
- F. The Contractor must submit to the County Prevailing Wage Compliance Manager and DOLI, within five (5) working days of the end of each month, certification for each craft or trade employed on the project, specifying the total hourly amount paid to employees, including wages and applicable fringe benefits using the Pay Scale Certification Form at <https://www.doli.virginia.gov/wp-content/uploads/2021/04/DOLI-Pay-Scale-Certification-for-Public-Works-Projects.pdf>. The certification must itemize the amount paid in wages and each applicable benefit and list the names and addresses of any third party fund, plan or program to which benefit payments will be made on behalf of employees.
- G. The Contractor shall indemnify and hold harmless the County from any fines, demands, claims, suits, and damages, including attorney’s fees, resulting from the Contractor’s or any subcontractor’s failure to pay the Prevailing Wage.
- H. The Contractor and its subcontractors shall keep, maintain, and preserve (i) records relating to the wages paid to and hours worked by each individual performing the work of any mechanic, laborer, or worker; and (ii) a schedule of the occupation or work classification at which each individual performing the work of any mechanic, laborer, or worker on the construction project is employed each work day and week. The Contractor and its subcontractors shall make such records available to the Prevailing Wage Compliance Manager within 10 days of a request or per a regular schedule established in the Contract, and shall certify that records reflect the actual hours worked and the amount paid to its workers for whatever time period is requested. The Contractor and its subcontractors must preserve these records for a period of six (6) years after the expiration or earlier termination of the applicable contract.
- I. Any Contractor or subcontractor who pays any mechanic, laborer, or worker for services under this Contract less than the Prevailing Wage shall be liable to such individuals for the payment of all wages due, plus interest at an annual rate of eight percent (8%) from the dates wages were due; and shall be disqualified from bidding on public contracts with any public body until the Contractor or subcontractor has made full restitution. A willful violation of Article 4-104 is a Class I misdemeanor.
- J. For questions regarding Prevailing Wage, please email prevailingwage@arlingtonva.us.

10. RELEASE AND REQUEST FOR FINAL PAYMENT

In order to receive final payment upon Final Completion of the Project and before Final Acceptance, the Contractor must submit to the Project Officer a signed original notarized copy of the Arlington County Release and Request for Final Payment form per the General Conditions.

11. LIQUIDATED DAMAGES

Time is of the essence under this Contract. The Work must be completed within the Time for Completion. The County and the Contractor agree that damages for failure to achieve Substantial Completion of the Work by the date specified under Time for Completion are not susceptible to exact determination but that \$1,817.50 per calendar day is in proportion to the actual loss that the County would suffer from such delay. Therefore, the Contractor will pay the County as liquidated damages \$1,817.50 per day for each

and every day beyond the time for Substantial Completion that the County determines Substantial Completion has not achieved. The County and the Contractor also agree that damages for failure to achieve Final Completion of the Work by the date specified under Time for Completion are not susceptible to exact determination but that \$1,817.50 per calendar day is in proportion to the actual loss the County would suffer from such delay. Therefore, the Contractor will pay the County as liquidated damages \$1,817.50 per day for each and every day beyond the time for Final Completion until Final Completion is achieved.

The County will be entitled to deduct liquidated damages against any sums owed by the County to the Contractor under this Contract. The Contractor hereby waives any defense as to the validity of any liquidated damages on grounds that such liquidated damages are void as penalties or are not reasonably related to actual damages.

12. PERFORMANCE OF WORK BY THE CONTRACTOR

The Contractor shall perform on site, and with its own organization, at least eighty percent (80%) of the total direct labor and at least eighty percent (80%) of the total work in place to be performed under the Contract. Prior to award, the Contractor must demonstrate to the Project Officer's satisfaction that both of these standards will be met during contract performance. Labor and work to be counted when determining whether the Contractor has met the self-performance requirement shall not include any work that the Contractor performs under the supervision of a subcontractor.

The self-performance percentage may be reduced by an Amendment to the Contract, if during performance of the Work, the Contractor requests a reduction and the Project Officer determines that the reduction would be to the advantage of the County.

13. NON-APPROPRIATION

All payments by the County to the Contractor pursuant to this Contract are subject to the availability of an annual appropriation for this purpose by the County Board of Arlington County, Virginia ("Board"). In the event that the Board does not appropriate funds for the goods or services provided under this Contract, the County will terminate the Contract, without termination charge or other liability to the County, on the last day of the fiscal year or when the previous appropriation has been spent, whichever occurs first.

14. ESTIMATED QUANTITIES/NON-EXCLUSIVITY OF CONTRACTOR

This Contract does not obligate the County to purchase a specific quantity of items or services during Contract Term. Any quantities that are included in the Contract Documents are the present expectations of the County for the period of the Contract; and the County is under no obligation to buy that or any amount as a result of having provided this estimate or of having had any normal or otherwise measurable requirement in the past. The County may require more goods and/or services than the estimated annual quantities, and any such additional quantities will not give rise to any claim for compensation other than at the unit prices and/or rates in the Contract.

The County does not guarantee that the Contractor will be the exclusive provider of the goods or services covered by this Contract. The items or services covered by this Contract may be or become available under other County contract(s), and the County may determine that it is in its best interest to procure the items or services through those contract(s).

15. COUNTY PURCHASE ORDER REQUIREMENT

County purchases are authorized only if the County issues a Purchase Order in advance of the transaction, indicating that the ordering County agency has sufficient funds available to pay for the purchase. If the Contractor provides goods or services without a signed County Purchase Order, it does so at its own risk and expense. The County will not be liable for payment for any purchases made by its employees that are not authorized by the County Purchasing Agent.

16. LIEN

It is expressly agreed that after any payment has been made by the County either to the Contractor for work done, or labor or material supplied under the Contract, the County will have a lien upon all material delivered to the site either by the Contractor, or for the Contractor, which is to be used in the performance of the Contract.

17. VALUE ENGINEERING PROPOSAL (VE)

Unless otherwise provided, the Contractor may submit to the County a written VE for modifying the plans, specifications, or other requirements of the Agreement covering the work (Contract) for the purpose of reducing the total cost of the Contract without reducing the design capacity or quality of the finished product. If the VEP is accepted by the County, the net savings will be equally divided by the County and the Contractor.

Each VEP shall result in a net savings over the Contract cost without impairing essential functions and characteristics of the item(s) or of any other part of the project, including, but not limited to, service life, reliability, economy of operation, ease of maintenance, aesthetics, and safety. At least the following information shall be submitted with each VE:

- (a) a statement that the proposal is submitted as a VE;
- (b) a statement concerning the basis for the VE, benefits to the County, and an itemization of the Contract items and requirements affected by the VE;
- (c) a detailed estimate of the cost under the existing Contract and under the VE;
- (d) proposed specifications and recommendations as to the manner in which the VE changes are to be accomplished; and
- (e) a statement as to the time by which a Contract Amendment adopting the VE must be issued so as to obtain the maximum cost-effectiveness.

The County will process the VE in the same manner as prescribed for any other proposal that would necessitate issuance of an Amendment. The County may accept a VE in whole or part by issuing an Amendment that will identify the VE on which it is based. The County will not be liable to the Contractor for failure to accept or act on any VE submitted pursuant to these requirements or for delays in the work attributable to any VE. Until a VE is put into effect by an Amendment, the Contractor shall remain obligated to the terms and conditions of the existing Agreement. If an executed Amendment has not been issued by the date on which the Contractor's proposal specifies that a decision should be made or such other date as the Contractor may subsequently have specified in writing, the VE shall be deemed rejected.

The Amendment effecting the necessary modification of the Contract will establish the net savings agreed on, provide for adjustment of the contract prices, and indicate the net savings. The Contractor shall absorb

all costs incurred in preparing a VE. Reasonably incurred costs for reviewing and administering a VE will be borne by the County. The County may establish any reasonable conditions it deems appropriate for consideration, approval, and implementation of the VE. The Contractor's 50 percent share of the net savings shall constitute full compensation to it, including by way of illustration and not limitation compensation for time, for effecting all changes pursuant to the Amendment.

Unless specifically provided for in the Amendment authorizing the VE, acceptance of the VE and performance of the work thereunder will not change the Contract Term limit.

The County may adopt a VE for general use in contracts administered by the County if it determines that the VE is suitable for application to other contracts. A VE identical with or similar to a previously submitted VE will be eligible for consideration and compensation under these provisions if it has not been previously adopted for general application to other contracts administered by the County. When a VE is adopted for general use, compensation pursuant to these requirements will be applied only to those awarded contracts for which the VE was submitted prior to the date of adoption of the VE.

If a VEP is based on or is similar to a change in the plans, specifications, or special provisions adopted by the County prior to submission of the VE, as determined by the County, the County will not accept the VE.

The County will be the sole judge of the acceptability of a VE. The requirements herein apply to each VE initiated, developed, and identified as such by the Contractor at the time of its submission to the County. However, nothing herein shall be construed as requiring the County to consider or approve a VE, and the decision to enter into an Amendment to the contract to accommodate a VE shall be in the County's sole discretion.

Subject to the provisions contained herein, the County, or any other public agency with the County's permission, shall have the right to use all or part of an accepted VE without obligation or compensation of any kind to the Contractor.

If a VE is accepted by the County, any provisions herein that pertain to the adjustment of contract unit prices attributable to alterations of contract quantities will not apply to the items adjusted or deleted as a result of putting the VE into effect by an Amendment.

18. EMPLOYMENT DISCRIMINATION BY CONTRACTOR PROHIBITED

During the performance of its work pursuant to this Contract:

- A. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual orientation, gender identity, national origin, age, disability or on any other basis prohibited by state law. 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. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation will be deemed sufficient for meeting the requirements of this section.
- C. The Contractor will state in all solicitations or advertisements for employees that it places or causes to be placed that such Contractor is an Equal Opportunity Employer.
- D. The Contractor will comply with the provisions of the Americans with Disabilities Act of 1990 ("ADA"), which prohibits discrimination against individuals with disabilities in employment and

mandates that disabled individuals be provided access to publicly and privately provided services and activities.

- E. The Contractor must include the provisions of the foregoing paragraphs in every subcontract or purchase order of more than \$10,000.00 relating to this Contract so that the provisions will be binding upon each subcontractor or vendor.

19. EMPLOYMENT OF UNAUTHORIZED ALIENS PROHIBITED

In accordance with §2.2-4311.1 of the Code of Virginia, as amended, the Contractor must not during the performance of this Contract knowingly employ an unauthorized alien, as that term is defined in the federal Immigration Reform and Control Act of 1986.

20. DRUG-FREE WORKPLACE TO BE MAINTAINED BY CONTRACTOR

During the performance of this Contract, the Contractor must: (i) provide a drug-free workplace for its 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 violating 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 more than \$10,000.00 relating to this Contract so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "workplace" means the site(s) for the performance of the work required by this Contract.

21. SEXUAL HARASSMENT POLICY

If the Contractor employs more than five employees, the Contractor shall (i) provide annual training on the Contractor's sexual harassment policy to all supervisors and employees providing services in the Commonwealth, except such supervisors or employees that are required to complete sexual harassment training provided by the Department of Human Resource Management, and (ii) post the Contractor's sexual harassment policy in (a) a conspicuous public place in each building located in the Commonwealth that the Contractor owns or leases for business purposes and (b) the Contractor's employee handbook.

22. COVID-19 VACCINATION POLICY FOR CONTRACTORS

Due to the ongoing COVID-19 pandemic, the County has taken various steps to protect the welfare, health, safety, and comfort of the workforce and public at large. As part of these steps, the County has implemented various requirements with respect to health and safety including policies with respect to social distancing, the use of face-coverings and vaccine mandates. To protect the County's workforce and the public at large, all employees and subcontractors of the Contractor who are assigned to this Contract, should be fully vaccinated against COVID-19. Any contractor employee or subcontractor who is not fully vaccinated should be following a weekly testing protocol as established by the Contractor, unless exempt pursuant to a valid reasonable accommodation under state or federal law.

23. PROJECT STAFF

The County has the right to reasonably reject staff or subcontractors whom the Contractor assigns to the Project. The Contractor must then provide replacement staff or subcontractors satisfactory to the County

in a timely manner and at no additional cost to the County. The day-to-day supervision and control of the Contractor's employees and its subcontractors is the sole responsibility of the Contractor.

24. FAILURE TO DELIVER

If the Contractor fails to deliver goods or services in accordance with the Contract terms and conditions, the County, after notice to the Contractor, may procure the goods or services from other sources and hold the Contractor responsible for any resulting additional purchase and administrative costs. The County shall be entitled to offset such costs against any sums owed by the County to the Contractor. However, if public necessity requires the use of nonconforming materials or supplies, they may be accepted at a reduction in price to be determined solely by the County.

25. UNSATISFACTORY WORK

If any of the work done, or material, goods, or equipment provided by the Contractor, is unsatisfactory to the County the Contractor must, upon notice from the County, immediately remove at the Contractor's expense such unsatisfactory work, material, goods, or equipment and replace the same with work, material, goods, or equipment satisfactory to the County. If the Contractor fails to do so after fifteen (15) days the County shall have the right to remove or replace the rejected work, material, goods, or equipment at the expense of the Contractor and offset the expense and administrative costs against any sums owed to the Contractor. This provision applies during the Contract term and during any warranty or guarantee period. At the Project Officer's discretion, rather than correction or replacement of the work, an appropriate adjustment to the Contract Amount may be made.

26. TERMINATION

The County may terminate this Contract at any time as follows: (1) for cause, if, as determined by the County, the Contractor is in breach or default or has failed to perform the Work satisfactorily; or (2) for the convenience of the County.

Upon receipt of a notice of termination, the Contractor must not place any further orders or subcontracts for materials, services or facilities; must terminate all vendors and subcontracts, except as are necessary for the completion of any portion of the Work that the County did not terminate; and must immediately deliver all documents related to the terminated Work to the County.

Any purchases that the Contractor makes after the notice of termination will be the sole responsibility of the Contractor, unless the County has approved the purchases in writing as necessary for completion of any portion of the Work that the County did not terminate.

If any court of competent jurisdiction finds a termination for cause by the County to be improper, then the termination will be deemed a termination for convenience.

A. TERMINATION FOR CAUSE, INCLUDING BREACH AND DEFAULT; CURE

1. Termination for Unsatisfactory Performance. If the County determines that the Contractor has failed to perform satisfactorily, then the County will give the Contractor written notice of such failure(s) and the opportunity to cure them within 15 days or any other period specified by the County ("Cure Period"). If the Contractor fails to cure within the Cure Period, the County may terminate the Contract for failure to provide satisfactory performance by providing written notice with a termination date. Upon such termination, the Contractor may apply for compensation for Contract services that the County previously accepted ("Termination Costs"), unless payment is otherwise barred by the Contract. The Contractor must submit any request for Termination Costs, with all

supporting documentation, to the County Project Officer within 30 days after the expiration of the Cure Period. The County may accept or reject the request for Termination Costs, in whole or in part, and may notify the Contractor of its decision within a reasonable time.

In the event of termination by the County for failure to perform satisfactorily, the Contractor must continue to provide its services as previously scheduled through the termination date, and the County must continue to pay all fees and charges incurred through the termination date.

2. Termination for Breach or Default. If the County terminates the Contract for default or breach of any Contract provision or condition, then the termination will be immediate after notice of termination to the Contractor (unless the County provides for an opportunity to cure), and the Contractor will not be permitted to seek Termination Costs.

Upon any termination pursuant to this section, the Contractor will be liable to the County for costs that the County must expend to complete the Work, including costs resulting from any related delays and from unsatisfactory or non-compliant work performed by the Contractor or its subcontractors. The County will deduct such costs from any amount due to the Contractor; or if the County does not owe the Contractor, the Contractor must promptly pay the costs within 15 days of a demand by the County. This section does not limit the County's recovery of any other damages to which it is entitled by law.

Except as otherwise directed by the County, the Contractor must stop work on the date of receipt of the notice of the termination.

B. TERMINATION FOR THE CONVENIENCE OF THE COUNTY

The County may terminate this Contract in whole or in part whenever the Purchasing Agent determines that termination is in the County's best interest. The County will give the Contractor at least 15 days' notice in writing. The notice must specify the extent to which the Contract is terminated and the effective termination date. The Contractor will be entitled to Termination Costs, as defined above, plus any other reasonable amounts that the parties might negotiate; but no amount will be allowed for anticipatory profits.

Except as otherwise directed by the County, the Contractor must stop work on the date of receipt of the notice of the termination.

27. INDEMNIFICATION

The Contractor covenants for itself, its employees and its subcontractors to save, defend, hold harmless and indemnify the County and all of its elected and appointed officials, officers, current and former employees, agents, departments, agencies, boards and commissions (collectively the "County Indemnitees") from and against any and all claims made by third parties for any and all losses, damages, injuries, fines, penalties, costs (including court costs and attorneys' fees), charges, liability, demands or exposure resulting from, arising out of or in any way connected with the Contractor's acts or omissions, including the acts or omissions of its employees, vendors, delivery drivers and/or subcontractors, in performance or nonperformance of the Contract. This duty to save, defend, hold harmless and indemnify will survive the termination of this Contract. If the Contractor fails or refuses to fulfill its obligations contained in this section, the Contractor must reimburse the County for any and all resulting payments and expenses, including reasonable attorneys' fees. The Contractor must pay such expenses upon demand

by the County, and failure to do so may result in the County withholding such amounts from any payments to the Contractor under this Contract.

28. INTELLECTUAL PROPERTY INDEMNIFICATION

The Contractor warrants and guarantees that in providing services under this Contract neither the Contractor nor any subcontractor is infringing on the intellectual property rights (including, but not limited to, copyright, patent, mask and trademark) of third parties.

If the Contractor or any of its employees or subcontractors uses any design, device, work or material that is covered by patent or copyright, it is understood that the Contract Amount includes all royalties, licensing fees, and any other costs arising from such use in connection with the Work under this Contract.

The Contractor covenants for itself, its employees and its subcontractors to save, defend, hold harmless, and indemnify the County Indemnitees, as defined above, from and against any and all claims, losses, damages, injuries, fines, penalties, costs (including court costs and attorneys' fees), charges, liability or exposure for infringement of or on account of any trademark, copyright, patented or unpatented invention, process or article manufactured or used in the performance of this Contract. This duty to save, defend, hold harmless and indemnify will survive the termination of this Contract. If the Contractor fails or refuses to fulfill its obligations contained in this section, the Contractor must reimburse the County for any and all resulting payments and expenses, including reasonable attorneys' fees. The Contractor must pay such expenses upon demand by the County, and failure to do so may result in the County withholding such amounts from any payments to the Contractor under this Contract.

29. COPYRIGHT

By this Contract, the Contractor irrevocably transfers, assigns, sets over and conveys to the County all rights, title and interest, including the sole exclusive and complete copyright interest, in any and all copyrightable works created pursuant to this Contract. The Contractor will execute any documents that the County requests to formalize such transfer or assignment.

The rights granted to the County by this section are irrevocable and may not be rescinded or modified, including in connection with or as a result of the termination of or a dispute concerning this Contract.

The Contractor may not use subcontractors or third parties to develop or provide input into any copyrightable materials produced pursuant to this Contract without the County's advance written approval and unless the Contractor includes this Copyright provision in any contract or agreement with such subcontractors or third parties related to this Contract.

30. OWNERSHIP AND RETURN OF RECORDS

This Contract does not confer on the Contractor any ownership rights or rights to use or disclose the County's data or inputs.

All drawings, specifications, blueprints, data, information, findings, memoranda, correspondence, documents or records of any type, whether written, oral or electronic, and all documents generated by the Contractor or its subcontractors as a result of this Contract (collectively "Records") are the exclusive property of the County and must be provided or returned to the County upon completion, termination, or cancellation of this Contract. The Contractor will not use or willingly cause or allow such materials to be used for any purpose other than performance of this Contract without the written consent of the County.

The Records are confidential, and the Contractor will neither release the Records nor share their contents. The Contractor will refer all inquiries regarding the status of any Record to the Project Officer or to his or her designee. At the County's request, the Contractor will deliver all Records, including hard copies of electronic records, to the Project Officer and will destroy all electronic Records.

The Contractor agrees to include the provisions of this section as part of any contract or agreement related to this Contract into which it enters with subcontractors or other third parties.

The provisions of this section will survive any termination or cancellation of this Contract.

31. CONFIDENTIAL INFORMATION

The Contractor and its employees, agents and subcontractors will hold as confidential all County information obtained under this Contract. Confidential information includes, but is not limited to, nonpublic personal information; personal health information (PHI); social security numbers; addresses; dates of birth; other contact information or medical information about a person; and information pertaining to products, operations, systems, customers, prospective customers, techniques, intentions, processes, plans and expertise. The Contractor must take reasonable measures to ensure that all of its employees, agents and subcontractors are informed of and abide by this requirement.

32. ETHICS IN PUBLIC CONTRACTING

This Contract incorporates by reference Article 9 of the Arlington County Purchasing Resolution, as well as all state and federal laws related to ethics, conflicts of interest or bribery, including the State and Local Government Conflict of Interests Act (Code of Virginia § 2.2-3100 et seq.), the Virginia Governmental Frauds Act (Code of Virginia § 18.2-498.1 et seq.) and Articles 2 and 3 of Chapter 10 of Title 18.2 of the Code of Virginia, as amended (§ 18.2-438 et seq.). The Contractor certifies that its bid was made without collusion or fraud; that it has not offered or received any kickbacks or inducements from any other offeror, supplier, manufacturer or subcontractor; and that it has not conferred on any public employee having official responsibility for this procurement any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

33. COUNTY EMPLOYEES

No Arlington County employee may share in any part of this Contract or receive any benefit from the Contract that is not available to the general public.

34. FORCE MAJEURE

Neither party will be held responsible for failure to perform the duties and responsibilities imposed by this Contract if such failure is due to a fire, riot, rebellion, natural disaster, war, act of terrorism or act of God that is beyond the control of the party and that makes performance impossible or illegal, unless otherwise specified in the Contract, provided that the affected party gives notice to the other party as soon as practicable after the force majeure event, including reasonable detail and the expected duration of the event's effect on the party.

35. AUTHORITY TO TRANSACT BUSINESS

The Contractor must, pursuant to Code of Virginia § 2.2-4311.2, be and remain authorized to transact business in the Commonwealth of Virginia during the entire term of this Contract. Otherwise, the Contract is voidable at the sole option of and with no expense to the County.

36. RELATION TO THE COUNTY

The Contractor is an independent contractor, and neither the Contractor nor its employees or subcontractors will be considered employees, servants or agents of the County. The County will not be responsible for any negligence or other wrongdoing by the Contractor or its employees, servants or agents. The County will not withhold payments to the Contractor for any federal or state unemployment taxes, federal or state income taxes or Social Security tax or for any other benefits. The County will not provide to the Contractor any insurance coverage or other benefits, including workers' compensation.

37. ANTITRUST

The Contractor conveys, sells, assigns and transfers to the County all rights, title and interest in and to all causes of action under state or federal antitrust laws that the Contractor may have relating to this Contract.

38. REPORT STANDARDS

The Contractor must submit all written reports required by this Contract for advance review in a format approved by the Project Officer. Reports must be accurate and grammatically correct and should not contain spelling errors. The Contractor will bear the cost of correcting grammatical or spelling errors and inaccurate report data and of other revisions that are required to bring the report(s) into compliance with this section.

Whenever possible, proposals must comply with the following guidelines:

- printed double-sided on at least 30% recycled-content and/or tree-free paper
- recyclable and/or easily removable covers or binders made from recycled materials (proposals with glued bindings that meet all other requirements are acceptable)
- avoid use of plastic covers or dividers
- avoid unnecessary attachments or documents or superfluous use of paper (e.g. separate title sheets or chapter dividers)

39. AUDIT

The Contractor must retain all books, records and other documents related to this Contract for at least five (5) years, unless otherwise specified in the Contract, or such period of time required by the County's funding partner(s), if any, whichever is greater, after the final payment and must allow the County or its authorized agents to examine the documents during this period and during the Contract Term. The Contractor must provide any requested documents to the County for examination within 15 days of the request, at the Contractor's expense. Should the County's examination reveal any overcharging by the Contractor, the Contractor must, within 30 days of County's request, reimburse the County for the overcharges and for the reasonable costs of the County's examination, including, but not limited to, the services of external audit firm and attorney's fees; or the County may deduct the overcharges and examination costs from any amount that the County owes to the Contractor. If the Contractor wishes to destroy or dispose of any records related to this Contract (including confidential records to which the County does not have ready access) within five (5) years after the final payment, unless otherwise specified in the Contract, or such period of time required by the County's funding partner(s), if any, whichever is greater, the Contractor must give the County at least 30 days' notice and must not dispose of the documents if the County objects.

The Purchasing Agent may require the Contractor to demonstrate that it has the necessary facilities, ability, and financial resources to comply with the Contract and furnish the service, material or goods specified herein in a satisfactory manner at any time during the term of this Contract.

40. ASSIGNMENT

The Contractor may not assign, transfer, convey or otherwise dispose of any award or any of its rights, obligations or interests under this Contract without the prior written consent of the County.

41. AMENDMENTS

This Contract may not be modified except by written amendment executed by persons duly authorized to bind the Contractor and the County.

42. ARLINGTON COUNTY PURCHASING RESOLUTION AND COUNTY POLICIES

Nothing in this Contract waives any provision of the Arlington County Purchasing Resolution, which is incorporated herein by reference, or any applicable County policy.

43. DISPUTE RESOLUTION

All disputes arising under this Agreement or concerning its interpretation, whether involving law or fact and including but not limited to claims for additional work, compensation or time, and all claims for alleged breach of contract must be submitted in writing to the Project Officer as soon as the basis for the claim arises. In accordance with the Arlington County Purchasing Resolution, claims denied by the Project Officer may be submitted to the County Manager in writing no later than 60 days after the final payment. The time limit for a final written decision by the County Manager is 30 days. Procedures concerning contractual claims, disputes, administrative appeals and protests are contained in the Arlington County Purchasing Resolution. The Contractor must continue to work as scheduled pending a decision of the Project Officer, County Manager, County Board or a court of law.

44. APPLICABLE LAW, FORUM, VENUE, AND JURISDICTION

This Contract is governed in all respects by the laws of the Commonwealth of Virginia; and the jurisdiction, forum and venue for any litigation concerning the Contract or the Work is in the Circuit Court for Arlington County, Virginia, and in no other court.

45. ARBITRATION

No claim arising under or related to this Contract may be subject to arbitration.

46. NONEXCLUSIVITY OF REMEDIES

All remedies available to the County under this Contract are cumulative, and no remedy will be exclusive of any other at law or in equity.

47. NO WAIVER

The failure to exercise a right provided for in this Contract will not be a subsequent waiver of the same right or of any other right.

48. SEVERABILITY

The sections, paragraphs, clauses, sentences, and phrases of this Contract are severable; and if any section, paragraph, clause, sentence or phrase of this Contract is declared invalid by a court of competent jurisdiction, the rest of the Contract will remain in effect.

49. ATTORNEY'S FEES

In the event that the County prevails in any legal action or proceeding brought by the County to enforce any provision of this Contract, the Contractor will pay the County's reasonable attorney's fees and expenses.

50. SURVIVAL OF TERMS

In addition to any statement that a specific term or paragraph survives the expiration or termination of this Contract, the following sections also survive: INDEMNIFICATION; INTELLECTUAL PROPERTY INDEMNIFICATION; RELATION TO COUNTY; OWNERSHIP AND RETURN OF RECORDS; AUDIT; COPYRIGHT; DISPUTE RESOLUTION; APPLICABLE LAW AND JURISDICTION; ATTORNEY'S FEES, AND CONFIDENTIAL INFORMATION.

51. HEADINGS

The section headings in this Contract are inserted only for convenience and do not affect the substance of the Contract or limit the sections' scope.

52. AMBIGUITIES

The parties and their counsel have participated fully in the drafting of this Agreement; and any rule that ambiguities are to be resolved against the drafting party does not apply. The language in this Agreement is to be interpreted as to its plain meaning and not strictly for or against any party.

53. NOTICES

Unless otherwise provided in writing, all legal notices and other formal communications required by this Contract are deemed to have been given when either (a) delivered in person; (b) delivered by an agent, such as a delivery service; or (c) deposited in the United States mail, postage prepaid, certified or registered and addressed as follows:

TO THE CONTRACTOR:

TO THE COUNTY:

_____, Project Officer

AND

Dr. Sharon T. Lewis, LL.M, MPS, VCO, CPPB
Purchasing Agent
Arlington County, Virginia
2100 Clarendon Boulevard, Suite 500
Arlington, Virginia 22201

Phone: (703) 228-3294
Email: slewis1@arlingtonva.us

TO COUNTY MANAGER’S OFFICE (FOR PROJECT CLAIMS):

Mark Schwartz, County Manager
Arlington County, Virginia
2100 Clarendon Boulevard, Suite 318
Arlington, Virginia 22201

54. NON-DISCRIMINATION NOTICE

Arlington County does not discriminate against faith-based organizations.

55. INSURANCE, PAYMENT AND PERFORMANCE BONDS

The Contractor shall maintain the required insurance coverage and payment and performance bonds as set forth in the Invitation to Bid through completion of the Contract, including all warranty and guarantee periods.

56. MATERIAL CHANGES

The Contractor shall notify Purchasing Agent within seven days of any material changes in its operation that relate to any matter attested regarding certifications on its bid form.

57. CONTRACTOR PERFORMANCE

Arlington County will perform written evaluations of the Contractor’s performance at various intervals throughout the term of this Contract. The evaluations will address, at a minimum, the Contractor’s work/performance, quality, cost controls, schedule, timeliness and sub-contractor management. The Project Officer shall be responsible for completing the evaluations and providing a copy to the Contractor and County Procurement Officer.

58. COUNTERPARTS

This Agreement may be executed in one or more counterparts and all of such counterparts shall together constitute one and the same instrument. Original signatures transmitted and received via facsimile or other electronic transmission (e.g., PDF or similar format) are true and valid signatures for all purposes hereunder and shall be effective as delivery of a manually executed original counterpart.

WITNESS these signatures:

THE COUNTY BOARD OF ARLINGTON
COUNTY, VIRGINIA

CONTRACTOR

AUTHORIZED
SIGNATURE: _____

AUTHORIZED
SIGNATURE: _____

NAME: _____

NAME: _____

TITLE: _____

TITLE: _____

DATE: _____

DATE: _____

III. ARLINGTON COUNTY CONSTRUCTION GENERAL CONDITIONS

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A. INTRODUCTION TO TERMS

- 1) The term "Agreement" means the completed and signed Form of Contract Agreement.
- 2) The term "Award Date" means the date of execution of the Agreement by the Purchasing Agent.
- 3) The term "Business Day" shall refer to any day that the County is open for general business.
- 4) The term "Calendar Day" means any day of twenty-four hours measured from midnight to the next midnight. Included are weekends and holidays. When the term "Day" is used it shall be assumed to refer to a Calendar Day unless otherwise specified.
- 5) The term "Change Order" means a written order to the Contractor, signed by the Project Officer and the Contractor, which authorizes a change in the Work, and/or adjustment to the Contract Amount and/or an adjustment to the Time for Completion. A Change Order once signed by all the parties is incorporated into and becomes part of the Contract.
- 6) The term "Commencement Date" means the date on which the Time for Completion will commence for the Contractor to begin to perform his obligations under the Contract Documents as provided in the Notice to Proceed.
- 7) The term "Construction Change Directive" means a written order issued by the County directing a change in the Work prior to agreement on adjustment, if any, in the Contract Amount or Contract Time, or both.
- 8) The term "Contract Documents" means the Agreement and all the documents and Exhibits and/or Attachments identified therein which shall include the Drawings and the Specifications, and all modifications including amendments and subsequent Change Orders thereto properly incorporated in the Contract.
- 9) The terms "County" and "Contractor" shall mean the respective parties to the Contract. They shall be treated throughout the Contract Documents as though each were of the singular number and masculine gender. Only one Contractor is recognized as a party to this Contract.
- 10) The term "Critical Path Method or CPM" means a step-by-step project management technique for process planning that defines critical and non-critical tasks with the goal of preventing time-frame problems and process bottlenecks. An activity on the critical path cannot be started until its predecessor activity has been completed. is delayed then the entire project is delayed.
- 11) The term "Delay" means an event or condition that results in a work activity starting or being completed later than originally planned.

- 12) The term "Drawings" means all drawings pertaining to the Contract, including the Contract Drawings and Construction Notes which show and describe the locations, character, dimensions, and details of the Work to be performed under the contract.
- 13) The term "Field Order" is a written order to the Contractor, authorized by the Project Officer, which acknowledges a change in the Work that does not adjust the Contract Amount and does not adjust the Time for Completion.
- 14) The term "Final Acceptance" shall mean the date on which the County issues the final payment for the Work.
- 15) The term "Final Completion" shall mean the condition when the County agrees that all the Work has been fully completed in accordance with the Contract Documents and is acceptable. The date of the Final Completion of the Work under the Contract is the date on which Final Completion is accomplished.
- 16) The term "Float" shall represent the amount of time that a task in a project network or sequence can be delayed without causing a delay to: subsequent tasks ("free Float") or project completion date ("total Float"). Float shall belong to the County and shall be used for the successful completion of the Project within the Time for Completion.
- 17) The term "Limits of Disturbance (LOD)" shall represent the area within which land disturbing activities take place. Land disturbing activities include all actions that expose bare soil during construction.
- 18) The term "Limits of Work (LOW)" shall represent the area within which construction activities take place, including but not limited to the Limits of Disturbance area.
- 19) The term "Notice to Proceed" shall mean a written notice issued by the County to the Contractor stating the Commencement Date. The Notice to Proceed will specify the Time for Completion of the Contract.
- 20) The term "Project" means the entire proposed construction to be executed as stipulated in the Contract Documents
- 21) The term "Project Officer" means the County Project Officer assigned by the Director of the County Department responsible for the project, or the Director's designee. When a designee to act on behalf of the Project Officer is used by the County, the name of the designee and the duties and authority of such designee will be identified in the Contract Documents or in a written notice to the Contractor from the Project Officer responsible for the project. The designee may be a professional architect or engineer or other person employed by the County to perform construction services administration, design services, or project oversight.

- 22) The term "Punch List" means unfinished items of the construction of the Project, which unfinished items of construction are minor or insubstantial details of construction, mechanical adjustment or decoration remaining to be performed, the non-completion of which would not materially affect use of the Project, and which are capable of being completed within the time specified for Final Completion after Substantial Completion has been achieved.
- 23) The term "Request for Information" (RFI) means a request originated by the Contractor requesting clarification or additional information from the Project Officer and/or Architect/Engineer concerning information in the construction documents where the Contractor believes there is insufficient information or a conflict in the documents. RFI's shall be submitted by the Contractor sufficiently in advance of the Work to provide time for assessment and response without delay of the Work. Responses to RFI's shall not be construed as authorization for a Change Order.
- 24) The term "Schedule of Values" means a listing of the Contractor's total contract value by Construction Specifications Institute (CSI) divisions, including Division 1, Contractor's General Conditions.
- 25) The term "Site" refers to that portion of the property on which the Work is to be performed or which has otherwise been set aside for use by the Contractor.
- 26) The terms "Special Conditions" mean the written statements modifying or supplementing the Technical Specifications or General Conditions for requirements or conditions peculiar to the Contract.
- 27) The term "Specifications" means and shall include the Technical Specifications, the Special Conditions and all written agreements and instructions pertaining to the performance of the Work.
- 28) When used, the term "Stipulated Price Item" means and includes an item of Work, unanticipated or of unknown quantity at the time of issuance of the solicitation for a Bid and determined to be executed, based on the actual field conditions during the progress of Work under the Contract. The Unit Price for the "Stipulated Price Item", as identified in the "Stipulated Price Items" section of the Bid Form, is predetermined by the County as the current reasonably workable rate for the Item inclusive of all necessary labor, equipment, materials, overheads (provision and installation), and the contractor's profit.
- 29) The term "Subcontractor", shall include only those having a direct contract with the Contractor, and it shall include those who furnish material worked to a special design according to the plans and specifications for this Work but shall not include those who merely furnish material not so worked.

- 30) The term "Substantial Completion" shall mean the condition when the County agrees that the Work, or a specific portion thereof, is sufficiently complete, in accordance with the Contract Documents, so that it can be utilized by the County for the purposes for which it was intended. The date of Substantial Completion of the Work under the Contract is the milestone date on which Substantial Completion condition is accomplished.
- 31) The term "Technical Specifications" means that part of the Contract Documents that describe the quality of materials, method of installation, standard of workmanship, and the administrative and procedural requirements for the performance of the Work under the contract.
- 32) The term "Time for Completion" shall mean the time period set forth in the Agreement.
- 33) The term "Work" shall mean the services performed under this Contract including, but not limited to, furnishing labor, and furnishing and installing materials and equipment required to complete the Project specified in the Contract Documents.

B. DRAWINGS, SPECIFICATIONS, RELATED DATA AND RECORDS KEEPING

1. INTENT OF THE DRAWINGS AND SPECIFICATIONS

- a. It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, water haulage, light power, transportation, superintendence, temporary construction of all kinds, and other services and facilities of every nature whatsoever that are necessary to execute and deliver the Work, complete and usable within the scope of the Contract with all parts in working order, and all connections properly made.
- b. The general character and scope of the Work are illustrated by the Drawings and listed in the Specifications. Any additional drawings and or other instructions deemed necessary by the Project Officer or designee will be furnished to the Contractor when required for the Work and shall be incorporated into the Contract Documents.
- c. Where "as shown", "as indicated", "as detailed", or words of similar import are used, it shall be understood that direction, requirements, permission, or review of Project Officer or designee is intended unless stated otherwise. As used herein, "provide" shall be understood to mean "provide complete in place", that is, "furnish and install."
- d. Unless otherwise specifically noted, the word "similar" where it occurs in the Drawings, shall be interpreted in its general sense and not as meaning identical, and all details shall be worked out in relation to their locations and their connection with other parts of the Work.
- e. Materials or work described in words which, so applied, have a well-known technical, construction industry, or trade meaning, shall be held to refer to the recognized technical or trade meaning.
- f. The Contract Documents are complementary, and what is called for by any one document shall be as binding as if called for by all documents. In case of conflicting variance between the Contract Documents, the Order of Precedence stated in the Agreement shall govern. Figured dimensions on the plans shall be used; drawings shall not be scaled.
- g. Unless otherwise specifically noted, construction tolerances shall be to the numerical precision presented in the Contract Drawings.

2. DISCREPANCIES AND ERRORS

If the Contractor discovers any discrepancies between the Drawings and Specifications and the site conditions or any errors or omissions in the Drawings or Specifications, the Contractor shall at once, but in no event later than three calendar days after discovery of

the discrepancy or error, report them in writing to the Project Officer or designee. If the Contractor proceeds with any work that may be affected by such discrepancies, errors, or omissions, after their discovery, but before a clarification is provided, such work shall be at the Contractor's risk and expense. Issues affecting critical path activities shall be made known to the Project Officer or designee within one business day after discovery.

3. DIFFERING SITE CONDITIONS

The Contractor shall immediately, and before the conditions are further disturbed, give notice to the Project Officer of subsurface or latent physical conditions at the site which differ materially from those indicated in this Contract, or previously unknown physical conditions discovered at the site of an unusual nature and which differ materially from those ordinarily expected to be encountered at the site. Such notice shall be followed by a written notice provided within 48 hours of discovery.

The Project Officer will investigate the site conditions promptly after receiving the notice. If the conditions do materially differ to the extent that an increase or decrease would result in the Contractor's cost of the Work, or the time required for performing any part of the Work under the contract, an equitable adjustment may be made under this clause and the Contract modified in writing accordingly.

No request by the Contractor for an adjustment to the Contract under this clause shall be allowed, unless the Contractor has given the written notice required. If the Contractor proceeds with any work that may be affected by such differing site conditions before giving notice to the Project Officer as set forth herein, such work shall be at the Contractor's sole risk and expense.

No request by the Contractor for an adjustment to the contract for differing site conditions shall be allowed if made after Final Payment under the Contract.

4. COPIES FURNISHED

Except as provided for otherwise, copies of the Drawings and Specifications reasonably necessary for the execution of the Work will be furnished to the Contractor. One electronic copy of the Contract Drawings and Specifications will be provided by the Project Officer or designee to the Contractor.

5. USE OF CADD FILES

The Contractor may request Electronic CADD files related to the Work or the Project. The CADD files will be provided by the County only if the Contractor completes the Arlington County Electronic CADD Drawing Release Form, which form is then incorporated by reference into this Contract. Use of CADD files is at the Contractor's own risk and in no way alleviates Contractor's responsibility for the Work to conform to the Plans and Specifications.

6. DOCUMENTS ON THE JOBSITE

The Contractor shall keep on the site of the Project a copy of the Drawings and Specifications updated to include all authorized revisions and RFI responses, and

shall at all times give the County and its authorized representatives access thereto. The Contractor shall mark up the Drawings on a daily basis in red. The As-Built Drawings shall be submitted to the County at Substantial Completion as the Final As-Built Drawings.

7. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

All Drawings and Specifications and copies thereof furnished by the County are the property of the County and shall not be used on other projects. All copies of the Drawings and Specifications except the signed Contract sets shall be returned to the Project Officer or designee at Final Completion.

8. SUBMITTALS

- a. The term "submittals", as used herein, shall include fabrications, erection and setting drawings, manufacturers' standard drawings, schedules, descriptive literature, catalogs, brochures, performance and test data, wiring and control diagrams, and other descriptive data pertaining to the materials and equipment as required to demonstrate compliance with the Contract requirements.
- b. Unless other specified in the Specifications the Contractor shall submit for the review of the Project Officer or designee a listing of all submittals required by the Specifications or requested by the Project Officer or designee within fifteen (15) calendar days after receipt of the Notice to Proceed. This listing shall include due dates for each required submittal, coordinated with the project schedule such that adequate time is allotted for review and potential resubmittals, fabrication and delivery without causing delay. The Contractor bears all risk for delay associated with submittals not received in a timely manner.
- c. Submittals shall be submitted in such number of copies as established in the Specifications. Each submission shall be accompanied by a letter of transmittal, listing the contents of the submission and identifying each item by reference to specification section or drawing. All submittals shall be clearly labeled with the name of the project and such information as may be necessary to enable their complete review by the Project Officer or designee. Catalog plates and other similar material that cannot be so labeled conveniently shall be bound in suitable covers bearing the identifying data.
- d. Submittals shall be accompanied by all required certifications and other such supporting material, and shall be submitted in sequence or groups that all related items can be checked together. When submittals cannot be checked because a submission is not complete, or because submittals on related items have not been received by the Project Officer or designee, then such submittals will be returned without

action or will be held, not checked, until the missing material is received. Incomplete or defective submittals shall not be considered to have been submitted. Failure to deliver submittals within the specified time will not be grounds for additional time or compensation.

- e. Submittals shall have been reviewed by the Contractor and coordinated with all other related or affected work before they are submitted for review and acceptance and shall bear the Contractor's certification that the Contractor has checked and approved them as complying with all relevant information in the Contract Documents. Submittals submitted without such certification and coordination will be returned to the Contractor without action and will not be considered as a formal submission.
- f. If shop drawings show variations from the Drawings and Specifications because of standard shop practice or other reasons, the Contractor shall make specific mention of such variation in the Contractor's letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment; otherwise the Contractor will not be relieved of the responsibility for executing the work in accordance with the Drawings and Specifications even though shop drawings have been accepted.
- g. The Project Officer or designee shall review the shop drawings with reasonable promptness. Review and/or acceptance of shop drawings will be general for conformance with the design concept of the Project and compliance with the information given in the Contract Documents, and will not include quantities, detailed dimensions, nor adjustments of dimensions to actual field conditions. Acceptance shall not be construed as permitting any departure from Contract requirements, as authorization of any increase in price nor as relieving the Contractor of the responsibility for any error in details, dimensions or otherwise that may exist. Review is not intended to relieve the contractor of full responsibility for the accuracy and completeness of the plans and calculations, or for the complete compliance with the contract documents. Contractor is solely responsible for the means and methods of the construction, including temporary items proposed for use.

9. SAMPLES

The Contractor shall submit to the Project Officer or designee, all samples required by the Specifications or requested by the Project Officer or designee. Samples shall be submitted in single units only, unless the Contractor desires additional units for the Contractor's own use. Each sample shall bear a label indicating what the material represented, the name of the producer and the title of the Project. Acceptance of a sample shall be only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents, and only for the characteristics or use named in such acceptance. Such acceptance shall not be construed to change or modify any Contract requirements or the Contract Price. Materials and equipment

incorporated in the Work shall match the accepted samples. The Contractor shall be responsible for researching the availability of the specified product in the dimensions and colors specified at no additional cost to the County. Failure of the Contractor to identify specified products that are not commercially produced within the time required for submittal transmittal in order to meet the project schedule shall not be entitled to additional time or compensation.

10. TESTS

Any specified tests of materials and finished articles shall be made by bureaus, laboratories or agencies approved by the Project Officer or designee and the certified reports of such tests shall be submitted to the Project Officer or designee. All tests shall be in compliance with the Specifications. All costs in connection with the testing and test failures shall be borne by the Contractor. Failure of any material to pass the specified tests or any test performed by the Project Officer or designee, will be sufficient cause for refusal to consider, under this Contract, any further materials of the same brand or make of that material. Samples of various materials delivered on the site or in place may be taken by the Project Officer or designee for testing. Samples failing to meet the Contract requirements will automatically void previous acceptance of the items tested. The Contractor will not be compensated for additional time and/or cost incurred in finding an acceptable replacement or the removal and replacement of the defective item.

11. MATERIALS AND EQUIPMENT LIST

- a. Unless otherwise specified in the Specifications, within thirty (30) days of the Commencement Date the Contractor shall submit to the Project Officer or designee a complete list of materials and equipment proposed for use in connection with the Project. Partial lists submitted from time to time will not be considered unless specifically approved by the Project Officer or designee.
- b. After any material or piece of equipment has been approved through submittal process, no change in brand or make will be permitted unless satisfactory written evidence is presented to prove that the manufacturer cannot make scheduled delivery of the accepted material, or that material delivered has been rejected and the substitution of a suitable material is an urgent necessity, or that other conditions have become apparent which indicate that acceptance of such other material is in the best interest of the County. The Contractor is solely responsible for the cost and time required to obtain and install a suitable replacement.

12. STANDARDS, SUBSTITUTIONS

- a. Any material specified by reference to the number, symbol or title of a specific standard, such as a Commercial Standard, a Federal

Specification, a Trade Association Standard, or other similar standard, shall comply with the requirements in the latest revision of the standards or specification and any amendment or supplement, except as limited to type, class or grade, or as modified in such reference. The standard referred to, except as modified in the Specifications, shall have full force and effect as though printed in the Specifications.

- b. Reference in the Specifications or on the Drawings to any article, device, product, material, fixture, form or type of construction by name, make or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as eliminating from competition other products of equal or better quality by other approved manufacturers. Otherwise, applications for acceptance of substitutions for the specified items will be considered only upon request of the Contractor, not of individuals, trades or suppliers, and only for a specific purpose; no blanket acceptance will be granted. No acceptance of a substitution shall be valid unless it is in written form and signed by the Project Officer or designee.
- c. If any proposed substitution will affect a correlated function, adjacent construction or the work of other contractors, then the necessary changes and modifications to the affected work shall be considered as an essential part of the proposed substitution, to be accomplished by the Contractor without additional expense to the County or an extension of the contract time, if and when accepted. Detail drawings and other information necessary to show and explain the proposed modifications shall be submitted with the request for acceptance of the substitution.

13. SURVEYS AND CONTROLS

Unless otherwise specified, the Contractor shall establish all baselines for the location of the principal component parts of the Work, establish a suitable number of benchmarks adjacent to the Work, and develop all detail surveys necessary for construction by a professional land surveyor licensed in the Commonwealth of Virginia. The Contractor shall carefully preserve benchmarks, reference points and stakes, and in the case of destruction thereof by the Contractor or due to the Contractor's negligence or the negligence of any subcontractor or supplier, the Contractor shall be responsible for expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the loss or disturbance of such benchmarks, reference points and stakes. The Contractor shall within 30 days of NTP perform a full site survey to verify all control points shown on the drawings against existing conditions within the site limits. Any discrepancies found during this effort shall be made known immediately to the Project Officer. Failure to perform this survey and provide proof and acceptance of Project datum, control points, and existing benchmarks will not give rise to any extensions to contract time or amount. The cost of all necessary surveying services shall be considered incidental to the work and, unless otherwise specified, shall be included in the cost of the Work.

14. AS-BUILT DRAWINGS

As-Built Drawings shall be the responsibility of the Contractor. The Contractor shall maintain and mark up one set of prints of the applicable Contract Drawings to portray as-built construction. The prints shall be neatly and clearly marked in red to show all variations between the Work actually provided and that indicated on the Contract Drawings, and all utilities encountered in the Work. All drafting shall conform to good drafting practice and shall include such supplementary notes, legends and details as may be necessary for legibility and clear portrayal of the as-built construction. These drawings shall be marked promptly upon any approved change to the Work or discovery of any undocumented utility or obstruction and shall be submitted to the Project Officer or designee in sufficient time to be approved no later than thirty (30) calendar days after the Substantial Completion Date. The final As-Built Drawings approved by the Project Officer or designee shall be submitted in paper copy and .pdf format electronic files prior to Final Completion. Unless otherwise required under the Contract Documents, incorporation of red-lined changes into CADD format shall be the responsibility of the Architect and/or Engineer of Record, with the exception being any documents prepared by the Contractor in CADD, the record version of which shall also be provided to the County in CADD format by the Contractor. Final payments will be held until the complete set of red-line drawings are submitted to and approved by the Project Officer.

15. WEB BASED RECORDS DOCUMENTATION

Unless instructed otherwise, the Contractor shall use the web based construction management tool, e-Builder for, but not limited to, submittals, record keeping and document storage of all construction files including, invoices, pay applications, RFIs, approved shop drawings, change orders, construction progress meeting minutes, warranties, equipment specifications and brochures, record drawings, automated alerts and reminders for all functions, and Operation and Maintenance (O&M) Manuals.

C. COUNTY, COUNTY PROJECT OFFICER, AND CONTRACTOR RELATIONS

1. STATUS OF COUNTY PROJECT OFFICER OR DESIGNEE

The Project Officer or designee shall be the County's representative during the construction period. All Contractor instructions or requests shall be issued from or submitted through the Project Officer or designee. The Project Officer or designee shall have authority to suspend the Work whenever such suspension may be necessary in the responsible opinion of the Project Officer or designee to ensure the proper execution of the Contract. The Project Officer or designee shall also have authority to reject all work and materials that do not conform to the Contract and to decide questions that arise in the execution of the Work. The County Project Officer or designee will, within a reasonable time, make decisions on all matters relating to the execution and progress of the Work.

2. LIMITATION ON COUNTY'S RESPONSIBILITIES

The County shall not supervise, direct, or have control or authority over, nor be responsible for: The Contractor's means, methods, techniques, sequences or procedures of construction; the safety precautions and programs related to safety, or the Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

3. DISPUTES

- a. All disputes or claims arising under this Contract or its interpretation, whether involving law or fact or both, or extra work, and all claims for alleged breach of Contract shall be submitted in writing to the Project Officer or designee as set forth in these General Conditions. Such claims must set forth in detail the amount of the claim, and shall state the facts surrounding it in sufficient detail to identify it together with its character and scope.
- b. Claims denied by the Project Officer shall be processed in accordance with the procedures outlined in Sections 7-107, Contractual Disputes and 7-108, Legal Actions of the Arlington County Purchasing Resolution and the Dispute Resolution paragraph in the Agreement.
- c. The Contractor shall not cause a delay in the work pending a decision of the Project Officer or designee, County Manager, County Board, or court, except by prior written approval of the Project Officer or designee.

4. INSPECTION OF WORK

The Project Officer or designee and representatives of any public authority having jurisdiction shall, at all times, have access to the Work while in progress. The Contractor shall provide suitable facilities for such access and for proper observation of the Work and shall conduct all special tests required by the Specifications, the Project Officer or designee's instructions, and any laws, ordinances or the regulations of any public

authority applicable to the work. Nothing in this section shall abrogate or otherwise limits or relieves the Contractor's independent duty to inspect the Work.

5. INSPECTION OF MATERIALS

All articles, materials, and supplies purchased by the Contractor for the Work are subject to inspection upon delivery to the site and during manufacturing or fabrication. The County reserves the right to return for full credit, at the risk and expense of the Contractor, all or part of the articles, materials, or supplies furnished contrary to Specifications and instructions. Nothing in this section shall abrogate or otherwise limit or relieve the Contractor's independent duty to inspect materials.

6. EXAMINATION OF COMPLETED WORK

If the Project Officer or designee requests it, the Contractor, at any time before acceptance of the Work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the Specifications. Should the work thus exposed or examined prove acceptable, then the uncovering or removing, and the replacing of the covering or making good of the parts removed shall be paid for as extra work, but should the work so exposed or examined prove unacceptable, then the uncovering, removing and replacing shall be at the Contractor's expense.

7. RIGHT TO SUSPEND WORK

The County shall have the authority to suspend the Work, in whole or in part, for such periods and such reasons as the County may deem necessary or desirable. Any such suspension shall be in writing to the Contractor and the Contractor shall obey such order immediately and not resume the Work until so ordered in writing by the County. No such suspension of the Work shall be the basis for a claim by the Contractor for any increase in the Contract Amount provided that the suspension is for a reasonable time under the circumstances then existing. If the suspension of Work is caused by the County's belief that non-conforming work is being installed, and subsequent investigation proves that the Work was non-conforming, the Contractor shall not be awarded additional time or costs.

8. RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a 10-day period after receipt of written notice from the County or such shorter time as may be reasonable under the circumstances, to commence and continue correction of such default or neglect with diligence and promptness, the County may, without prejudice to other remedies the County may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including the County's expenses, and any additional architect or engineering costs necessary by Contractor's default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the County upon demand.

9. CONTRACTOR MANAGEMENT PERSONNEL

The Contractor shall keep a competent superintendent and any necessary assistants on the Site at all times during progress of the Work and such persons shall be satisfactory to the Project Officer or designee. The superintendent or project manager shall not be changed except with the Project Officer or designee's consent. If the Project Officer determines that the superintendent or project manager is no longer satisfactory, then the superintendent or project manager must be replaced within 15 days of the Project Officer's written notice with a replacement superintendent or project manager with equal or superior qualifications and subject to Project Officer approval.

The superintendent and project manager shall represent the Contractor and all directions given to such persons shall be as binding as if given to the Contractor. The Contractor shall at all times enforce strict discipline and good order among the workers performing under this Contract, and shall not employ on the Work any person not reasonably proficient in the Work assigned. Persons permitted to perform Work under Contractor, or any subcontractor, or sub-subcontractor, shall meet all employment eligibility, safety training, security or drug/alcohol testing requirements required by law or by the County. Any person not complying with all such requirements shall be immediately removed from the Site.

The Contractor shall have a qualified and experienced person who can clearly communicate technical matters regarding the subject project. This person shall be available via phone to respond to emergency situations on the project 24 hours a day.

10. DRUG-FREE POLICY

The Contractor is responsible for ensuring that the Site remains a drug-free site. Contractor will require that employees undergo random drug/alcohol screening on a quarterly interval. Any employee who fails the test must be removed from the Site immediately. Random screening shall be performed by a third party licensed to do so in the Commonwealth of Virginia. The Contractor shall provide its random testing policy and schedule to the Project Officer within 30 days of Notice to Proceed. The Contractor will include this provision in every subcontract relating to this Contract. Any infraction by an employee of the Drug-Free policy shall be reported to the Project Officer within 24 hours.

11. LANDS BY COUNTY

The County shall provide access to the lands shown on the Drawings upon which the Work under the Contract is to be performed and to be used for rights of way and for access. In case all the lands, rights-of-way or easements have not been obtained as herein contemplated before construction begins, then the Contractor shall begin its work on such lands and rights-of-way that the County has acquired access to. No additional time or compensation shall be awarded to the Contractor for modifying work location and sequence provided other locations are available for work.

Contractor shall verify the acquisition of all off-site easements and Rights-of-Way prior to the start of off-site construction. Restore all off-site easements to the conditions existing prior to the start of work.

The Contractor shall confine all activities at the site associated with construction activities, to include storage of equipment and or materials, access to the work, formwork, etc. to within the designated Limits of Disturbance (LOD).

12. LANDS BY CONTRACTOR

If the Contractor requires additional land or lands for temporary construction facilities and for storage of materials and equipment other than the areas available on the site or right-of-way, or as otherwise furnished by the County, then the Contractor shall provide such other lands and access thereto entirely at the Contractor's own expense and without liability to the County. The Contractor shall not enter upon private property for any purpose without prior written permission of all of the persons and entities who own the property. The Contractor shall provide copies of all agreements to the County and shall include language in the agreement indemnifying and holding the County harmless for any damages, repairs, restoration or fees associated with the use of the property. Upon termination of the agreement, the Contractor shall provide to the County a fully executed release from the property owner.

13. PROTECTION OF WORK AND PROPERTY

- a. The Contractor shall continuously maintain and protect all of its Work from damage and shall protect the County's property from damage or loss arising in connection with this Contract until Substantial Completion. After Substantial Completion, the maintenance or protection of any incomplete or remedial Work identified on the punch list that requires maintenance or protection in order to allow for the final completion and acceptance of such Work shall be the responsibility of the Contractor until Final Completion. The Contractor shall make good any such damage or loss, except such as may be caused by agents or employees of the County. Failure to adequately protect the Work shall not be grounds for additional compensation for any maintenance and/or repairs to such Work.
- b. The Contractor shall not place upon the Work, or any part thereof, any loads which are not consistent with the design strength of that portion of the Work.
- c. The Contractor shall be responsible for the preservation of all public and private property, trees, monuments, etc., along and adjacent to the street and/or right-of-way, and shall use every precaution to prevent damage to pipes, conduits and other underground structures, curbs, pavements, etc., except those to be removed or abandoned in place and shall protect carefully from disturbance or damage all monuments and property marks until an authorized agent has witnessed or otherwise

referenced their location and shall not remove them until directed. Any damage which occurs by reason of the operations under this Contract, whether shown or not on the approved construction plans, shall be completely repaired or replaced to the County's satisfaction by the Contractor at the Contractor's expense. The Contractor shall be responsible for all damages caused by their construction activities.

- d. Prior to commencing construction activity at the Site, the Contractor shall videotape the Site and an additional fifty (50) feet outside the perimeter of the Site. Contractor shall submit a copy of high resolution digital recording on a DVD or flash drive to the County. The recording shall be stable, continuous, and contain all items within the limits of Work. Submission of the DVD to the County shall be a condition precedent to any obligation of the County to consider an Application for Payment. The DVD shall be the property of the County, and the County shall be permitted to reproduce such DVD's and use the same for any purpose without limitation or claim of ownership or compensation from any party. Contractor shall incorporate the cost of the preconstruction survey in the bid amount or the unit prices of the bid items, as applicable. No additional payment will be made by the County.
- e. The Contractor shall shore, brace, underpin, secure, and protect, as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site that may be affected in any way by excavations or other operations connected with the work required under this Contract. The Contractor shall be responsible for giving any and all required notices to owners or occupants of any adjoining or adjacent property or other relevant parties before commencement of any work. Contractor shall provide all engineering (signed and sealed) for items listed in this section per the Specifications. The Contractor shall indemnify and hold the County harmless from any damages on account of settlements or loss of all damages for which the County may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.
- f. In an emergency affecting the safety of life or of the Work, or of adjoining property, the Contractor, without special instruction or authorization from the Project Officer or designee, or the County, is hereby permitted to act, at the Contractor's discretion, to prevent such threatened loss or injury, and the Contractor shall so act without appeal, if so instructed or authorized.
- g. The Contractor shall contact "Miss Utility" at 811 for marking the locations of existing underground utilities (i.e. Water, sewer, gas, telephone, electric, and cable tv) at least 72 hours prior to any excavation or construction. The Contractor is required to identify and protect all other utility lines found in the work site area belonging to other owners that are not members of "Miss Utility". Private water

and/or sewer laterals will not be marked by "Miss Utility" or the County. The Contractor shall locate and protect these services during construction.

14. SEPARATE CONTRACTS

- a. The County reserves the right to let other contracts in connection with this Project. The Contractor shall afford other contractors reasonable access to the Project including storage of their materials and the execution of their work, and shall properly connect and coordinate its work with the work of other such contractors.
- b. If any part of the Contractor's work depends, for proper execution or results, upon the work of any other contractor, the Contractor shall inspect and promptly report to the Project Officer or designee any defects in such work that renders it unsuitable for such proper execution and results. The Contractor's failure to so inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of the Contractor's work, except as to defects which may develop in other contractor's work after its execution.
- c. If the Contractor or any of the Contractor's subcontractors or employees cause loss or damage to any separate contractor on the Work, the Contractor agrees to settle or make every effort to settle or compromise with such separate contractor. If such separate contractor sues the County on account of any loss so sustained, the County shall notify the Contractor, who shall indemnify and save the County harmless against any expense, claim or judgment arising therefrom, including reasonable attorney's fees.
- d. In case of a dispute arising between two or more separate contractors engaged on adjacent work as to the respective rights of each under their respective contracts, the Project Officer shall determine the rights of the parties.

15. SUBCONTRACTS

- a. Unless otherwise specified, the Contractor shall, within fifteen (15) calendar days after the execution of the Contract by the County, provide to the Project Officer or designee, in writing, the names of all subcontractors proposed for the principal parts of the Work and for such others as requested by the Project Officer or designee, and shall not employ any subcontractors that the Project Officer or designee may object to as incompetent or unfit after an appropriate determination of the subcontractor's ability. No proposed subcontractor will be disapproved except for cause.

- b. The Contractor shall make no substitutions for any subcontractor previously selected/approved unless first submitted to the County for approval.
- c. The Contractor shall be as fully responsible to the County for the acts and omissions of the Contractor's subcontractors as the Contractor is for the acts and omissions of persons directly employed by the Contractor.
- d. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to the Contractor by the terms of the General Conditions of the Contract, Special Provisions and other Contract Documents comprising the Contract insofar as such documents are applicable to the work of subcontractors.
- e. Nothing contained in the Contract shall be construed to create any contractual relation between any subcontractor and the County, nor shall it establish any obligation on the part of the County to pay to, or see to the payment of any sums to any subcontractor. The County will not discuss, negotiate or otherwise engage in any contractual disputes with any subcontractor.
- f. If requested by the County, the Contractor shall replace any subcontractor at no cost to the County within 30 days of the Project Officers written notice or as otherwise specified. No additional time or compensation will be provided in the event a subcontractor is removed due to non-compliance of the requirements outlined within the Contract.

16. ELIMINATED ITEMS

If any item(s) in the Contract are determined to be unnecessary for the proper completion of the Work contracted, the Project Officer or designee may, upon written notice to the Contractor, eliminate such item(s) from the Contract. Payment will not be made for such item(s) so eliminated; except that the Contractor will be compensated for the actual cost of any work performed and the net cost of materials purchased before the item(s) was eliminated from the Contract, including freight and tax costs, as evidenced by invoice. No additional compensation will be made for overhead or anticipated profit. The County will receive the full unit price credit for work eliminated prior to production or installation.

17. COUNTY ORDINANCES

The Contractor shall comply with all applicable County ordinances, including but not limited to: the *Noise Control*, *Erosion & Sediment Control*, *Storm Water Management*, and *Chesapeake Bay Preservation ordinances (Chapters 15, 57, 60, and 61 of the County Code)*.

D. MATERIALS AND WORKMANSHIP

1. MATERIALS FURNISHED BY THE CONTRACTOR

Unless otherwise specified, all materials and equipment incorporated in the Work under the Contract shall be new. All work shall be accomplished by persons qualified in the respective trades.

2. IBC AND VUSBC REQUIREMENTS

The Contractor certifies that all material supplied or used under this Contract meets all current International Building Code (IBC) requirements and the requirements of the Virginia Uniform Statewide Building Code (VUSBC); and further certifies that, if the material delivered or used in the performance of the work is found to be deficient in any of the applicable state or national code requirements, all costs necessary to bring the material into compliance with the requirements shall be borne by the Contractor. The County shall be entitled to offset such costs against any sums owed by the County to the Contractor under this Contract.

3. ADA COMPLIANCE

The Contractor shall ensure that all Work performed under this Agreement is completed in accordance with the Contract Documents, including Work intended to meet the accessibility requirements of the Americans with Disabilities Act (ADA).

The Contractor is not required to ascertain whether the Contract Documents meet ADA design standards and guidelines. However, should the Contractor discover any non-conformity with such requirements, the Contractor shall immediately inform the County and its design consultant, if applicable, to allow for corrective action.

The Contractor shall defend and hold the County harmless from any expense or liability arising from the Contractor's non-compliance in meeting its obligations herein. The Contractor shall be responsible for all costs related to permitting delays, redesign, corrective Work, and litigation relating to such non-compliance.

4. MANUFACTURER'S DIRECTIONS

Manufactured articles, material, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's directions as accepted by the Project Officer or designee, unless herein specified to the contrary.

5. WARRANTY

All material provided to the County shall be fully guaranteed by the Contractor against manufacturing defects within the period of the manufacturer's standard warranty. Such defects shall be corrected by the Contractor at no expense to the County. The Contractor shall provide all manufacturers' warranties to the Project Officer by the date of Final Completion.

All Work is guaranteed by the Contractor against defects resulting from the use of inferior or faulty materials. The Contractor warrants that the Work will conform to the

requirements of the Contract Documents and will be free from defects or inferior or faulty workmanship, or work not in accordance with the Contract Documents for one (1) year from the date of Substantial Completion or as set forth in the Specifications of the work by the County in addition to and irrespective of any manufacturer's or supplier's warranty.

No date other than Substantial Completion or as set forth in the Specifications shall govern the effective date of the Warranty, unless that date is agreed upon by the County and the Contractor in advance and in a signed writing.

The Contractor shall promptly correct any defective work or materials after receipt of a written notice from the County to do so. If the Contractor fails to proceed promptly or use its best efforts and due diligence to complete such compliance as quickly as possible, the County may have the materials or work corrected and the Contractor and its Sureties shall be liable for all expenses and costs incurred by the County.

Nothing contained in this section shall be construed to establish a period of limitations with respect to other obligations the Contractor may have under this Contract.

6. INSPECTION AND ACCEPTANCE OF MATERIALS

Inspection and acceptance by the County will be at the work site in Arlington County, Virginia and within ten (10) calendar days of delivery unless otherwise provided for in the Contract Documents. The County will not inspect, accept, or pay for any materials stored or delivered off-site by the Contractor, except as provided by the Payment for Stored Materials clause of these General Conditions and other requirements of the Contract Documents. The County's right of inspection shall not be deemed to relieve the Contractor of its obligation to ensure that all articles, materials and supplies are consistent with Specifications and instructions and are fit for their intended use. The County reserves the right to conduct any tests or inspections it may deem appropriate before acceptance. The Contractor shall be responsible for maintaining all materials and supplies in the condition in which they were accepted until they are used in the work.

The Contractor is to coordinate its work and request inspections in such a manner as to minimize the cost to the County without impacting the overall schedule of the Project within reason. All costs associated with re-inspection shall be borne by the Contractor.

7. CONTRACTOR'S TITLE TO MATERIALS

No materials or supplies for the work shall be purchased by the Contractor or any subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that it has good title to, and that it will require all subcontractors to warrant that they have good title to, all materials and supplies for which the Contractor invoices for payment. The County may request proof of title or payment prior to acceptance of the Contractor's invoice.

8. TITLE TO MATERIALS AND WORK COVERED BY PARTIAL PAYMENTS

All material and work covered by partial payments made by the County will become the property solely of the County at the time the partial payment is made. However, risk of

loss or damage to all items shall be the responsibility of the Contractor until Final Acceptance by the County. This provision will not be construed as relieving the Contractor from having sole responsibility for all materials and work upon which payments have been made and for the restoration of any damaged work or replacement or repair at the County's option of any damaged materials. This provision will not be construed as a waiver of the County's right to require fulfillment of all terms of the Agreement, including full rights under the terms of the Warranty provisions of the Agreement, nor shall payment indicate acceptance of the materials or work.

9. CONNECTING WORK

The Contractor shall do all cutting, patching, or digging of the Contractor's work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors as shown upon or reasonably implied by the Drawings and Specifications for the completed Project and shall make good after them as the Project Officer or designee may direct. This work will be performed in a workmanlike manner utilizing proper care and equipment to achieve proper line and grade. The Contractor shall not endanger any work by cutting, patching, or digging, or otherwise, and shall not cut or alter the work of any other contract except with the prior written consent of the Project Officer or designee.

10. REJECTED WORK AND MATERIALS

- a. Any of the Work or materials, goods, or equipment which do not conform to the requirements of the Contract Documents, or are not equal to samples accepted by the Project Officer or designee, or are in any way unsatisfactory or unsuited to the purpose for which they are intended, shall be rejected and replaced immediately so as not to cause delay to the Project or work by others. Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, shall be removed and the work shall be re-executed by the Contractor at the Contractor's expense. The fact that the Project Officer or designee may have previously overlooked such defective work shall not constitute acceptance of any part of it.
- b. If the Contractor fails to proceed at once with the replacement of rejected material and/or the correction of defective workmanship when notified to do so by the Project Officer or designee, the County may, by contract or otherwise, replace such material or correct such workmanship and charge the cost to the Contractor. This clause applies during the Contract and during any warranty or guarantee period.
- c. The Contractor shall be responsible for managing, addressing within a timely manner, and formally closing out all notices of non-compliance issued by the inspector of record, Arlington County Inspection Services, or the Design Team. The Contractor shall be solely liable for any costs or time associated with the corrective action to address any notices of non-compliance. The Contractor must work directly with the entity issuing the notice of non-compliance.

- d. If the Project Officer or designee deems it expedient not to require correction of work which has been damaged or not done in accordance with the Contract, an appropriate adjustment to the Contract Price may be made.

11. PROHIBITION AGAINST ASBESTOS CONTAINING MATERIALS

No goods or equipment provided to the County or construction material installed shall contain asbestos. If a Contractor or supplier provides or installs any goods, equipment, supplies, or materials that contain asbestos in violation of this prohibition, the Contractor shall be responsible for all costs related to the immediate removal and legal disposal of the goods, equipment or materials containing asbestos and replacement with County-approved alternate. The Contractor shall be responsible for all goods, equipment, supplies or materials installed or provided by any of its employees, agents or subcontractors in connection with the work under this contract. The Contractor shall also reimburse to the County all costs of such goods, equipment, supplies or materials installed if not corrected by the Contractor.

E. LEGAL RESPONSIBILITY AND PUBLIC SAFETY

1. SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK

The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and locations of the work of the Contract, and that it has investigated and satisfied itself as to the general and local conditions and factors which can affect the Work or its cost, including but not limited to:

- a. conditions bearing upon transportation, disposal, handling, and storage of materials;
- b. the availability of labor, water, electric power, and roads;
- c. uncertainties of weather, river stages, tides, or similar physical conditions at the site;
- d. the information and conditions of the ground; and
- e. the character of equipment and facilities needed before and during work performance.

The Contractor, by executing the Contract, represents that it has reviewed and understands the Contract Documents and has notified the County of and obtained clarification of any discrepancies which have become apparent during the bidding period. During the Contract, the Contractor must promptly notify the County in writing of any apparent errors, inconsistencies, omissions, ambiguities, construction impracticalities or code violations discovered as a result of the Contractor's review of the Contract Documents including any differences between actual and indicated dimensions, locations and descriptions, and must give the County timely notice in writing of same and of any corrections, clarifications, additional Drawings or Specifications, or other information required to define the Work in greater detail or to permit the proper progress of the Work. The Contractor must provide similar notice with respect to any variance between its review of the Site and physical data and Site conditions observed. If the Contractor performs any Work involving an apparent error, inconsistency, ambiguity, construction impracticality, omission or code violation in the

Contract Documents of which the Contractor is aware, or which could reasonably have been discovered, without prompt written notice to the County and request for correction, clarification or additional information, as appropriate, the Contractor does so at its own risk and expense and all related claims are specifically waived.

The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the County, as well as from the Drawings and Specifications made a part of this Contract. Unless otherwise specified, all existing structures, materials and obstructions that interfere with the new construction shall be removed and disposed of as part of this Contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the Work without additional expense to the County.

The locations of existing utilities, including underground utilities, which may affect the Work, are indicated on the Drawings or in the Specifications insofar as their existence and location were known at the time of preparation of the drawings. However, nothing in these Drawings or Specifications shall be construed as a guarantee that such utilities are in the location indicated or that they actually exist, or that other utilities are not within the area of the operations. The Contractor shall make all necessary investigations to determine the existence and locations of such utilities. Should uncharted or incorrectly charted utilities be encountered during performance of the Work, notify the Project Officer or designee immediately for instructions. The Contractor will be held responsible for any damage to and maintenance and protection of existing utilities and structures, of both public and private ownership. However, if it is determined that such existing utility lines or structures require relocation or reconstruction or any other work beyond normal protection, then such additional work will be ordered under the terms of the clause entitled "Changes in Work." At all times, cooperate with the County and utility companies to keep utility services and facilities in operation.

The County assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the County. The County assumes no responsibility for any understanding reached or representation made concerning conditions which can affect the Work by any of its officers or agents before the execution of this Contract, unless that understanding or representation is expressly stated in this Contract.

2. PUBLIC CONVENIENCE

The Contractor shall at all times so conduct its Work as to ensure the least possible obstruction to traffic (vehicular, bicycle and pedestrian) and inconvenience to the general public, County employees, and the residents in the vicinity of the Work. Traffic shall be maintained in accordance with the approved Maintenance of Traffic (MOT) plan. No road, street or sidewalk shall be closed to the public except with the permission of the Project Officer or designee and or proper governmental authority. Fire hydrants on or adjacent to the Work shall be kept accessible to firefighting equipment at all times. Temporary provisions shall be made by the Contractor and included in the cost of

the Work to ensure the use of sidewalks, trails, and transit facilities compliant with all applicable ADA and other regulations, as well as the proper functioning of all gutters, drainage inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the Project Officer or designee.

The Contractor is responsible for securing its work area for safety and security. The Contractor shall confine its construction and presence to the Limits of Work, unless otherwise approved by the County Project Officer.

3. SAFETY AND ACCIDENT PREVENTION

The Contractor shall comply with, and ensure that the Contractor's employees and subcontractors comply with, all current applicable local, state and federal policies, regulations and standards relating to safety and health, including, by way of illustration and not limitation, the U.S. Department of Labor's Occupational Safety and Hazard Administration (OSHA) Construction Industry Regulations, the standards of the Virginia Occupational Safety and Health program of the Department of Labor and Industry for General Industry and for the Construction Industry, the Federal Environmental Protection Agency Standards and the applicable standards of the Virginia Department of Environmental Quality.

The Contractor shall provide, or cause to be provided, all technical expertise, qualified personnel, equipment, tools and material to safely accomplish the Work specified to be performed by the Contractor and subcontractor(s).

The Contractor shall identify to the County Project Officer at least one on-site person who is the Contractor's competent, qualified, and authorized safety officer on the worksite and who is, by training or experience, familiar with and trained in policies, regulations and standards applicable to the work being performed. The competent, qualified and authorized person must be capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, shall be capable of ensuring that applicable safety regulations are complied with, and shall have the authority and responsibility to take prompt corrective measures, which may include removal of the Contractor's personnel from the work site.

The Contractor shall provide to the County, within 7 days of issuance of the Notice to Proceed, a copy of the Contractor's written safety policies and safety procedures applicable to the scope of work. Failure to provide this information within may result in cancellation of the Contract.

The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all injury to persons and damage to property either on or off the site, which occur as a result of the Contractor's prosecution of the Work.

The Contractor shall take or cause to be taken such additional safety and health measures as the County may determine to be reasonably necessary. Machinery, equipment, and all hazards shall be guarded in accordance with the safety provisions of

the current version of "Manual of Accident Prevention" published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable local laws. The Contractor is directed to the "Rules and Regulations Governing Construction, Demolition and All Excavation" and adopted by the Safety Codes Commission of Virginia, 1966, or latest edition, covering requirements for shoring, bracing, and sheet piling of trench excavations.

4. HAZARDOUS MATERIALS

Arlington County is subject to the Hazard Communication Standard, 29 CFR §1910.1200 (Standard). The Contractor agrees that it will provide or cause to be provided Safety Data Sheets (SDS) required under the Standard for all hazardous materials supplied to the County or used in the performance of the work. Such SDS shall be delivered to the County no later than the time of actual delivery of any hazardous materials to the County or use of such material in the performance of work under the Contract by the Contractor or its subcontractors, whichever occurs first. Container labeling meeting the requirements of the Standard shall be appropriately affixed to the shipping or internal containers. The County reserves the right to refuse shipments of hazardous materials not appropriately labeled, or when SDS have not been received prior to or at the time of receipt of the shipment for use by the County or for use by the Contractor in the performance of the Contract, or whenever the material is delivered in a manner inconsistent with any applicable law or regulation. Any expenses incurred due to the refusal or rejection of SDS are the responsibility of the Contractor. The Contractor shall comply with all federal, state, and local laws governing the storage, transportation, and use of toxic and hazardous materials. The Contractor shall maintain onsite an up to date SDS binder for all material used and delivered to the Project. The County Project Officer or his designee shall be allowed access to the SDS book at all times.

5. HAZARDOUS WASTE

Hazardous Waste Generator/Hazardous Waste Disposal: The County Board of Arlington County, Virginia and the Contractor shall be listed as Co-generators. The Contractor shall assume all the duties pertaining to the Waste Generator, including signing the Waste Shipment Record ("WSR") and manifest. The Contractor shall supply the County Project Officer with the executed original Owner's Copy of the WSR, as required by applicable regulatory agencies within 35 days from the time the waste was accepted by the initial waste transporter, and prior to request for final payment. A separate WSR shall be submitted for each shipment to the disposal site.

Delayed Waste Shipment Records: The Contractor shall report in writing to the EPA Region III office within 45 days if an executed copy of the WSR is not received from the operator of the disposal site. The report to the EPA regional office shall include a copy of the original WSR and a cover letter signed by the Contractor stating the efforts taken to locate the hazardous waste shipment and the results of those efforts.

Temporary Hazardous Waste Storage Prohibited: The Contractor shall not temporarily store hazardous waste unless pre-approved by the County in writing. If so approved, hazardous waste stored off-site in a temporary facility shall be monitored and records shall be kept on the number of containers, size, and weight. The Contractor shall inform the County when the hazardous waste is to be transported to the final disposal site. The

County has the right to inspect the temporary site at any time. The Contractor shall submit copies of all relevant manifests, Waste Shipment Record(s), and landfill receipts to the County Project Officer prior to the request for final payment. All paperwork shall be signed by the Contractor and disposal site operator as required.

6. ASBESTOS

Whenever and wherever during the course of performing any work under this Contract the Contractor discovers the presence of asbestos or suspects that asbestos is present, the Contractor shall stop work immediately, secure the area, notify the County Project Officer immediately and await positive identification of the suspect material. During the downtime in such a case, the Contractor shall not disturb any surrounding surfaces but shall protect the area with suitable dust covers. Work shall not proceed without an Asbestos-Related Work Authorization executed by the County Asbestos Program Manager.

7. CROSSING UTILITIES

When construction crosses highways, railroads, streets, waterways, or utilities under the jurisdiction of State, County, City, or other public agency, public utility, or private entity, the Contractor shall secure written permission where necessary from the proper authority before executing such new construction. A copy of such written permission must be filed with the County before any work is started. The Contractor shall be required to furnish a release from the proper authority before Final Acceptance of the Work.

8. OVERHEAD HIGH VOLTAGE LINES SAFETY ACT

If any work required herein will be performed within ten feet of an overhead high voltage line, the provisions of Virginia Statute 59.1-406, et. seq., "Overhead High Voltage Line Safety Act" (Act) shall apply. The "person or contractor responsible for the work to be done", as that term is used in the Act, will be interpreted to mean the Contractor. The Contractor shall notify the owner or operator of the high voltage line in the manner prescribed in Section 59.1-411 of the Act in sufficient time prior to the time work is to be commenced to avoid any delays in the work. The County will not pay for lost time, profits, or permit any extension of the work for any delays caused by the failure of the Contractor to make such arrangements in a timely manner. All costs for the work shall be paid by the Contractor. The County shall reimburse the Contractor for the actual reasonable cost paid to the owner or operator of the high voltage line by the Contractor on presentation to the County by the Contractor of original invoices from the owner or operator of the high voltage line in the same manner as for other Contractor invoices submitted for work performed. Retention, if applicable to the Contract, shall not be withheld from the payment to the Contractor by the County for this work. No processing, administrative, or other charges above the actual amount charged by the owner or operator of the high voltage line shall be paid to the Contractor by the County.

9. SANITARY PROVISIONS

The Contractor shall provide and maintain such sanitary accommodations for the use of the Contractor's employees and those of its subcontractors as may be necessary to

comply with the requirements and regulations of OSHA and of the local and State departments of health.

10. SITE CLEAN-UP AND WASTE DISPOSAL

The Contractor shall frequently remove and properly dispose of all refuse, rubbish, scrap materials, and debris from the site resulting from the Contractor's operations during the performance of this contract. The Contractor shall ensure the work site presents a neat and orderly appearance at all times. The Contractor shall isolate any and all dumpsters, trash cans and recycling bins provided for the Project from public use until Final Acceptance.

Unless otherwise stated, the Contract Amount and any unit prices shall include all costs and fees for removal and disposal of all waste and debris, whether disposed of at a County site or at any other location.

The Contractor shall remove all surplus material, false work, temporary structures including foundations thereof, and debris resulting from the Contractor's operations at work completion and before Final Acceptance. The County shall reserve the right to remove the surplus material, false work, temporary structures including foundations and debris. The County will restore the site to a neat, orderly condition if the Contractor fails to do so. The County shall be entitled to offset such cost against any sums owed by the County to the Contractor under this Contract.

11. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

When the Project includes an approved SWPPP, the Contractor shall strictly abide by this plan which includes: a Pollution Prevention (P2) Plan, an Erosion and Sediment Control (E&S) Plan, and a Stormwater Management Plan. If the Contractor proposes to deviate from this approved plan, it shall be the Contractor's responsibility to coordinate and obtain approval from the County Project Officer prior to implementing any changes.

No separate payment shall be made by the County for SWPPP implementation, with the exception of E&S items as specified on the E&S plans or listed as pay items. The Contractor shall not be entitled to any additional payment for changes to the SWPPP which are the result of the Contractor's work schedule or resource allocation, weather delays, or other factors not controlled by the County.

F. PROGRESS AND COMPLETION OF THE WORK

1. NOTICE TO PROCEED

The Contractor shall be given written Notice to Proceed with the Work. Such Notice to Proceed shall state the date on which the Work is to be commenced, and every calendar day thereafter shall be counted in computing the actual Time for Completion.

2. TIME FOR COMPLETION

It is hereby understood and mutually agreed by and between the Contractor and the County that the Commencement Date, the rate of progress, and the Time for

Completion of the Work to be done hereunder are essential conditions of the Contract. The Contractor agrees that the Work shall be started promptly upon receipt of a written Notice to Proceed in accordance with the accepted schedule. The Work shall be prosecuted regularly, diligently, and uninterruptedly at a rate of progress that will ensure full completion of the Project within the Time for Completion specified in the Contract Documents.

3. SCHEDULE OF COMPLETION

Unless otherwise specified, the Contractor shall within 10 business days after the Award Date, or prior to the pre-construction meeting, whichever occurs first, submit schedules which show the order in which the Contractor proposes to carry on the Work, with dates for starting and completing the various activities of the Work. The Contractor shall submit an updated schedule monthly with the request for partial payment. Review and acceptance by the County of the Contractor's schedule of completion shall in no way relieve the Contractor of its responsibility to complete the Work within the contract time. If the Work falls behind the schedule, the County may require the Contractor to prepare and submit, at no extra cost to the County, a recovery schedule indicating by what means the Contractor intends to regain compliance with the schedule. The recovery schedule must be submitted to the County for review by the date indicated in the County's written demand.

4. CONDITIONS FOR COMPLETION

a. **SUBSTANTIAL COMPLETION:** The Work will be considered Substantially Complete when all of the following conditions have been met and accepted by the Project Officer, and a Certificate of Substantial Completion has been issued:

1. The Contractor has provided formal notice that the Work is substantially complete, and the Project Officer has agreed that the condition of the Work warrants a Substantial Completion inspection;
2. The Contractor has provided a Punch List and that list has been reviewed and approved by the Project Officer. Failure to include an item on the Punch List does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents;
3. Final test reports as required by the Contract and certificates of inspection and approval required for use and occupancy;
4. Fire Marshal's report, if applicable;
5. Approval forms and transfer documents for all utilities;
6. All life safety systems, including fire alarms, visual and audios alarms, fire detectors and fire alarm annunciator system, sprinkler systems, and all mechanical and electrical systems are complete and working in an automatic mode, and the County has been adequately trained in the operation of the systems;

7. The HVAC system Testing and Balancing Report and build air quality test results as required for LEED certification have been accepted by the Project Officer;
 8. Operation and Maintenance Manuals have been submitted for review;
 9. All documents and verification of training required in accordance with any Commissioning Plan;
 10. Mark-ups of construction drawings showing the As-Built or "Record" condition have been submitted for review and approval by the Project Officer;
 12. Entrances and egress pathways have been constructed and can remain clear of construction activities;
 13. A Certificate of Occupancy has been issued for the space by the County's Inspection Services Division;
 14. All Commissioning has performed and completed to the satisfaction of the Project Officer; and
 15. Schedule to complete the Punch List and value of Work not yet complete.
- b. Upon the Contractor providing notice that the Work is substantially complete, the Project Officer or designee will invite all relevant parties to perform an inspection of the Work, and any noted deficiencies or incomplete items not indicated on the Contractor's punch list will be added. All punch list items, whether generated by the Contractor or any other party on behalf of the County, shall be completed within thirty (30) days of the date of Substantial Completion, unless otherwise agreed to by the County due to seasonal or other extenuating circumstances.
- c. FINAL COMPLETION: The Work will be considered Finally Complete when all of the following conditions have been met and accepted and a Final Completion Notice has been issued by the Project Officer:
1. The Contractor has provided formal notice that the Work is complete, and the Project Officer has agreed that the condition of the Work warrants a Final Completion inspection;
 2. All construction deficiencies and punch list items have been closed and all construction deficiencies corrected and accepted by the Project Officer;

3. All spare parts and attic stock have been delivered, stored in an orderly manner in a space designated by the Project Officer and a complete inventory list has been verified and accepted by the Project Officer;
4. All warranties and manufacturer certificates and contact information for parties providing warranties have been delivered and accepted by the Project Officer;
5. All final Operating and Maintenance manuals have been delivered and approved and accepted by the Project Officer;
6. All final As-Built Drawings in .pdf format on a CD delivered and accepted by the Project Officer;
7. All commissioning has been completed and any open construction items in the commissioning agent's report have been closed and accepted by the Project Officer; and
8. All LEED documents and submittals, if applicable, to be provided by the Contractor or sub-contractors have been submitted and accepted by the Project Officer.

5. USE OF COMPLETED PORTIONS

The County shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions may not have expired; but taking such possession and use shall not be deemed an acceptance of any work not done in accordance with the Contract Documents. If the Contractor claims that such prior use increases the cost or delays, the completion of remaining work, or causes refinishing of completed work, the Contractor may submit a claim for compensation or extension of time, or both.

G. MEASUREMENT AND PAYMENT

1. PAYMENTS TO CONTRACTOR

The County will make partial payments, to the Contractor monthly on the basis of the Contractor's written estimate of the work performed during the preceding calendar month as approved by the Project Officer or designee.

The Contractor's application for payment shall indicate the amount of work completed to date in a format consistent with the accepted bid and as indicated below:

- a. Lump Sum: For lump sum contracts, the Contractor shall provide to the Project Officer a Schedule of Values, and the application for payment will reflect the Schedule of Values and the amount of work completed in those units.

For contracts that include multiple lump sum line items, the application for payment shall reflect the percentage of work completed for each lump sum item. If requested by the Project Officer, the Contractor shall provide a Schedule of Values for each lump sum line item in the contract.

- b. Unit Price: The schedule of unit prices in the accepted bid shall be used as the basis for preparing the estimates, and each partial payment shall represent the total value of all units of work completed, computed at the unit prices stated in the Contract, less the aggregate of previous payments.

At the discretion of the Project Officer, payments may alternatively be based on actual quantities and site measurements taken in the field by County staff using the Contract Unit Prices.

If Stipulated Price Items are included in the contract, Work on such Stipulated Price Items shall be carried out only upon written order by the Project Officer. The payment for a Stipulated Price Item shall be made by the County to the Contractor at the related unit price specified in the 'Stipulated Price Items' section of the Bid Form on the same basis as the payment for any other regular Bid Item.

In addition to the amount of work completed to date, the application for payment shall indicate the aggregate of all previous payments for each line item, and the total payment requested this period.

The Contractor's application for payment will not be reviewed or processed unless an updated schedule is attached. The pay application shall also contain a certification by the Contractor that due and payable amounts have been paid by the Contractor, including payments to subcontractors, for work which previous payment was received by the Contractor from the County.

5. PAYMENT FOR STORED MATERIALS

When requested in writing by the Contractor, payment allowances may be made for material secured for use on the Project and secured at the project site. Such payments will only be made for materials scheduled for incorporation into the work within sixty (60) days.

Payment for materials stored offsite may be considered at the discretion of the Project Officer. Any such request shall be made in writing, and the Contractor shall provide photographs of materials stored offsite, bills of sale, and proof of insurance on the premises at which off-site materials are stored with the application for payment. Payment for stored materials may also be subject to additional requirements contained elsewhere in the Contract Documents.

3. PAYMENTS WITHHELD

The Project Officer or designee may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate for payment to the extent necessary to protect the County from loss on account of defective work not remedied or withhold payment for violation of any contract term or condition not remedied after sufficient notice given to the Contractor.

Any such withholding shall not result in any liability to the Contractor for damages.

4. COUNTY ORDERED CHANGES IN WORK

The County, without invalidating the Contract, may order extra Work or make changes by addition, deletion or revision in the Work, with the total Contract Amount being adjusted accordingly if applicable. All such work shall be executed under the conditions of the original Contract, except that modification of the Time for Completion caused thereby shall be made at the time of approving such change.

- a. Changes in the Work which do not involve extra cost and are not inconsistent with the purpose of the Project can be directed by means of a Field Order. Otherwise, except in an emergency endangering life or property, no extra Work or change shall be made unless in pursuance of a written Construction Change Directive or Change Order and no claim for an addition to the Contract Amount or Contract Time shall be valid unless so ordered.
- b. The Contractor shall review any County requested or directed change and shall respond in writing within 14 days after receipt of the proposed change stating the effect of the proposed change upon Contractor's work, including any increase or decrease in Contract time and price. The Contractor shall furnish the County an itemized breakdown of the quantities and prices used in computing the proposed change. The Contractor shall also furnish any sketches, drawings, and or pictures to properly explain the change or impact to the Project Officer. It is the sole responsibility of the Contractor to provide adequate change order backup to satisfy the Project Officer.

- c. The value of any such extra work or change shall be proposed by the Contractor in one or more of the following ways: (a) by estimate in a lump sum; (b) by cost and fixed fee; (c) by unit price additions or deletions of quantities stated in the unit price contract; or (d) by any other method permitted under the Arlington County Purchasing Resolution. The Project Officer will determine the method appropriate based on the nature of the changes.
- d. If none of the aforementioned methods is agreed upon the Contractor shall proceed with the work without delay under force account, provided the Contractor receives a Construction Change Directive. In such case, the Contractor shall keep and present in such form as the Project Officer or designee may direct, a correct account of the cost, together with vouchers. The Project Officer or designee shall be permitted to verify such records on a daily basis and may require such additional records as are necessary to determine the cost of the change to the Work. The Project Officer or designee shall certify to the amount due to the Contractor, including a reasonable lump sum allowance for overhead and profit. A complete accounting of the extra cost shall be made within 14 days after completion of the work involved in the claim. Refer to Paragraph G.5, *Force Account Work*, below for a description of allowable costs when work is performed under force account.
- e. A cost proposal for a change in the Work shall provide a complete breakdown itemizing the estimated quantities and costs of labor, materials, and equipment (base cost) required in addition to any markup used. The allowable percentage markups for overhead and profit for a non-force account change to the Work performed by the Contractor's own forces or performed by the Subcontractor shall be negotiated based on the nature, size, and complexity of the Work involved but shall not exceed the percentages for each category listed below.
 - 1) Subcontractor's markup for overhead and profit for the work it performs in a change to the Work shall be a maximum of fifteen (15%).
 - 2) Contractor's markup for overhead and profit on the Subcontractor's base cost in a change to the Work shall be a maximum of ten percent (10%).
 - 3) Contractor's markup for overhead and profit (including bonds and insurance) for work it performs in a change to the Work shall be a maximum of fifteen percent 15%.
 - 4) The markup for overhead and profit of a sub-subcontractor at any tier on a change to the Work it performs shall be a maximum of fifteen percent (15%). The Contractor and all intervening tiers of subcontractors' markup on such sub-subcontractor's base cost in the change to the Work shall not exceed a total of ten percent (10%).
- f. Base Cost is defined as the total of labor, material, and equipment costs, it does not include markup for overhead and profit. The labor costs include only the

costs of employees directly constructing or installing the change in the Work and exclude the costs of employees coordinating or managing the work.

- g. The allowable percentage markups for overhead and profit stated above shall compensate the Contractor, subcontractor, and sub-subcontractor for all other costs associated with or relating to the change to the Work including by way of illustration and not limitation, general conditions, supervision, field engineering, coordination, insurance, bond(s), use of small tools, incidental job costs, and all other general and administrative home and field office expenses.
- h. Allowable costs for changes in the Work shall not include home office expenses including payroll costs for the Contractor's officers, executives, administrators, project managers, estimators, clerks timekeepers, and other administrative personnel employed by the Contractor, whether at the Site or in the Contractor's principal or branch office for general administration of the Work. These costs are deemed overhead included in the percentage markups in Subsection (e) above.
- i. If the change to the Work also changes the Time for Completion by adding days to perform the Work, an itemized accounting of the following Site direct overhead expenses for the change to the time may be considered as allowable costs for compensation in addition to the base cost indicated above:
 - 1) site superintendent's pro-rata salary
 - 2) temporary site office trailer expense
 - 3) temporary site utilities including basic telephone service, electricity, heat, water, and sanitary/toilet facilities.

All other direct and indirect overhead expenses are considered covered by and included in Subsection (e) markups above. In no case shall subcontractor extended overhead be submitted or considered. The County does not have a direct contractual relationship with any subcontractor or supplier and therefore will not direct, discuss or negotiate with subcontractors employed by the Contractor.

- j. If Contractor requests an extension to the Time for Completion due to changes in the Work it must provide to the Project Officer adequate documentation substantiating its entitlement for the time extension. The documentation must demonstrate an anticipated actual increase in the time required to complete the Work beyond that allowed by the Contract as adjusted by prior changes to the Work, not just an increase or decrease in the time needed to complete a portion of the total Work. In the event a Critical Path Method (CPM) schedule is required by the Contract, no extension to the Time for Completion shall be granted unless the additional or change to the Work increases the length of the critical path beyond the Time for Completion as demonstrated on the approved CPM schedule or bar chart schedule. Any Float belongs to Arlington County. A written statement in addition to a CPM analysis shall be prepared explaining how no other sequence of work activities could have been performed to

decrease the impact or eliminate the impact altogether. If requested by the Project Officer the Contractor must provide alternate documentation detailing the claim to the County's satisfaction.

- k. Any change that will increase the Contract Amount more than 10% will require notice to sureties and require that Performance and Payment Bonds be increased by the Contractor. The increased Performance and Payment Bonds must be sent to the County's Office of the Purchasing Agent within 15 calendar days of the County's approval of such change.

5. FORCE ACCOUNT WORK

A Force Account may be used at the County's discretion and only when either 1) agreement on the valuation of a change cannot be made using the methods described in the preceding paragraph, *County Ordered Changes in the Work*, or 2) the County cannot firmly establish an applicable and acceptable estimate for the cost of the work because the level of effort necessary to perform and complete the work cannot be reasonably estimated or anticipated but can only be determined by performing the work. Because of the significant burden on the County to monitor and control the work, Force Account work is not a preferred method, and it shall be the responsibility of the Contractor to provide all necessary documentation and justification of costs. The rates for labor, equipment and materials to be used in cases of work performed on a force account basis will be compensated as documented below. No costs other than those explicitly listed below shall be allowed:

- a. Labor: Before any Force Account work begins, the Contractor shall submit for approval to the Project Officer the proposed hourly rates and associated labor costs (benefits and payroll burden) for all laborers and forepersons to be engaged in the work. The number of laborers and forepersons engaged in the work will be subject to regulation by the Project Officer and shall not exceed the number that the Project officer deems most practical and economical for the work. For all labor and forepersons in direct charge of the force account work, excluding general superintendence, compensation will be as follows:
 - 1) Certified Pay Rate: The Contractor will receive the actual rate of wage or scale as set forth in his most recent payroll for each classification of laborers, and forepersons who are in direct charge of the specific operation. The time allowed for payment will be the number of hours such workers are actually engaged in the work. If overtime work is authorized by the County, payment will be at the normal overtime rate set forth in the Contractor's most recent payroll.
 - 2) Benefits: The Contractor will be entitled to receive the actual cost for any fringe benefits that are regularly provided to the classes of laborers and forepersons engaged in the work and that are not included in the certified pay rate.

- 3) Payroll Burden: The Contractor will be entitled to receive the actual cost for all costs associated with required payroll taxes and payroll benefits not covered in 2) above, including:
 - Social Security Tax
 - Medicare Tax
 - Unemployment Tax
 - Worker's Compensation Insurance
 - Contractor's Public Liability Insurance
 - Contractor's Property Damage Liability Insurance
 - 4) If the Contractor is unable to provide the necessary documentation for Benefits and Payroll Burden as identified above, the Contractor will be entitled to an additive of 20% of the Certified Hourly Pay Rate as full and final compensation for Benefits and Payroll Burdens
 - 5) Overhead and Profit: The Contractor will be entitled to an additive of 10% on all properly documented and approved costs established in paragraphs 1), 2), 3), and 4) above for all administrative, overhead, and profit associated with labor costs.
 - 6) Subsistence and lodging allowances may be allowed by the Project Officer at the actual and documented costs for lodging and meals if the following conditions are met and the applicable rates and authorization for such costs are established prior to beginning the work. No additives for overhead, administrative, profit, or any other costs will be permitted for subsistence and lodging.
 - i. The specific Force Account work is outside the scope of the original contract, requires mobilization of a separate crew not intended to be used on the original contract, and the Contractor's base location is more than 50 miles from the work site, or
 - ii. Forces which have been working on the Contract will be used for the Force Account work and have been routinely staying overnight during the life of the Project, and the Force Account Work will warrant an extension of the contract time, and the distance from the Contractor's base location to the work site is more than 50 miles
- b. Materials: The Contractor will receive the actual cost of materials accepted by the Project Officer that are delivered and used for the work including taxes, transportation, and handling charges paid by the Contractor, not including labor and equipment rentals as herein set forth, to which 15 percent (15%) of the cost will be added for administration and profit. The Contractor shall make every reasonable effort to take advantage of trade discounts offered by material suppliers. Any discount received shall pass through to the County. Salvageable temporary construction materials will be retained by the County, or their appropriate salvage value shall be credited to the County, at the County's

discretion.

- c. Equipment: For all equipment other than small tools, the Contractor will be entitled to rental rates as established herein, and agreed to in writing before the work is begun. Transportation costs directly attributable to Force Account work will be as stated below. Small tools will be considered any equipment which has a new cost of \$1000 or less, and will not be eligible for any compensation. The Contractor shall provide the Project Officer a list of all equipment to be used in the work. For each piece of equipment, the list shall include the serial number; date of manufacture; location from which equipment will be transported; and, for rental equipment, the rental rate and name of the company from which it is rented. The number and types of equipment engaged in the work will be subject to regulation by the Project Officer as deemed to be the most practical and economical for the work. No compensation will be allowed for equipment which is inoperable due to mechanical failure. Compensation for equipment shall be as follows:

- 1) Hourly Base Equipment Rental Rates (Owned Equipment) – For equipment authorized for use in the Force Account work that is owned by the Contractor, the Contractor shall be entitled to an Hourly Base Rental Rate as detailed in the following paragraphs. The Hourly Base Rental Rate for Contractor owned equipment will not exceed 1/176 of the monthly rates of the schedule shown in the *Rental Rate Blue Book* modified in accordance with the *Rental Rate Blue Book* rate adjustment tables that are current at the time the force account is authorized. The rates for equipment not listed in the *Rental Rate Blue Book* schedule shall not exceed the hourly rate being paid for such equipment by the Contractor at the time of the force account authorization. In the absence of such rates, prevailing rates being paid in the area where the authorized work is to be performed shall be used.
- 2) Hourly Base Equipment Rental Rates (Rented Equipment) – If the Contractor does not possess or have readily available equipment necessary for performing the force account work and such equipment is rented from a source other than a company that is an affiliate of the Contractor, payment will be based on actual invoice rates when the rates are reasonably in line with established rental rates for the equipment in question and are approved by the Project Officer.
- 3) Hourly Operating Rates – Hourly Operating Rates shall be as established in the Blue Book estimated operating cost per hour. This operating cost will be full compensation for fuel, lubricants, repairs, servicing (greasing, fueling, and oiling), small tools, and any and all incidentals. If rental rates for the equipment being used in the work are not listed in the Blue Book or otherwise readily available, the Hourly Operating Cost will be 15% of the established Hourly Base Rental Rate. If invoices for Rental Equipment include the furnishing of fuel, lubricants, repair, and

servicing, then the Contractor will not be entitled to any Hourly Operating costs for that equipment.

- 4) Equipment Usage - Equipment usage will be measured by time in hours of actual time engaged in the performance of the work. The Contractor shall be entitled to the applicable Hourly Base Equipment Rental Rate and Hourly Operating Rate for all approved Equipment Usage.
 - 5) Equipment Standby – Standby time is defined as the period of time equipment authorized for Force Account work by the Project Officer is available on-site for the work but is idle for reasons not the fault of the Contractor or normally associated with the efficient and necessary use of that equipment in the overall operation of the work at hand. Hourly rates for Contractor owned equipment on standby, will be at 50 percent (50%) of the rate paid for equipment performing work. Operating costs will not be allowed for equipment on Standby. When equipment is performing work less than 40 hours for any given week and is on standby, payment for standby time will be allowed for up to 40 hours, minus hours performing work. Payment for Standby will be allowed only for working days. Payment for Standby will not be made for the time that equipment is on the Project in excess of 24 hours prior to its actual performance in the force account work.
 - 6) Transporting Costs – When it is necessary to obtain equipment exclusively for Force Account work from sources beyond the Project limits and the Project Officer authorizes the transporting of such equipment to the Project site, the cost of transporting the equipment will be allowed as an expense. Where the transport requires the use for a hauling unit, the allowable expense will consist only of the actual cost incurred for the use of the hauling equipment, or the applicable Blue Book cost, whichever is less. When equipment is transferred under its own power, the allowable Transporting cost shall be 50% of the Hourly Base Equipment Rental Rate.
 - 7) Overhead and Profit – The Contractor shall be entitled to an additive of 10% on all appropriate and approved Equipment Rental, Operating, and Transporting costs as defined above.
- d. Subcontracting: The Contractor shall receive the cost of work performed by a subcontractor as determined in (a), (b), and (c) above. In addition, the Contractor will be allowed an allowance per the schedule below for administrative costs and profit.

Total Cost of Subcontract Work: Rate Schedule

\$0 - \$10,000	10%
> \$10,000	\$1,000 + 5 % above \$10,000

- e. Other Costs: The Contractor shall not be entitled to any costs associated with Force Account Work other than those specifically identified in this section.
- f. Statements: Payments will not be made for work performed on a force account basis until the Contractor has furnished the Project Officer duplicate itemized statements of all costs of such work detailed as follows:
 - 1. Payroll indicating name, classification, date, daily hours, total hours, rate, and extension of each laborer, foreperson
 - 2. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of equipment
 - 3. Quantities of materials, prices, and extensions
 - 4. Transportation of materials
 - 5. Statements shall be accompanied and supported by invoices for all materials used and transportation charges. However, if materials used on the Force Account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices, the Contractor shall furnish an affidavit certifying that such materials were taken from his stock; that the quantity claimed was actually used; and that the price, transportation, and handling claimed represented his actual cost.

6. CLAIMS FOR EXTRA COST

If the Contractor claims that any event will give rise to a claim for an increase in the Contract Amount or that any instructions from the Project Officer, by drawings or otherwise, will incur him extra cost under the Contract, then, except in emergencies endangering life or property, it shall give the Project Officer written notice thereof no later than three (3) days of the event or instruction. The Contractor thereafter must provide to the Project Officer a full cost proposal within 14 days detailing the amount of additional compensation claimed, together with the basis therefore and documentation supporting the claimed amount. No such claims shall be valid unless so made. If the Project Officer agrees that such event or instructions involve extra cost to the Contractor, any additional compensation will be determined by one of the methods provided in the Changes in Work paragraph of these General Conditions as selected by the Project Officer. All pricing and supporting documentation requirements of the Changes in the Work clause shall apply to claims for extra cost deemed valid under this paragraph.

7. DAMAGES FOR DELAY; EXTENSION OF TIME OTHER THAN FOR WEATHER

a. Excusable Non-Compensable Delays: If and to the extent that the Contractor is delayed at any time in the progress of the Work by a Force Majeure event or other causes outside of the County's control or the Contractor's control and which the Contractor could not have reasonably foreseen, the Contractor may request an extension of the Time for Completion. To be considered for an extension of the Time for Completion, the Contractor shall give the Project Officer timely written notice at the inception of the delay. The Contractor thereafter must provide to the Project Officer a full claim within 14 calendar days of the cessation of the delay and demonstrate that the delay affected the critical path of the accepted schedule and any Float has been consumed. If the Project Officer

agrees with the existence and impact of the delays, the Project Officer shall extend the Time for Completion for the length of time that the Time for Completion was actually delayed thereby. The Contractor shall not be due compensation or damages of any kind as a result of such delay. Delays caused by weather are addressed in Section G.8.

b. Excusable Compensable Delays: If and to the extent that the Contractor is unreasonably delayed at any time in the progress of the Work by any act or omission of the County, its agents or employees, due to causes within the County's control, the Contractor may request an extension of the Time for Completion and/or additional compensation. The Contractor shall give notice to the Project Officer immediately at the time of the occurrence giving rise to the delay and shall give written notice no later than five (5) calendar days after the inception of the delay. The Contractor's written notice shall specify the nature of the delay claimed, the cause of the delay, and the impact of the delay on the Contractor's schedule. Thereafter the Contractor shall provide to the Project Officer a full claim within 14 calendar days of the cessation of the delay. The claim must detail the amount of additional contract time or compensation claimed, together with the basis therefor along with itemized documentation supporting the claim. The itemized documentation must demonstrate that the claimed delay directly affected the critical path of the accepted schedule and any Float has been consumed and the time and/or costs incurred by the Contractor are directly attributable to the delay in the work claimed. The Contractor shall be entitled to additional compensation only if the delay was caused solely by acts or omission of the County, its agents or employees, or due to causes within their control.

If the Contractor is entitled to compensation, an itemized accounting of the following direct site overhead expenses will be considered as allowable costs to be used in determining the compensation due the Contractor: the site superintendent(s) (as identified at the inception of the work) pro rata salary, temporary site facilities, temporary site office expense, and temporary site utilities including basic telephone service, electricity, heat, water, and sanitary/toilets. A fifteen percent (15%) markup of these expenses will be allowed to compensate the Contractor for home office and other direct or indirect overhead.

Furthermore, compensation for the delay shall be calculated from the contractual Time for Completion, as adjusted by Change Order, and shall not be calculated based on any early completion planned or scheduled by the Contractor

c. Non-Excusable Non-Compensable Delays: The Contractor shall not be entitled to an extension of the Time for Completion or to any additional compensation for delays if and to the extent they are caused by acts, omissions, fault, or negligence of the Contractor or its subcontractors, agents, or employees or due to foreseeable causes within their control, including, but not limited to, delays resulting from defective work, including workmanship and/or materials, from rejected work which must be corrected before dependent work can proceed, from defective work or rejected work for which corrective action must be determined before like work can proceed, from incomplete,

incorrect, or unacceptable Submittals or samples, or from the failure to furnish enough properly skilled workers, proper materials or necessary equipment to diligently perform the work in a timely manner in accordance with the Project schedule.

d. No extension of time or additional compensation shall be given for a delay if the Contractor failed to give notice in the manner and within the time prescribed herein. Furthermore, no extension of time or additional compensation shall be given for any delay unless a full claim is made to the Project Offer within 14 days of the end of the delay. Failure to give written notice or failure to present a timely claim shall constitute a waiver of any claim for extension or additional compensation based upon that cause.

e. If the Contractor submits a claim for damages pursuant to this Section, the Contractor shall be liable to the County for a percentage of all costs incurred by the County in investigating, analyzing, negotiating and litigating the claim, which percentage shall be equal to the percentage of the Contractor's total delay claim that is determined through litigation to be false or to have no basis in law or fact (Virginia Code §2.2-4335).

f. Any change in the Time for Completion or additional compensation shall be accomplished only by the issuance of a Change Order.

8. TIME EXTENSIONS FOR WEATHER

The Contractor's sole relief on any claims for delay which is caused by abnormal weather shall be an extension of the Time for Completion provided the Contractor gave the Project Officer written notice no later than five (5) calendar days after the onset of such delay and provided the weather affected the Critical Path. A fully-documented claim for a time extension under this Section must be submitted no later than thirty (30) calendar days after the cessation of the delay. It shall be the Contractor's responsibility to provide the necessary documentation to satisfy the Project Officer that the weather conditions claimed were encountered, which may include daily reports by the Contractor, copies of notification of weather days to the Project Officer, NOAA backup, and pictures from each day claimed.

The Time for Completion will not be extended due to inclement weather conditions which are normal, as defined below, for Arlington County. The Time for Completion includes an allowance for workdays (based on five (5) day workweek) which according to historical data may not be suitable for construction work. The Contractor may request extension to the Time for Completion if it can demonstrate unusual and disruptive weather conditions per the requirements below:

- a. That one or more of the Weather Conditions listed below was encountered; and,
- b. The occurrence of the Weather Condition(s) resulted in an inability to prosecute work which would have otherwise been performed on the day(s) the Weather Condition(s) occurred; and,
- c. The work which was not able to be completed was on the Critical Path and could not be completed **only** due to the Weather Condition(s) claimed.

The Project Officer will determine the Contractor’s entitlement to an extension of the Time for Completion. A time extension of no more than one (1) day will be granted for one (1) day of lost work which satisfies the requirements above, regardless of the number of Weather Conditions encountered. The Contractor’s sole relief shall be an extension of the Time for Completion and no claim for an increase in Contract Amount will be allowed.

The Weather Conditions listed below will be the only basis for consideration by the County, based upon the requirements listed above, as an extension of the Time for Completion due to inclement weather or weather-related site conditions.

Weather Condition #1: Unusually Heavy Precipitation - Figure 1 illustrates the anticipated monthly inclement weather due to precipitation (Rain Days). If the number of days with precipitation in excess of 0.10”, as recorded at Washington Reagan National Airport, exceeds the anticipated Rain Days, the Contractor will be entitled to an extension of one (1) day on the Time for Completion for every day in excess of the Rain Days illustrated in Figure 1. The anticipated value of Rain Days for partial months at the beginning and end of the Contract shall be evaluated on a pro-rated basis.

FIGURE 1
Average days with precipitation of 0.1” or more

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7	6	7	6	8	6	7	6	6	5	6	6

Weather days are not exclusive to the individual months that they represent in Figure 1. If weather days are not used in a previous month(s) they can be used to offset weather delays in subsequent months. This will be reviewed on a case by case basis and is subject to reconciliation at the end of the Project.

Condition #2: Temperature – The Contractor may be entitled to an additional day for every day that the recorded high temperature at Washington Reagan National Airport is 32 degrees Fahrenheit or less, that has not already been incurred under Weather Condition #1 above. This condition does not apply to vertical construction as defined by the Arlington County Vertical Construction Standards.

9. RELEASE OF LIENS

The County, before making final payment, shall require the Contractor to furnish a complete release of all liens arising out of this Contract. The Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the County, to indemnify him against any lien. If any lien remains unsatisfied after all payments have been made, the Contractor shall refund to the County all money that the latter may be compelled to pay in discharging such lien. However, the County may make payments in part or in full to the Contractor without requiring the releases or receipts, and the payments so made shall not impair the obligations of any Surety or Sureties on any bond or bonds furnished under this Contract.

10. FINAL PAYMENT

After the Contractor has completed all work and corrections to the satisfaction of the Project Officer or designee and delivered all maintenance and operating instructions, schedules, quantities, bonds, certificates of inspection, maintenance records, As-Built Drawings, and other items required as final payment submittal documents, the Contractor may make application for final payment following the procedure for progress payments. The Final Application for Payment shall be accompanied by all documents required in the Contract, including a complete and signed and notarized copy of the Final Payment Release Form as follows:

RELEASE AND REQUEST FOR FINAL PAYMENT

CONTRACT NUMBER: _____ CONTRACTOR NAME: _____

FINAL PAYMENT AMOUNT: _____

The Contractor hereby requests final payment in the amount indicated on the above referenced Contract. The Contractor agrees that its acceptance of final payment releases and forever discharges Arlington County and its officers, employees, servants and agents from any and all actions, claims, demands and liability of whatever nature now existing or which may hereafter arise as a result of or in connection with the above referenced Contract.

The Contractor certifies that all of the debts for labor, materials, and equipment incurred in connection with the above referenced Contract have been fully paid.

AUTHORIZED SIGNATURE DATE: _____

The date of Final Acceptance is the date on which the County issues the final payment for the work performed.

COMMONWEALTH OF VIRGINIA

COUNTY OF ARLINGTON

On this the ____ day of _____, 20__, before me, personally appeared _____, who acknowledged himself/herself to be _____ in the above instrument, and that he/she, as such _____, being authorized so to do, executed the foregoing instrument for the purposes therein contained, by signing his/her name by himself/herself as _____.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

My Commission Expires: _____

VI. INSURANCE REQUIREMENTS

Review this section carefully with your insurance agent or broker prior to submitting a bid or proposal. See the Insurance Checklist (part of the Bid or Proposal Forms) for specific coverages applicable to this Contract. The term "Contract," as used in this section, shall mean the fully executed Agreement covering the work entered into between the County and the Contractor.

1. General

- 1.1 The Contractor shall provide insurance as specified in the Insurance Checklist found on the last page of the bid or proposal form.
- 1.2 The Contract with the Contractor will not be executed by the County until the Contractor has obtained, at its own expense, all of the insurance called for hereunder and such insurance has been approved by the County; additionally, the Contractor shall not allow any subcontractor to start work on any subcontract until all insurance required of the subcontractor has been so obtained and approved by the Contractor. The Contractor shall submit to the County Purchasing Agent copies of all required endorsements and documentation of coverage consistent with the requirements herein or, alternately, at the County's request, certified copies of the required insurance policies in compliance with the insurance requirements. All endorsements and documentation shall state this Contract's number and title.
- 1.3 The Contractor shall require all subcontractors to maintain during the term of this Agreement, Commercial General Liability insurance, Business Automobile Liability insurance, and Workers' Compensation, Employers' Liability insurance, or any other insurance required by the Contract in the same manner and form as specified for the Contractor. The Contractor shall furnish subcontractors' evidence of insurance and copies of endorsements to the County Purchasing Agent immediately upon request by the County and/or prior to the subcontractor's performance of work related to this Contract.
- 1.4 If there is a material change or reduction in coverage, nonrenewal of any insurance coverage or cancellation of any insurance coverage required by this contract, the Contractor shall notify the Purchasing Agent immediately. It is the Contractor's responsibility to notify the County upon receipt of a notice indicating that the policy will not be renewed or will be materially changed. Any policy on which the Contractor has received notification from an insurer that the policy has or will be cancelled or materially changed or reduced must be immediately replaced with another policy consistent with the terms of this Contract and in such a manner that there is no lapse in coverage, and the County immediately notified of the replacement. Not having the required insurance throughout the Contract is considered a material breach of this Contract and grounds for termination. The Contractor shall also obtain an endorsement providing to the County thirty (30) days advance notice of cancellation or nonrenewal (ten days for nonpayment of premium. A copy of that endorsement shall be provided to the County Purchasing Agent prior to the execution of this Contract or any Contract extension thereafter.
- 1.5 No acceptance and/or approval of any insurance by the County shall be construed as relieving or excusing the Contractor, any surety, or any bond, from any liability or obligation imposed under this Agreement.

- 1.6 Arlington County, and its officers, elected and appointed officials, employees, and agents are to be listed as additional insureds under all coverages except Workers' Compensation, Professional Liability, and Automobile Liability, and the endorsement must clearly identify the County as an additional insured permitted to enjoy all the benefits under the applicable policy of insurance. The certified policy, if requested, must so state coverage afforded under this paragraph shall be primary as respects the County, its officers, elected and appointed officials, agents and employees. The following definition of the term "County" applies to all policies issued under the Contract and to all applicable endorsements:

"The County Board of Arlington County and any affiliated or subsidiary Board, Authority, Committee, or Independent Agency (including those newly constituted), provided that such affiliated or subsidiary Board, Authority, Committee, or Independent Agency is either a Body Politic created by the County Board of Arlington County, Virginia, or one in which controlling interest is vested in Arlington County; and Arlington County Constitutional Officers."

- 1.7 The Contractor shall be responsible for the work performed under the Contract Documents and every part thereof, and for all materials, tools, equipment, appliances, and property of any description used in connection with the work. The Contractor assumes all risks for direct and indirect damage or injury to the property or persons used or employed on or in connection with the Work contracted for, and of all damage or injury to any person or property wherever located, resulting from any action, omission, commission or operation under the Contract, or in connection in any way whatsoever with the contracted work.
- 1.8 The insurance coverage required shall remain in force throughout the Contract or as otherwise stated in the Contract Documents or these Insurance Requirements. If the Contractor fails to provide acceptable evidence of current insurance within seven (7) days of written notice at any time during the Contract, the County shall have the absolute right to terminate the Contract without any further obligation to the Contractor.
- 1.9 Contractual and other liability insurance provided under this Contract shall not contain a supervision, inspection or engineering services exclusion that would preclude the County from supervising or inspecting the work as to the end result. The Contractor shall assume all on-the-job responsibilities as to the control of persons directly employed by it and of the subcontractors and any persons employed by the subcontractor and/or carriers delivering and receiving materials from the Project.
- 1.10 If any policy contains a warranty stating that coverage is null and void (or words to that effect) if the Contractor does not comply with the most stringent regulations governing the work, such policy shall be modified so that coverage shall be afforded in all cases except for the Contractor's willful or intentional noncompliance with applicable government regulations.
- 1.11 All policies shall include the following language: "The insolvency or bankruptcy of the insured or of the insured's estate will not relieve the insurance company of its obligations under this policy."
- 1.12 All policy forms must "Pay on behalf of" rather than "Indemnify" the insured.

- 1.13 Nothing contained in these Insurance Requirements or the Contract Documents shall be construed as creating any contractual relationship between any subcontractor and the County. The Contractor shall be as fully responsible to the County for the acts and omissions of its subcontractors and of persons employed by them as it is for acts and omissions of persons directly employed by it.
 - 1.14 Precaution shall be exercised by the Contractor at all times for the protection of persons, (including employees) and property. All existing structures, utilities, roads, services, trees and shrubbery shall be protected against damage or interruption of service at all times by the Contractor and its subcontractors during the term of the Contract, and the Contractor shall be held responsible for any damage to property occurring by reason of its work under the Contract whether identified on the Contract Documents or not.
 - 1.15 For any claims related to this work, The Contractor's insurance shall be deemed primary and non-contributory to all other applicable coverage and in particular with respect to Arlington County, its representatives, officials, employees, and agents. Any insurance or self-insurance maintained by Arlington County shall be excess and noncontributory of the Contractor's insurance. The Contractor shall waive its right of subrogation for all insurance claims.
 - 1.16 If the Contractor does not meet the insurance requirements set forth by the Contract Documents, alternate insurance coverage or self-insurance, satisfactory to the Purchasing Agent, may be considered. Written requests for consideration of alternate coverages including the Contractor's most recent actuarial report and a copy of its self-insurance resolution to determine the adequacy of the insurance funding must be received by the County Purchasing Agent at least ten (10) working days prior to the date set for receipt of bids or proposals. If the County denies the request for alternate coverages, the specified coverages will be required to be submitted. If the County permits alternate coverage, an Addendum to the Insurance Requirements will be prepared and distributed prior to the time and date set for receipt of bids or proposals.
 - 1.17 All required insurance coverages must be acquired from insurers authorized to do business in the Commonwealth of Virginia and acceptable to the County. The insurers must also have a policyholders' with a rating of "A-VII" in the latest edition of the A.M. Best Co.'s Insurance Reports, unless the County grants specific approval for an exception, in the same manner as described in 1.16 above.
 - 1.18 The Contractor shall be responsible for payment of any deductibles applicable to the coverages.
 - 1.19 The Contractor must disclose the amount of any deductible or self-insurance component applicable to the General Liability, Automobile Liability, Professional Liability, Intellectual Property or any other policies, if any. The County reserves the right to request additional information to determine if the Contractor has the financial capacity to meet its obligations under a deductible. Thereafter, at its option, the County may require a lower deductible, funds equal to the deductible be placed in escrow, a certificate of self-insurance, collateral, or other mechanism in the amount of the deductible to ensure additional protection for the County.
2. Contractor's Insurance:
- 2.1 The Contractor shall purchase the following insurance coverages, including the terms, provisions and limits shown in the Insurance Checklist.

2.1.1 Commercial General Liability - Such Commercial General Liability policy shall include any or all of the following as indicated on the Checklist:

- i. General aggregate limit is to apply per project;
- ii. Premises/Operations;
- iii. Actions of Independent Contractors;
- iv. Products/Completed Operations to be maintained for five (5) years after completion of the Work;
- v. Contractual Liability, including protection for the Contractor from claims arising out of liability assumed under this Contract;
- vi. Personal Injury Liability including, including but not limited to, coverage for offenses related to employment and copyright infringement;
- vii. Explosion, Collapse, or Underground (XCU) hazards.

2.1.2 Business Automobile Liability, including coverage for any owned, hired, or non-owned motor vehicles, Uninsured Motorists coverage, and automobile contractual liability.

2.1.3 Workers' Compensation - statutory benefits as required by Virginia law or the U.S. Longshoremen's and Harbor Workers' Compensation Act, or other laws as required by labor union agreements, including standard Other States coverage; Employers' Liability coverage. The policy shall not contain any provision or definition which would serve to eliminate third party action over claims, including exclusion for bodily injury to an employee of the insured, employees of the premises owner, or employees of the general contractor to which the insured is subcontracted; or employees of the insured's subcontractor.

2.2 The Contractor shall take reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to, its employees on the job, and others. The Contractor shall comply with all applicable provisions of federal, state and municipal safety laws, insurance requirement's, standard industry practices, the requirements of the operations and this contract, the Contractor, directly through its subcontractors, shall effect and properly maintain at all times, as required by the conditions and progress of the work, necessary safeguards for safety and protection of the public, including securing areas, posting danger signs, placarding, labeling or posting other forms of warning against hazards.

3. Commercial General or other Liability Insurance - Claims-made Basis:

3.1 If Commercial General or other liability insurance purchased by the Contractor has been issued on a claims-made basis, the Contractor must comply with the following additional conditions. The limits of liability and the extensions to be included as described in the Insurance Checklist remain the same. The Contractor must either:

- i. Agree to provide insurance, copies of the endorsement and certified documentation evidencing the above coverages and naming the County as an additional insured for a period of five (5) years after final payment under the

Contract. Such documentation shall evidence a retroactive date, no later than the beginning of the Contractors or subcontractors' work under this Contract, or

- ii. Purchase an extended (minimum five [5] years) reporting period endorsement for the policy or policies in force during the term of this Contract and evidence the purchase of this extended reporting period endorsement by means of a copy of the endorsement itself. The extended reporting period will begin upon final payment under the Contract.

4. Builder's Risk Insurance

- 4.1 The Contractor shall purchase and maintain builders risk insurance with a limit equal to the initial Contract Amount and any amendments to the Contract which affect the project cost on a replacement cost basis. Builder's risk insurance shall be maintained until Final Payment under the Contract has been made or until no person or entity other than the County has an insurable interest in the covered property, whichever is earlier. The builders risk insurance shall include the County as defined in Section 1.6, Contractor, subcontractors and sub-subcontractors as named insureds.
 - 4.2 Insurance shall be on an all-risks policy form including the perils of fire, theft, vandalism, malicious mischief, lightning, wind, force majeure, collapse, and earthquake. Coverage is to apply for demolition occasioned by enforcement of any applicable legal requirements, and Architect's fees. Coverage for the peril of flood shall not be required unless otherwise required in the Contract Documents.
 - 4.3 Unless otherwise provided in the Contract Documents, the builders risk insurance shall also cover materials to be incorporated into the project which are stored off the site.
 - 4.4 The Contractor shall purchase and maintain Boiler and Machinery insurance, if required by the contract documents or by law, with a limit satisfactory to the County. The Boiler and Machinery insurance shall cover objects during installation and until Final Acceptance by the County. The County shall be included as a named insured.
 - 4.5 Any loss under builder's risk insurance shall be payable to the County as fiduciary for the insureds, as their interests may appear, subject to any mortgagee clause. The Contractor shall pay subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require subcontractors to make payments to their sub-subcontractors in similar manner. The County, as fiduciary, shall have the right to adjust and settle a loss with insurers.
 - 4.6 The insurance company providing the builders risk coverage shall grant permission for the County to partially occupy or use the premises under construction prior to final acceptance without removing or affecting the coverage.
5. Professional Errors & Omissions - \$1,000,000 per occurrence or claim.
6. Umbrella/Excess Liability - \$1,000,000 Bodily Injury, Property Damage and Personal Injury.

VII. ATTACHMENTS AND FORMS

ARLINGTON COUNTY, VIRGINIA
OFFICE OF THE PURCHASING AGENT

INVITATION TO BID NO. 23-DES-ITBPW-502
PROJECT NO.: 6721-000-R59

B I D F O R M

ELECTRONIC BIDS WILL BE RECEIVED BY THE COUNTY VIA VENDOR REGISTRY NOT LATER THAN 4:00
P.M., FEBRUARY 20, 2023.

FOR PROVIDING CONSTRUCTION OF THE SHIRLINGTON ROAD PEDESTRIAN BRIDGE IDENTIFIED HEREIN
IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, TERMS AND CONDITIONS OF THIS
SOLICITATION

THE FULL LEGAL NAME OF THE ENTITY SUBMITTING THIS BID MUST BE WRITTEN IN THE SPACE
BELOW. THIS BID FORM AND ALL OTHER DOCUMENTS THAT REQUIRE A SIGNATURE MUST BE FULLY
AND ACCURATELY COMPLETED AND SIGNED BY A PERSON WHO IS AUTHORIZED TO BIND THE
BIDDER, OR THE BID MAY BE REJECTED.

SUBMITTED BY:

(legal name of entity)

AUTHORIZED SIGNATURE:

PRINT NAME AND TITLE:

ADDRESS:

CITY/STATE/ZIP:

TELEPHONE NO.:

E-MAIL ADDRESS:

THIS ENTITY IS INCORPORATED
IN:

THIS ENTITY IS A:

*(check the applicable
option)*

CORPORATION

LIMITED PARTNERSHIP

GENERAL PARTNERSHIP

UNINCORPORATED
ASSOCIATION

LIMITED LIABILITY COMPANY

SOLE PROPRIETORSHIP

IS BIDDER AUTHORIZED TO TRANSACT BUSINESS IN THE COMMONWEALTH
OF VIRGINIA?

YES NO

IDENTIFICATION NO. ISSUED TO THE ENTITY BY THE
SCC:

*Any Bidder exempt from Virginia State Corporation Commission (SCC) authorization requirement
must include a statement with its bid explaining why it is not required to be so authorized.*

VIRGINIA CONTRACTOR'S LICENSE NUMBER: _____

ENTITY'S DUN & BRADSTREET D-U-N-S NUMBER: *(if available):* _____

HAS YOUR FIRM OR ANY OF ITS PRINCIPALS BEEN DEBARRED, ENJOINED, OR SUSPENDED FROM SUBMITTING BIDS TO ARLINGTON COUNTY, VIRGINIA, OR ANY OTHER STATE OR POLITICAL SUBDIVISION WITHIN THE PAST THREE YEARS? YES NO

HAS YOUR FIRM DEFAULTED ON ANY PROJECT IN THE LAST THREE YEARS? YES NO

HAS YOUR FIRM HAD ANY TYPE OF BUSINESS, CONTRACTING OR TRADE LICENSE, REGISTRATION OR CERTIFICATION REVOKED OR SUSPENDED IN THE PAST THREE YEARS? YES NO

HAS YOUR FIRM AND ITS PRINCIPALS/OWNERS BEEN CONVICTED OF ANY CRIME RELATING TO ITS CONTRACTING BUSINESS IN THE PAST TEN YEARS? YES NO

HAS YOUR FIRM BEEN FOUND IN VIOLATION OF ANY LAW APPLICABLE TO ITS CONTRACTING BUSINESS (LICENSING LAWS, TAX LAWS, WAGE AND HOUR LAWS, PREVAILING WAGE LAWS, ENVIRONMENTAL) WHERE THE RESULT OF SUCH VIOLATION WAS THE PAYMENT OF A FINE, BACK PAY DAMAGES, OR ANY OTHER PENALTY IN THE AMOUNT OF \$5000 OR MORE? YES NO

IS YOUR FIRM PREQUALIFIED BY THE VIRGINIA DEPT. OF TRANSPORTATION? YES NO

BIDDER STATUS: MINORITY OWNED: WOMAN OWNED: NEITHER:

The undersigned certifies that (Bidder Name) _____ is currently registered with the Virginia State Board of Contractors as required by the Code of Virginia. Certificate Number _____ for a Class _____ License was issued on the _____ day of _____, 20____. The undersigned further certifies that the registration fee and all renewal fees required under law have been paid.

TIME LIMIT FOR PROJECT: SUBSTANTIAL COMPLETION – **365 CALENDAR DAYS**
FINAL COMPLETION – **30 CALENDAR DAYS** FROM
SUBSTANTIAL COMPLETION

LIQUIDATED DAMAGES: SUBSTANTIAL COMPLETION - **\$1,817.50** PER DAY
FINAL COMPLETION - **\$1,817.50** PER DAY

MINIMUM BIDDER QUALIFICATIONS:

COMPANY QUALIFICATIONS:

- Bidders shall have seven continuous years of experience conducting public works infrastructure and street improvement projects in an urban environment. The experience shall be work of similar size and scope, construction, re-construction, and maintenance. The Bidder's obtained project experience shall consist of the following:
 - **New Bridge Construction**
 - **State and County streets**
 - **Curbs and gutters**
 - **Sidewalks and walkways**
 - **Pavement markings and signage**
 - **Electrical conduits**
 - **Traffic signals and street lighting**
 - **Streetscapes and related site work**

STAFFING QUALIFICATIONS:

- Site Supervisor:
The Contractor shall have a qualified and experienced Site Supervisor who can clearly communicate technical matters on-site at all times when construction activity is occurring or when the site is not in a secure state.
- Safety Project Officer:
The Contractor shall have at least one (1) employee certified by VDOT in Basic Work Zone Traffic Control on-site at all times that work is occurring and be responsible for the following:
 - Placement, maintenance, and removal of work zone traffic control devices,
 - Compliance with permit requirements and conditions, approved plans and specifications, the Virginia Work Area Protection Manual, and the Manual of Uniform Traffic Control Devices.

The flagger shall be certified in accordance with the VDOT Flagger Certification Program, the American Traffic Safety Services Association Flagger Certification Program or any other VDOT approved flagger program. The flagger shall have his/her certification card with them at all times while performing flagging activities.

The Contractor shall have at least one (1) employee certified in OSHA 10 on-site at all times that work is occurring. The employee shall have served as a Safety Project Officer on at least three (3) prior projects. If the Contractor has multiple employees with these requirements, the Contractor shall clearly identify which employee shall serve as the Safety Project Officer.

- Environmental Project Officer:
The Contractor shall have at least one (1) employee that has successfully completed the VDOT Erosion & Sediment Control Contractor Certification training. The Contractor employee shall be on-site during all land disturbance activities. The Contractor shall be responsible for ensuring

compliance with all applicable local, State, and Federal erosion and sediment control regulations and permits during land disturbance activities.

BID SUBMISSION REQUIREMENTS

Bidders shall provide the following documentation with their bid submission:

- Bidders shall provide a list of three similar projects recently completed projects that involving the same material, equal size, and comparable length. For each project, Bidders shall list the following information:
 - Project Name
 - Project description and Bidder's scope of work within the project
 - Project manager's name, telephone number and email address
 - Work start date, scheduled completion, and actual completion date
 - Initial contract cost and final contract cost

The experience of the contractor owner(s) may be imputed to a newly formed company/Contractor provided the Contractor owner(s) has/have at least five (5) years of demonstrated experience of reliability and meets the criteria set forth herein.

- Bid Surety in the amount of not less than 5%

COMPLETE THE PRICING SHEET PROVIDED WITH THE BID DOCUMENTS AS ATTACHMENT A TO ITB NO. 23-DES-ITBPW-502 AND SUBMIT IT WITH YOUR BID.

FAILURE TO SUBMIT THE PRICING SHEET WITH THE BID WILL DEEM THE BIDDER NONRESPONSIVE.

THE UNDERSIGNED UNDERSTANDS AND ACKNOWLEDGES THE FOLLOWING:

THE OFFICIAL COPY OF THE SOLICITATION DOCUMENTS, WHICH INCLUDES ANY ADDENDA, IS THE ELECTRONIC COPY THAT IS AVAILABLE FROM THE VENDOR REGISTRY WEBSITE AT:

<HTTPS://VRAPP.VENDORREGISTRY.COM/BIDS/VIEW/BIDSLIST?BUYERID=A596C7C4-0123-4202-BF15-3583300EE088>.

VENDORS ARE REQUIRED TO REGISTER ON [VENDOR REGISTRY](#) IN ORDER TO SUBMIT A RESPONSE TO THIS INVITATION TO BID. **NO RESPONSES WILL BE ACCEPTED AFTER THE BID DUE DATE AND TIME.**

POTENTIAL BIDDERS ARE RESPONSIBLE FOR DETERMINING THE ACCURACY AND COMPLETENESS OF ALL SOLICITATION DOCUMENTS THEY RECEIVE FROM ANY SOURCE, INCLUDING THE COUNTY.

The undersigned acknowledges receipt of the following Addenda:

ADDENDUM NO. 1 DATE: _____ INITIAL: _____

ADDENDUM NO. 2 DATE: _____ INITIAL: _____

ADDENDUM NO. 3 DATE: _____ INITIAL: _____

TRADE SECRETS OR PROPRIETARY INFORMATION:

Trade secrets or proprietary information submitted by an Offeror in connection with a procurement transaction will not be subject to public disclosure under the Virginia Freedom of Information Act. Pursuant to Section 4-112 of the Arlington County Purchasing Resolution, however, an Offeror seeking to protect submitted data or materials from disclosure must, before or upon submission of the data or materials, identify the specific data or materials to be protected and state the reasons why protection is necessary. Please note that designation of an entire bid, proposal, or prequalification application or of line-item prices or the total bid amount is prohibited.

Please mark one:

- No, the bid that I have submitted does not contain any trade secrets and/or proprietary information.
- Yes, the bid that I have submitted does contain trade secrets and/or proprietary information.

If Yes, you must clearly identify below the exact data or materials to be protected and list all applicable page numbers, sections, and paragraphs of the bid that contain such data or materials:

State the specific reason(s) why protection is necessary and why the identified information constitutes a trade secret or is proprietary:

If you fail above to identify the data or materials to be protected or to state the reason(s) why protection is necessary, you will not have invoked the protection of Section 4-111 of the Purchasing Resolution.

Accordingly, upon the award of a contract, the bid will be open for public inspection consistent with applicable law.

CERTIFICATION OF NON-COLLUSION: The undersigned certifies that this bid is not the result of or affected by (1) any act of collusion with another person engaged in the same line of business or commerce (as defined in Virginia Code §§ 59.1-68.6 *et seq.*) or (2) any act of fraud punishable under the Virginia Governmental Frauds Act (Virginia Code §§ 18.2-498.1 *et seq.*).

CONTACT PERSON AND MAILING ADDRESS FOR DELIVERY OF NOTICES

Provide the name and address of the person who is designated to receive notices and other communications regarding this solicitation. Refer to the "Notices" section in the draft Contract Terms and Conditions for information regarding delivery of notices.

NAME: _____

ADDRESS: _____

E-MAIL: _____

REFERENCES

Bidders must provide three references for similar goods that have been provided by the Bidder within the past seven years. The County reserves the right to evaluate the quality of Contractor's work through site visits with Contractor's references.

REFERENCE 1: Contact Name: _____
Organization: _____
Phone Number: _____
E-mail Address: _____
Contract/Project Name: _____
Contract/Project Dates (from-to): _____
Contract/Project Description: _____

REFERENCE 2: Contact Name: _____
Organization: _____
Phone Number: _____
E-mail Address: _____
Contract/Project Name: _____
Contract/Project Dates (from-to): _____
Contract/Project Description: _____

REFERENCE 3: Contact Name: _____
Organization: _____
Phone Number: _____
E-mail Address: _____
Contract/Project Name: _____
Contract/Project Dates (from-to): _____
Contract/Project Description: _____

BIDDER NAME: _____

INSURANCE CHECKLIST

CERTIFICATE OF INSURANCE MUST SHOW ALL COVERAGE AND ENDORSEMENTS MARKED "X".

COVERAGES REQUIRED
MINIMUMS)

LIMITS (FIGURES DENOTE

- 1. Workers' Compensation.....Statutory limits of Virginia
- 2. Employer's Liability.....\$500,000/accident, \$500,000/disease, \$500,000/disease policy limit
- 3. Commercial General Liability..... \$1,000,000 CSL BI/PD each occurrence, \$2 Million annual aggregate
 - 4. Premises/Operations.....\$1, Million CSL BI/PD each occurrence, \$ 2 Million annual aggregate
 - 7. Independent Contractors.....\$1 million CSL BI/PD each occurrence, \$2 Million annual aggregate
 - 8. Products Liability..... \$1 million CSL BI/PD each occurrence, \$2 Million annual aggregate
 - 9. Completed Operations..... \$1 million CSL BI/PD each occurrence, \$2 Million annual aggregate
 - 10. Contractual Liability (Must be shown on Certificate.... \$1 million CSL BI/PD each occurrence, \$2 Million annual aggregate
 - 11. Personal and Advertising Injury Liability.....\$1 million each offense, \$2 Million annual aggregate
 - 21. Moving and Rigging Floater.....Endorsement to CGL
 - 24. XCU Coverage.....Endorsement to CGL
- 5. Automobile Liability.....\$1 million CSL BI/PD each accident, Uninsured Motorist
 - 6. Owned/Hired/Non-Owned Vehicle.....\$1 million BI/PD each accident, Uninsured Motorist
 - 16. Motor Carrier Act (MCS-90) and CA9948 (or equivalent) Endorsements\$ 2 million BI/PD each accident, Uninsured Motorist
- 12. Umbrella/Excess Liability.....\$1 million Bodily Injury, Property Damage and Personal Injury
- 13. Per Project Aggregate for __ General Liability or __ Umbrella/Excess Liability (check coverage)
- 14. Professional Liability/ Errors and Omission (E&O)
 - a. Architects and Engineers.....\$1 million per occurrence/claim
 - b. Asbestos Removal Liability\$3 million per occurrence/claim
 - c. Medical Malpractice.....\$2.55 million per occurrence/claim or the statutory VA annual claim cap whichever is greater
 - 15. Miscellaneous E&O.....\$1 million per occurrence/claim
- 17. Motor Cargo Insurance.....\$ _____ (to the total value of the goods being transported)
- 18. Garage Liability.....\$1 million Bodily Injury, Property Damage per occurrence
- 19. Garage Keepers Liability.....\$1Million Comprehensive, \$1 Million Collision
- 20. Inland Marine-Bailee's Insurance..... \$ _____ (maximum value of goods under Contractor's care)
- 22. Crime Liability/ Employee Dishonesty insurance or Dishonesty Bond.....\$ _____
(Maximum value of revenue or goods that can be taken at one time)
- 23. Builder's Risk.....\$ _____ (Provide Coverage in the full amount of contract)
- 25. USL&H.....Federal Statutory Limits
- 26. Carrier Rating shall be Best's Rating of A-VII or better or its equivalent
- 27. Notice of Cancellation, nonrenewal or material change in coverage shall be provided to County at least thirty (30) days prior to action.
- 28. The County shall be named Additional Insured on all policies except Workers Compensation, Errors, and Omissions/Professional Liability and auto.
- 29. Certificate of Insurance shall show Bid Number and Bid Title.
- 30. Environmental Impairment Liability, including coverage of on-site clean up.....BI/PD \$3 Million per occurrence or \$6 Million Aggregate
 - a. If work requires clean up, remediation, and/or removal of bio -solids, bio-hazards waste, and any hazardous or toxic

material via transportation request Business Auto Liability add #16 from this checklist.

 31. Cyber insurance with Technology E&O..... \$2 Million per occurrence

 32. OTHER INSURANCE REQUIRED: _____

BIDDER'S STATEMENT:

If awarded the contract, I will comply with contract insurance requirements.

BIDDER NAME: _____

AUTH. SIGNATURE: _____

EXHIBIT B



COMMONWEALTH of VIRGINIA **DEPARTMENT OF LABOR AND INDUSTRY**

Gary G. Pan
COMMISSIONER

Main Street Centre
600 East Main Street, Suite 207
Richmond, Virginia 23219
PHONE (804) 371-2327
FAX (804) 371-6524

Virginia Department of Labor and Industry Wage Determination Decision

Project Name	Shirlington Pedestrian Bridge
County Project Code	23-DES-ITBPW-502
DOLI Project Number	ARLC-23-0004
County or Independent City	Arlington County
Publication Date	01/13/2023
Construction Type	Highway

Wage Determinations	Wage	Fringe
Carpenter, Includes Form Work	\$20.97	
Cement Mason/Concrete Finisher	\$20.70	\$8.03
Electrician, Includes Traffic Signalization	\$30.55	\$11.51
Fence Erector	\$15.28	
Ironworker, Reinforcing	\$34.18	
Ironworker, Structural	\$34.18	
Laborer: Asphalt, Includes Raker, Shoveler, Spreader and Distributor	\$19.06	\$1.75
Laborer: Common or General	\$21.41	\$8.11
Laborer: Grade Checker	\$14.88	
Laborer: Pipelayer	\$20.48	
Laborer: Power Tool Operator	\$15.69	
Operator: Asphalt Spreader and Distributor	\$20.58	\$2.31
Operator: Backhoe/Excavator/Trackhoe	\$23.93	

Wage Determinations	Wage	Fringe
Operator: Bobcat/Skid Steer/Skid Loader	\$19.00	\$3.49
Operator: Broom/Sweeper	\$17.40	\$2.01
Operator: Bulldozer, Including Utility	\$20.64	
Operator: Crane	\$29.46	
Operator: Drill	\$24.89	
Operator: Gradall	\$19.26	
Operator: Grader/Blade	\$23.21	
Operator: Hydroseeder	\$16.64	
Operator: Loader	\$18.92	
Operator: Mechanic	\$22.84	
Operator: Milling Machine	\$23.19	\$2.94
Operator: Pavement Planer	\$21.14	
Operator: Pavement Planer Groundsmen	\$19.75	
Operator: Paver (Asphalt, Aggregate, and Concrete)	\$20.33	\$2.81
Operator: Piledriver	\$21.83	\$4.08
Operator: Roller	\$18.92	
Operator: Roller (Finishing)	\$18.73	\$3.23
Operator: Screed	\$22.13	\$4.89
Pavement Marking Operator	\$22.16	
Pavement Marking Truck Driver	\$18.78	
Traffic Control: Flagger	\$13.64	
Truck Driver: 1/Single Axle Truck	\$19.35	
Truck Driver: Fuel and Lubricant Service	\$18.25	
Truck Driver: Heavy 7CY & Under	\$15.53	
Truck Driver: Heavy Over 7CY	\$18.05	
Truck Driver: Multi Axle	\$20.34	\$2.89

Additional Notes

All wage rates to be used on a contract will be set at the time the contract is awarded. While DOLI maintains a list of wage determinations online for reference purposes, only the wage determinations made in an official Wage Determination Decision, sent by DOLI to the contracting agency, can be used to ascertain the exact rates to be paid for a specific contract.

All rates are determined by DOLI and any appeals of specific classifications may be made through the Wage Determination Appeal form available at <http://www.doli.virginia.gov/wp-content/uploads/2021/04/Appeal-for-Wage-Determination-Clarification.pdf>

Any additional classifications may be requested through the Additional Wage Classification form available at <http://www.doli.virginia.gov/wp-content/uploads/2021/04/Request-for-Additional-Wage-Classification.pdf>

Understand your duties as a contractor under Virginia law by referencing our Contractor Responsibilities information sheet available at <http://www.doli.virginia.gov/wp-content/uploads/2021/04/PREVAILING-WAGE-CONTRACTOR-RESPONSIBILITIES.pdf>

Your employees have specific rights, which can be found on our List of Employee Rights information sheet available at <http://www.doli.virginia.gov/wp-content/uploads/2021/04/PREVAILING-WAGE-EMPLOYEE-RIGHTS.pdf>

Any further questions should be directed to PrevailingWage@doli.virginia.gov

EXHIBIT D

CONTRACTOR PERFORMANCE EVALUATION FORM

ARLINGTON COUNTY GOVERNMENT

Contractor Performance Evaluation Form

Contractor Name: _____ Contract No.: _____

Date: _____ Project/Contract Name: _____

Interim Evaluation _____ Final Evaluation _____

Scope of Work/Services Provided:

Contract Start Date: ____/____/____ Contract End Date: ____/____/____ Actual Completion Date: ____/____/____

Please rate the effectiveness of the Contractor's performance on the Contract/Project across the following dimensions:

Evaluation Criteria: Unacceptable Poor Satisfactory Excellent

Written comments to explain assigned ratings are required for any performance ratings below "satisfactory" or an "excellent" in any category.

Evaluation Questions

1. Quality of Workmanship

Rate the quality of the Contractor's workmanship. Were there quality-related or workmanship problems on the Contract? Was the Contractor responsive to remedial work required?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

2. Problem Solving and Decision Making

Rate the Contractor's ability to provide effective and creative problem solving, coordination and fair decision making on Contract/Project.

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

3. Project Schedule

Rate the Contractor's performance with regard to adhering to contract schedules. Did the Contractor meet the contract schedule, or the schedule as revised by approved change orders? If not was the delay attributable to the Contractor?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

4. Subcontractor Management

Rate the Contractor's ability, effort and success in managing and coordinating subcontractors (if no subcontractors rate the Contractor's overall project management). Was the Contractor able to effectively resolve problems?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

5. Safety

Rate the Contractor's safety procedures on this Contract/Project? Were there any OSHA violations or serious safety accidents?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

6. Environmental Compliance

Did the Contractor comply with local, state, and federal environmental standards in the performance of the Contract? Did the Contractor comply in good faith with local erosion and sedimentation control requirements and/or any Stormwater Pollution Prevention Plan?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

7. Change Orders

Did the Contractor unreasonably claim change orders or extras? Were the Contractor's prices on change orders and extra work reasonable?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

8. Paperwork Processing

Rate this Contractor's performance in completing and submitting required project paperwork (i.e. change orders, submittal, drawings, invoices, workforce reports, etc.) Did the Contractor submit the required paperwork promptly and in proper form?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

9. Supervisory Personnel

Rate the general performance of this Contractor's supervisory personnel. Did they have the knowledge, management skills and experience to run a project of this size and scope?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

10. Expertise, Knowledge and Experience

Rate this Contractor's personnel. Were they dedicated, experienced and qualified for the duration of project.

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

11. Project/Contract Closeout

Rate the Contractor's performance on timeliness and quality of closeout deliverables such as As-Built Drawings, Operation and Maintenance Manuals, and training. Did the Contractor complete the tasks or Project on schedule; was the punch list completed within the allotted time?

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

12. Level of Overall Performance

___ Unacceptable ___ Poor ___ Satisfactory ___ Excellent ___ N/A

Based on these comments, would you recommend this Contractor for comparable work in the future?

Yes No

Please provide any comments regarding the Contractor's performance or the quality of its work. The Contractor can also provide any comments or clarification on the evaluation in the box below.

(Project Officer or Contractor, use additional sheets, if Necessary):

ITB No. 23-DES-ITBPW-502
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Signatures and Certifications:

1. The information contained in this evaluation form represents, to the best of my knowledge, a true and accurate analysis of the Contractor's performance record on this Contract; and,
2. The contents on the evaluation form and the ratings were not negotiated with the Contractor or its representative for any reason.

Evaluator's Signature: _____ Date: _____

Evaluator's (PJO) Printed Name _____ Evaluator's Title: _____

Contractor's signature below acknowledges receipt and the opportunity to respond:

Contractor Signature: _____ Date: _____

Contractor Printed Name: _____ Title: _____

EVALUATION RATINGS DEFINITIONS

Rating	Definition	Notes
Excellent	Performance meets contractual requirements and exceeds many to the County's benefit. The contractual performance of the element or sub-element being evaluated was accomplished with few minor problems for which corrective actions taken by the contractor were highly effective.	To justify an Exceptional rating, identify multiple significant events and state how they were of benefit to the County. A singular benefit, however, could be of such magnitude that it alone constitutes an Exceptional rating. Also, there should have been NO significant weaknesses identified.
Satisfactory	Performance meets contractual requirements. The contractual performance of the element or sub-element contains some minor problems for which corrective actions taken by the contractor appear or were satisfactory.	To justify a Satisfactory rating, there should have been only minor problems, or major problems the contractor recovered from without impact to the contract/order. There should have been NO significant weaknesses identified. A fundamental principle of assigning ratings is that contractors will not be evaluated with a rating lower than Satisfactory solely for not performing beyond the requirements of the contract/order.
Poor	Performance does not meet some contractual requirements. The contractual performance of the element or sub-element being evaluated reflects a serious problem for which the contractor has not yet identified corrective actions. The contractor's proposed actions appear only marginally effective or were not fully implemented.	To justify poor performance, identify a significant event in each category that the contractor had trouble overcoming and state how it impacted the County. A poor rating should be supported by referencing the management tool that notified the contractor of the contractual deficiency (e.g., management, quality, safety, or environmental deficiency report or letter).

Unacceptable	Performance does not meet most contractual requirements and recovery is not likely in a timely manner. The contractual performance of the element or sub-element contains a serious problem(s) for which the contractor's corrective actions appear or were ineffective.	To justify an Unsatisfactory rating, identify multiple significant events in each category that the contractor had trouble overcoming and state how it impacted the County. A singular problem, however, could be of such serious magnitude that it alone constitutes an unsatisfactory rating. An Unsatisfactory rating should be supported by referencing the management tools used to notify the contractor of the contractual deficiencies (e.g., management, quality, safety, or environmental deficiency reports, or letters).
Not Applicable (N/A)	N/A (not applicable) should be used if the ratings are not going to be applied to a particular area for evaluation.	

END

EXHIBIT E
ARLINGTON COUNTY DES ENGINEERING
SPECIAL CONDITIONS

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PROJECT SUMMARY

The purpose of the Shirlington Road Pedestrian Bridge project is to build a new bicycle and pedestrian prefabricated bridge across Four Mile Run to provide for an effective and safe bicycle and pedestrian access. The other improvements include new streetlighting, median, sidewalk and crosswalk retrofits, as well as a new Rectangular Rapid Flashing Beacon (RRFB).

The Contractor shall provide all resources to successfully perform the terms of this contract in accordance with project plans, and in compliance with Arlington County and VDOT Standards and Specifications. The Contractor shall perform the work complete, in place, tested, and ready for continuous service.

All work within the VDOT Right-Of-Way shall be performed in accordance with the VDOT Standards and Specifications, unless otherwise noted. All work within the County Right-Of-Way shall be in accordance with the Arlington County Standards and Specifications, unless otherwise noted.

SUPPLEMENTS TO THE GENERAL CONDITIONS

These Conditions modify the Arlington County Construction General Conditions. All provisions that are not modified or deleted by these Supplemental Conditions shall remain in full force and effect.

The address system used in these Supplemental Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE B – DRAWINGS, SPECIFICATIONS AND RELATED DATA

SC-B.10 TESTS

Add the following new language to Paragraph B.10:

All materials testing shall be in compliance with the Arlington County Materials Testing Specification Reference. This document specifies the method and frequency of testing for Arlington County projects. A copy of this document is included in the bid documents. This shall be incidental to the work and no separate payment will be made.

The Contractor shall engage the services of a geotechnical company, acceptable to both the County and VDOT, to conduct all materials testing per the County and VDOT Specifications.

If it is observed that samples for testing are being improperly taken or that samples are being taken from an area that is not fully representative of all project conditions, then Contractor shall take and test additional samples at the County Project Officer's request from areas designated by the County Project Officer and at the Contractor's expense.

In addition, the Contractor shall provide the County with unfettered site access as needed for VDOT/County personnel or VDOT/County consultants to enter the site, inspect, and perform any additional testing for any and all materials (including soil, concrete, asphalt, etc.).

Compaction results must meet VDOT Specifications and be certified by a Geotechnical Engineer licensed in Virginia. This work shall be at no cost to the County.

SC-B.13 SURVEYS AND CONTROLS

Delete Paragraph B.13 in its entirety and insert the following in its place:

Unless otherwise stated, the County will provide horizontal and vertical reference points necessary for the Contractor to proceed with the Work. The Contractor shall carefully preserve all reference points, and in the case of destruction thereof by the Contractor or due to the negligence of the Contractor or of any subcontractor, the Contractor shall be

responsible for expense and damage resulting therefrom and shall be responsible for any mistakes or construction errors that may be caused by the loss or disturbance of such reference points. The Contractor shall be responsible for laying out the Work and shall retain a professional land surveyor licensed in the Commonwealth of Virginia to survey and provide all necessary construction layouts and to establish all control lines, grades, and elevations during construction.

ARTICLE C – COUNTY, COUNTY PROJECT OFFICER, AND CONTRACTOR RELATIONS

SC-C.1 STATUS OF COUNTY PROJECT OFFICER OR DESIGNEE

Add the following new language to Paragraph C.1:

The County Project Officer will coordinate and consult with the VDOT Field Inspector as appropriate when working within the VDOT Right-Of-Way.

SC-C.4 INSPECTION OF WORK

Add the following new language to Paragraph C.4:

Contractor shall notify the Project Officer at least 3 working days prior to disturbing any existing, or installing any new, traffic signs, signals, or other traffic control devices. The Contractor shall allow 3 working days for the inspection and approval of the premarkings prior to placing the permanent markings.

SC-C.9 CONTRACTOR MANAGEMENT PERSONNEL

Add the following new language to Paragraph C.9:

Site Supervisor:

The Contractor shall have a qualified and experienced Site Supervisor who can clearly communicate technical matters on-site at all times when construction activity is occurring or when the site is not in a secure state.

Safety Project Officer:

The Contractor shall have at least one (1) employee certified by VDOT in Basic Work Zone Traffic Control on-site at all times that work is occurring and be responsible for the following:

- Placement, maintenance, and removal of work zone traffic control devices,
- Compliance with permit requirements and conditions, approved plans and specifications, the Virginia Work Area Protection Manual, and the Manual of Uniform Traffic Control Devices.

The flagger shall be certified in accordance with the VDOT Flagger Certification Program, the American Traffic Safety Services Association Flagger Certification Program or any other

VDOT approved flagger program. The flagger shall have his/her certification card with them at all times while performing flagging activities.

The Contractor shall have at least one (1) employee certified in OSHA 10 on-site at all times that work is occurring. The employee shall have served as a Safety Project Officer on at least three (3) prior projects. If the Contractor has multiple employees with these requirements, the Contractor shall clearly identify which employee shall serve as the Safety Project Officer.

Environmental Project Officer:

The Contractor shall have at least one (1) employee that has successfully completed the VDOT Erosion & Sediment Control Contractor Certification training. The Contractor employee shall be on-site during all land disturbance activities. The Contractor shall be responsible for ensuring compliance with all applicable local, State, and Federal erosion and sediment control regulations and permits during land disturbance activities.

If the Contractor proposes to deviate from the approved Erosion and Sediment Control Plan, it shall be the Contractor's responsibility to coordinate and obtain approval from the County Project Officer prior to implementing any changes.

SC-C.13 PROTECTION OF WORK AND PROPERTY

Add the following new language to Subparagraph C.13.c:

The Contractor shall be responsible for all damages caused by their construction activities. The Contractor shall perform or provide repairs, replacements, and restoration to all property that has been damaged resulting from construction operations performed by the Contractor, and shall meet the following requirements:

- Restore all areas to conditions that existed prior to construction. Remove and Replace damaged items with items equal to or better than the damaged items.

ARTICLE E – LEGAL RESPONSIBILITY AND PUBLIC SAFETY

SC-E.1 SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK

Add the following new language at the end of E.1:

When construction activity reaches in proximity to existing utilities, the trench(es) shall be opened a sufficient distance ahead of the work or test pits shall be made to verify the exact location and inverts of the utility to allow for possible changes in the line or grade as directed by the Project Officer. This shall be incidental to the work and no separate payment shall be made.

SC-E.2 PUBLIC CONVENIENCE

Add the following new language to Paragraph E.2:

The Contractor shall set up controls at the beginning of each work day and take down controls at the end of each work day for the duration of the project. At all times the Contractor shall maintain safe two-way vehicular traffic, and safe accessible pedestrian traffic in conformance with County and VDOT standards.

At all times the Contractor shall use the personnel and traffic control signs and devices necessary to comply with the Virginia Work Area Protection Manual and Part VI of the "National Manual on Uniform Traffic Control Devices." The Contractor has sole responsibility for ensuring that its operations are conducted in a safe manner and notwithstanding any other provision to the contrary, shall fully indemnify Arlington County, its officers, agents and employees for any damage or injury related to traffic operations which is caused by negligent or otherwise improper or deficient performance under the Contract or nonperformance of the terms of the Contract. All personnel, signs, barricades and any other items necessary for the maintenance of traffic and safety shall be provided by the Contractor.

When conditions warrant due to traffic volumes, patterns, or special events, the County may suspend or otherwise direct the Contractor's activities to protect the public and or the County's transportation network.

When the project includes a VDOT and/or County approved MOT Plan (or Plans), the Contractor shall strictly abide by this plan. If the Contractor proposes to deviate from the approved MOT Plan for a County road, it shall be the Contractor's responsibility to coordinate and obtain approval from the County Project Officer prior to implementing any changes. If the Contractor proposes to deviate from the approved MOT Plan for a VDOT road, it shall be the Contractor's responsibility to coordinate and obtain approval directly from VDOT prior to implementing any changes.

Prior to any lane closures within the VDOT Right-of-Way, the County Project Officer and VDOT Field Inspector must be notified in advance of such lane closure in accordance with VDOT requirements.

The Contractor shall not be entitled to any additional payment for changes to MOT which are the result of the Contractor's work schedule or resource allocation, weather delays, or other factors not controlled by the County.

Failure of the Contractor to correct any MOT deficiency immediately upon notification may result in the project being shut down until the deficiency is corrected, and a reduction from the amount of payment due in the amount of \$1,000.00 per violation. Repeated violations of this provision may result in contract termination.

The Contractor shall install project information signs (size - 36"x48") at least two (2) different locations for each site. Signs will be supplied by the County. Sign posts and

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incidentals necessary for a complete installation of the signs shall be furnished by the Contractor. Signs shall be installed at least two (2) weeks prior to the start of the construction. The Contractor shall coordinate the location of the signs with the Project Officer. After the project has been completed the Contractor shall remove and return the signs to the County Project Officer. The cost for this work shall be considered incidental to other items within the Contract and no separate payment will be made.

At the close of each work day, the area of work shall be confined to the smallest area possible, but in no event larger than the area designated in the Construction Documents, so that the maximum use of the street and sidewalk shall be restored and the hazard to traffic reduced to the minimum.

The Contractor shall preserve all bus stops, including maintaining adequate accessibility through and adjacent to the construction for buses and their passengers. The Contractor shall not close, relocate, or otherwise modify a bus stop without prior request of the Project Officer. Any relocation or closure of a bus stop will require at least four weeks advance notice for coordination with the county's bus stop coordinator.

SC-E.10 SITE CLEAN-UP AND WASTE DISPOSAL

Add the following new language to Paragraph E.10:

The County's Earth Products Recycling Yard (located at 4300 29th Street South, Arlington, VA) shall **not** be used on an as-needed basis for unspecified quantities of waste (due in part to the limited size of the Yard). Although atypical, the Yard **may** be considered, on a case-by-case basis, for disposal of specific types/quantities of waste from County construction projects. In such cases disposal arrangements must be approved by the County Project Officer, be made in advance, depend on available space and the type/quantity of waste, and comply with certain requirements (for example, concrete shall be broken into pieces no longer than 24" in any dimension, contain less than 20% soil content, and be free of rebar).

SC-E.11 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Delete Paragraph 2.

ARTICLE F– PROGRESS AND COMPLETION OF THE WORK

SC-F.2 TIME FOR COMPLETION

Delete Paragraph F.2 and replace with the following language:

It is hereby understood and mutually agreed by and between the Contractor and the County that the Commencement Date, the rate of progress, and the Time for Completion of the Work to be done hereunder are essential conditions of the Contract. The Contractor agrees that the Work shall be started promptly upon receipt of a written Notice to Proceed in accordance with the accepted schedule. Additional time shall not be allowed for holidays or weather delays except as allowed in the contract.

ARTICLE G– MEASUREMENT AND PAYMENT

SC-G.1 PAYMENTS TO CONTRACTOR

Add the following new language to Section G.1:

Payments will be based on actual quantities and site measurements of the approved work taken in the field by the County Project Officer using the Contract Unit Prices. Any Work that is not shown on the approved plans that has not been previously authorized in writing by the Project Officer shall be at the Contractor's expense, and at no cost to the County.

SPECIAL CONDITIONS

These Special Conditions include any project-specific requirements in addition to the General Condition, Supplementary Specifications, and the County Standards Referenced herein.

1. **CONSTRUCTION STANDARDS**

All work shall conform to project plans and specifications along with the current edition of following County and VDOT construction standards and specifications:

- **The Arlington County Department of Environmental Services (DES) Bike Parking Standards**, a copy of which may be downloaded at no charge from the internet at: <https://info.arlingtontransportationpartners.com/arlington-county-bike-parking-standards>
- **The Arlington County Department of Environmental Services (DES) Construction Standards and Specifications**, a copy of which may be downloaded at no charge from the internet at: <http://topics.arlingtonva.us/building/construction-standards-specifications/>
- **The Arlington County Department of Environmental Services (DES) Traffic Signal Specifications**, a copy of which may be downloaded at no charge from the internet at: <https://transportation.arlingtonva.us/traffic-signal-specification-updates/>
- **The Arlington County Department of Environmental Services (DES) Streetlight Specifications**, a copy of which may be downloaded at no charge from the internet at: <https://transportation.arlingtonva.us/streets/street-lights/lighting-standards-specifications-updates/>
- **The Arlington County Department of Environmental Services (DES) Pavement Marking Specifications**, a copy of which may be downloaded at no charge from the internet at: <http://transportation.arlingtonva.us/streets/traffic-signals/>
- **The Arlington County Department of Parks and Recreation (DPR) Specifications**, a copy of which may be downloaded at no charge from the internet at: <https://www.arlingtonva.us/Government/Departments/Parks-Recreation/About/Design-Standards>
- **The Virginia Department of Transportation (VDOT) Road and Bridge Standards and Specifications**, a copy of which may be downloaded at no charge from the internet at: <http://www.virginiadot.org/business/const/spec-default.asp>
- **The Virginia Work Area Protection Manual (WAPM)**, a copy of which may be downloaded at no charge from the internet at: <https://www.virginiadot.org/business/trafficeng-WZS.asp>
- **Manual on Uniform Traffic Control Devices(MUTCD)**, a copy of which may be downloaded at no charge from the internet at: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm

- **The Arlington County Department of Environmental Services (DES) Dechlorination and Disposal Procedures**, a copy of which may be downloaded at no charge from the internet at: <https://www.arlingtonva.us/Government/Programs/Water-Utilities/Discharging-Chlorinated-Water>
- **The Supplementary Specifications listed within the Contract.**

In case of a discrepancy, the following order of priority will apply, with the highest governing item appearing first and the least governing item appearing last:

The Contract Bid Items
 Special Conditions
 Contract Drawings
 Supplemental Specifications
 Arlington County Construction Standards and Specifications
 External Agency Specifications

2. PERMITS

Permits required for the project include, but are not limited to:

- **County Land Disturbing Activities (LDA) permit**
- **County Public Right-Of-Way (PROW) permit**
- **County Transportation Right-Of-Way(TROW) permits**
- **County Resource Protection Area (RPA) permit**
- **County Water Meter and Fire Hydrant permits**
- **VDOT Land Use permit**

All fees for Arlington County (County) permits will be waived by the County, and fees for non-County permits will be paid by the County.

The County will obtain the County LDA permit and the County RPA permit. The Contractor shall transfer the County LDA permit, in the Contractors name as the permittee and/or responsible party prior to the start of Work. The Contractor will obtain and pay for VDOT Land Use permit, if required prior to the start of work.

The Contractor shall provide a Responsible Land Disturber (RLD) that meets all the required qualifications of the permits. The Contractor shall complete and sign the RLD certificate and submit to the County Project Officer prior to the start of Work.

The Contractor shall obtain the County PROW permit, the County TROW permits and the County Water Meter and Fire Hydrant permits. The Contractor is responsible for investigating and satisfying all permit requirements for the above-mentioned permits.

3. SPECIAL CONTRACTOR/SUBCONTRACTOR QUALIFICATIONS

The Contractor shall have seven continuous years of experience conducting public works infrastructure, bridge construction, and street improvement projects in an urban environment. The experience shall be work of similar size and scope, construction, re-construction, and maintenance. The Contractor's obtained project experience shall consist of the following:

- **New Bridge Construction**
- **State and County streets**
- **Curbs and gutters**
- **Sidewalks and walkways**
- **Pavement markings and signage**
- **Electrical conduits**
- **Traffic signals and street lighting**
- **Streetscapes and related site work**

4. STAKEOUT AND CUT-SHEETS

The Contractor shall be responsible for laying out the work and shall retain a professional land surveyor licensed in the Commonwealth of Virginia to provide all necessary construction layouts and establish all control lines, grades, and elevation during construction. The Contractor shall submit a copy of all cut-sheets for review, per the Arlington County Specifications. All cut-sheets for layout and construction shall be provided as submittals at least seven (7) calendar days prior to construction of the work included on that cut-sheet. The cost of all necessary surveying services shall be considered incidental to the work and no separate payment shall be made.

5. WORK HOURS

The Contractor shall comply with **normal daytime working hours** as defined in the County Noise Control Ordinance unless otherwise defined by the project plans and specifications, or approved by the Project Officer.

The Contractor shall comply with **restricted working hours** of 9:00 am to 3:00 pm when working in Arlington County arterial streets unless otherwise indicated on the Maintenance of Traffic Plans for each project.

The Contractor shall comply with **restricted working hours** as defined by VDOT and as noted on the approved VDOT permit when working within the VDOT Right-Of-Way. For restricted work hours in VDOT ROW, see attached "Lane Closure Guidelines in NOVA District". The Contractor is responsible for satisfying all VDOT Permit requirements found at: <http://www.virginiadot.org/business/fairfax-permits-main.asp>.

In addition, the County reserves the right to restrict working days and hours to accommodate special site conditions as required.

6. GENERAL SITE SECURITY AND CONTROLS

The Contractor is responsible for securing its work area for safety and security. The Contractor shall confine its construction and presence to the Limits of Work, unless otherwise approved by the County Project Officer.

The Contractor shall provide, erect, and maintain barricades, fences, and/or signage as required to protect the general public, workers, and adjoining properties at no additional cost to the County. Before leaving the site at the end of each day, the Contractor shall replace any and all sections of the security fence or barricade moved or removed during work hours.

The Contractor shall maintain clear vehicular access to existing driveways and entrances at all times unless such access is otherwise addressed on County-approved project plans, precluding concrete pouring and curing of such access points, unless otherwise directed by the County Project Officer.

Homeowners shall be notified by the Contractor a minimum of fourteen (14) calendar days in advance of any driveway closure, and driveways can only be closed for a maximum of five (5) calendar days.

The Contractor shall monitor parking of construction personnel's private vehicles and ensure that the public has unobstructed access to and through parking areas.

7. TRAFFIC SIGNALS AND STREETLIGHTS

Materials and construction of the communications conduit, streetlights, and traffic signals shall abide by the latest versions of the 'Arlington County Traffic Signal Specifications and Standards' and 'Arlington County Lighting Specifications and Standards. All materials for these areas shall be approved by Arlington County Transportation Engineering and Operations Bureau. The County Project Officer will facilitate the material specification submissions for review by the Transportation Engineering and Operations Bureau.

The Contractor shall abide by VDOT's requirement to submit signal foundation details for review. These details include, but are not limited to soil tests to verify the detail design, along with any other supporting information required by VDOT in their submission package. Details shall be created for each signal pole foundation and shall be for both three feet and four feet diameter foundations. The County will assist only in the submission of these details to VDOT, if requested. The Contractor is responsible for satisfying all VDOT requirements. The Contractor shall incorporate all costs for this in relevant items and no payment will be made by the County. The submission shall be submitted with enough time for VDOT to adequately review it. The Contractor cannot claim any time delay or any additional compensation due to such delay.

Prior to removal of the existing signal equipment and materials, the Contractor shall meet with the Project Officer to verify which equipment will be returned to the County, when and where the returned equipment will be delivered, and which equipment will be disposed. All costs associated with this shall be incidental to other items in the Contract.

Installation of electrical service for temporary services such as signals, streetlights, signal cabinets, construction trailers, or for equipment use are incidental to the contract.

Intercepting existing streetlight conduits and splicing into existing cables are incidental to the contract.

References to a CCTV camera shall mean to both furnish and install the CCTV camera, unless specifically excluded.

As part of the luminaire installation, Contractor shall install house-side shields in each fixture. These shields will be provided by the County. If requested, the County will demonstrate how to install the shields. The Contractor shall contact the Streetlights Operations Team Manager at (703) 228-6531 to obtain the shields prior to ordering any streetlight materials to ensure they will be available at the time of construction, and to request a demonstration on how to install the shields. Failure to do so will be at the Contractor's expense for time if construction is stopped because the shields are not available. The installation of the shields is considered incidental to the contract and no additional payments shall be made for this work.

SUPPLEMENTS TO THE DES CONSTRUCTION STANDARDS AND SPECIFICATIONS

SECTION 01500 – TEMPORARY EROSION AND SEDIMENT CONTROL

PART 3 - EXECUTION

PARAGRAPH 3.1 Installation and Maintenance of Erosion and Sediment Controls

Delete

3.5.C The Contractor shall conduct dewatering operations in a manner to prevent sediment or other pollutants from discharging to the County's storm drain system, which includes the curb and gutter, or any surface water. Dewatering operations shall not create any erosion or flooding. Dewatering discharges that contain chemicals, hydrocarbons, or sewage shall not be discharged to the storm drain system. Any discharge from dewatering operations shall be properly filtered prior to being discharged. A dewatering plan with sufficient detail to ensure the proposed dewatering shall comply with applicable regulations must be included as part of the erosion and sediment control plan.

Add

3.5.C The Contractor shall conduct dewatering operations in a manner to prevent sediment or other pollutants from discharging to the County's storm drain system, which includes the curb and gutter, or any surface water. Dewatering operations shall not create any erosion or flooding. Dewatering discharges that contain chemicals, hydrocarbons, or sewage shall not be discharged to the storm drain system. Any discharge from dewatering operations shall be properly filtered prior to being discharged. A dewatering plan with sufficient detail to ensure the proposed dewatering shall comply with applicable regulations shall be prepared by the Contractor.

SECTION 02200 – EARTHWORK

PART 3 - EXECUTION

PARAGRAPH 3.5 Dewatering

Delete

3.5.C The Contractor shall conduct dewatering operations in a manner to prevent sediment or other pollutants from discharging to the County's storm drain system, which includes the curb and gutter, or any surface water. Dewatering operations shall not create any erosion or flooding. Dewatering discharges that contain chemicals, hydrocarbons, or sewage shall not be discharged to the storm drain system. A dewatering plan with sufficient detail to ensure the proposed dewatering shall comply with applicable regulations must be included as part of the erosion and sediment control plan.

Add

3.5.C The Contractor shall conduct dewatering operations in a manner to prevent sediment or other pollutants from discharging to the County's storm drain system, which

includes the curb and gutter, or any surface water. Dewatering operations shall not create any erosion or flooding. Dewatering discharges that contain chemicals, hydrocarbons, or sewage shall not be discharged to the storm drain system. Any discharge from dewatering operations shall be properly filtered prior to being discharged. A dewatering plan with sufficient detail to ensure the proposed dewatering shall comply with applicable regulations shall be prepared by the Contractor.

SECTION 02500 – GRAVITY SEWERS AND APPURTENANCES

PART 4 – MEASUREMENT AND PAYMENT

PARAGRAPH 4.1 Sewer

Delete

4.1.A Sewer pipe for the various materials, classes, and sizes shown on the plans shall be measured in linear feet along the center line of the pipe and shall be measured from inside wall of structure to inside wall of structures. Payment shall include the furnishing of all pipe and fittings, all necessary tests, excavation, removal and disposal of existing pipes, removal and disposal of unsuitable or surplus material, placement of bedding and backfill as shown in Standard M-3.0, restoration of roadways as shown in Standard M-6.1, all other restoration, and all other work required to providing a complete sewer installation in compliance with the Construction Documents.

Add

4.1.A Sewer pipe for the various materials, classes, and sizes shown on the plans shall be measured in linear feet along the center line of the pipe and shall be measured from inside wall of structure to inside wall of structures. Payment shall include the furnishing of all pipe and fittings, all necessary tests, excavation, abandonment and/or removal and disposal of existing pipes, removal and disposal of unsuitable or surplus material, placement of bedding and backfill as shown in Standard M-3.0, restoration of roadways as shown in Standard M-6.1, all other restoration, and all other work required to providing a complete sewer installation in compliance with the Construction Documents.

SECTION 02600 - BITUMINOUS ROADWAY PAVEMENTS

PART 4 – MEASUREMENT AND PAYMENT

Delete

4.2 Subbase shall be measured to the width and depths shown on the approved plans as verified in the field by the Project Officer or his designee. Payment shall be in cubic yards of material.

Add

4.2 Subbase shall be measured to the width and depths shown on the approved plans as verified in the field by the Project Officer or his designee. Payment shall be in cubic yards of material and shall include demolition, excavation, and the necessary preparation of the sub grade surface.

SECTION 02900 - PAVEMENT MARKINGS

PART 3 - EXECUTION

PARAGRAPH 3.2 Provision for Temporary Markings

Add

B. All Type D pavement markings shall conform to the latest VDOT requirements.

PART 4 - MEASUREMENT AND PAYMENT

PARAGRAPH 4.4 Removal/Eradication of Existing Pavement Markings

Delete

A. Payment for pavement line markings (type, class, width) removal and/or eradication shall be paid by actual work performed as listed in the contract and shall include all labor, materials, tools, equipment, transportation, supplies, and incidentals required to remove and/or eradicate the line markings as specified.

Add

A. Payment for pavement line markings (type, class, width) removal and/or eradication shall be incidental to the work and no separate payment shall be made.

Add

PARAGRAPH 4.5 Pavement Message Marking

A. Measurement of pavement message markings (type, class, size) shall be in units of each furnished and installed.

B. Payment for pavement message markings (type, class, size) shall be in units of each and shall include all labor, materials, tools, equipment, transportation, supplies, and incidentals required to furnish and install the message markings as specified.

SECTION 329100 - PLANTING PREPARATION

PART 4 - MEASUREMENT AND PAYMENT

Add

4.10 The measurement of CONTINUOUS SOIL PANEL to be paid for shall be per CUBIC YARD of the amended soil in accordance with the plans, specifications and to the satisfaction of the Project Officer.

4.11 The unit price for CONTINUOUS SOIL PANEL shall include the cost of furnishing all labor, materials, equipment and incidental expenses, including but not limited to imported topsoil, vapor barrier, 4" UD-4 underdrain (per VDOT specification), bedding material per Continuous Soil Panel and Tree Pit Drainage Details, and connection to storm sewer system.

SUPPLEMENTS TO THE 2020 LIGHTING SPECIFICATIONS

Modify the listed sections as follows:

SECTION 14050 – LIGHTING CONDUCTORS

PART 4 MEASUREMENT AND PAYMENT

Delete

- (a) Furnish Conductor shall be measured and paid for on a linear foot basis.
- (b) Install Conductor will be measured and paid for on a linear foot basis. Several conductors pulled into a single conduit at the shall be measured by the length of the pull rather than the total length of the conductors installed. Cost for pulling conductors shall include all connectors, splice enclosures, or other appurtenances required for making the electrical connections.
 - 1. The cost of installing or replacing pull rope shall be incidental to the cost of pulling conductor.

Add

- (a) Furnishing and installing all conductor(s) and/or cable(s) for streetlights is included in a single price paid per linear foot measured by the length of conduit installed. The Unit Price shall include the cost of all conductors, fittings, connections, slack, securing terminals and other incidentals necessary for the Work as detailed in the County Lighting Specifications.
 - 1. The size, number and/or required slack length of the conductor(s) and/or cable(s) will not be assessed independently for payment.
 - 2. The cost of installing or replacing pull rope shall be incidental to the cost of the conductor(s).
- (b) THIS LINE INTENTIONALLY LEFT BLANK

DYNAMIC PILE TESTING FOR FRICTION PILES (LRFD)

I. DESCRIPTION

This work shall consist of dynamic testing of piles by the use of electronic monitoring equipment, reprocessing the data and furnishing a written report of the results.

II. EQUIPMENT

All equipment necessary for the dynamic monitoring, including but not limited to the gages and cables, shall be furnished by the Dynamic Testing Consultant. All the equipment shall conform to the requirements of ASTM-4945-08, Standard Test Method for High Strain Dynamic Testing of Piles.

III. PERSONNEL

The Contractor shall employ a Dynamic Testing Consultant to install or supervise the installation of the necessary equipment, to perform the dynamic monitoring and to prepare the Dynamic Testing Report.

The dynamic monitoring operator shall have a minimum of two years experience, at least one of which shall have been in data acquisition from high strain dynamic pile testing and successful performance on at least two projects in similar geotechnical conditions, or who has a Certificate of Testing: Basic Level or better on the Foundation QA Examination for Providers of Pile Dynamic Analyzer (PDA) Testing Services.

The Dynamic Pile Testing Report shall be prepared by a Registered Professional Engineer (Engineer) with a minimum of five years experience, at least two of which shall have been in data interpretation from high strain dynamic pile testing and successful completion of at least five projects in similar geotechnical conditions, or who has a Certificate of Interpretation: Advanced Level or better on the Foundation QA Examination for Providers of PDA Testing Services.

IV. TESTING

Dynamic testing shall be conducted in the presence of the Engineer and during the entire time piles are initially driven or redriven and during pile restrike testing.

The Contractor shall notify the Engineer of the date and time for dynamic testing at least 48 hours prior to testing. Such notice shall be given during the normal work hours of the County. If additional dynamic testing is ordered by the Engineer, the Contractor shall schedule the tests in cooperation with the availability of the Engineer.

Where possible, splices to the pile(s) shall be made prior to the start of driving so that dynamic testing can be performed without interruption.

The Contractor shall fasten a pair of transducers and a pair of accelerometers in place prior to testing. Piles shall be driven until the soil resistance measured is 80 percent of the Nominal Pile Resistance shown on the plans and the required minimum tip elevation and penetration have been

obtained or as directed by the plans, approved wave equation analysis or as approved by the Engineer. Any pile not developing the specified end of initial drive Mobilized Pile Resistance shall be left at least one foot above cut off grade to allow for restrike testing. The Contractor shall remove the transducers and accelerometers after the dynamic testing is completed.

Pile restrike testing shall be conducted no sooner than 120 hours after the pile, or any pile within a 25 foot radius, has been driven. Restrike testing shall include dynamic testing of the pile when it is redriven. The pile shall be redriven with the same pile hammer used for initial driving. The restrike driving sequence shall be performed with a warmed up hammer and shall consist of striking the pile for 20 blows or until the pile penetrates an additional 3 inches, whichever occurs first. If the soil resistance measured on restrike is less than the Nominal Pile Resistance shown on the plans, the Engineer may direct the Contractor to drive all or a portion of the remaining test pile length and repeat the restrike testing. The Contractor will be notified by the Engineer of the necessity to perform a second restrike test within 3 days of the receipt of the results from a signal-matching analysis that estimates static soil resistance and simulates static load test results from the initial restrike.

All signals resulting from initial testing and any restrike testing shall be recorded and made available upon the request of the Engineer.

V. REPORTS

If requested by the Engineer, the following information shall be provided within 24 hours after completion of the testing: for each blow from the Dynamic Driving Records provide the Depth, Maximum Transferred Energy, Blows per Minute (including strokes, fuel settings, bounce chamber pressures, etc. as applicable), Maximum Tensile Stress, Maximum Compressive Stress and Pile Resistance.

The Contractor shall furnish the Engineer a Dynamic Pile Testing Report with the production pile order list.

The Dynamic Pile Testing Report shall include the following information for each pile tested:

Project identification and location

Location of test,

Date of test,

Description of the subsurface soil condition including log of nearest boring

Description of the test pile

Description of pile installation equipment, the lead type and any special installation equipment

Description of dynamic testing equipment, including model and software version(s) utilized in obtaining, evaluating and reporting dynamic data.

A copy of the Pile Driving Record

Pile Installation Details and Comments

Discussion of the hammer performance

Discussion of pile integrity

For at least every fifth blow from the Dynamic Driving Records: the Depth, Maximum Transferred Energy, Blows per Minute (including strokes, fuel settings, bounce chamber pressures, etc. as applicable), Maximum Tensile and Compressive Stress and Pile Resistance.

A graphical presentation of the following: Pile Penetration versus Maximum Transferred Energy, Maximum Compressive Stress, Maximum Tension Stress and Mobilized Pile Resistance.

The results from a signal-matching program that estimates static soil resistance and simulates static load test results for both the end of initial drive conditions and the beginning of restrrike conditions including Mobilized Pile Resistance for the shaft and toe with the associated parameters used in the estimation. The skin friction distribution along the pile shall also be presented.

When Dynamic Pile Testing is followed by a pile load test include a summary of soil resistance from both Load and Dynamic Testing, including an evaluation of the correlation between the two approaches and discussion of any discrepancies, if applicable. Plot of applied load versus average butt settlement, with determination of the nominal resistance required by the specifications, shall be provided.

A summary tabulation of the following information for both Initial Drive and Restrike: Pile Location and Designation, Date Driven, Pile Tip Elevation, Visual Blow Count Rate, Transferred Energy, Hammer Efficiency, Maximum Driving Stresses, Dynamic Testing Mobilized Pile Resistance, Signal-Matched Mobilized Pile Resistance for Shaft, Toe and Combined.

Recommendations for production pile driving criteria based on the results of the testing program. Driving criteria shall include: blow count to obtain the required Mobilized Pile Resistance for both initial drive and the restrrike of a production pile that does not meet initial criteria (include: stroke(s), fuel setting(s), bounce chamber pressure(s), etc. as applicable), criteria for controlling driving stresses in the pile (including maximum allowable hammer strokes, recommendations for preboring or jetting that might be required, cushion material, thickness and replacement, etc. as applicable) to control driving stresses in the pile and criteria for terminating driving in the event of high blow count before reaching the approved tip elevation. Pile driving criteria shall be approved by the Engineer.

IV. MEASUREMENT AND PAYMENT

Dynamic pile testing (Friction Piles) will be measured and paid for at the contract unit price per each, which price shall be full compensation for providing all services of the testing consultant and dynamic monitoring operator as specified herein including providing, installing, monitoring the dynamic testing equipment, removing the dynamic test equipment, providing the data and preparing the written documentation specified, and for all tools, labor, materials, and incidentals necessary to complete the work. This price shall also include all work and equipment necessary to drive the pile during restrike testing, and any additional driving required should the required soil resistance not be obtained.

Payment will be made under:

Pay Item	Pay Unit
Dynamic Pile Test (Friction Piles)	Each

PREFABRICATED STEEL TRUSS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Virginia Department of Transportation Road and Bridge Specifications, 2020 (VDOT Specifications)

1.2 SUMMARY

- A. These specifications are for a fully engineered clear span steel truss bridge and shall be designed and manufactured by CONTECH Engineered Solutions at www.conteches.com or equivalent as approved by the Engineer. Truss shall be similar to the CONTECH Connector® Truss. To be considered equivalent, the truss must have parallel top and bottom chords.

1.3 MEASUREMENT AND PAYMENT

- A. Prefabricated Steel Truss shall be paid for as a lump sum. The price shall include design, fabrication, delivery, erection, wood deck, rub rails, safety rails, toe plates, bearing assemblies and any associated hardware, false work or temporary supports.

1.4 SUBMITTALS

- A. Shop drawings shall be submitted to the County for review and approval. Shop drawings shall be signed and sealed by a Professional Engineer licensed in the Commonwealth of Virginia.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. All structural members shall have a minimum thickness of material of at least 3/16".
- B. Type of steel:
 - 1. Members shall be fabricated from ASTM A242 or ASTM A588 steel for plates and structural shapes, and ASTM A606 or ASTM A847 for tubular sections.
 - 2. Minimum yield strength of steel members shall be greater than or equal to 50,000 psi.

3. Steel shall be unpainted weathering steel.
- C. Bridge deck:
1. Wood decking shall be No. 1 Grade Southern Yellow Pine.
 2. Wood decking shall be treated to a minimum of 0.40 pounds of preservative per cubic foot of wood.
 3. Wood decking shall be designed for a pedestrian loading condition of 90 psf and a 20,000 lb vehicular live load.
- D. Field splices shall be bolted with High Strength ASTM A325 bolts. Type 3 bolts shall be used for weathering steel bridges.
- E. Welding materials shall be in strict accordance with the American Welding Society (AWS). Structural welding code, D1.1. Filler metal as specified in 4.1 shall be used for the particular welding process required. Welders will be certified in accordance with AWS D1.1

PART 3 – EXECUTION

3.1 DIMENSIONS

- A. Dimensions shall be in accordance with the details shown in the plans.

3.2 DESIGN

- A. Open truss bridges shall be designed by a professional engineer experienced in pony truss bridge design for pedestrian use. Engineers shall be licensed in the Commonwealth of Virginia.
- B. In addition to self-weight and other dead loads, the bridges shall be designed for the following:
1. Pedestrian live load: A uniformly applied load of 90 psf, in accordance with the AASHTO Guide Specification for the Design of Pedestrian Bridges.
 2. Vehicle load: Bridge will also be designed to withstand a moving vehicle load which weighs 20,000 pounds.
 3. Wind load: Bridge shall be designed for a minimum wind load of 35 pounds per

square foot (approximately 120 mph). The wind should be calculated on the entire vertical surface of the bridge as if fully enclosed.

- C. Design Criteria: The design of the bridges shall be in accordance with the AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017; and LRFD Guide Specifications for Design of Pedestrian Bridges, 2nd Edition, 2009.
- D. Temperature: Bridge shall be designed to accommodate a temperature differential of 120 degrees Fahrenheit. Bridges shall be placed on elastomeric bearing pads sufficient to accommodate thermal movements. At least 3/4" clearance shall be provided between the bridge and concrete abutments.
- E. Deflection: The vertical deflection of the bridge due to pedestrian live load shall not exceed 1/400 of the span length. The maximum deflection due to vehicular loads shall not exceed 1/800 of the span length. For pedestrian comfort, the load used for the deflection check be a minimum of 500 pounds per lineal foot of bridge or the uniform pedestrian live load, whichever is greater. The horizontal deflection due to lateral wind load shall not exceed 1/500 of the span length.

3.3 FABRICATION AND QUALITY CONTROL

- A. Bridge fabricator shall be certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability, and commitment to produce fabricated structural steel for Major Steel Bridge Structures with Fracture Critical and Sophisticated Paint Endorsements as set forth in the American Institute of Steel Construction (AISC) Certification Program.
- B. Workmanship, fabrication, and shop connections shall be in accordance with American Association of State Highway and Transportation Officials Specifications (AASHTO).
- C. Welding operators shall be properly accredited experienced operators, each of whom shall submit satisfactory evidence of experience and skill in welding structural steel with the kind of welding to be used in the work, and who have demonstrated the ability to make uniform good welds meeting the size and type of weld required.
- D. All welding shall utilize E70 or E80 series electrodes. The weld process used shall be Flux Core Arc Welding (FCAW) or Gas Metal Arch Welding (GMAW).
- E. All structural elements used in the bridge shall be identified by heat number of the steel member used. Specific mill test reports and individual welder certificates shall be tracked and kept on file to be provided at the request of the owner or engineer.
- F. To ensure quality control during bridge fabrication, the bridge supplier shall be the designer and fabricator of the bridge and shall not assign, sublet, or subcontract any part of the bridge fabrication including painting.

- G. The bridge design Professional Engineer shall inspect the bridge structure after fabrication and furnish a signed and sealed Conformance Report and Affidavit verifying that the bridge has been inspected by the Engineer and fabricated in accordance with the Engineer's design calculations and approved shop drawings. This inspection and report shall not be delegated to any other engineer or person. The report shall include a summary of computations of the corrosion index (per ASTM G101) for every heat number of structural steel used in the bridge to verify that the steel is of a weathering grade.
- H. Each bridge shall be inspected by a Certified Welding Inspector that is qualified under the American Welding Society (AWS) QC-1 program. This inspection shall include as a minimum requirement the following: review of shop drawings, weld procedures, welder qualifications, and weld testing reports, visual inspection of welds and verification of overall dimensions and geometry of the bridge. A report shall be produced indicating the above items were reviewed and shall be signed and sealed by the CWI signifying compliance with AWS D1.1 codes

3.4 RAILING AND ACCESSORIES

- A. All railings shall have a smooth inside surface with no protrusions or depressions. All ends of angles and tubes shall be closed and ground smooth. In accordance with AASHTO, railings for bicycle use should be a minimum height of 54" above the floor deck.
- B. Continuous rails shall be located on the inside of the trusses. The safety rails shall be horizontal rails with a maximum opening of 4 inches.

3.5 FINISHES

- A. All boldly exposed surfaces of weathering steel bridges shall be sand blasted in accordance with the Steel Structures Painting Council (SSPC) Surface Preparation Specification No. 7 "Brush Blast Cleaning".

3.6 DELIVERY AND ERECTION

- A. Bridges will be delivered by truck to a location nearest to the site accessible by roads. Hauling permits and freight charges are the responsibility of the manufacturer.
- B. The manufacturer will notify the Contractor in advance of the expected arrival. Information regarding delays after the trucks depart the plant such as weather, delays in permits, re-routing by public agencies or other circumstances will be passed on to the customer as soon as possible but the expense of such unavoidable delays will not be accepted by the manufacturer.
- C. The manufacturer will advise the Contractor of the actual lifting weights, attachment points and all necessary information to install the bridge. Unloading, splicing, bolting, and proper

lifting equipment is the responsibility of the Contractor.

- D. The Contractor shall install the anchor bolts in accordance with the manufacturer's anchor bolt spacing dimensions. All grounding and lightning protection shall be the responsibility of the Contractor.

3.7 LIMITED WARRANTY

- A. The bridge supplier shall warrant their steel structure(s) to be free of design, material and workmanship defects for a period of ten years from the date of delivery.

EXHIBIT F



Geotechnical Engineering Report

**Shirlington Road Pedestrian Bridge
Shirlington, Arlington County, Virginia**

February 11, 2021

Terracon Project No. JD205151

Prepared for:

Volkert, Inc
Springfield, Virginia

Prepared by:

Terracon Consultants, Inc.
Ashburn, Virginia



February 11, 2021

Volkert, Inc
6225 Brandon Avenue, Suite 540
Springfield, Virginia 22150



Attn: Mr. Brian Graham, PE
P: (703) 738-8331
E: brian.graham@volkert.com

Re: Geotechnical Engineering Report
Shirlington Road Pedestrian Bridge
Shirlington, Arlington County, Virginia
Terracon Project No. JD205151

Dear Mr. Graham:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PJD205151 dated May 8, 2020. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations for the proposed project. The final report will be signed and sealed after incorporating all the comments from the departments review.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Braque Mathson, EIT
Senior Project Manager

Sushant Upadhyaya, PhD, PE, PMP, RMP
Principal



REPORT TOPICS

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Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLANS
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Shirlington Road Pedestrian Bridge

Shirlington, Arlington County, Virginia

Terracon Project No. JD205151
February 11, 2021

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed pedestrian bridge to be located parallel to the existing Shirlington Road Bridge over Four Mile Run in Shirlington, Arlington County, Virginia. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Seismic site classification
- Foundation design and construction
- Lateral earth pressures
- Global Stability
- Trail Pavement

The geotechnical engineering Scope of Services for this project included the advancement of two test borings to depths of 60 feet below existing site grades.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and as separate graphs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located parallel to Shirlington Rd at Four Mile Run in Arlington County, Virginia (approximate 38.8431, -77.0859) See Site Location
Existing Improvements	Existing Shirlington Road bridge over Four Mile Run, asphalt trail along S. Arlington Mill Drive and concrete side walk along Shirlington Road, and other improvements around the project site. There are many underground utilities located in the area.

Geotechnical Engineering Report

Shirlington Road Pedestrian Bridge ■ Shirlington, Arlington County, Virginia

February 11, 2021 ■ Terracon Project No. JD205151



Item	Description
Current Ground Cover	Paved roadway, grass and concrete sidewalks
Existing Topography	Existing elevations vary from EL 32 at Four Mile Run level to EL 47 at the top of the slope.
Geology	The project site is located within the Coastal Plain Physiographic Province of Virginia. The Coastal Plain consists of a seaward thickening wedge of unconsolidated to semi-consolidated sedimentary deposits from the Cretaceous Geologic Period to the Holocene Geologic Epoch. These deposits represent marginal-marine to marine sediments consisting of interbedded sands and clays. The sediment beneath the majority of the proposed work area is mapped as the Potomac Formation which consists of pebbly quartzofelspathic sands interbedded with sandy, organic-rich clays and silts. Potomac Formation is overlain by alluvial deposits including unconsolidated sand, silt, and gravel. Additionally, existing fill was encountered that are believed to be associated with previous site development.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	Volkert provided us the 30% Submission Plans dated January 24, 2020, 60% Submission Plans, and As-Built Plans dated May 2, 1969.
Project Description	The pedestrian bridge is planned at the northwest corner of Shirlington Road and S. Arlington Mill Drive. The bridge will span over Four Mile Run. For the south abutment of the pedestrian bridge, the existing wingwall of the roadway bridge will be modified. The plan is to use the existing foundation and modify the top of the wall to support the pedestrian bridge. The north abutment of the bridge will be new. About 75 feet of at-grade trail is planned to connect the north end of the abutment to the existing sidewalk at Shirlington Road.
Proposed Structure	A 150 feet long and 15 feet wide single span pedestrian bridge. The bridge will have single span steel frame with wood planks. The proposed bridge will be supported on deep foundations.

Item	Description
Maximum Loads	Pile load were provided by Volkert: Strength - I (max) = 79.3 kips Strength - I (min) = 34.4 kips Service - I (max) = 53.2 kips Service - I (min) = 30.6 kips
Estimated Start of Construction	2021

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Stratum	General Description
Existing Fill	loose to medium dense, fine to coarse, CLAYEY SAND WITH GRAVEL (SC), SILTY SAND (SM), moist, light gray brown, gray to red brown.
Alluvium	medium dense to very dense, fine to coarse, CLAYEY SAND WITH GRAVEL (SC), POORLY GRADED SAND WITH GRAVEL (SP), CLAYEY SAND (SC), moist, light brown to white, light gray orange to red, light gray to light brown.
Potomac Formation	medium dense to very dense, SILTY SAND (SM), CLAYEY SAND (SC), SANDY LEAN CLAY (CL), POORLY GRADED SAND (SP), SANDY SILT (ML), SILTY CLAYEY SAND (SC-SM), moist, light blue gray, gray blue, light brown, gray to light brown, orange brown, gray, dark gray, light gray brown. hard to very hard, SILT (ML) with various percentage of sand, moist, dark gray

Groundwater

Groundwater level observations were made in the field during drilling and up to one day after the completion of the test borings. Longer-term groundwater level reading was obtained in temporary observation standpipe installed in test boring PB-2. A summary of the water level readings is presented below.

Test Boring No.	Ground Surface Elevation (ft)	Depth to Groundwater (ft)		Groundwater Elevation (ft)	
		During Drilling	Long-Term	During Drilling	Long-Term
PB-1	45.0	5.0	NR	40.0	NR
PB-2 ¹	45.5	13.0	20.0	32.5	25.5

1. Temporary Standpipe was installed.

2. NR: Not Recorded

The groundwater observations presented herein are considered to be an indication of the groundwater levels at the dates and times indicated. Where more impervious silt and clay soils are encountered, the amount of water seepage into the borings is limited, and it is generally not possible to establish the location of the groundwater table through short term water level observations. Accordingly, the groundwater information presented herein should be used with caution. Also, fluctuations in groundwater levels should be expected with seasons of the year, construction activity, changes to surface grades, precipitation, or other similar factors.

Soil Laboratory Test Results

Selected soil samples obtained from the field investigation were tested for grain size distribution, Atterberg limits, and natural moisture contents. A summary of soil laboratory test results is presented in **Exploration Results**. In addition to standard geotechnical soil laboratory testing, five soil samples were submitted for corrosion testing.

Geotechnical Design Parameters

A summary of the soil design parameters is presented in Table 1 under **Supporting Documents**. For each analysis, soil shear strength design parameters were selected based on laboratory tests, VDOT's Soil Design Parameters for Sound Barrier Walls, Retaining Walls, and Non-Critical Slopes, and our experience with similar soil materials and geologic condition.

EARTHWORK

All earthwork procedures should conform to Section 303 of the VDOT Road and Bridge Specifications, 2020. Earthwork is anticipated to include clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations and earthwork.

Fill materials should not be placed on frozen or frost-heaved soils, and/or soils that have been recently subjected to precipitation. All frozen or frost-heaved soils should be removed prior to continuation of fill operations. Borrow fill materials should not contain frozen materials at the time of placement. Compaction equipment that is compatible with the soil type used for fill should be selected. Theoretically, any equipment type can be used as long as the required density is achieved; however, sheepsfoot roller equipment are best suited for fine grained soils and vibratory smooth drum rollers are best suited for granular soils. Ideally, a smooth drum roller should be used for sealing the surface soils at the end of the day or prior to upcoming rain events. In addition, compaction equipment used adjacent to wingwalls should be selected so as to not impose undesirable surcharge on walls. All areas receiving fill should be graded to facilitate positive drainage of any water associated with precipitation and surface run-off.

Existing slopes should be continuously benched where embankments are constructed one-half width at a time; against slopes of existing embankments or hillsides; or across existing embankments, hillsides, and depressions at a skew angle of 30 degrees or more or the existing slopes are steeper than 4:1. For slopes steeper than 4:1 but not steeper than 1-1/2:1, the bench should be at least 6 feet in width. For slopes steeper than 1-1/2:1 but less than 1/2:1, the bench should be at least 4 feet in width. Benching should consist of a series of horizontal cuts beginning at the intersection with the original ground and continuing at each vertical intersection of the previous cut. Material removed during benching operations should be placed and compacted as embankment material.

After completion of compacted fill operations in pavement areas, asphalt operations should begin as soon as practically possible, or the finished subgrade should be protected from exposure to inclement weather conditions. Exposure to precipitation and freeze/thaw cycles will cause the finished subgrade to soften and become excessively disturbed. If construction plans require that finished subgrades remain exposed to weather conditions after completion of fill operations, additional fill should be placed above finished grades to protect the newly placed fill or reworking of the upper 1 to 2 feet of previously placed compacted fill should be planned.

Site Preparation

Prior to placing fill, any existing vegetation and root mat should be removed. Complete stripping of the topsoil should be performed in the proposed approach areas.

The subgrade should be proofrolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck within a minimum load of 25 tons. The proofrolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proofroll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should either be removed. Excessively wet or dry material should either be removed or moisture conditioned and recompacted.

Existing Fill

As noted in **Geotechnical Characterization**, borings PB-1 and PB-2 encountered existing fill to depths ranging from about 5 to 7 feet. The fill appears to have been placed in a controlled manner, but we have no records to indicate the degree of control. Support of foundations on or above existing fill soils, is discussed in this report. However, even with the recommended construction procedures, there is inherent risk for the owner that compressible fill or unsuitable material, within or buried by the fill will, not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but can be reduced by following the recommendations contained in this report.

Fill Material Types

Fill required to achieve design grade should be classified as structural fill and general fill. Structural fill is material used below, or within 20 feet of structures, pavements or constructed slopes. General fill is material used to achieve grade outside of these areas. Earthen materials used for structural and general fill should meet the following material property requirements:

Soil Type ¹	USCS Classification	Acceptable Parameters
Low Plasticity Cohesive	CL, CL-ML, ML	Liquid Limit less than 40 Plasticity index less than 15
Granular	GW, GP, GM, GC, SW, SP	Minimum CBR 5. Less than 10% Passing No. 200 sieve
Select Type I Material, CBR 30	VDOT 21A	As per VDOT Road and Bridge Specification 2020

1. Structural and general fill should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.

Fill Compaction Requirements

Structural and general fill should meet the following compaction requirements.

Item	Structural Fill	General Fill
Maximum Lift Thickness	8 inches or less in loose thickness when heavy, self-propelled compaction equipment is used. 4 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used	Same as Structural Fill
Minimum Compaction Requirements ^{1, 2}	95% of maximum dry density below foundations and within 6-inch of finished pavement subgrade 100% of max. above foundations, and within 6-inch below pavement subbase	As required to achieve the minimum compaction requirements
Water Content Range ¹	Soils: $\pm 20\%$ of optimum moisture content Aggregate: $\pm 2\%$ points of optimum moisture content	As required to achieve minimum compaction requirements

^{1.} Maximum density and optimum water content as determined by the standard Proctor test (VTM 1).
^{2.} If the granular material is a coarse sand or gravel, or of a uniform size, or has a low fines content, compaction comparison to relative density may be more appropriate. In this case, granular materials should be compacted to at least 95% relative density (ASTM D 4253 and D 4254).

Earthwork Construction Considerations

Shallow excavations for the proposed structure are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

The groundwater was encountered in soil test borings, due to the interlayered nature of the sands and clays, seeps and or springs may be encountered during excavations. The volume of water generated by seeps or springs, if present, can vary significantly. It is critical that as soon as water seepage is observed, the contractor should excavate surface trenches from the observed water seepage to a sump pit and sump pump.

If the water is allowed to saturate the subgrades, softening of the subgrade will occur very quickly, and extra costs will be incurred. However, if the contractor can channel the water to a sump pit and keep the majority of the subgrade from getting saturated, extra costs due to water softening should be significantly reduced.

The groundwater table could affect over excavation efforts, especially for over-excavation and replacement of lower strength soils. A temporary dewatering system consisting of sumps with pumps could be necessary to achieve the recommended depth of over-excavation.

The design of temporary excavations should be in accordance with OSHA regulations and should be signed and sealed by a registered professional engineer experienced in the design of such systems. As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, and/or state regulations.

It may be necessary to install vertical excavation support for the proposed construction. The feasibility of excavation support methods depends on such factors as the nature of the soil and groundwater conditions of the site, the depth and width of the excavation, the proximity and sensitivity of adjacent existing structures and utilities, the compatibility of support system with the proposed construction, and the general expertise available in the local construction industry. Depending on these considerations, flexible or rigid excavation support systems may be considered.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proofrolling, and mitigation of areas delineated by the proofroll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency as per VDOT specifications.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure.

The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil properties encountered at the site and as described on the exploration logs and results, it is our professional opinion that the **Seismic Site Classification is D**. Subsurface explorations at this site were extended to a maximum depth of 60 feet. The site properties below the boring depth to 60 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

CORROSION

The table below lists the results of laboratory soluble sulfate, soluble chloride, electrical resistivity, and pH testing. The values may be used to estimate potential corrosive characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

Boring	Sample Depth (feet)	Soil Description	Soluble Sulfate (%)	Soluble Chloride (%)	Electrical Resistivity (Ω-cm)	pH
PB-2	5-10	SP	91	291	600	5.55
PB-2	10-15	CL	72	45	1201	7.96
PB-2	15-20	SC	49	43	4336	7.93
PB-2	20-25	CL	73	32	2101	8.17
PB-2	25-30	SM	43	23	3568	7.33

Based on corrosion consideration criteria presented in Section 23.05-1 of Chapter 23 dated April 30, 2020 we estimated a sacrificial metal loss of 30% over 75-year design life.

DEEP FOUNDATIONS

The abutment A (south side) will be supported on the existing bridge’s wingwall (west end) that is supported by 10BP42 steel pile. After discussion with bridge design engineer it was confirmed that the design load shown on the as-built plans is the allowable capacity of 72 kips (36 tons). The wingwall (west end) has one row of vertical piles and two rows of battered piles (1H:4V). The length of the piles ranges varies from 25 feet to 30 feet and are embedded 1.5 feet in the abutment pile cap. The bottom of the abutment is assumed to be at elevation (EL) 28.5.

The abutment B (north side) will be supported on HP 12x53 steel piles with one row of vertical in the back and one row of battered piles in the front. The bottom of the abutment is assumed to be at EL 39.

As discussed with the bridge designer, the abutment A has been designed based on Allowable Stress Design (ASD) methodology and the abutment B has been designed based on AASHTO Load Resistance Factored Design (LRFD) methodology.

Driven Piles – Abutment A

The allowable stresses in piles are estimated based on section 4.5.7.3 of AASHTO 17th edition. The maximum allowable stress is $(0.25) \cdot (F_y) \cdot (\text{pile cross sectional area})$. We have reduced the pile area by 30 percent for corrosion considerations to estimate the axial capacity. AASHTO Section 4.5.6.2 recommends a factor of safety of 2.25 when performing static axial capacity calculation combined with a WEAP analysis and dynamic testing. Since the piles are under service for around 50 years we have used a factor of safety of 2.25 for design.

The ultimate and allowable structural pile capacities for the existing piles are calculated below:

$$F_y = 36 \text{ ksi} ; \text{ Pile Cross section Area} = 12.4 \text{ in}^2; \text{ Sacrificial reduction of area} = 30 \text{ percent}$$

$$\text{Allowable Structural Capacity: } 0.25 \cdot 36 \cdot 12.4 \cdot 0.70 = 78 \text{ kips};$$

$$\text{Ultimate Structural Capacity: } 78 \cdot 2.25 = 175.5 \text{ kips}$$

Geotechnical axial capacity was evaluated using the computer program APile version 2014.6.9 developed by Ensoft, Inc and the methods outlined in AASHTO Standard Specifications for Highway Bridges 17th Edition – 2002. We have developed the soil profiles and design parameters by reviewing the relevant test borings and laboratory test results. The soil properties and design parameters used in our analyses are summarized in Table 1 under **Supporting Documents**.

The geotechnical ultimate and allowable pile capacities are calculated to be 170 kips and 75.5 kips per pile, respectively. The design calculations and output files are presented in **Supporting Documents**. The settlement of the H-Piles was not evaluated since the applied load on the existing piles is expected to be less than design loads provided on the as-built plans.

Driven Piles – Abutment B

We have evaluated HP 12x53, Grade 50 piles to support the proposed pedestrian bridge at Abutment B. H-piles will develop the majority of their capacity through side resistance and end bearing on Potomac Formation.

The nominal axial compressive structural resistance (P_n) for piles loaded in compression should be as specified in LRFD Section 6.9.4.1. The H-piles are assumed to be fully embedded and the value of factor λ is taken as 0. Factored structural resistance (P_r) calculated for HP 12x53 of Grade 50 steel using a resistance factor (ϕ_c) of 0.50 is presented in the table below. It is the responsibility of the structural engineer to recalculate the nominal and factored pile structural compressive resistance (P_n) based on the actual unbraced pile length (l) and effective length factor (K), or on the actual elastic critical buckling resistance (P_e).

Pile Section	Steel Area A_s	Reduced Steel Area for Corrosion ¹	Nominal Structural Strength (P_n) ²		Factored Structural Strength (P_r) ³	
	in ²	in ²	kips	tons	kips	tons
HP 12x53	15.5	10.5	525	262	262	131

1. 30 percent reduction in area for corrosion consideration.
2. $P_n = 0.66l F_y A_s$
3. $P_r = P_n \times \phi_c$

We have calculated the geotechnical nominal compressional axial resistance of the piles using the computer program APile version 2014.6.9 developed by Ensoft, Inc. and the methods outlined in AASHTO LRFD Bridge Design Specifications 2020 (AASHTO LRFD). For the purposes of our calculations, the perimeter of the pile is assumed for the estimates of side resistance and the box area of the pile is assumed for the estimates of tip resistance. Up to 2 feet of new fill is expected at the abutment B to reach the proposed grade; therefore, we do not anticipate downdrag loads (negative side resistance) to be present on the piles. The factored resistance is calculated using a resistance factor (ϕ_{dyn}) of 0.65 and is summarized in table below. Since the geotechnical axial resistance is less than the structural resistance, we recommend that geotechnical axial resistance should be used for design.

Pile Section	Factored Design Axial Load (Q_p)	Nominal Design Resistance (R_n) ¹	Nominal Driving Resistance (R_{ndr}) ³	Estimated Elevation of Bottom of Pile Cap	Estimated Pile Length from Bottom of Pile Cap ²	Estimated Pile Tip Elevation
	kips	kips	kips	feet	feet	feet
HP 12x53	79.5	122.5	125	39	27	12

1. $R_n = Q_p / 0.65$; Resistance factor ($\phi_{dyn} = 0.65$) assumes dynamic load testing of at least two piles per site condition, but no less than 2% of the production piles.
2. Upper 3 feet of existing fill is not used in the axial resistance
3. Driving Resistance to reach estimated pile tip elevation (EL)

Pile center-to-center spacing of at least three pile widths is recommended, approximately 36 inches for HP 12X53 piles. The capacity of a pile group will be equal to the individual pile capacity multiplied by the number of piles in the group. The capacity of a group with closer pile spacing may be less and should be evaluated by the Geotechnical Engineer. We assumed there will be no scour at the abutment locations.

The vertical pile has a very low resistance to lateral loads and, for economy, substantial loadings are designed to be resisted by batter piles. The horizontal force can be resolved into two components, producing an axial compressive force and tensile force. We recommend that pile batter not exceed 1H:4V. Since the lateral load will be resisted by the battered piles no lateral load analysis has been performed.

Driven Pile Construction Considerations

The Contractor shall conduct wave equation analyses demonstrating the proposed hammer is suitable to install the proposed piles. Since dynamic testing methods will be used in the test pile program, the wave equation analysis must indicate that the hammer can mobilize the full nominal pile resistance during restrike. The wave equation analyses should demonstrate that the proposed hammer can develop the nominal driving resistance without exceeding allowable driving stresses. The contractor should submit the results of the wave equation analysis to the Geotechnical Engineer for review and acceptance, prior to mobilizing pile driving equipment to the site.

Dynamic pile load testing used with wave equation analyses is recommended to determine the driving criteria. We have used a resistance factor of 0.65 in our design recommendations, assuming that dynamic load testing will be performed. Pile driving equipment should be compatible with the soil conditions in order to achieve the required pile penetration and the required nominal pile driving resistance. The pile driving contractor should submit a list of proposed driving equipment along with a wave equation analysis using GRLWEAP to assess the suitability of the driving system. The driving criteria should be developed using CAPWAP signal matching results within a refined WEAP run for the test pile to account for the actual driving conditions. All pile driving and monitoring requirements for the installation of piles should be in accordance with VDOT Road and Bridge Construction Specifications 2020.

We recommend that a minimum of two dynamic load tests with signal matching be performed for abutment B before driving production piles. The test piles should be driven to the nominal driving resistance required per pile (R_{ndr}) as indicated in the section above. The test piles should be installed with the same equipment used for the wave equation analysis and the production piles. Test piles may be used as production piles.

Production piles should be driven utilizing the same hammer and equipment as the test pile and be based on the driving criteria established with the test pile program. If the pile driving contractor changes hammer, cushion or driving methods, a revised wave equation should be submitted and an additional dynamic load test should be performed.

During pile driving, the depth of embedment, blow counts, driving rate, and the driving records should be verified. The sequence of driving piles in groups can affect the pile lengths and driving resistances due to ground densification. We recommend that the piles in the centers of a pile group be driven first.

After the initial installation of test piles, the piles should set for a minimum of 72 hours so excessive pore pressure caused by driving operations can dissipate and the soils can set-up around the piles. After the waiting period, the piles should be re-driven to see if they have achieved the required nominal pile driving resistance.

Consideration of Existing Structures

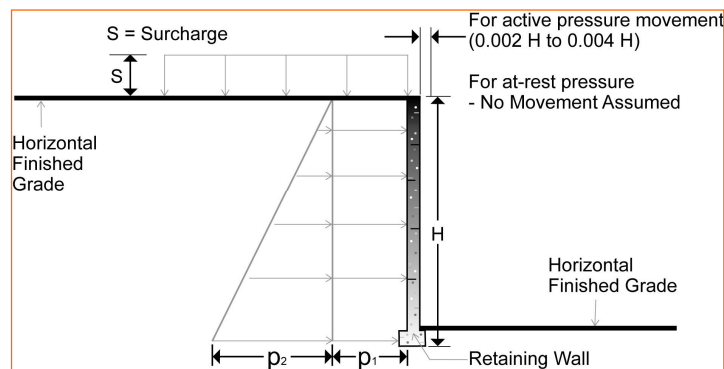
A pre-condition survey of the structures (existing bridges, utilities, and buildings) near the North Abutment should be completed prior to pile installation of pile foundation. The existing structures should be monitored during the pile driving for indications of movement or cracks. Pile driving should be stopped if the vibration level near the existing structures reaches above 0.5 inches. The potential impact of driving piles at this site should be considered when evaluating this alternative.

The pile driving process should be performed under the direction of the Geotechnical Engineer. The Geotechnical Engineer should document the pile installation process including soil and groundwater conditions encountered, consistency with expected conditions, and details of the installed pile.

LATERAL EARTH PRESSURES

Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the Table 1 provided in **Supporting Documents**. Earth pressures will be 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. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for walls restrained at the top such as abutment walls. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated). Hydrostatic pressures are not included in the lateral pressure calculations assuming relatively granular or free draining backfill material will be used behind the abutments.



Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively.

The lateral earth pressures shown in Table 1 are applicable only to cases where a subdrainage system is installed as per VDOT Specification. Hydrostatic pressures are not included in the lateral earth pressures assuming the use of relatively granular or free draining backfill, and subdrainage (weepholes) at the base of walls below grade.

Equivalent fluid pressure factors should be calculated by multiplying earth pressure coefficient with unit weight for the respective backfill conditions. Where applicable, the design should consider surcharge loads using a rectangular earth pressure distribution. The surcharge pressure ordinate should be obtained by multiplying the surface surcharge pressure (q) by the lateral earth pressure coefficient in Table 1 for the respective backfill condition. In addition to static earth pressures, the structural designer should consider dynamic earth pressures due to seismic loading, as applicable

GLOBAL STABILITY ANALYSES

Mechanics of Stability

Global stability analyses take into consideration material strength, presence and orientation of weak layers, water (piezometric) pressures, surcharge loads, and the slope geometry. Mathematical computations are performed using computer-assisted simulations to calculate a Factor of Safety (FS). Minor changes to slope geometry, surface water flow and/or groundwater levels could result in slope instability. Factor of Safety values are dependent upon the confidence in the parameters utilized in the analyses performed, among other factors related to the project itself.

The stability analysis was conducted using the computer program Slope/W Version 9.0.3.15488 developed by Geo-Slope International. This computer program was used to generate potential

failure surfaces with randomly selected radii and centers. The stability analysis was performed assuming static loading for drained (long-term) soil conditions. Slope stability analysis was not analyzed for dynamic loading. A search for the most critical potential failure surfaces occurring within earth materials in the proposed slope was performed using circular failure mode as calculated by the Spencer method. A surcharge load of 75 psf was used for pedestrian traffic where applicable.

Slope stability analyses were performed for the profiles and cross-section drawings obtained from the 30 percent plans.

Analyses Results

The stability of the slopes at the cross-section locations shown on the **Exploration Plan** were analyzed based on the provided topography and proposed grading. Soil properties used in the analyses are provided in Table 1.

Based on the analyses, the calculated FS for the critical surface identified in each section is shown below. As per VDOT (MOI chapter III) the minimum FS for global stability for structures is 1.5. The slope stability results are included in **Supporting Information**.

Cross-Section	Loading Condition	Minimum Calculated Factor-of-Safety for Slopes	
		Circular Failure Surface	Optimized Failure Surface
B-B', North Abutment	Long-Term	1.8	1.8
	Short-Term	2.0	1.9

TRAIL PAVEMENT

About 75 feet of at-grade trail is planned to connect the Abutment B to the existing sidewalk at Shirlington Road.

Proposed trail subgrades are expected to consist of firm existing fill, natural soils, or new compacted fill. These materials are generally considered suitable for support of the planned trail. However, where trail subgrades consist of unsuitable soils (Soft, loose, or highly plastic soils), we recommend budgeting for undercutting the unsuitable soils to a depth of at least 1 foot and backfilling with new compacted fill with a minimum CBR value of 5.0. The decision to undercut the existing fill should be based on a thorough proofroll of the pavement subgrades under the observation of the geotechnical engineer.

Geotechnical Engineering Report

Shirlington Road Pedestrian Bridge ■ Shirlington, Arlington County, Virginia
February 11, 2021 ■ Terracon Project No. JD205151



Minimum rigid and flexible pavement sections that may be required for the trail are presented below. Control of both surface water and groundwater is an important consideration for design and construction with respect to the overall performance of trail. The minimum pavement sections require that proper grading be maintained to direct surface water away from paved areas and to provide for efficient runoff from surrounding areas.

- Rigid Pavement:
 - Surface: 4 inches Portland Cement Concrete
 - Subbase: 4 inches Type I, VDOT No. 21B
- Flexible Pavement:
 - Surface: 2 inches SM 9.5D
 - Subbase: 8 inches Type I, VDOT No. 21B

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Geotechnical Engineering Report

Shirlington Road Pedestrian Bridge ■ Shirlington, Arlington County, Virginia

February 11, 2021 ■ Terracon Project No. JD205151



Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

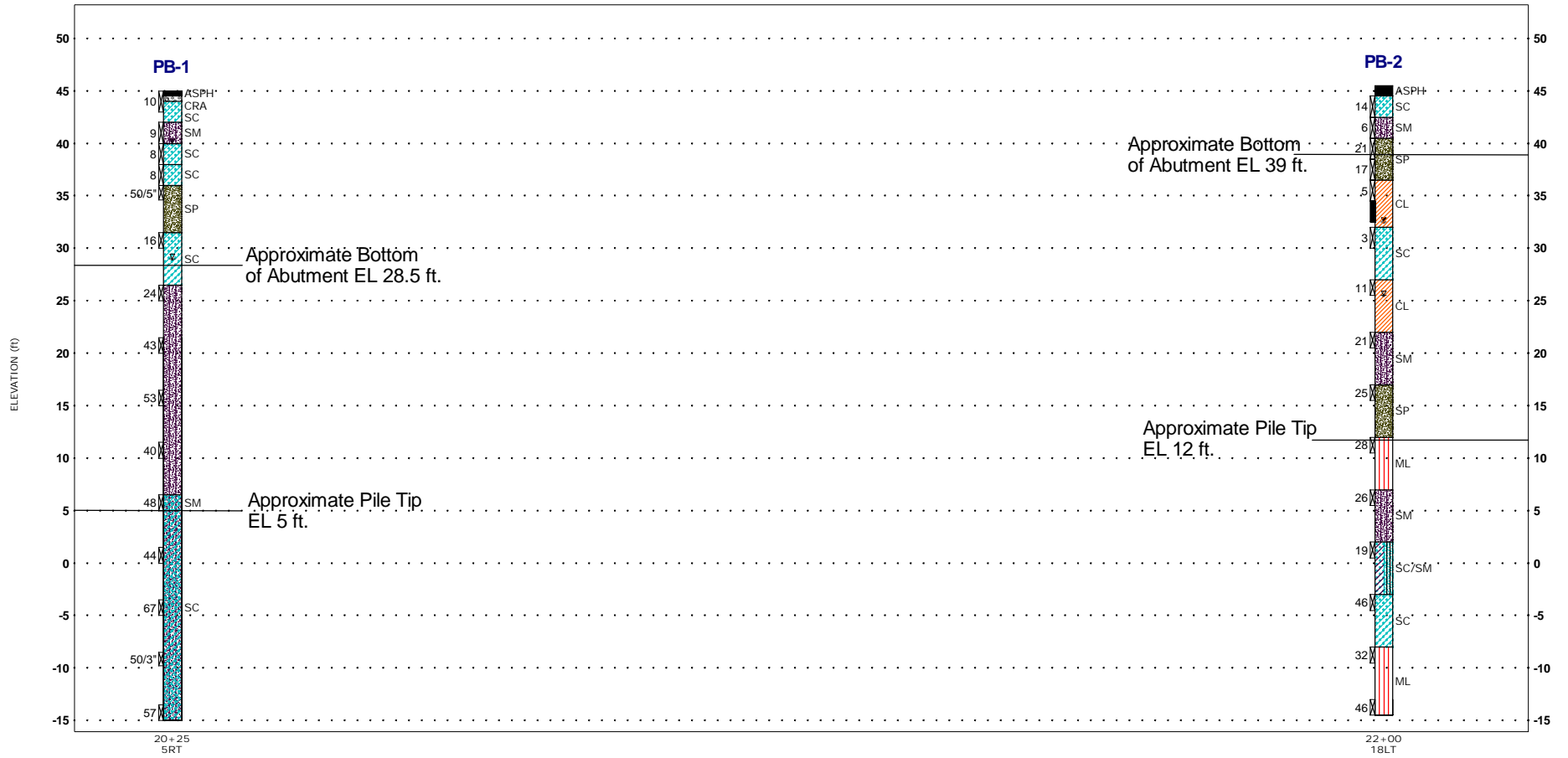
FIGURES

Contents:

Subsurface Profile

Note: All attachments are one page unless noted above.

FHWA REGION	STATE	FEDERAL AID		STATE		SHEET NO.
		ROUTE	PROJECT	ROUTE	PROJECT	
3	VA.					



Notes: See borehole logs for complete data
See Material and Sample Symbols List

The subsurface information shown on the boring logs in these plans was obtained with reasonable care and recorded in good faith solely for use by the Department in establishing design controls for the project. The Department has no reason to suspect that such information is not reasonably accurate as an approximate indication of the subsurface conditions at the sites where the borings were taken. The Department does not in any way warrant or guarantee that such data can be projected as indicative of conditions beyond the limits of the borings shown and any such projections by bidders are purely interpretive and altogether speculative. Further, the Department does not in any way guarantee, either expressly or by implication, the sufficiency of the information for bid purposes.

The boring logs are made available to bidders in order that they may have access to subsurface data identical to that which is possessed by the Department, and are not intended as a substitute for personal investigation, interpretation and judgment by the bidders.

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

MATERIALS DIVISION

JD205151
ENGINEERING GEOLOGY

No.	Description	Date	Drawn:	Date	Plan No.	Sheet No.
			Logged:			
			Checked:			

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Number of Borings	Boring Depth (feet)	Planned Location
2	60	pedestrian bridge

Boring Layout and Elevations: Unless otherwise noted, Terracon personnel provided the boring layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ± 10 feet) and approximate elevations were obtained by interpolation from the Plan and Profile drawing, dated January 24, 2020. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advanced the borings with a track-mounted rotary drill rig using continuous flight augers (solid stem and/or hollow stem, as necessary, depending on soil conditions). Five samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge was pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration or middle 12 inches of 24-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings after their completion. Pavements were patched with cold-mix asphalt and/or pre-mixed concrete, as appropriate.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. Procedural standards noted below are for reference to methodology in general. In some cases, variations to

Geotechnical Engineering Report

Shirlington Road Pedestrian Bridge ■ Shirlington, Arlington County, Virginia

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methods were applied because of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D422 Standard Test Method for Particle-Size Analysis of Soils
- AASHTO T289 Standard Test Method for pH Analysis of Soils
- AASHTO T290 Standard Test Method for Water-Soluble Sulfate Ion Content in Soils
- AASHTO T291 Standard Test Method for Water-Soluble Chloride Ion Content in Soils
- AASHTO T288 Standard Test Method for Soil Resistivity

The laboratory testing program often included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan

Exploration Plan

Note: All attachments are one page unless noted above.

SITE LOCATION

Shirlington Road Pedestrian Bridge ■ Shirlington, Arlington County, Virginia
February 11, 2021 ■ Terracon Project No. JD205151

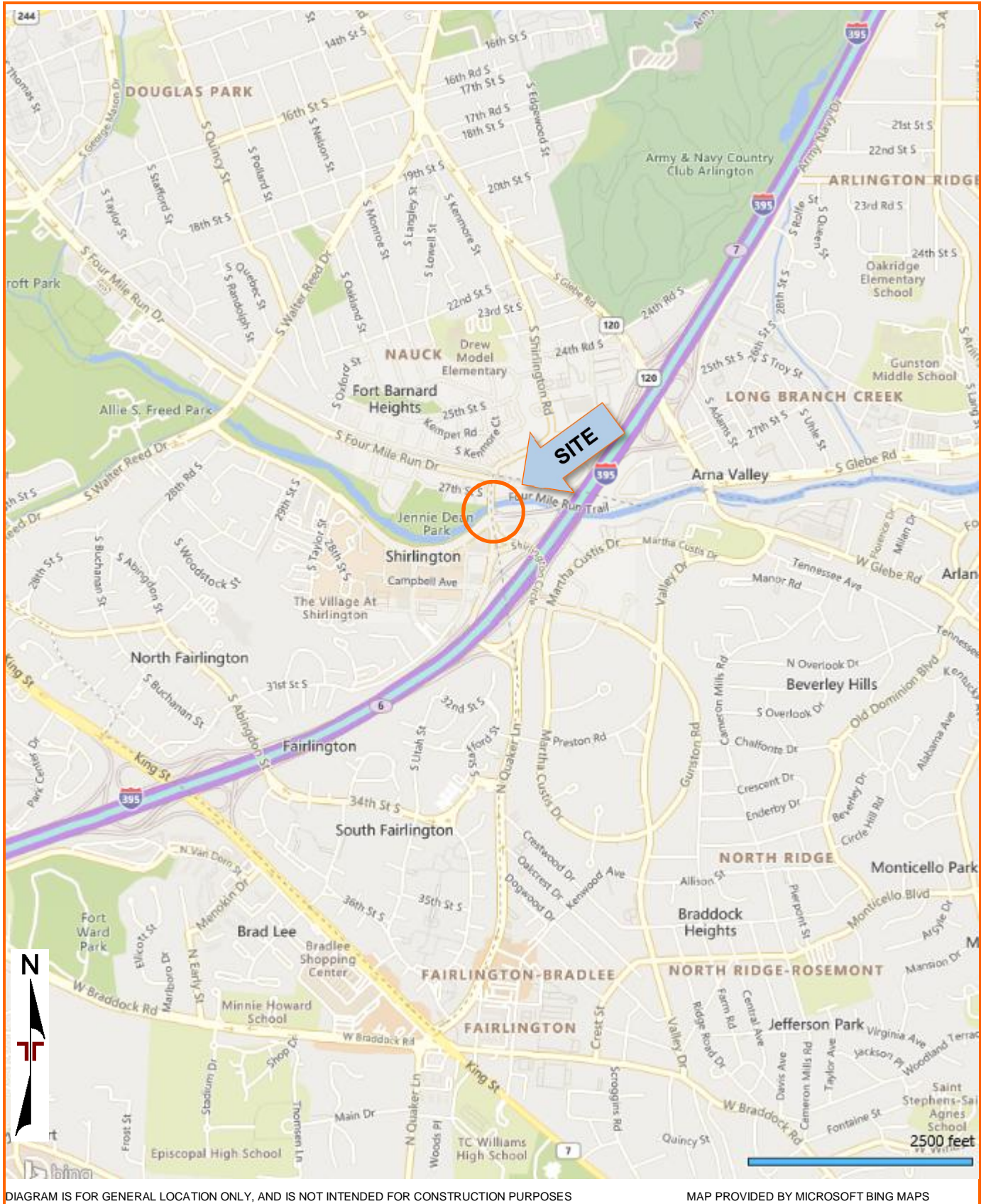


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Shirlington Road Pedestrian Bridge ■ Shirlington, Arlington County, Virginia
February 11, 2021 ■ Terracon Project No. JD205151

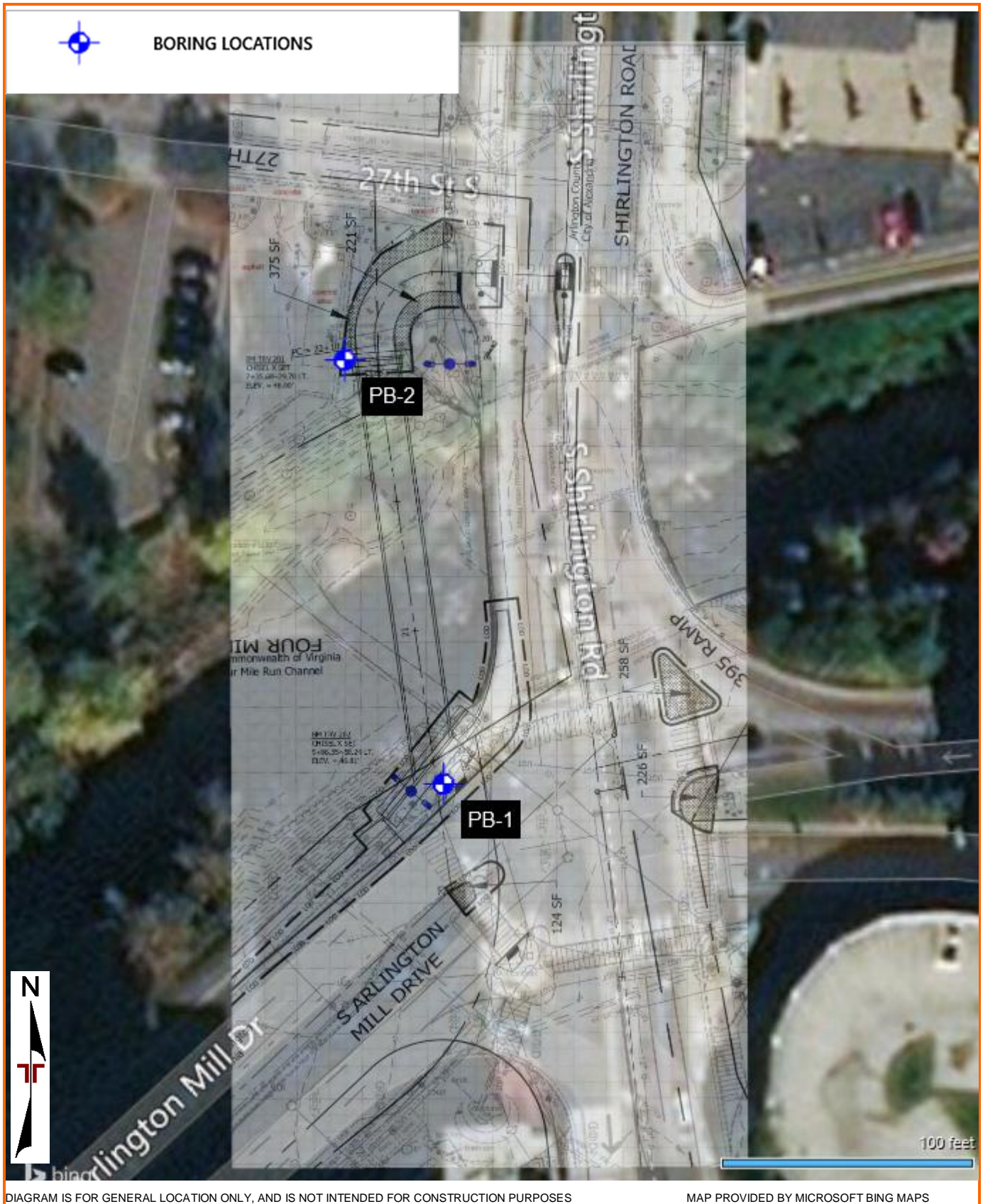


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Boring Logs (PB-1 and PB-2) (4 pages)
Summary of Laboratory Results (2 pages)
Atterberg Limits Results
Grain Size Distribution (3 pages)
Corrosion Analysis (2 pages)

Note: All attachments are one page unless noted above.



PROJECT #: JD205151
LOCATION: Shirlington Rd, Arlington, VA
STRUCTURE: ABUTMENT A

PB-1
PAGE 1 OF 2

STATION: 20+25 **OFFSET:** 5RT
LATITUDE: 38.842957° N **LONGITUDE:** 77.085908° W
SURFACE ELEVATION: 45.0 ft **COORD. DATUM:** NAD 83

FIELD DATA											LAB DATA			
PKT. PENETROMETER (tsf)	DEPTH (ft)	ELEVATION (ft)	SOIL			ROCK				STRATA LEGEND	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	FINES CONTENT #200 (%)
			STANDARD TEST PENETRATION TEST HAMMER BLOWS	SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	CORE RECOVERY (%)	ROCK QUALITY DESIGNATION	STRATA					
<p>Date(s) Drilled: 10/09/2020 - 10/09/2020 Drilling Method(s): 3.25" ID HSA SPT Method: Automatic Hammer Other Test(s): Not Applicable Driller: Terracon (A. Fowler) Logger: GeoConcepts (A. Seip)</p> <p>GROUND WATER ▽ FIRST ENCOUNTERED AT 16.0 ft DEPTH ▽ STABILIZED AT 5.0 ft AFTER 0 HOURS</p> <p>FIELD DESCRIPTION OF STRATA</p>														
											LL	PI		
	2	43.0	4	100	X	2								
	4	41.0	9	100	X	3								
	6	39.0	7	100	X	5								
	8	37.0	6	100	X	7								
	10	35.0	15	100	X	9								
	12	33.0	27	100	X	10.4								
	14	31.0	7	100	X	13.5								
	16	29.0	7	100	X	15								
	18	27.0	8	100	X	18.5								
	20	25.0	8	100	X	20								
	22	23.0	8	100	X	23.5								
	24	21.0	18	100	X	25								
	26	19.0	18	100	X	28.5								
	28	17.0	23	100	X	30								
	30	15.0	30	100	X	33.5								
	32	13.0	16	100	X	35								
	34	11.0	6	100	X	38.5								
	36	9.0	16	100	X									
	38	7.0	8	100	X									
	40	5.0	20	100	X									

REMARKS: Rig Type: D 50. Cave-in at 10 ft.

PAGE 1 OF 2
PB-1

SPT_LOGAB:SHIRLINGTON VDOT LOGS.GPJ:10.01.00.11:02:10:11:2:11/21



PROJECT #: JD205151
LOCATION: Shirlington Rd, Arlington, VA
STRUCTURE: ABUTMENT A

PB-1
PAGE 2 OF 2

STATION: 20+25 **OFFSET:** 5RT
LATITUDE: 38.842957° N **LONGITUDE:** 77.085908° W
SURFACE ELEVATION: 45.0 ft **COORD. DATUM:** NAD 83

FIELD DATA											LAB DATA									
PKT. PENETROMETER (tsf)	DEPTH (ft)	ELEVATION (ft)	SOIL			ROCK				STRATA LEGEND	Date(s) Drilled: 10/09/2020 - 10/09/2020	Drilling Method(s): 3.25" ID HSA	SPT Method: Automatic Hammer	Other Test(s): Not Applicable	Driller: Terracon (A. Fowler)	Logger: GeoConcepts (A. Seip)	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	FINES CONTENT #200 (%)
			STANDARD PENETRATION TEST HAMMER BLOWS	SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	CORE RECOVERY (%)	ROCK QUALITY DESIGNATION	DIP °											
1.25	44	0	10	17	100														20.3	
2	50	-5	17	27	100														18.8	
3	54	-10	20	40	100														18.3	
2.5	58	9	23	34	100														22.0	
	60	-15																		
											GROUND WATER									
											▼ FIRST ENCOUNTERED AT 16.0 ft DEPTH ▼ STABILIZED AT 5.0 ft AFTER 0 HOURS									
											FIELD DESCRIPTION OF STRATA									
											CLAYEY SAND, very dense, moist SC									
											Bottom of borehole at 60.0 ft.									

REMARKS: Rig Type: D 50. Cave-in at 10 ft.

PAGE 2 OF 2
PB-1

SPT_LOGAB:SHIRLINGTON VDOT LOGS.GPJ:10.01.00.11:02:10:11:21:11/21



PROJECT #: JD205151
LOCATION: Shirlington Rd, Arlington, VA
STRUCTURE: ABUTMENT B

PB-2
PAGE 1 OF 2

STATION: 22+00 **OFFSET:** 18LT
LATITUDE: 38.843420° N **LONGITUDE:** 77.086043° W
SURFACE ELEVATION: 45.5 ft **COORD. DATUM:** NAD 83

FIELD DATA										LAB DATA				
PKT. PENETROMETER (tsf)	DEPTH (ft)	ELEVATION (ft)	SOIL			ROCK				STRATA LEGEND	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	FINES CONTENT #200 (%)
			STANDARD TEST PENETRATION TEST HAMMER BLOWS	SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	CORE RECOVERY (%)	ROCK QUALITY DESIGNATION	STRATA					
<p>Date(s) Drilled: 10/08/2020 - 10/08/2020 Drilling Method(s): 3.25" ID HSA SPT Method: Automatic Hammer Other Test(s): Not Applicable Driller: Terracon (A. Fowler) Logger: GeoConcepts (A. Seip)</p>										<p>GROUND WATER ▽ FIRST ENCOUNTERED AT 20.0 ft DEPTH ▽ STABILIZED AT 13.0 ft AFTER 0 HOURS</p>				
<p>FIELD DESCRIPTION OF STRATA</p>										LL	PI			
		45												
0.25	2		5	7	7	65	1							
				3	3	8	3			0.0 / 45.5 Asphalt = 12 in. ASPH				
0.75	4			3	3	55	5			1.0 / 44.5 Fill, red-brown and gray, fine to coarse, micaceous, medium dense, moist SC			13.0	
				5	9	7	5			3.0 / 42.5 Fill, red-brown and gray, fine to coarse, SILTY SAND WITH GRAVEL, micaceous, loose, moist SM			14.8	
	6	40		12	14	65	7			5.0 / 40.5 Residual, light brown white, medium to coarse, POORLY GRADED SAND WITH GRAVEL, medium dense, moist SP			4.0	
	8			16	11	5	9			9.0 / 36.5 Alluvium, gray light brown, SANDY LEAN CLAY, micaceous, firm, moist CL	47	24	21.2	60.2
1	10	35		2	3	65	11							
1	12						13							
1.25	14		0	0	3	100	13.5			13.5 / 32.0 Potomac Formation, orange-brown, fine to medium, CLAYEY SAND, loose, moist SC			23.6	
	16	30			5		15.5							
	18						18.5							
2.25	20		5	5	6	100	20			18.5 / 27.0 Potomac Formation, gray, fine to medium, SANDY LEAN CLAY, medium dense, moist CL			21.8	
	22	25					23.5							
	24			9	12	100	25			23.5 / 22.0 Potomac Formation, light gray-brown, fine to coarse, SILTY SAND, medium dense, moist SM			23.6	
	26	20					28.5							
	28			9	10	15	30			28.5 / 17.0 Potomac Formation, light gray-brown, medium to coarse, POORLY GRADED SAND, dense, moist, with silt SP			23.1	76.9
	30	15					33.5							
	32						35							
	34			8	13	15	35			33.5 / 12.0 Potomac Formation, dark gray, SANDY SILT, hard, moist ML	46	17	24.1	37.7
3.5	36	10					38.5							
	38													
2.5	40			7	11	15	100			38.5 / 7.0 Potomac Formation, gray-blue, fine to medium, SILTY			24.3	

REMARKS: Rig Type: D 50. Standpipe installed.
 Cave-in at 10 ft.

PAGE 1 OF 2
PB-2

SPT_LOGAB:SHIRLINGTON VDOT LOGS.GPJ:10.01.00.11:02:10:11:2:11/21



PROJECT #: JD205151
 LOCATION: Shirlington Rd, Arlington, VA
 STRUCTURE: ABUTMENT B

PB-2
 PAGE 2 OF 2

STATION: 22+00 OFFSET: 18LT
 LATITUDE: 38.843420° N LONGITUDE: 77.086043° W
 SURFACE ELEVATION: 45.5 ft COORD. DATUM: NAD 83

FIELD DATA										LAB DATA											
PKT. PENETROMETER (tsf)	DEPTH (ft)	ELEVATION (ft)	SOIL			ROCK				STRATA LEGEND	Date(s) Drilled: 10/08/2020 - 10/08/2020	Drilling Method(s): 3.25" ID HSA	SPT Method: Automatic Hammer	Other Test(s): Not Applicable	Driller: Terracon (A. Fowler)	Logger: GeoConcepts (A. Seip)	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	FINES CONTENT #200 (%)	
			STANDARD PENETRATION TEST HAMMER BLOWS	SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	CORE RECOVERY (%)	ROCK QUALITY DESIGNATION	STRATA												JOINTS
		5																			
	42																				
1	44	4	7	100	X	43.5															
	46	0				45															
	48																				
1.5	50	-5	21	100	X	48.5															
	52					50															
	54																				
4.5	56	-10	9	100	X	53.5															
	58					55															
	60																				
			5	100	X	58.5															
4.5	60		21	100	X	60															
											FIELD DESCRIPTION OF STRATA SAND, dense, moist SM 43.5 / 2.0 <i>Potomac Formation</i> , gray-blue, SILTY CLAYEY SAND, micaceous, very stiff, moist, with silt SC/SM 48.5 / -3.0 <i>Potomac Formation</i> , gray, medium to coarse, CLAYEY SAND, very dense, moist SC 53.5 / -8.0 <i>Potomac Formation</i> , dark gray, fine to medium, SILT WITH SAND, hard to very hard, moist ML 58.5 / -13.0 SAME: below 58.5 ft. very hard Bottom of borehole at 60.0 ft.										

REMARKS: Rig Type: D 50. Standpipe installed.
 Cave-in at 10 ft.

PAGE 2 OF 2
PB-2

SPT_LOGAB:SHIRLINGTON VDOT LOGS.GPJ:10.01.00.11:02:10:11:21:11/21

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-LANDSCAPE-A. JD205151 SHIRLINGTON ROAD. GPJ TERRACON_DATATEMPLATE.GDT 10/28/20

SUMMARY OF LABORATORY RESULTS

BORING ID	Depth (Ft.)	Soil Classification USCS	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Gravel	% Sand	% Fines	% Clay	% Silt
PB-1	0 - 2		14.9								
PB-1	3 - 5		16.2								
PB-1	5 - 7	CLAYEY SAND(SC)	17	44	19	25	3.4	56.9	39.7		
PB-1	7 - 9		19.1								
PB-1	9 - 10.42		2.3								
PB-1	13.5 - 15	CLAYEY SAND(SC)	21.5	37	17	20	3.5	77.5	19.0	7.1	12.0
PB-1	18.5 - 20		20.3								
PB-1	23.5 - 25	SILTY SAND(SM)	19.8	31	23	8	0.0	78.4	21.6	0.3	21.4
PB-1	28.5 - 30		16.4								
PB-1	33.5 - 35		18.7								
PB-1	38.5 - 40	CLAYEY SAND(SC)	21.1	29	20	9	2.5	82.2	15.3	0.2	15.1
PB-1	43.5 - 45		20.3								
PB-1	48.5 - 50		18.8								
PB-1	53.5 - 54.75		18.3								
PB-1	58.5 - 60		22								
PB-2	1 - 3		13								
PB-2	3 - 5		14.8								
PB-2	5 - 7		4								
PB-2	7 - 9		9.9								
PB-2	9 - 11	SANDY LEAN CLAY(CL)	21.2	47	23	24	0.0	39.8	60.2	9.1	51.1
PB-2	13.5 - 15.5		23.6								
PB-2	18.5 - 20		21.8								
PB-2	23.5 - 25		23.6								
PB-2	28.5 - 30		23.1				9.1	76.9	14.0	4.6	9.4
PB-2	33.5 - 35	SANDY SILT(ML)	24.1	46	29	17	0.0	37.7	62.3		
PB-2	38.5 - 40		24.3								
PB-2	43.5 - 45	SILTY, CLAYEY SAND(SC-SM)	29	29	22	7	0.7	62.9	36.4		
PB-2	48.5 - 50		16.8								

PROJECT: Shirlington Road Pedestrian Bridge SITE: Shirlington, VA	<p style="font-size: small;">19955 Highland Vista Dr Ste 170 Ashburn, VA</p> <p>PH. 703-726-8030 FAX. 703-726-8032</p>	PROJECT NUMBER: JD205151 CLIENT: Volkert, Inc. Springfield, VA EXHIBIT: B-1
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SUMMARY OF LABORATORY RESULTS

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-LANDSCAPE-A JD205151 SHIRLINGTON ROAD.GPJ TERRACON_DATATEMPLATE.GDT 10/28/20

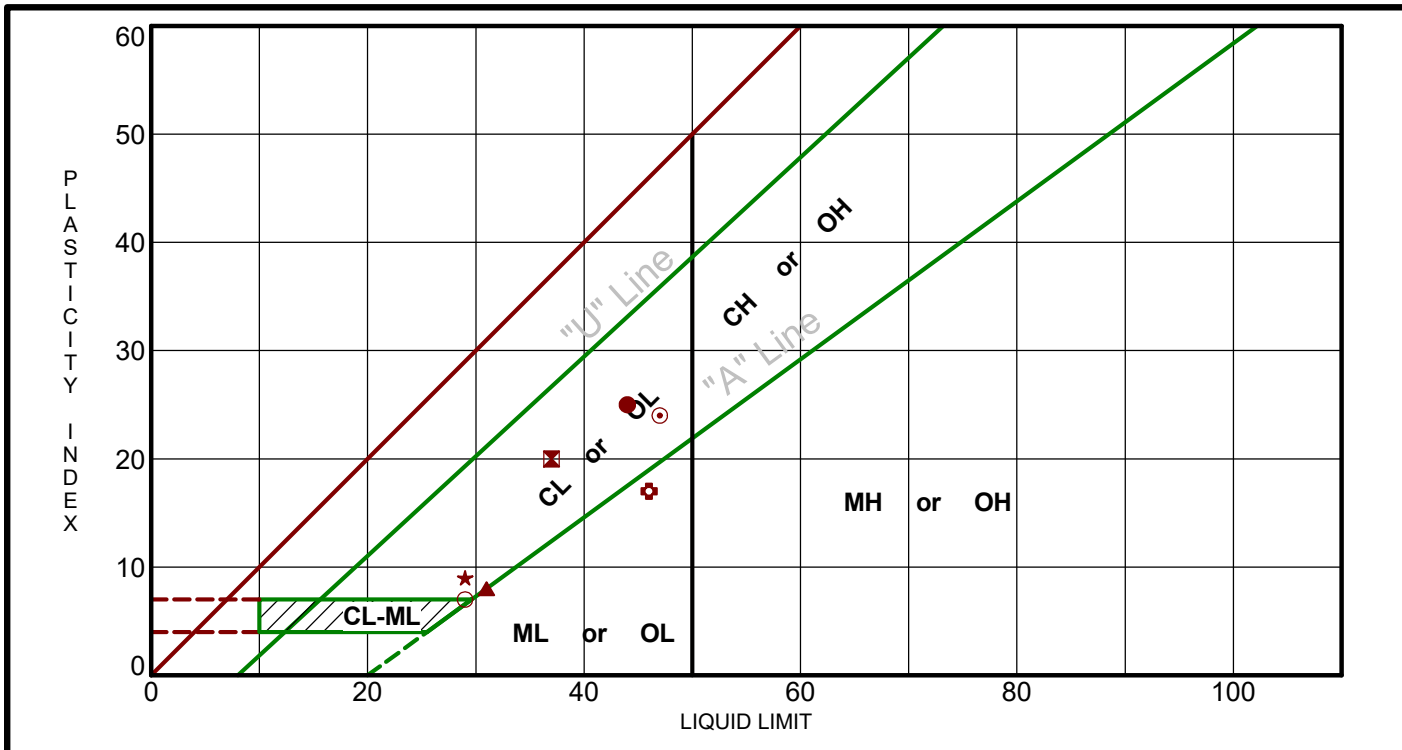
BORING ID	Depth (Ft.)	Soil Classification USCS	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Gravel	% Sand	% Fines	% Clay	% Silt
PB-2	53.5 - 55		24								
PB-2	58.5 - 60		21.4								

PROJECT: Shirlington Road Pedestrian Bridge	<p style="font-size: small; margin: 0;">19955 Highland Vista Dr Ste 170 Ashburn, VA</p>	PROJECT NUMBER: JD205151
SITE: Shirlington, VA		CLIENT: Volkert, Inc. Springfield, VA
PH. 703-726-8030 FAX. 703-726-8032		EXHIBIT: B-2

ATTERBERG LIMITS RESULTS

ASTM D4318

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS JD205151 SHIRLINGTON ROAD.GPJ TERRACON_DATATEMPLATE.GDT 10/28/20

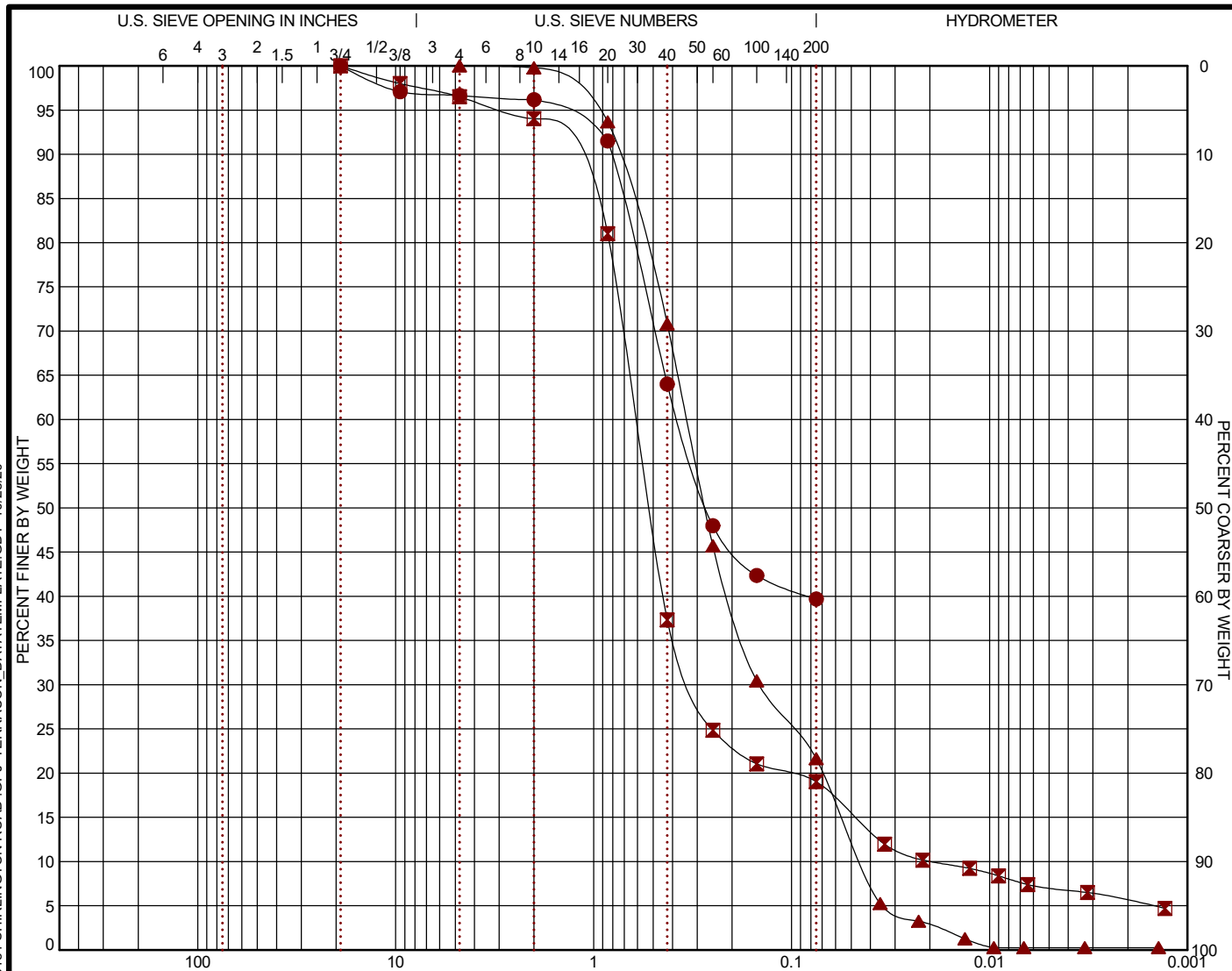


Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
● PB-1	5 - 7	44	19	25	39.7	SC	CLAYEY SAND
■ PB-1	13.5 - 15	37	17	20	19.0	SC	CLAYEY SAND
▲ PB-1	23.5 - 25	31	23	8	21.6	SM	SILTY SAND
★ PB-1	38.5 - 40	29	20	9	15.3	SC	CLAYEY SAND
○ PB-2	9 - 11	47	23	24	60.2	CL	SANDY LEAN CLAY
⊕ PB-2	33.5 - 35	46	29	17	62.3	ML	SANDY SILT
○ PB-2	43.5 - 45	29	22	7	36.4	SC-SM	SILTY, CLAYEY SAND

PROJECT: Shirlington Road Pedestrian Bridge	<p>19955 Highland Vista Dr Ste 170 Ashburn, VA</p>	PROJECT NUMBER: JD205151
SITE: Shirlington, VA		CLIENT: Volkert, Inc. Springfield, VA
		EXHIBIT: B-1

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY			
	coarse	fine	coarse	medium	fine				

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	PB-1	5 - 7	0.0	3.4	56.9		39.7		SC
☒	PB-1	13.5 - 15	0.0	3.5	77.5	12.0		7.1	SC
▲	PB-1	23.5 - 25	0.0	0.0	78.4	21.4		0.3	SM

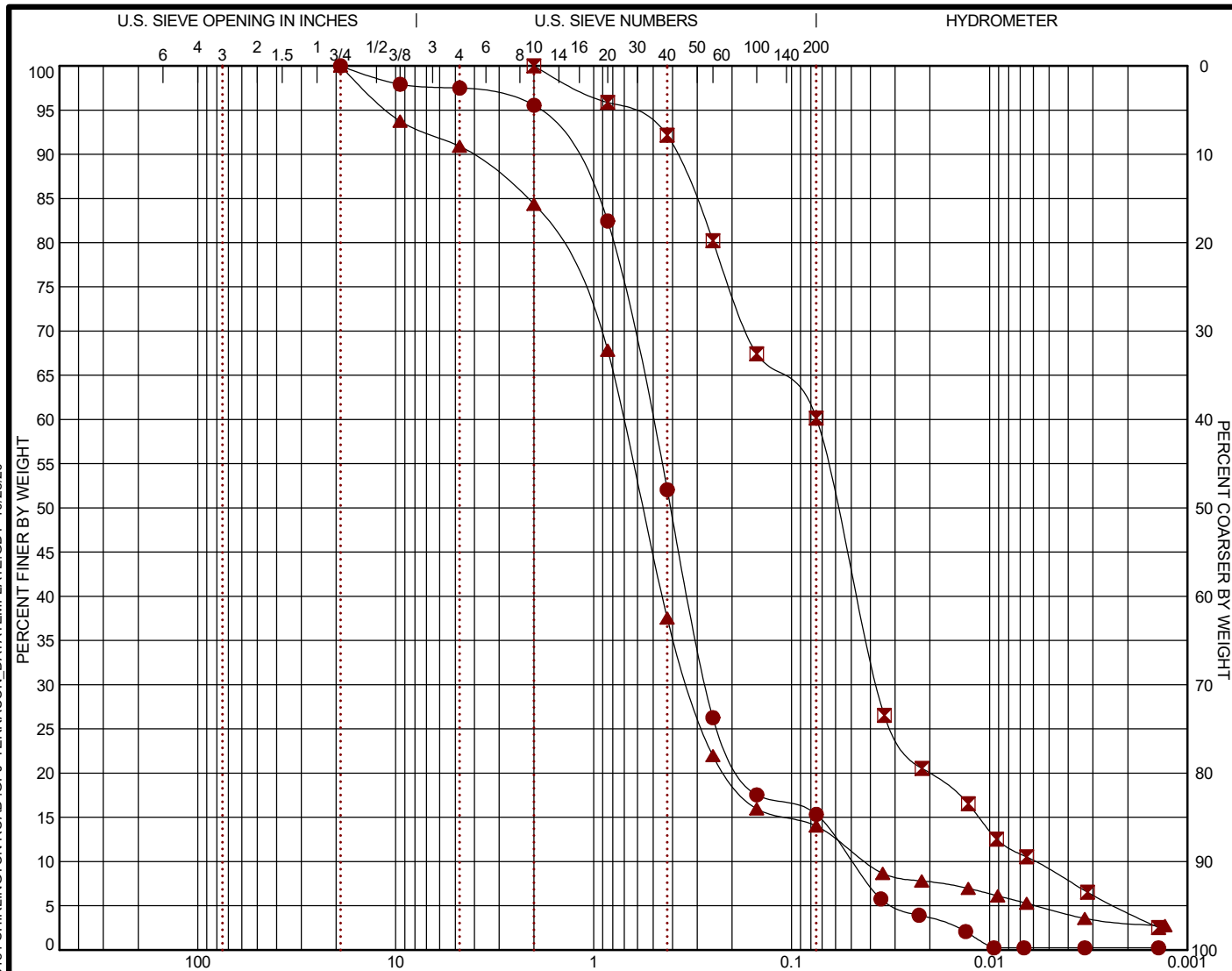
GRAIN SIZE				SOIL DESCRIPTION					
●	☒	▲		●	☒	▲			
D ₆₀	0.372	0.609	0.338	3/4"	100.0	3/4"	100.0	#4	100.0
D ₃₀	0.311		0.145	#10	96.64	#10	96.49	#10	99.79
D ₁₀	0.02		0.044	#4	96.64	#4	96.49	#20	93.67
C _c	8.09		1.40	#10	96.18	#10	94.02	#40	70.82
C _u	31.00		7.64	#20	91.5	#20	81.01	#60	45.71
				#40	64.01	#40	37.35	#100	30.44
				#60	47.99	#60	24.86	#200	21.64
				#100	42.36	#100	21.06		
				#200	39.7	#200	19.04		

PROJECT: Shirlington Road Pedestrian Bridge	<p>1995 Highland Vista Dr Ste 170 Ashburn, VA</p>	PROJECT NUMBER: JD205151
SITE: Shirlington, VA		CLIENT: Volkert, Inc. Springfield, VA
		EXHIBIT: B-1

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS 1 JD205151 SHIRLINGTON ROAD GPJ TERRACON DATATEMPLATE.GDT 10/28/20

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	PB-1	38.5 - 40	0.0	2.5	82.2	15.1		0.2	SC
☒	PB-2	9 - 11	0.0	0.0	39.8	51.1		9.1	CL
▲	PB-2	28.5 - 30	0.0	9.1	76.9	9.4		4.6	

GRAIN SIZE				SOIL DESCRIPTION					
	●	☒	▲	Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
				3/4"	100.0	#10	100.0	3/4"	100.0
				3/8"	97.91	#20	95.86	3/8"	93.75
				#4	97.49	#40	92.15	#4	90.91
				#10	95.54	#60	80.23	#10	84.35
				#20	82.45	#100	67.44	#20	67.84
				#40	52.06	#200	60.16	#40	37.54
				#60	26.28			#60	21.98
				#100	17.55			#100	15.97
				#200	15.34			#200	14.03

COEFFICIENTS			
C _c	2.90	3.08	3.62
C _u	10.33	12.63	16.93

REMARKS	
●	CLAYEY SAND (SC)
☒	SANDY LEAN CLAY (CL)
▲	

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS 1 JD205151 SHIRLINGTON ROAD GPJ TERRACON DATATEMPLATE.GDT 10/28/20

PROJECT: Shirlington Road Pedestrian Bridge

SITE: Shirlington, VA



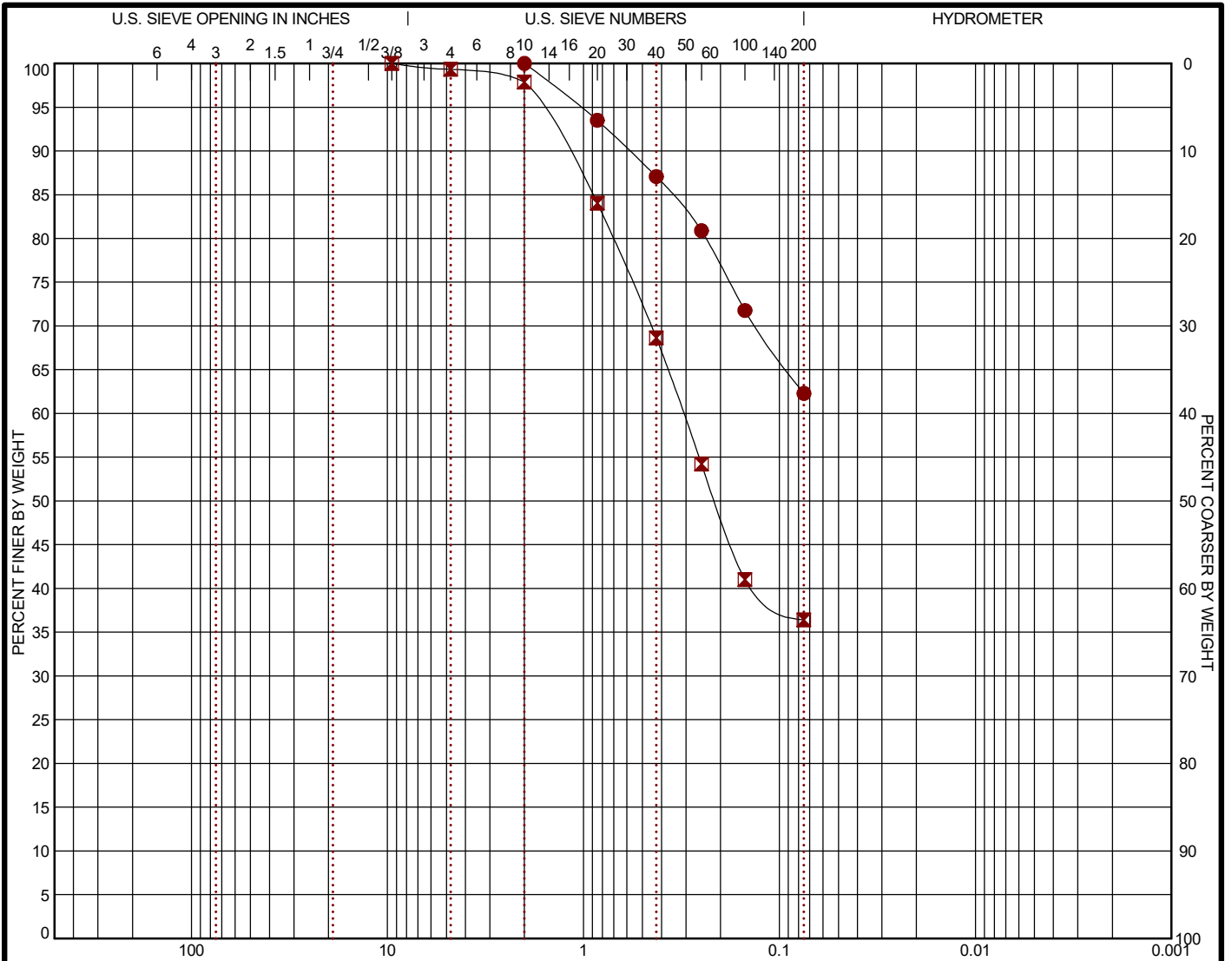
PROJECT NUMBER: JD205151

CLIENT: Volkert, Inc. Springfield, VA

EXHIBIT: B-2

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
● PB-2	33.5 - 35	0.0	0.0	37.7		62.3		ML
☒ PB-2	43.5 - 45	0.0	0.7	62.9		36.4		SC-SM

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2" style="text-align: center;">GRAIN SIZE</th></tr> <tr><td style="text-align: center;">●</td><td style="text-align: center;">☒</td></tr> <tr><td style="text-align: center;">D₆₀</td><td style="text-align: center;">0.309</td></tr> <tr><td style="text-align: center;">D₃₀</td><td></td></tr> <tr><td style="text-align: center;">D₁₀</td><td></td></tr> <tr><th colspan="2" style="text-align: center;">COEFFICIENTS</th></tr> <tr><td style="text-align: center;">C_c</td><td></td></tr> <tr><td style="text-align: center;">C_u</td><td></td></tr> </table>	GRAIN SIZE		●	☒	D ₆₀	0.309	D ₃₀		D ₁₀		COEFFICIENTS		C _c		C _u		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Sieve</th> <th>% Finer</th> <th>Sieve</th> <th>% Finer</th> <th>Sieve</th> <th>% Finer</th> </tr> </thead> <tbody> <tr><td>#10</td><td>100.0</td><td>3/8"</td><td>100.0</td><td></td><td></td></tr> <tr><td>#20</td><td>93.5</td><td>#4</td><td>99.35</td><td></td><td></td></tr> <tr><td>#40</td><td>87.07</td><td>#10</td><td>97.86</td><td></td><td></td></tr> <tr><td>#60</td><td>80.89</td><td>#20</td><td>84.03</td><td></td><td></td></tr> <tr><td>#100</td><td>71.77</td><td>#40</td><td>68.62</td><td></td><td></td></tr> <tr><td>#200</td><td>62.29</td><td>#60</td><td>54.22</td><td></td><td></td></tr> <tr><td></td><td></td><td>#100</td><td>41.01</td><td></td><td></td></tr> <tr><td></td><td></td><td>#200</td><td>36.42</td><td></td><td></td></tr> </tbody> </table>	Sieve	% Finer	Sieve	% Finer	Sieve	% Finer	#10	100.0	3/8"	100.0			#20	93.5	#4	99.35			#40	87.07	#10	97.86			#60	80.89	#20	84.03			#100	71.77	#40	68.62			#200	62.29	#60	54.22					#100	41.01					#200	36.42			<p>SOIL DESCRIPTION</p> <ul style="list-style-type: none"> ● SANDY SILT (ML) ☒ SILTY, CLAYEY SAND (SC-SM) <p>REMARKS</p> <ul style="list-style-type: none"> ● ☒
GRAIN SIZE																																																																								
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PROJECT: Shirlington Road Pedestrian Bridge	<p>1995 Highland Vista Dr Ste 170 Ashburn, VA</p>	PROJECT NUMBER: JD205151
SITE: Shirlington, VA		CLIENT: Volkert, Inc. Springfield, VA
		EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS 1 JD205151 SHIRLINGTON ROAD GPJ TERRACON DATATEMPLATE.GDT 10/28/20

Client

Volkert, Inc.
Springfield, VA

Project

Shirlington Road Pedestrian Bridge

Sample Submitted By: Terracon (JD)


Date Received: 10/19/2020

Lab No.: 20-1131

Results of Corrosion Analysis

	Sample Number	--	--	--	--
	Sample Location	PB-2	PB-2	PB-2	PB-2
	Sample Depth (ft.)	5.0-10.0	10.0-15.0	15.0-20.0	20.0-25.0
pH Analysis, AASHTO T 289		5.55	7.96	7.93	8.17
Water Soluble Sulfate (SO ₄), AASHTO T 290 (mg/Kg)		91	72	49	73
Chlorides, AASHTO T 291 (mg/kg)		291	45	43	32
Resistivity, AASHTO T 288, (ohm-cm)		600	1201	4336	2101

Analyzed By:



Trisha Campo
Chemist

Client

Volkert, Inc.
Springfield, VA

Project

Shirlington Road Pedestrian Bridge

Sample Submitted By: Terracon (JD)

Date Received: 10/19/2020

Lab No.: 20-1131

Results of Corrosion Analysis

Sample Number	--
Sample Location	PB-2
Sample Depth (ft.)	25.0-30.0
pH Analysis, AASHTO T 289	7.33
Water Soluble Sulfate (SO ₄), AASHTO T 290 (mg/Kg)	43
Chlorides, AASHTO T 291 (mg/kg)	23
Resistivity, AASHTO T 288, (ohm-cm)	3568

Analyzed By:



Trisha Campo
Chemist

SUPPORTING INFORMATION

Contents:

VDOT Unified Soil Classification System
VDOT Material and Sample Symbols List (2 pages)
Table 1 Summary of Soil Design Parameters
Axial Resistance - APile (11 pages)
Global Stability Analyses (20 pages)

Note: All attachments are one page unless noted above.



UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
Clean Gravels (Less than 5% fines)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
Gravels with fines (More than 12% fines)		
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
Clean Sands (Less than 5% fines)		
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
Sands with fines (More than 12% fines)		
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

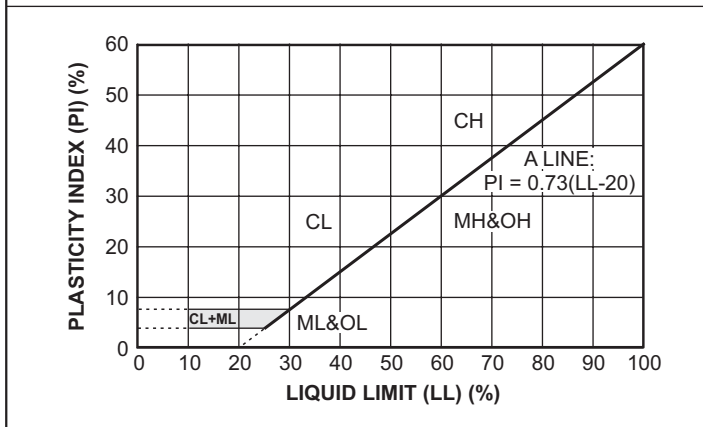
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent GW, GP, SW, SP
 More than 12 percent GM, GC, SM, SC
 5 to 12 percent Borderline cases requiring dual symbols

PLASTICITY CHART





MATERIAL AND SAMPLE SYMBOLS LIST

Pavement/Soils				Sedimentary Rocks		Igneous Rocks	Metamorphic Rocks	Sampling
<p>ASPH - ASPHALT PVT</p>	<p>GP - Poorly-graded Gravel</p>	<p>MH - Elastic Silt</p>	<p>SC - Clayey Sand</p>	<p>CGL - Conglomerate</p>	<p>SE - Shell Bed</p>	<p>AND - Andesite</p>	<p>GGE - Gouge</p>	<p>SPT</p>
<p>CH - Fat Clay</p>	<p>GP-GC</p>	<p>MH/CH</p>	<p>SM - Silty Sand</p>	<p>CLST - Cherty Limestone</p>	<p>SHL - Shale</p>	<p>BST - Basalt</p>	<p>GNS - Gneiss</p>	<p>Core</p>
<p>CL - Lean Clay</p>	<p>GP-GM</p>	<p>MH/ML</p>	<p>SP - Poorly-Graded Sand</p>	<p>COL - Coal</p>	<p>SLS - Siltstone</p>	<p>DBS - Diabase</p>	<p>MYL - Mylonite</p>	<p>Auger</p>
<p>CL-ML</p>	<p>GW - Well-Graded Gravel</p>	<p>MH/SM</p>	<p>SP-SC</p>	<p>MST - Mudstone</p>	<p>SST - Sandstone</p>	<p>DRT - Diorite</p>	<p>PHY - Phyllite</p>	<p>Vane</p>
<p>CONC- CONCRETE PVT</p>	<p>GW-GC</p>	<p>ML - Silt</p>	<p>SP-SM</p>	<p>GWK - Graywacke</p>	<p>SST-SHL - Interbedded Sandstone/Shale</p>	<p>GBR - Gabbro</p>	<p>SCH - Schist</p>	<p>Undisturbed</p>
<p>FL - Fill</p>	<p>GW-GM</p>	<p>ML/CL</p>	<p>SW - Well-Graded Sand</p>	<p>LST - Limestone</p>	<p>SST-SLS - Interbedded Sandstone/Siltstone</p>	<p>GRD - Granodiorite</p>	<p>SLT - Slate</p>	<p>Grab</p>
<p>GC - Clayey Gravel</p>	<p>GM/GP</p>	<p>ML/GM</p>	<p>SW-SC</p>	<p>UCY - Underclay</p>	<p>SHLS-Shaly Limestone</p>	<p>GRN Granite</p>	<p>Misc.</p>	<p>No Recovery</p>
<p>GC-GM</p>	<p>GM/ML</p>	<p>ML/SM</p>	<p>SHDS Shaly Dolostone</p>	<p>MSH Silty Shale</p>	<p>POR - Porphyry</p>	<p>CAV - Cavity</p>	<p>HWR Highly Weathered Rock</p>	<p>Other</p>
<p>GM - Silty Gravel</p>	<p>GM/SM</p>	<p>SW-SM</p>	<p>CHK Chalk</p>	<p>SSHL Sandy Shale</p>	<p>RHY - Rhyolite</p>	<p>BRC - Breccia</p>		



MATERIAL AND SAMPLE SYMBOLS LIST

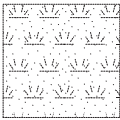
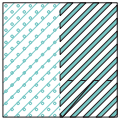
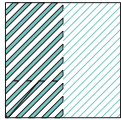
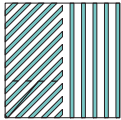
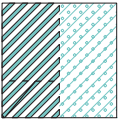
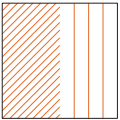
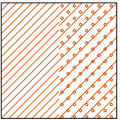
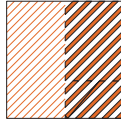
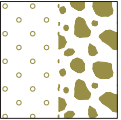

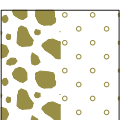
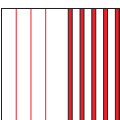
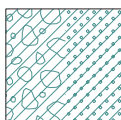
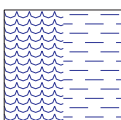
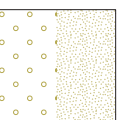
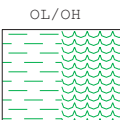
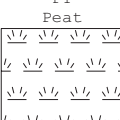
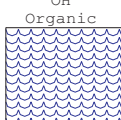
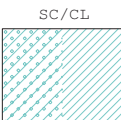


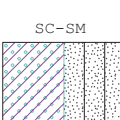
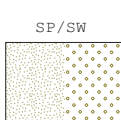
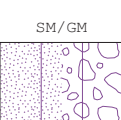
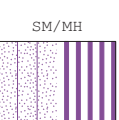
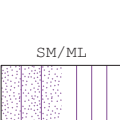
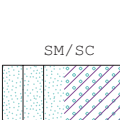


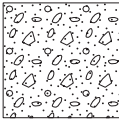
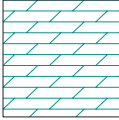
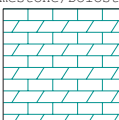
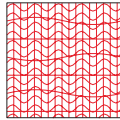
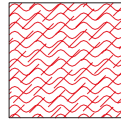
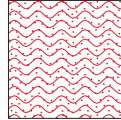
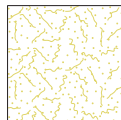

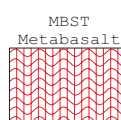
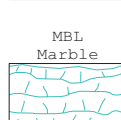
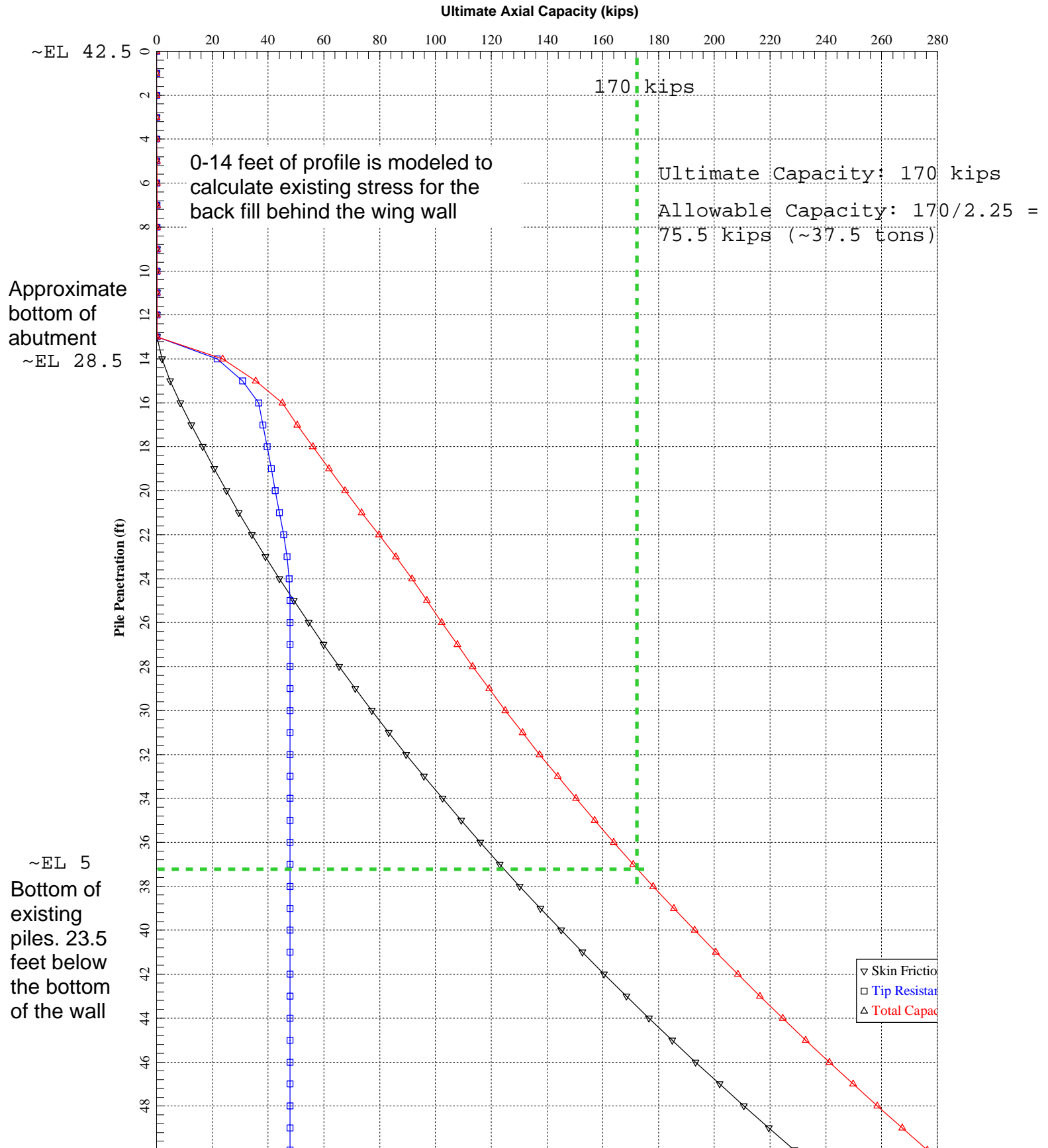
Pavement/Soils	Sedimentary Rocks	Igneous Rocks	Metamorphic Rocks	Sampling
<p>TOPS-TOPSOIL</p>  <p>SC/CH</p>  <p>CH/CL</p>  <p>CH/MH</p>  <p>CH/SC</p>  <p>CL/ML</p>  <p>CL/SC</p>  <p>CL/CH</p>  <p>GP/GW</p>  <p>CRA Crushed Aggregate</p>  <p>GW/GP</p>  <p>ML/MH</p>  <p>GC/SC</p>  <p>OH/OL</p>  <p>GP/SP</p>  <p>OL/OH</p>  <p>PT Peat</p>  <p>OH Organic</p>  <p>SC/CL</p>  <p>OL Organic</p>  <p>SC/GC</p>  <p>SC-SM</p>  <p>SP/SW</p>  <p>SM/GM</p>  <p>SM/MH</p>  <p>SM/ML</p>  <p>SM/SC</p>  <p>SP/GP</p>  <p>SW/SP</p> 	<p>BLD-Boulder Bed</p>  <p>DLS Dolostone</p>  <p>LST-DLS-Interbedded Limestone/Dolostone</p> 	<p>CHT Charnockite</p> 	<p>MSLS Metasiltstone</p>  <p>MSST Metasandstone</p>  <p>QZT - Quartzite</p>  <p>SPS Soapstone</p>  <p>MBST Metabasalt</p>  <p>MBL Marble</p> 	

Table 1: Summary of Soil Design Parameters

Stratum (Material Description)	Unit Weight, γ (pcf)	Short-Term Strength		Long-Term Strength		Lateral Earth Pressure (LEP) Coefficients ^{2,3,4,6}						Coefficient of Sliding (μ) ^{7,8}
		Friction Angle, ϕ (degrees)	Cohesion, c (psf)	Friction Angle, ϕ' (degrees)	Cohesion, c' (psf)	Active		At-Rest		Passive ⁵		
						Level Backslope	2H:1V Backslope	Level Backslope	2H:1V Backslope	Level Toeslope	2H:1V Toeslope	
New Fill ¹	120	30	50	30	50	0.33	0.54	0.50	0.72	3.0	1.5	0.55
Select Type I Material, CBR 30	135	34	0	0	34	0.28	0.41	0.44	0.64	3.5	1.9	0.65
Existing Fill	115	28	50	28	50	0.36	0.65	0.53	0.77	2.8	1.3	0.50
Alluvium -Fine	115	0	500 ⁹	28	0	0.36	0.65	0.53	0.77	2.8	1.3	0.50
Alluvium -Coarse (Top)	115	30	50	30	50	0.33	0.54	0.50	0.72	3.0	1.5	0.55
Alluvium -Coarse (Bottom) ¹⁰	115	28	0	28	0	0.36	0.65	0.53	0.77	2.8	1.3	0.50
Potomac Formation	125	34	0	34	0	0.28	0.41	0.44	0.64	3.5	1.9	0.65

1. New Fill: Uniform, horizontal backfill, compacted to at least 95% of the VTM-1 maximum dry density, rendering a maximum unit weight of 120 pcf.
2. Lateral earth pressure coefficients are based on Rankine's equation.
3. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance.
4. Include traffic, pedestrian, or heavy compaction equipment surcharge pressure when calculating the earth pressures where appropriate.
5. No safety factor is included in these values.
6. Relatively granular or free draining backfill material shall be used behind the walls.
7. $\delta_{slide} = \phi'$ for concrete cast against soil
8. A factor of 0.80 should be applied to the sliding resistance (μ) for precast concrete footing per section 10.6.3.4 of AASHTO LRFD 2020.
9. *Cohesion value provided was used for short-term analysis.
10. Alluvium -Coarse (Bottom) was observed within the North Abutment only.

Abutment A, Geotechnical Axial Capacity for HP 10x42



South Abutment.ap9o

APILE for Windows, Version 2019.9.3

Serial Number : 506768014

A Program for Analyzing the Axial Capacity and Short-term Settlement of Driven Piles under Axial Loading. (c) Copyright ENSOFT, Inc., 1987-2015 All Rights Reserved

This program is licensed to :

Terracon, Inc. Global License, Global License

Path to file locations : C:\Users\bdmathson\OneDrive - Terracon Consultants Inc\Desktop\66\JD205151\Working Files\Calculations-Analyses\ Name of input data file : South Abutment.ap9d Name of output file : South Abutment.ap9o Name of plot output file : South Abutment.ap9p

Time and Date of Analysis

Date: February 08, 2021 Time: 15:17:45

***** * INPUT INFORMATION * *****

Shirlington Pedestrian Bridge - North Abutment - HP ()

DESIGNER : GeoConcepts

JOB NUMBER : JD205151

METHOD FOR UNIT LOAD TRANSFERS :

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- FHWA (Federal Highway Administration) Unfactored Unit Side Friction and Unit Side Resistance are used.

COMPUTATION METHOD(S) FOR PILE CAPACITY :

- FHWA (Federal Highway Administration)

TYPE OF LOADING :

- COMPRESSION

PILE TYPE :

H-Pile/Steel Pile

DATA FOR AXIAL STIFFNESS :

- MODULUS OF ELASTICITY = 0.290E+08 PSI - CROSS SECTION AREA = 93.77 IN2

NONCIRCULAR PILE PROPERTIES :

- TOTAL PILE LENGTH, TL = 50.00 FT. - BATTER ANGLE = 0.00 DEG - PILE STICKUP LENGTH, PSL = 0.00 FT. - ZERO FRICTION LENGTH, ZFL = 0.00 FT. - PERIMETER OF PILE = 38.74 IN. - TIP AREA OF PILE = 93.77 IN2 - INCREMENT OF PILE LENGTH USED IN COMPUTATION = 1.00 FT.

SOIL INFORMATIONS :

Table with 6 columns: DEPTH FT., SOIL TYPE, LATERAL EARTH PRESSURE, EFFECTIVE UNIT WEIGHT LB/FT^3, FRICTION ANGLE DEGREES, BEARING CAPACITY FACTOR. Rows show soil properties at depths of 0.00, 14.00, 14.00, and 60.00 feet.

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* VALUE ASSUMED BY THE PROGRAM
 ** VALUE ESTIMATED BY THE PROGRAM BASED ON FRICTION ANGLE

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00

* MAXIMUM UNIT FRICTION AND/OR MAXIMUM UNIT BEARING WERE SET TO BE 0.10E+08 BECAUSE THE USER DOES NOT PLAN TO LIMIT THE COMPUTED DATA.

DEPTH FT.	LRFD FACTOR ON UNIT FRICTION	LRFD FACTOR ON UNIT BEARING
0.00	0.010	0.010
14.00	0.010	0.010
14.00	1.000	1.000
60.00	1.000	1.000

1

 * COMPUTATION RESULT *

 * FED. HWY. METHOD *

PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	0.0	0.0
1.00	0.0	0.0	0.0
2.00	0.0	0.0	0.0
3.00	0.0	0.0	0.0
4.00	0.0	0.0	0.0
5.00	0.0	0.0	0.1
6.00	0.0	0.0	0.1

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7.00	0.0	0.1	0.1
8.00	0.0	0.1	0.1
9.00	0.1	0.1	0.1
10.00	0.1	0.1	0.1
11.00	0.1	0.1	0.2
12.00	0.1	0.1	0.2
13.00	0.1	0.1	0.2
14.00	2.0	21.7	23.7
15.00	4.8	30.8	35.6
16.00	8.5	36.6	45.1
17.00	12.4	38.1	50.5
18.00	16.5	39.6	56.1
19.00	20.7	41.1	61.8
20.00	25.0	42.6	67.6
21.00	29.5	44.1	73.6
22.00	34.2	45.6	79.8
23.00	39.0	46.8	85.8
24.00	44.0	47.5	91.6
25.00	49.2	47.8	97.0
26.00	54.5	47.9	102.3
27.00	59.9	47.9	107.8
28.00	65.5	47.9	113.4
29.00	71.3	47.9	119.2
30.00	77.2	47.9	125.1
31.00	83.3	47.9	131.2
32.00	89.5	47.9	137.4
33.00	95.9	47.9	143.8
34.00	102.5	47.9	150.4
35.00	109.2	47.9	157.1
36.00	116.0	47.9	163.9
37.00	123.1	47.9	170.9
38.00	130.2	47.9	178.1
39.00	137.6	47.9	185.5
40.00	145.1	47.9	192.9
41.00	152.7	47.9	200.6
42.00	160.5	47.9	208.4
43.00	168.5	47.9	216.3
44.00	176.6	47.9	224.5
45.00	184.9	47.9	232.7
46.00	193.3	47.9	241.2
47.00	201.9	47.9	249.7
48.00	210.6	47.9	258.5
49.00	219.5	47.9	267.4
50.00	228.6	47.9	276.4

NOTES:
 - AN ASTERISK IS PLACED IN THE END-BEARING COLUMN IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

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 * COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
 * CURVES FOR AXIAL LOADING *

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00	0.0000E+00	0.0000E+00
			0.0000E+00	0.1973E-01
			0.0000E+00	0.3823E-01
			0.0000E+00	0.7029E-01
			0.0000E+00	0.9865E-01
			0.0000E+00	0.1233E+00
			0.0000E+00	0.2466E+00
			0.0000E+00	0.3699E+00
			0.0000E+00	0.6166E+00
			0.0000E+00	0.2466E+01
2	10	0.7025E+01	0.0000E+00	0.0000E+00
			0.6285E+00	0.1973E-01
			0.1047E+01	0.3823E-01
			0.1571E+01	0.7029E-01
			0.1885E+01	0.9865E-01
			0.2095E+01	0.1233E+00
			0.2095E+01	0.2466E+00
			0.2095E+01	0.3699E+00
			0.2095E+01	0.6166E+00
			0.2095E+01	0.2466E+01
3	10	0.1396E+02	0.0000E+00	0.0000E+00
			0.1249E+01	0.1973E-01
			0.2081E+01	0.3823E-01
			0.3122E+01	0.7029E-01
			0.3746E+01	0.9865E-01
			0.4162E+01	0.1233E+00
			0.4162E+01	0.2466E+00
			0.4162E+01	0.3699E+00
			0.4162E+01	0.6166E+00
			0.4162E+01	0.2466E+01
4	10	0.1400E+02	0.0000E+00	0.0000E+00
			0.1252E+01	0.1973E-01
			0.2087E+01	0.3823E-01
			0.3131E+01	0.7029E-01
			0.3757E+01	0.9865E-01
			0.4175E+01	0.1233E+00
			0.4175E+01	0.2466E+00
			0.4175E+01	0.3699E+00

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			0.4175E+01	0.6166E+00
			0.4175E+01	0.2466E+01
5	10	0.3703E+02	0.0000E+00	0.0000E+00
			0.4583E+01	0.1973E-01
			0.7638E+01	0.3823E-01
			0.1146E+02	0.7029E-01
			0.1375E+02	0.9865E-01
			0.1528E+02	0.1233E+00
			0.1528E+02	0.2466E+00
			0.1528E+02	0.3699E+00
			0.1528E+02	0.6166E+00
			0.1528E+02	0.2466E+01
6	10	0.5996E+02	0.0000E+00	0.0000E+00
			0.5893E+01	0.1973E-01
			0.9821E+01	0.3823E-01
			0.1473E+02	0.7029E-01
			0.1768E+02	0.9865E-01
			0.1964E+02	0.1233E+00
			0.1964E+02	0.2466E+00
			0.1964E+02	0.3699E+00
			0.1964E+02	0.6166E+00
			0.1964E+02	0.2466E+01
			TIP LOAD KIP	TIP MOVEMENT IN.
			0.0000E+00	0.0000E+00
			0.2992E+01	0.6166E-02
			0.5984E+01	0.1233E-01
			0.1197E+02	0.2466E-01
			0.2394E+02	0.1603E+00
			0.3591E+02	0.5179E+00
			0.4309E+02	0.9002E+00
			0.4787E+02	0.1233E+01
			0.4787E+02	0.1850E+01
			0.4787E+02	0.2466E+01
			LOAD VERSUS SETTLEMENT CURVE	

			TOP LOAD KIP	TOP MOVEMENT IN.
			0.4646E+00	0.1694E-03
			0.4646E+01	0.1694E-02
			TIP LOAD KIP	TIP MOVEMENT IN.
			0.4853E-01	0.1000E-03
			0.4853E+00	0.1000E-02

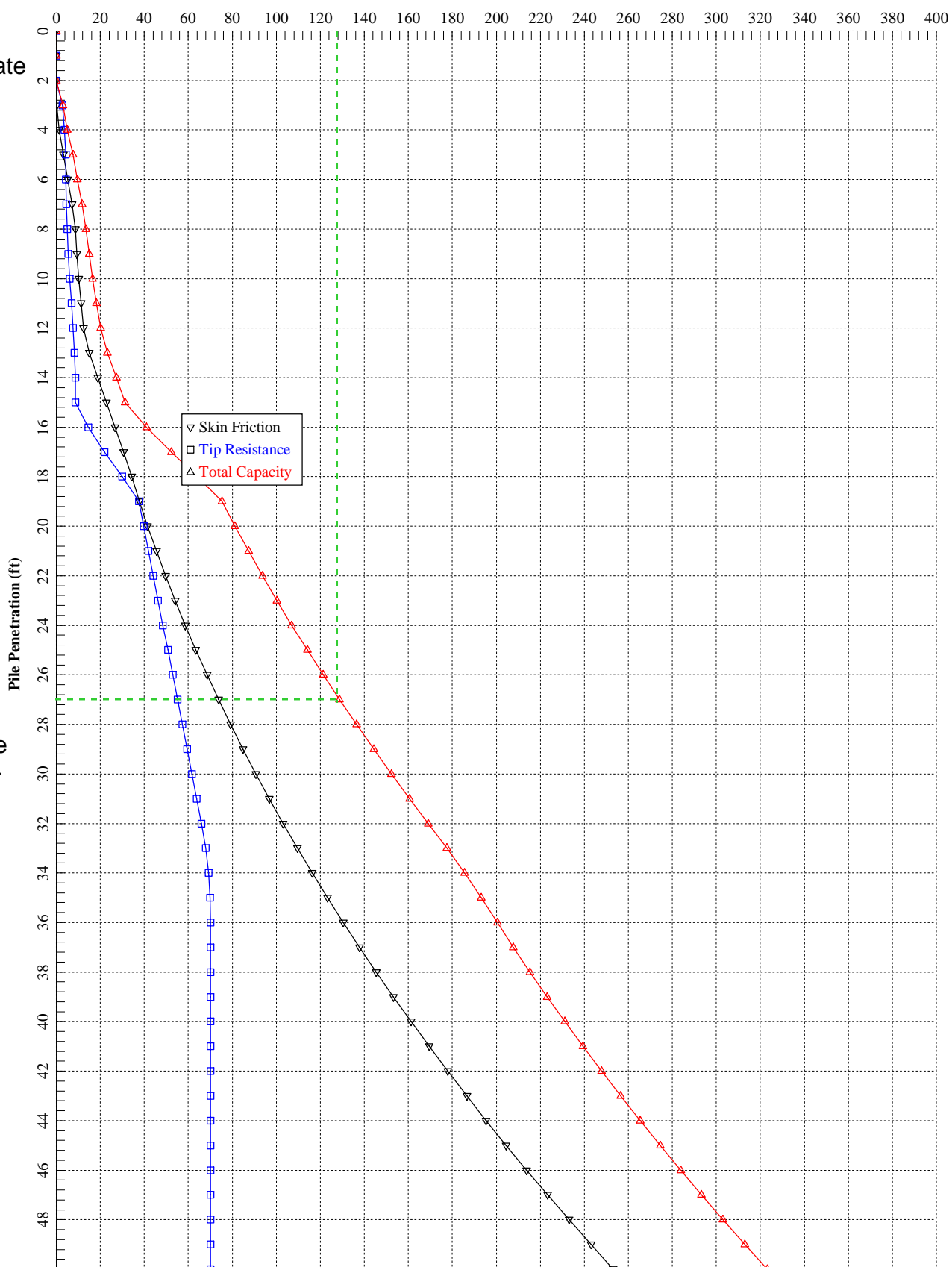
South Abutment.ap9o

0. 2323E+02	0. 8468E-02	0. 2426E+01	0. 5000E-02
0. 4646E+02	0. 1694E-01	0. 4853E+01	0. 1000E-01
0. 8979E+02	0. 3355E-01	0. 9706E+01	0. 2000E-01
0. 1660E+03	0. 7496E-01	0. 1420E+02	0. 5000E-01
0. 2178E+03	0. 1128E+00	0. 1685E+02	0. 8000E-01
0. 2432E+03	0. 1368E+00	0. 1862E+02	0. 1000E+00
0. 2653E+03	0. 2409E+00	0. 2527E+02	0. 2000E+00
0. 2754E+03	0. 5431E+00	0. 3531E+02	0. 5000E+00
0. 2813E+03	0. 8444E+00	0. 4121E+02	0. 8000E+00
0. 2846E+03	0. 1045E+01	0. 4452E+02	0. 1000E+01
0. 2880E+03	0. 2046E+01	0. 4787E+02	0. 2000E+01

Axial Capacity (kips)

~EL 39

Approximate
bottom of
abutment



~EL 12

Approximate
Pile Tip Ele-
vation

APILE for Windows, Version 2019.9.3

Serial Number : 506768014

A Program for Analyzing the Axial Capacity and Short-term Settlement of Driven Piles under Axial Loading. (c) Copyright ENSOFT, Inc., 1987-2015 All Rights Reserved

This program is licensed to :

Terracon, Inc. Global License, Global License

Path to file locations : N:\Projects\2020\JD205151\Working Files\Calculations-Analyses\Pile Axial\ Name of input data file : North Abutment - Rev1.ap9d Name of output file : North Abutment - Rev1.ap9o Name of plot output file : North Abutment - Rev1.ap9p

Time and Date of Analysis

Date: February 11, 2021 Time: 16:13:30

***** * INPUT INFORMATION * *****

Shirlington Pedestrian Bridge - North Abutment

DESIGNER : GeoConcepts

JOB NUMBER : JD205151

METHOD FOR UNIT LOAD TRANSFERS :

- FHWA (Federal Highway Administration) Unfactored Unit Side Friction and Unit Side Resistance are used.

COMPUTATION METHOD(S) FOR PILE CAPACITY :

- FHWA (Federal Highway Administration)

TYPE OF LOADING : - COMPRESSION

PILE TYPE :

H-Pile/Steel Pile

DATA FOR AXIAL STIFFNESS :

- MODULUS OF ELASTICITY = 0.290E+08 PSI - CROSS SECTION AREA = 137.11 IN2

NONCIRCULAR PILE PROPERTIES :

- TOTAL PILE LENGTH, TL = 50.00 FT. - BATTER ANGLE = 0.00 DEG - PILE STICKUP LENGTH, PSL = 0.00 FT. - ZERO FRICTION LENGTH, ZFL = 0.00 FT. - PERIMETER OF PILE = 46.84 IN. - TIP AREA OF PILE = 137.11 IN2 - INCREMENT OF PILE LENGTH USED IN COMPUTATION = 1.00 FT.

SOIL INFORMATIONS :

Table with 6 columns: DEPTH FT., SOIL TYPE, LATERAL EARTH PRESSURE, EFFECTIVE UNIT WEIGHT LB/FT^3, FRICTION ANGLE DEGREES, BEARING CAPACITY FACTOR. Rows show soil data for depths 0.00, 3.00, 3.00, 7.00, and 7.00 FT.

North Abutment - Rev1.ap9o					
12.00	SAND	0.80*	52.60	28.00	16.80**
12.00	CLAY	0.80*	62.60	0.00	8.00**
17.00	CLAY	0.80*	62.60	0.00	8.00**
17.00	SAND	0.80*	62.60	34.00	36.00**
60.00	SAND	0.80*	62.60	34.00	36.00**

* VALUE ASSUMED BY THE PROGRAM
 ** VALUE ESTIMATED BY THE PROGRAM BASED ON FRICTION ANGLE

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURBED SHEAR STRENGTH KSF	REMOLODED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.50	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.50	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	1.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	1.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00

* MAXIMUM UNIT FRICTION AND/OR MAXIMUM UNIT BEARING WERE SET TO BE 0.10E+08 BECAUSE THE USER DOES NOT PLAN TO LIMIT THE COMPUTED DATA.

DEPTH FT.	LRFD FACTOR ON UNIT FRICTION	LRFD FACTOR ON UNIT BEARING
0.00	0.001	0.001
3.00	0.001	0.001
3.00	1.000	1.000
7.00	1.000	1.000
7.00	1.000	1.000
12.00	1.000	1.000
12.00	1.000	1.000
17.00	1.000	1.000
17.00	1.000	1.000
60.00	1.000	1.000

1

 * COMPUTATION RESULT *

North Abutment - Rev1.ap9o

 * FED. HWY. METHOD *

PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	0.0	0.0
1.00	0.0	0.0	0.0
2.00	0.0	0.0	0.0
3.00	0.2	2.8	3.0
4.00	1.4	3.7	5.0
5.00	3.3	4.3	7.6
6.00	5.3	4.3	9.6
7.00	7.2	4.6	11.8
8.00	8.6	5.0	13.5
9.00	9.4	5.5	14.9
10.00	10.3	6.1	16.4
11.00	11.3	7.0	18.3
12.00	12.4	7.7	20.1
13.00	14.9	8.2	23.2
14.00	18.8	8.6	27.4
15.00	22.7	8.6	31.3
16.00	26.6	14.5	41.1
17.00	30.5	21.9	52.4
18.00	34.2	29.9	64.1
19.00	37.7	37.5	75.3
20.00	41.5	39.7	81.2
21.00	45.5	41.9	87.4
22.00	49.6	44.1	93.7
23.00	54.0	46.3	100.3
24.00	58.6	48.5	107.1
25.00	63.4	50.7	114.1
26.00	68.5	52.9	121.4
27.00	73.7	55.1	128.8
28.00	79.2	57.3	136.5
29.00	84.8	59.5	144.3
30.00	90.7	61.7	152.4
31.00	96.8	63.9	160.7
32.00	103.1	66.0	169.1
33.00	109.6	67.9	177.5
34.00	116.4	69.2	185.5
35.00	123.3	69.8	193.1
36.00	130.5	70.0	200.5
37.00	137.8	70.0	207.8
38.00	145.4	70.0	215.4
39.00	153.2	70.0	223.2
40.00	161.2	70.0	231.2

North Abutment - Rev1. ap9o			
41.00	169.5	70.0	239.5
42.00	177.9	70.0	247.9
43.00	186.6	70.0	256.6
44.00	195.4	70.0	265.4
45.00	204.5	70.0	274.5
46.00	213.8	70.0	283.8
47.00	223.3	70.0	293.3
48.00	233.0	70.0	303.0
49.00	243.0	70.0	313.0
50.00	253.1	70.0	323.1

North Abutment - Rev1. ap9o		
	0.1511E+00	0.2386E-01
	0.2519E+00	0.4622E-01
	0.3778E+00	0.8498E-01
	0.4534E+00	0.1193E+00
	0.5038E+00	0.1491E+00
	0.5038E+00	0.2982E+00
	0.5038E+00	0.4473E+00
	0.5038E+00	0.7455E+00
	0.5038E+00	0.2982E+01
	0.0000E+00	0.0000E+00
	0.1533E+00	0.2386E-01
	0.2554E+00	0.4622E-01
	0.3831E+00	0.8498E-01
	0.4598E+00	0.1193E+00
	0.5109E+00	0.1491E+00
	0.4598E+00	0.2982E+00
	0.4598E+00	0.4473E+00
	0.4598E+00	0.7455E+00
	0.4598E+00	0.2982E+01

NOTES:

- AN ASTERISK IS PLACED IN THE END-BEARING COLUMN IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

 * COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
 * CURVES FOR AXIAL LOADING *

4	10	0.3000E+01						
5	10	0.5025E+01						
6	10	0.6958E+01						
7	10	0.7000E+01						

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00	0.0000E+00	0.0000E+00
			0.0000E+00	0.2386E-01
			0.0000E+00	0.4622E-01
			0.0000E+00	0.8498E-01
			0.0000E+00	0.1193E+00
			0.0000E+00	0.1491E+00
			0.0000E+00	0.2982E+00
			0.0000E+00	0.4473E+00
			0.0000E+00	0.7455E+00
			0.0000E+00	0.2982E+01
2	10	0.1525E+01	0.0000E+00	0.0000E+00
			0.7791E-01	0.2386E-01
			0.1298E+00	0.4622E-01
			0.1948E+00	0.8498E-01
			0.2337E+00	0.1193E+00
			0.2597E+00	0.1491E+00
			0.2597E+00	0.2982E+00
			0.2597E+00	0.4473E+00
			0.2597E+00	0.7455E+00
			0.2597E+00	0.2982E+01
3	10	0.2958E+01	0.0000E+00	0.0000E+00

North Abutment - Rev1. ap9o				
8	10	0.9525E+01	0.3472E+01	0.2982E+01
			0.0000E+00	0.0000E+00
			0.4866E+00	0.2386E-01
			0.8110E+00	0.4622E-01
			0.1216E+01	0.8498E-01
			0.1460E+01	0.1193E+00
			0.1622E+01	0.1491E+00
			0.1622E+01	0.2982E+00
			0.1622E+01	0.4473E+00
			0.1622E+01	0.7455E+00
			0.1622E+01	0.2982E+01
9	10	0.1196E+02	0.0000E+00	0.0000E+00
			0.6109E+00	0.2386E-01
			0.1018E+01	0.4622E-01
			0.1527E+01	0.8498E-01
			0.1833E+01	0.1193E+00
			0.2036E+01	0.1491E+00
			0.2036E+01	0.2982E+00
			0.2036E+01	0.4473E+00
			0.2036E+01	0.7455E+00
			0.2036E+01	0.2982E+01
10	10	0.1200E+02	0.0000E+00	0.0000E+00
			0.6130E+00	0.2386E-01
			0.1022E+01	0.4622E-01
			0.1533E+01	0.8498E-01
			0.1839E+01	0.1193E+00
			0.2043E+01	0.1491E+00
			0.1839E+01	0.2982E+00
			0.1839E+01	0.4473E+00
			0.1839E+01	0.7455E+00
			0.1839E+01	0.2982E+01
11	10	0.1453E+02	0.0000E+00	0.0000E+00
			0.2083E+01	0.2386E-01
			0.3472E+01	0.4622E-01
			0.5208E+01	0.8498E-01
			0.6250E+01	0.1193E+00
			0.6944E+01	0.1491E+00
			0.6250E+01	0.2982E+00
			0.6250E+01	0.4473E+00
			0.6250E+01	0.7455E+00
			0.6250E+01	0.2982E+01
12	10	0.1696E+02	0.0000E+00	0.0000E+00
			0.2083E+01	0.2386E-01
			0.3472E+01	0.4622E-01
			0.5208E+01	0.8498E-01
			0.6250E+01	0.1193E+00
			0.6944E+01	0.1491E+00

North Abutment - Rev1. ap9o				
			0.6250E+01	0.2982E+00
			0.6250E+01	0.4473E+00
			0.6250E+01	0.7455E+00
			0.6250E+01	0.2982E+01
13	10	0.1700E+02	0.0000E+00	0.0000E+00
			0.2083E+01	0.2386E-01
			0.3472E+01	0.4622E-01
			0.5208E+01	0.8498E-01
			0.6250E+01	0.1193E+00
			0.6944E+01	0.1491E+00
			0.6944E+01	0.2982E+00
			0.6944E+01	0.4473E+00
			0.6944E+01	0.7455E+00
			0.6944E+01	0.2982E+01
14	10	0.3853E+02	0.0000E+00	0.0000E+00
			0.4166E+01	0.2386E-01
			0.6943E+01	0.4622E-01
			0.1041E+02	0.8498E-01
			0.1250E+02	0.1193E+00
			0.1389E+02	0.1491E+00
			0.1389E+02	0.2982E+00
			0.1389E+02	0.4473E+00
			0.1389E+02	0.7455E+00
			0.1389E+02	0.2982E+01
15	10	0.5996E+02	0.0000E+00	0.0000E+00
			0.5472E+01	0.2386E-01
			0.9120E+01	0.4622E-01
			0.1368E+02	0.8498E-01
			0.1642E+02	0.1193E+00
			0.1824E+02	0.1491E+00
			0.1824E+02	0.2982E+00
			0.1824E+02	0.4473E+00
			0.1824E+02	0.7455E+00
			0.1824E+02	0.2982E+01
			TIP LOAD	TIP MOVEMENT
			KIP	IN.
			0.0000E+00	0.0000E+00
			0.4375E+01	0.7455E-02
			0.8750E+01	0.1491E-01
			0.1750E+02	0.2982E-01
			0.3500E+02	0.1938E+00
			0.5250E+02	0.6262E+00
			0.6300E+02	0.1088E+01
			0.7000E+02	0.1491E+01
			0.7000E+02	0.2236E+01

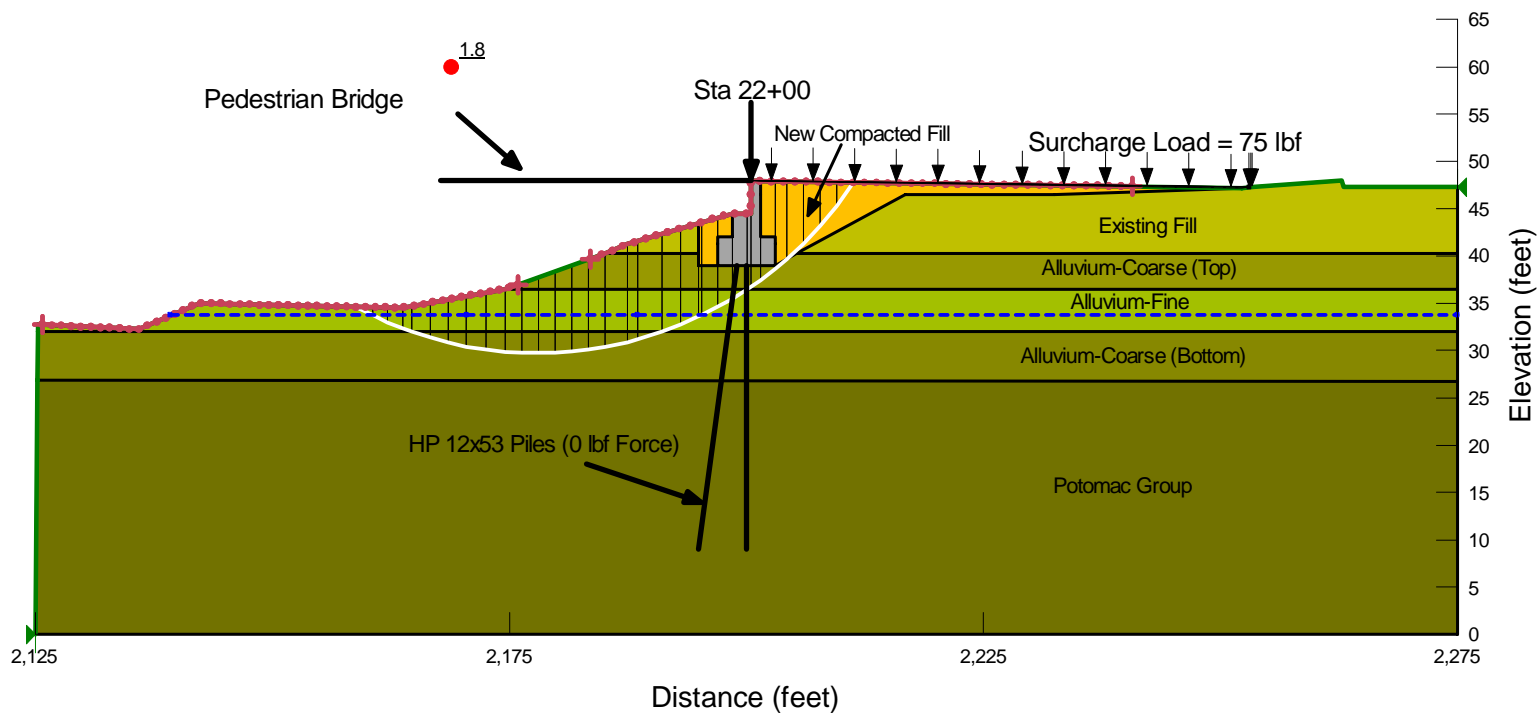
0. 7000E+02 North Abutment - Rev1. ap9o
 0. 2982E+01

LOAD VERSUS SETTLEMENT CURVE

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0. 4067E+00	0. 1428E-03	0. 5869E-01	0. 1000E-03
0. 4067E+01	0. 1428E-02	0. 5869E+00	0. 1000E-02
0. 2033E+02	0. 7140E-02	0. 2934E+01	0. 5000E-02
0. 4067E+02	0. 1428E-01	0. 5869E+01	0. 1000E-01
0. 8116E+02	0. 2856E-01	0. 1174E+02	0. 2000E-01
0. 1585E+03	0. 6671E-01	0. 1965E+02	0. 5000E-01
0. 2115E+03	0. 1022E+00	0. 2286E+02	0. 8000E-01
0. 2375E+03	0. 1249E+00	0. 2499E+02	0. 1000E+00
0. 2871E+03	0. 2307E+00	0. 3525E+02	0. 2000E+00
0. 2978E+03	0. 5325E+00	0. 4739E+02	0. 5000E+00
0. 3069E+03	0. 8339E+00	0. 5645E+02	0. 8000E+00
0. 3114E+03	0. 1035E+01	0. 6099E+02	0. 1000E+01
0. 3205E+03	0. 2036E+01	0. 7000E+02	0. 2000E+01

Project: Shirlington Pedestrian Bridge
 Project Number: JD205151
 Title: Shirlington Pedestrian Bridge
 Name: Circular, Drained (Long-Term)

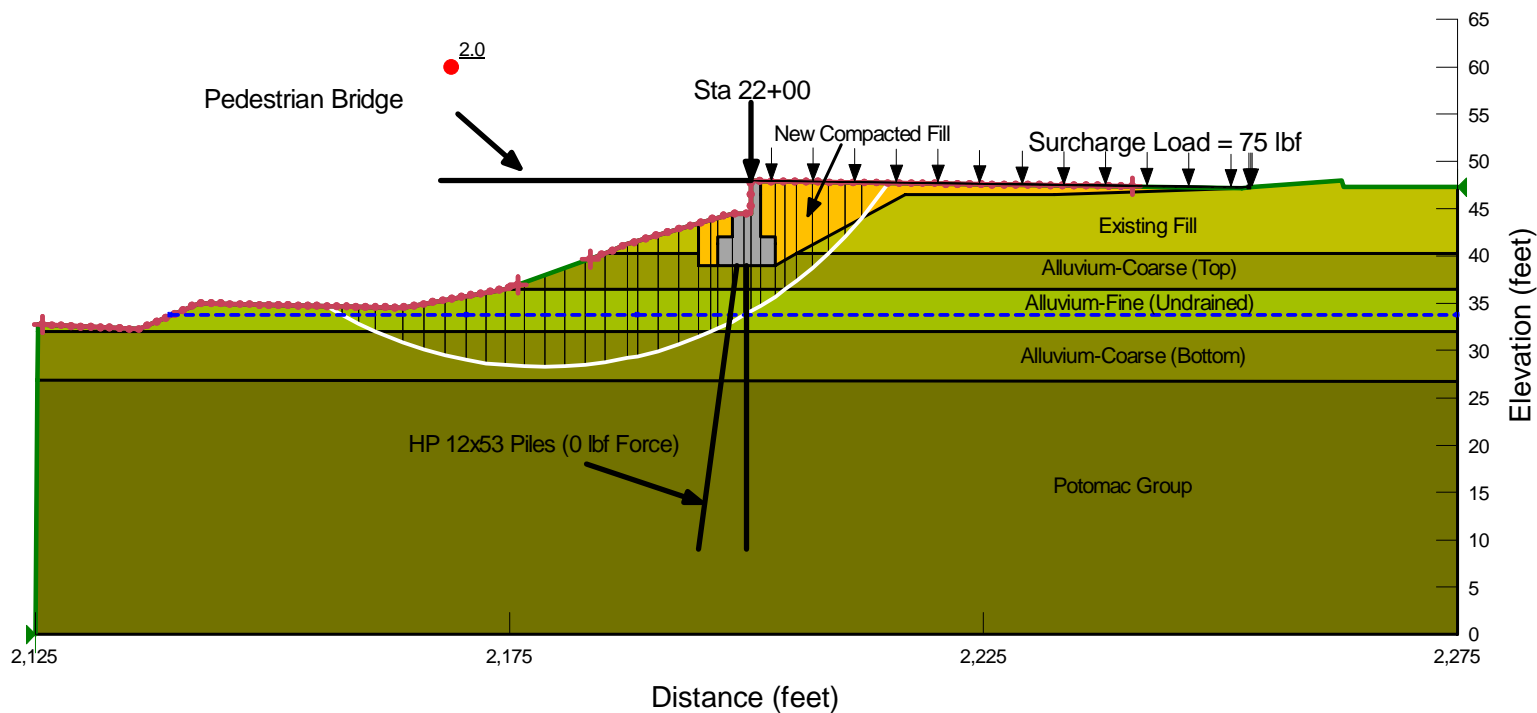
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
Dark Olive Green	Alluvium-Coarse (Bottom)	Mohr-Coulomb	115	0	28
Light Olive Green	Alluvium-Coarse (Top)	Mohr-Coulomb	115	50	30
Yellow-Green	Alluvium-Fine	Mohr-Coulomb	115	0	28
Grey	Concrete	High Strength	150		
Light Yellow-Green	Existing Fill	Mohr-Coulomb	115	50	28
Yellow	New Compacted Fill	Mohr-Coulomb	120	50	30
Dark Olive Green	Potomac Formation	Mohr-Coulomb	125	0	34



Note: Data point is randomly placed to show factor of safety value only and does not represent the true center of the critical slip surface. Actual coordinates of the center of critical slip surface are: (2,177.9186, 69.641822) ft

Project: Shirlington Pedestrian Bridge
 Project Number: JD205151
 Title: Shirlington Pedestrian Bridge
 Name: Circular, Undrained (Short-Term)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
Dark Green	Alluvium-Coarse (Bottom)	Mohr-Coulomb	115	0	28
Light Green	Alluvium-Coarse (Top)	Mohr-Coulomb	115	50	30
Yellow-Green	Alluvium-Fine (Undrained)	Mohr-Coulomb	115	500	0
Grey	Concrete	High Strength	150		
Light Yellow	Existing Fill	Mohr-Coulomb	115	50	28
Yellow	New Compacted Fill	Mohr-Coulomb	120	50	30
Dark Green	Potomac Formation	Mohr-Coulomb	125	0	34



Note: Data point is randomly placed to show factor of safety value only and does not represent the true center of the critical slip surface. Actual coordinates of the center of critical slip surface are: (2,178.578, 72.031676) ft

Circular, Drained (Long-Term)

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File Information

File Version: 10.02
 Title: [Shirlington Pedestrian Bridge](#)
 Created By: [Mathson, Braque D](#)
 Last Edited By: [Mathson, Braque D](#)
 Revision Number: 76
 Date: 02/08/2021
 Time: 06:31:42 PM
 Tool Version: 10.2.2.20559
 File Name: Existing Slope.gsz
 Directory: C:\Users\bdmathson\OneDrive - Terracon Consultants Inc\Desktop\66\JD205151\Working Files\Calculations-Analyses\
 Last Solved Date: 02/08/2021
 Last Solved Time: 10:43:37 PM

Project Settings

Unit System: [U.S. Customary Units](#)

Analysis Settings

Circular, Drained (Long-Term)

Kind: [SLOPE/W](#)
 Method: [Spencer](#)
 Settings
 PWP Conditions from: [Piezometric Line](#)
 Apply Phreatic Correction: [No](#)
 Use Staged Rapid Drawdown: [No](#)
 Unit Weight of Water: [62.430189 pcf](#)
 Slip Surface
 Direction of movement: [Right to Left](#)
 Use Passive Mode: [No](#)
 Slip Surface Option: [Entry and Exit](#)
 Critical slip surfaces saved: [1](#)
 Optimize Critical Slip Surface Location: [No](#)
 Tension Crack Option: [\(none\)](#)
 Distribution
 F of S Calculation Option: [Constant](#)
 Advanced
 Geometry Settings
 Minimum Slip Surface Depth: [0.1 ft](#)
 Number of Slices: [30](#)
 Factor of Safety Convergence Settings
 Maximum Number of Iterations: [100](#)
 Tolerable difference in F of S: [0.001](#)
 Solution Settings
 Search Method: [Root Finder](#)

Tolerable difference between starting and converged F of S: [3](#)
 Maximum iterations to calculate converged lambda: [20](#)
 Max Absolute Lambda: [2](#)

Materials

Existing Fill

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [28 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Alluvium-Fine

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion: [0 psf](#)
 Phi: [28 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Potomac Group

Model: [Mohr-Coulomb](#)
 Unit Weight: [125 pcf](#)
 Cohesion: [0 psf](#)
 Phi: [34 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

New Compacted Fill

Model: [Mohr-Coulomb](#)
 Unit Weight: [120 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [30 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Concrete

Model: [High Strength](#)
 Unit Weight: [150 pcf](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Alluvium-Coarse (Top)

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [30 °](#)

Phi-B: 0 °
 Pore Water Pressure
 Piezometric Line: 1

Alluvium-Coarse (Bottom)

Model: Mohr-Coulomb
 Unit Weight: 115 pcf
 Cohesion: 0 psf
 Phi: 28 °
 Phi-B: 0 °
 Pore Water Pressure
 Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
 Left-Zone Left Coordinate: (2,125.75, 32.726744) ft
 Left-Zone Right Coordinate: (2,175.9325, 37.000013) ft
 Left-Zone Increment: 50
 Right Type: Range
 Right-Zone Left Coordinate: (2,183.582, 39.714545) ft
 Right-Zone Right Coordinate: (2,240.7332, 47.356179) ft
 Right-Zone Increment: 50
 Radius Increments: 4

Slip Surface Limits

Left Coordinate: (2,125, 0) ft
 Right Coordinate: (2,275, 47.25) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	2,139.25 ft	33.75 ft
Coordinate 2	2,170.5 ft	33.75 ft
Coordinate 3	2,188.5 ft	33.75 ft
Coordinate 4	2,275 ft	33.75 ft

Surcharge Loads

Surcharge Load 1

Surcharge (Unit Weight): 75 pcf
 Direction: Vertical

Coordinates

	X	Y

2,200.5 ft	48.000222 ft
2,253 ft	47.232143 ft

Geometry

Name: Existing Slope (2)

Settings

View: 2D
 Element Thickness: 1 ft

Points

	X	Y
Point 1		
Point 2	2,125.25 ft	32.75 ft
Point 3	2,136 ft	32.25 ft
Point 4	2,142.25 ft	35 ft
Point 5	2,163.75 ft	34.5 ft
Point 6	2,174.5194 ft	36.498555 ft
Point 7	2,232.5 ft	46.5 ft
Point 8	2,253.5 ft	47.25 ft
Point 9	2,262.75 ft	48 ft
Point 10	2,263 ft	47.25 ft
Point 11	2,275 ft	47.25 ft
Point 12	2,275 ft	0 ft
Point 13	2,275 ft	36.5 ft
Point 14	2,275 ft	26.75 ft
Point 15	2,200.5 ft	48.000222 ft
Point 16	2,252.25 ft	47.205357 ft
Point 17	2,240.75 ft	46.794643 ft
Point 18	2,197 ft	41.25 ft
Point 19	2,203 ft	41.25 ft
Point 20	2,203 ft	42 ft
Point 21	2,201.5 ft	42 ft
Point 22	2,201.5 ft	47.869972 ft
Point 23	2,200.5 ft	46.5 ft
Point 24	2,198.5 ft	42 ft
Point 25	2,197 ft	42 ft
Point 26	2,201.5 ft	46.5 ft
Point 27	2,200.5 ft	44.5 ft
Point 28	2,216.75 ft	46.486842 ft
Point 29	2,187.4545 ft	41.249984 ft
Point 30	2,125 ft	0 ft
Point 31	2,125.207 ft	26.928325 ft
Point 32	2,275 ft	40.25 ft
Point 33	2,185.0909 ft	40.249999 ft
Point 34	2,275 ft	32 ft

Point 35	2,125.2464 ft	32 ft
Point 36	2,203 ft	39 ft
Point 37	2,203 ft	40.249999 ft
Point 38	2,197 ft	39 ft
Point 39	2,197.0011 ft	40.249999 ft
Point 40	2,198.5 ft	44.5 ft
Point 41	2,195 ft	39 ft
Point 42	2,195 ft	43.470164 ft
Point 43	2,195 ft	40.249999 ft
Point 44	2,195 ft	41.249997 ft
Point 45	2,205.2957 ft	40.249999 ft
Point 46	2,192 ft	40.75 ft

Regions

	Material	Points	Area
Region 1	Alluvium-Coarse (Top)	6,13,32,45,36,38,41,43,33	345.61 ft²
Region 2	Potomac Group	12,30,31,14	4,023.1 ft²
Region 3	New Compacted Fill	28,7,17,16,22,26,21,20,19,37,36,45	104.2 ft²
Region 4	Concrete	19,20,21,26,22,15,23,27,40,24,25,18,39,38,36,37	28.934 ft²
Region 5	New Compacted Fill	18,25,24,40,42,44,43,41,38,39	12.949 ft²
Region 6	Alluvium-Fine	3,4,5,6,13,34,35,2	564.43 ft²
Region 7	Existing Fill	11,10,9,8,16,17,7,28,45,32	427.24 ft²
Region 8	Alluvium-Coarse (Bottom)	14,31,35,34	772.96 ft²
Region 9	Existing Fill	33,43,44,42,29	17.103 ft²

Slip Results

Slip Surfaces Analysed: 7649 of 13005 converged

Current Slip Surface

Slip Surface: 8,548
 Factor of Safety: 1.831
 Volume: 362.86775 ft³
 Weight: 43,058.884 lbf
 Resisting Moment: 839,684.84 lbf-ft
 Activating Moment: 458,613.93 lbf-ft
 Resisting Force: 18,860.466 lbf
 Activating Force: 10,300.564 lbf

Slip Rank: 1 of 13,005 slip surfaces
 Exit: (2,158.8478, 34.614005) ft
 Entry: (2,211.251, 47.742274) ft
 Radius: 39.882868 ft
 Center: (2,177.9186, 69.641822) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	2,159.688 ft	34.182003 ft	-26.970012 psf	72.160176 psf	38.368246 psf	0 psf	0 psf	Alluvium-Fine
Slice 2	2,161.3337 ft	33.381615 ft	22.998351 psf	189.72928 psf	88.652406 psf	0 psf	0 psf	Alluvium-Fine
Slice 3	2,162.9446 ft	32.686878 ft	66.370922 psf	277.20989 psf	112.10507 psf	0 psf	0 psf	Alluvium-Fine
Slice 4	2,164.2438 ft	32.180263 ft	97.998986 psf	353.19404 psf	135.68962 psf	0 psf	0 psf	Alluvium-Fine
Slice 5	2,165.698 ft	31.690747 ft	128.55955 psf	452.63769 psf	172.3154 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 6	2,167.6188 ft	31.124679 ft	163.89928 psf	566.56833 psf	214.10293 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 7	2,169.5396 ft	30.661425 ft	192.82032 psf	661.12522 psf	249.00213 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 8	2,171.5048 ft	30.291207 ft	215.93312 psf	739.9264 psf	278.61217 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 9	2,173.5145 ft	30.015749 ft	233.12999 psf	803.85726 psf	303.46107 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 10	2,175.4004 ft	29.848322 ft	243.58247 psf	869.15421 psf	332.62239 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 11	2,177.1623 ft	29.775861 ft	248.10623 psf	937.17079 psf	366.38213 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 12	2,178.9242 ft	29.781374 ft	247.76204 psf	992.79234 psf	396.13964 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 13	2,180.6861 ft	29.864894 ft	242.54789 psf	1,036.6051 psf	422.20769 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 14	2,182.448 ft	30.026915 ft	232.43291 psf	1,069.0603 psf	444.84268 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 15	2,184.2099 ft	30.268407 ft	217.35648 psf	1,090.4938 psf	464.25535 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 16	2,186.2727 ft	30.66246 ft	192.75574 psf	1,109.8339 psf	487.6191 psf	0 psf	0 psf	

								Alluvium-Coarse (Bottom)
Slice 17	2,187.9772 ft	31.052004 ft	168.43642 psf	1,115.0184 psf	503.30658 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 18	2,189.7997 ft	31.594131 ft	134.59131 psf	1,088.1823 psf	507.0333 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 19	2,192.0746 ft	32.370364 ft	86.13092 psf	1,043.449 psf	509.01508 psf	0 psf	0 psf	Alluvium-Fine
Slice 20	2,194.0249 ft	33.171373 ft	36.123821 psf	990.43514 psf	507.41633 psf	0 psf	0 psf	Alluvium-Fine
Slice 21	2,195.1544 ft	33.676008 ft	4.6193162 psf	974.56936 psf	515.73159 psf	0 psf	0 psf	Alluvium-Fine
Slice 22	2,196.1544 ft	34.184901 ft	-27.150982 psf	939.92497 psf	499.76697 psf	0 psf	0 psf	Alluvium-Fine
Slice 23	2,197.75 ft	35.049774 ft	-81.145139 psf	954.05744 psf	507.28134 psf	0 psf	0 psf	Alluvium-Fine
Slice 24	2,199.302 ft	35.989334 ft	-139.80205 psf	924.05279 psf	491.32758 psf	0 psf	0 psf	Alluvium-Fine
Slice 25	2,200.302 ft	36.633206 ft	-179.99911 psf	834.12222 psf	481.58069 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 26	2,201 ft	37.122376 ft	-210.53808 psf	1,173.7141 psf	677.64415 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 27	2,202.25 ft	38.05499 ft	-268.76136 psf	928.81072 psf	536.24912 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 28	2,203.6156 ft	39.151564 ft	-337.22067 psf	742.48037 psf	428.67124 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 29	2,205.1087 ft	40.488802 ft	-420.7047 psf	602.72549 psf	347.98372 psf	50 psf	0 psf	New Compacted Fill
Slice 30	2,206.8637 ft	42.233878 ft	-529.65009 psf	432.60854 psf	249.76665 psf	50 psf	0 psf	New Compacted Fill
Slice 31	2,208.6186 ft	44.220228 ft	-653.65832 psf	255.91595 psf	147.75314 psf	50 psf	0 psf	New Compacted Fill
Slice 32	2,210.3735 ft	46.511084 ft	-796.6769 psf	73.398366 psf	42.376567 psf	50 psf	0 psf	New Compacted Fill

Circular, Undrained (Short-Term)

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File Information

File Version: 10.02
 Title: [Shirlington Pedestrian Bridge](#)
 Created By: [Mathson, Braque D](#)
 Last Edited By: [Mathson, Braque D](#)
 Revision Number: 76
 Date: 02/08/2021
 Time: 06:31:42 PM
 Tool Version: 10.2.2.20559
 File Name: Existing Slope.gsz
 Directory: C:\Users\bdmathson\OneDrive - Terracon Consultants Inc\Desktop\66\JD205151\Working Files\Calculations-Analyses\
 Last Solved Date: 02/08/2021
 Last Solved Time: 10:43:51 PM

Project Settings

Unit System: [U.S. Customary Units](#)

Analysis Settings

Circular, Undrained (Short-Term)

Kind: [SLOPE/W](#)
 Method: [Spencer](#)
 Settings
 PWP Conditions from: [Piezometric Line](#)
 Apply Phreatic Correction: [No](#)
 Use Staged Rapid Drawdown: [No](#)
 Unit Weight of Water: [62.430189 pcf](#)
 Slip Surface
 Direction of movement: [Right to Left](#)
 Use Passive Mode: [No](#)
 Slip Surface Option: [Entry and Exit](#)
 Critical slip surfaces saved: 1
 Optimize Critical Slip Surface Location: [No](#)
 Tension Crack Option: [\(none\)](#)
 Distribution
 F of S Calculation Option: [Constant](#)
 Advanced
 Geometry Settings
 Minimum Slip Surface Depth: [0.1 ft](#)
 Number of Slices: 30
 Factor of Safety Convergence Settings
 Maximum Number of Iterations: [100](#)
 Tolerable difference in F of S: [0.001](#)
 Solution Settings
 Search Method: [Root Finder](#)

Tolerable difference between starting and converged F of S: 3
 Maximum iterations to calculate converged lambda: 20
 Max Absolute Lambda: 2

Materials

Existing Fill

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion': [50 psf](#)
 Phi': [28 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: 1

Potomac Group

Model: [Mohr-Coulomb](#)
 Unit Weight: [125 pcf](#)
 Cohesion': [0 psf](#)
 Phi': [34 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: 1

Alluvium-Fine (Undrained)

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion': [500 psf](#)
 Phi': [0 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: 1

New Compacted Fill

Model: [Mohr-Coulomb](#)
 Unit Weight: [120 pcf](#)
 Cohesion': [50 psf](#)
 Phi': [30 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: 1

Concrete

Model: [High Strength](#)
 Unit Weight: [150 pcf](#)
 Pore Water Pressure
 Piezometric Line: 1

Alluvium-Coarse (Top)

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion': [50 psf](#)
 Phi': [30 °](#)

Phi-B: 0 °
 Pore Water Pressure
 Piezometric Line: 1

Alluvium-Coarse (Bottom)

Model: Mohr-Coulomb
 Unit Weight: 115 pcf
 Cohesion: 0 psf
 Phi: 28 °
 Phi-B: 0 °
 Pore Water Pressure
 Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
 Left-Zone Left Coordinate: (2,125.75, 32.726744) ft
 Left-Zone Right Coordinate: (2,175.9325, 37.000013) ft
 Left-Zone Increment: 50
 Right Type: Range
 Right-Zone Left Coordinate: (2,183.582, 39.714545) ft
 Right-Zone Right Coordinate: (2,240.7332, 47.356179) ft
 Right-Zone Increment: 50
 Radius Increments: 4

Slip Surface Limits

Left Coordinate: (2,125, 0) ft
 Right Coordinate: (2,275, 47.25) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	2,139.25 ft	33.75 ft
Coordinate 2	2,170.5 ft	33.75 ft
Coordinate 3	2,188.5 ft	33.75 ft
Coordinate 4	2,275 ft	33.75 ft

Surcharge Loads

Surcharge Load 1

Surcharge (Unit Weight): 75 pcf
 Direction: Vertical

Coordinates

	X	Y

2,200.5 ft	48.000222 ft
2,253 ft	47.232143 ft

Geometry

Name: Existing Slope (2)

Settings

View: 2D
 Element Thickness: 1 ft

Points

	X	Y
Point 1		
Point 2	2,125.25 ft	32.75 ft
Point 3	2,136 ft	32.25 ft
Point 4	2,142.25 ft	35 ft
Point 5	2,163.75 ft	34.5 ft
Point 6	2,174.5194 ft	36.498555 ft
Point 7	2,232.5 ft	46.5 ft
Point 8	2,253.5 ft	47.25 ft
Point 9	2,262.75 ft	48 ft
Point 10	2,263 ft	47.25 ft
Point 11	2,275 ft	47.25 ft
Point 12	2,275 ft	0 ft
Point 13	2,275 ft	36.5 ft
Point 14	2,275 ft	26.75 ft
Point 15	2,200.5 ft	48.000222 ft
Point 16	2,252.25 ft	47.205357 ft
Point 17	2,240.75 ft	46.794643 ft
Point 18	2,197 ft	41.25 ft
Point 19	2,203 ft	41.25 ft
Point 20	2,203 ft	42 ft
Point 21	2,201.5 ft	42 ft
Point 22	2,201.5 ft	47.869972 ft
Point 23	2,200.5 ft	46.5 ft
Point 24	2,198.5 ft	42 ft
Point 25	2,197 ft	42 ft
Point 26	2,201.5 ft	46.5 ft
Point 27	2,200.5 ft	44.5 ft
Point 28	2,216.75 ft	46.486842 ft
Point 29	2,187.4545 ft	41.249984 ft
Point 30	2,125 ft	0 ft
Point 31	2,125.207 ft	26.928325 ft
Point 32	2,275 ft	40.25 ft
Point 33	2,185.0909 ft	40.249999 ft
Point 34	2,275 ft	32 ft

Point 35	2,125.2464 ft	32 ft
Point 36	2,203 ft	39 ft
Point 37	2,203 ft	40.249999 ft
Point 38	2,197 ft	39 ft
Point 39	2,197.0011 ft	40.249999 ft
Point 40	2,198.5 ft	44.5 ft
Point 41	2,195 ft	39 ft
Point 42	2,195 ft	43.470164 ft
Point 43	2,195 ft	40.249999 ft
Point 44	2,195 ft	41.249997 ft
Point 45	2,205.2957 ft	40.249999 ft
Point 46	2,192 ft	40.75 ft

Regions

	Material	Points	Area
Region 1	Alluvium-Coarse (Top)	6,13,32,45,36,38,41,43,33	345.61 ft ²
Region 2	Potomac Group	12,30,31,14	4,023.1 ft ²
Region 3	New Compacted Fill	28,7,17,16,22,26,21,20,19,37,36,45	104.2 ft ²
Region 4	Concrete	19,20,21,26,22,15,23,27,40,24,25,18,39,38,36,37	28.934 ft ²
Region 5	New Compacted Fill	18,25,24,40,42,44,43,41,38,39	12.949 ft ²
Region 6	Alluvium-Fine (Undrained)	3,4,5,6,13,34,35,2	564.43 ft ²
Region 7	Existing Fill	11,10,9,8,16,17,7,28,45,32	427.24 ft ²
Region 8	Alluvium-Coarse (Bottom)	14,31,35,34	772.96 ft ²
Region 9	Existing Fill	33,43,44,42,29	17.103 ft ²

Slip Results

Slip Surfaces Analysed: 7488 of 13005 converged

Current Slip Surface

Slip Surface: 7,798
 Factor of Safety: 1.975
 Volume: 482.24195 ft³
 Weight: 56,893.508 lbf
 Resisting Moment: 1,199,341.8 lbf-ft
 Activating Moment: 607,198.17 lbf-ft
 Resisting Force: 24,663.001 lbf
 Activating Force: 12,491.64 lbf

Slip Rank: 1 of 13,005 slip surfaces
 Exit: (2,155.7857, 34.685216) ft
 Entry: (2,214.9363, 47.694012) ft
 Radius: 43.752104 ft
 Center: (2,178.578, 72.031676) ft

Slip Slices

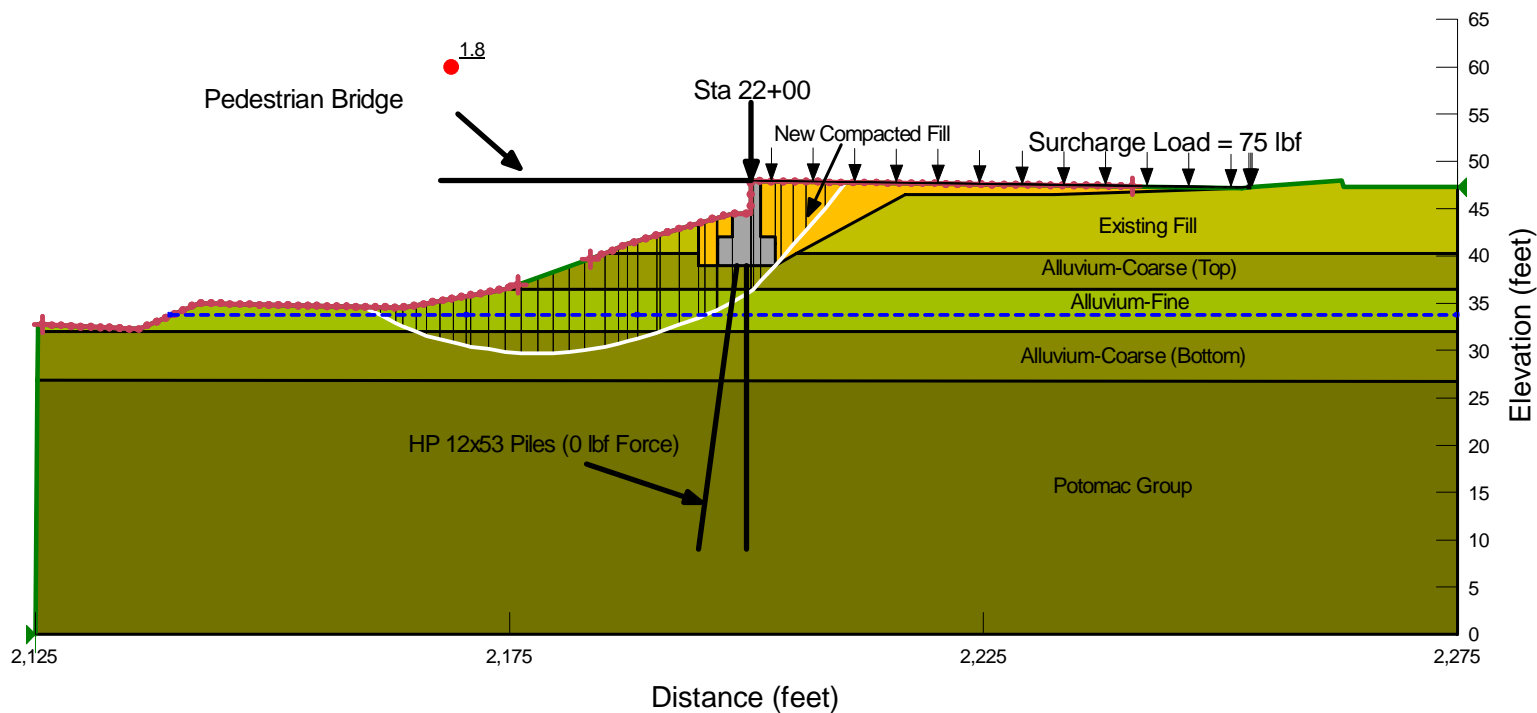
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	2,156.5899 ft	34.217608 ft	-29.192848 psf	268.53729 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 2	2,158.2762 ft	33.287754 ft	28.858123 psf	362.13319 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 3	2,160.0405 ft	32.412754 ft	83.484538 psf	447.15113 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 4	2,162.3363 ft	31.434435 ft	144.56117 psf	429.29573 psf	151.39605 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 5	2,164.875 ft	30.497706 ft	203.04131 psf	564.71358 psf	192.30456 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 6	2,167.125 ft	29.821295 ft	245.26981 psf	695.80231 psf	239.55238 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 7	2,169.375 ft	29.273906 ft	279.44338 psf	805.12651 psf	279.51068 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 8	2,171.5048 ft	28.867106 ft	304.83999 psf	890.87006 psf	311.59772 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 9	2,173.5145 ft	28.585336 ft	322.43096 psf	956.53377 psf	337.15845 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 10	2,175.5766 ft	28.395511 ft	334.28178 psf	1,031.9943 psf	370.98035 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 11	2,177.6908 ft	28.301349 ft	340.16029 psf	1,115.7589 psf	412.3931 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 12	2,179.8052 ft	28.309574 ft	339.64685 psf	1,184.1225 psf	449.0157 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 13	2,181.9194 ft	28.420242 ft	332.73783 psf	1,237.6765 psf	481.16444 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 14	2,184.0338 ft	28.634139 ft	319.38418 psf	1,276.8443 psf	509.09059 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
						0 psf	0 psf	

Slice 15	2,186.2727 ft	28.978255 ft	297.90094 psf	1,311.5392 psf	538.96105 psf			Alluvium-Coarse (Bottom)
Slice 16	2,187.9772 ft	29.304467 ft	277.53545 psf	1,327.6485 psf	558.355 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 17	2,189.5833 ft	29.701114 ft	252.77274 psf	1,316.2125 psf	565.44096 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 18	2,191.75 ft	30.324907 ft	213.82922 psf	1,290.1851 psf	572.30859 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 19	2,193.9167 ft	31.072745 ft	167.14152 psf	1,249.8377 psf	575.67976 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 20	2,195.6167 ft	31.739221 ft	125.53334 psf	1,229.5838 psf	587.03407 psf	0 psf	0 psf	Alluvium-Coarse (Bottom)
Slice 21	2,196.6172 ft	32.173734 ft	98.406583 psf	1,213.5723 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 22	2,197.7506 ft	32.712913 ft	64.745515 psf	1,261.4992 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 23	2,199.131 ft	33.414179 ft	20.965346 psf	1,261.4544 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 24	2,200.131 ft	33.958901 ft	-13.04172 psf	1,189.8656 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 25	2,201 ft	34.466241 ft	-44.715049 psf	1,595.8277 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 26	2,202.25 ft	35.247331 ft	-93.478634 psf	1,328.0748 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 27	2,203.553 ft	36.114481 ft	-147.61499 psf	1,132.9405 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 28	2,204.7008 ft	36.941849 ft	-199.26776 psf	992.77146 psf	573.17687 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 29	2,206.1336 ft	38.06449 ft	-269.35445 psf	866.19292 psf	500.09672 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 30	2,207.8095 ft	39.497131 ft	-358.79446 psf	712.95506 psf	411.6248 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 31	2,209.5258 ft	41.129612 ft	-460.71059 psf	556.47057 psf	295.88065 psf	50 psf	0 psf	Existing Fill
Slice 32	2,211.2824 ft	42.998606 ft	-577.39221 psf	379.54383 psf	201.80703 psf	50 psf	0 psf	Existing Fill
						50 psf	0 psf	

Slice 33	2,213.5485 ft	45.840999 ft	-754.84335 psf	129.08335 psf	74.526309 psf			New Compacted Fill
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Project: Shirlington Pedestrian Bridge
 Project Number: JD205151
 Title: Shirlington Pedestrian Bridge
 Name: Optimized, Drained (Long-Term)

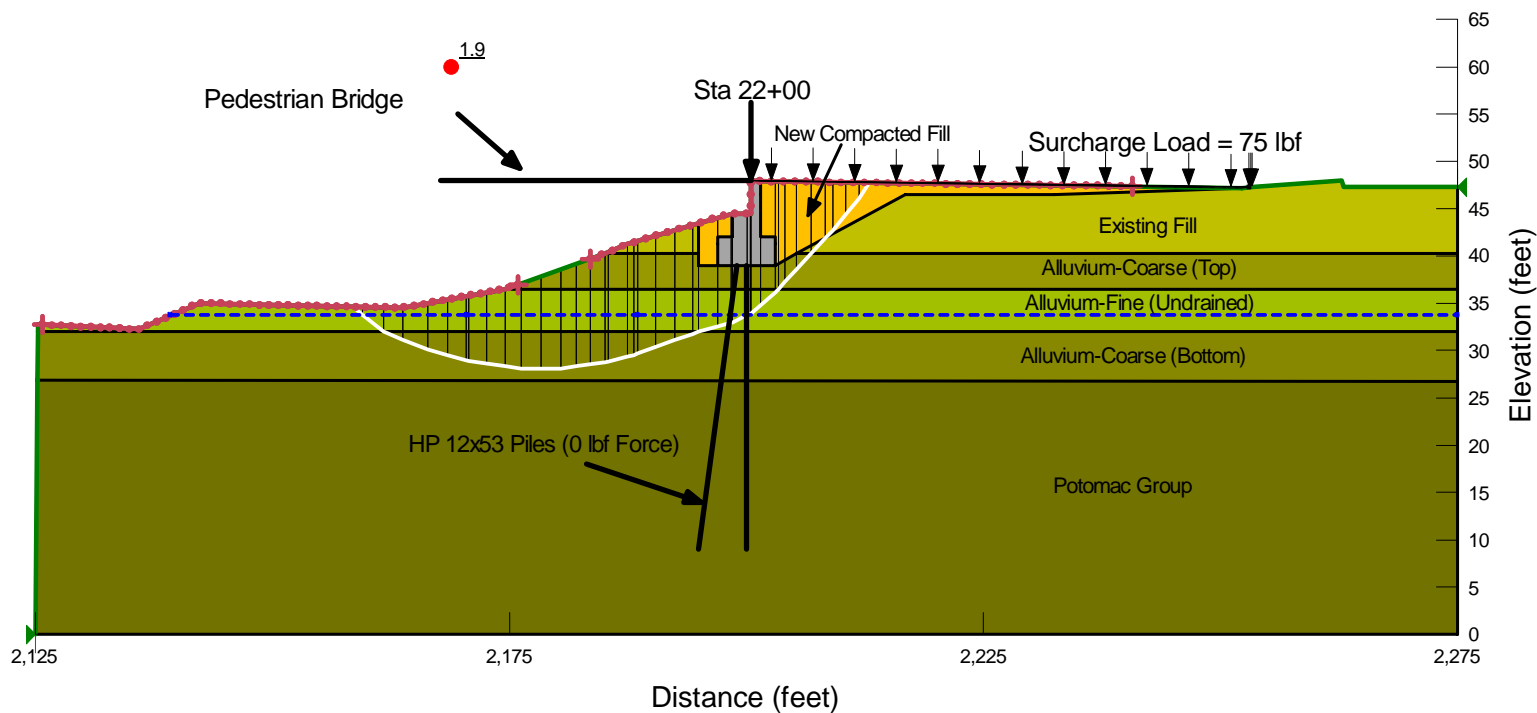
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
Dark Green	Alluvium-Coarse (Bottom)	Mohr-Coulomb	115	0	28
Light Green	Alluvium-Coarse (Top)	Mohr-Coulomb	115	50	30
Yellow-Green	Alluvium-Fine	Mohr-Coulomb	115	0	28
Grey	Concrete	High Strength	150		
Light Yellow	Existing Fill	Mohr-Coulomb	115	50	28
Orange	New Compacted Fill	Mohr-Coulomb	120	50	30
Dark Green	Potomac Formation	Mohr-Coulomb	125	0	34



Note: Data point is randomly placed to show factor of safety value only and does not represent the true center of the critical slip surface. Actual coordinates of the center of critical slip surface are: (2,177.9186, 69.641822) ft

Project: Shirlington Pedestrian Bridge
 Project Number: JD205151
 Title: Shirlington Pedestrian Bridge
 Name: Optimized, Undrained (Short-Term)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
Dark Olive Green	Alluvium-Coarse (Bottom)	Mohr-Coulomb	115	0	28
Light Olive Green	Alluvium-Coarse (Top)	Mohr-Coulomb	115	50	30
Yellow-Green	Alluvium-Fine (Undrained)	Mohr-Coulomb	115	500	0
Grey	Concrete	High Strength	150		
Light Yellow-Green	Existing Fill	Mohr-Coulomb	115	50	28
Yellow	New Compacted Fill	Mohr-Coulomb	120	50	30
Dark Olive Green	Potomac Formation	Mohr-Coulomb	125	0	34



Note: Data point is randomly placed to show factor of safety value only and does not represent the true center of the critical slip surface. Actual coordinates of the center of critical slip surface are: (2,178.578, 72.031676) ft

Optimized, Drained (Long-Term)

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File Information

File Version: 10.02
 Title: [Shirlington Pedestrian Bridge](#)
 Created By: [Mathson, Braque D](#)
 Last Edited By: [Mathson, Braque D](#)
 Revision Number: 67
 Date: 02/02/2021
 Time: 02:40:42 PM
 Tool Version: 10.2.2.20559
 File Name: Existing Slope.gsz
 Directory: \\dcmetrowest1\Data\Projects\2020\JD205151\Working Files\Calculations-Analyses\Slope Stability\
 Last Solved Date: 02/02/2021
 Last Solved Time: 02:41:02 PM

Project Settings

Unit System: [U.S. Customary Units](#)

Analysis Settings

Optimized, Drained (Long-Term)

Kind: [SLOPE/W](#)
 Method: [Spencer](#)
 Settings
 PWP Conditions from: [Piezometric Line](#)
 Apply Phreatic Correction: [No](#)
 Use Staged Rapid Drawdown: [No](#)
 Unit Weight of Water: [62.430189 pcf](#)
 Slip Surface
 Direction of movement: [Right to Left](#)
 Use Passive Mode: [No](#)
 Slip Surface Option: [Entry and Exit](#)
 Critical slip surfaces saved: [1](#)
 Optimize Critical Slip Surface Location: [Yes](#)
 Optimizations Settings
 Maximum Iterations: [2,000](#)
 Starting Points: [8](#)
 Ending Points: [16](#)
 Driving Side Maximum Convex Angle: [5 °](#)
 Resisting Side Maximum Convex Angle: [1 °](#)
 Tension Crack Option: [\(none\)](#)
 Distribution
 F of S Calculation Option: [Constant](#)
 Advanced
 Geometry Settings
 Minimum Slip Surface Depth: [0.1 ft](#)
 Number of Slices: [30](#)

Factor of Safety Convergence Settings
 Maximum Number of Iterations: [100](#)
 Tolerable difference in F of S: [0.001](#)
 Solution Settings
 Search Method: [Root Finder](#)
 Tolerable difference between starting and converged F of S: [3](#)
 Maximum iterations to calculate converged lambda: [20](#)
 Max Absolute Lambda: [2](#)

Materials

Existing Fill

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [28 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Alluvium-Fine

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [28 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Potomac Group

Model: [Mohr-Coulomb](#)
 Unit Weight: [125 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [34 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

New Compacted Fill

Model: [Mohr-Coulomb](#)
 Unit Weight: [120 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [30 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Concrete

Model: [High Strength](#)
 Unit Weight: [150 pcf](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Alluvium-Coarse (Top)

Model: Mohr-Coulomb
 Unit Weight: 115 pcf
 Cohesion: 50 psf
 Phi: 30 °
 Phi-B: 0 °
 Pore Water Pressure
 Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
 Left-Zone Left Coordinate: (2,125.75, 32.726744) ft
 Left-Zone Right Coordinate: (2,175.9325, 37.000013) ft
 Left-Zone Increment: 50
 Right Type: Range
 Right-Zone Left Coordinate: (2,183.582, 39.714545) ft
 Right-Zone Right Coordinate: (2,240.7332, 47.356179) ft
 Right-Zone Increment: 50
 Radius Increments: 4

Slip Surface Limits

Left Coordinate: (2,125, 0) ft
 Right Coordinate: (2,275, 47.25) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	2,139.25 ft	33.75 ft
Coordinate 2	2,170.5 ft	33.75 ft
Coordinate 3	2,188.5 ft	33.75 ft
Coordinate 4	2,275 ft	33.75 ft

Surcharge Loads

Surcharge Load 1

Surcharge (Unit Weight): 75 pcf
 Direction: Vertical

Coordinates

	X	Y
	2,200.5 ft	48.000222 ft
	2,253 ft	47.232143 ft

Geometry

Name: Existing Slope

Settings

View: 2D
 Element Thickness: 1 ft

Points

	X	Y
Point 1		
Point 2	2,125.25 ft	32.75 ft
Point 3	2,136 ft	32.25 ft
Point 4	2,142.25 ft	35 ft
Point 5	2,163.75 ft	34.5 ft
Point 6	2,174.5194 ft	36.498555 ft
Point 7	2,232.5 ft	46.5 ft
Point 8	2,253.5 ft	47.25 ft
Point 9	2,262.75 ft	48 ft
Point 10	2,263 ft	47.25 ft
Point 11	2,275 ft	47.25 ft
Point 12	2,275 ft	0 ft
Point 13	2,275 ft	36.5 ft
Point 14	2,275 ft	26.75 ft
Point 15	2,200.5 ft	48.000222 ft
Point 16	2,252.25 ft	47.205357 ft
Point 17	2,240.75 ft	46.794643 ft
Point 18	2,197 ft	41.25 ft
Point 19	2,203 ft	41.25 ft
Point 20	2,203 ft	42 ft
Point 21	2,201.5 ft	42 ft
Point 22	2,201.5 ft	47.869972 ft
Point 23	2,200.5 ft	46.5 ft
Point 24	2,198.5 ft	42 ft
Point 25	2,197 ft	42 ft
Point 26	2,201.5 ft	46.5 ft
Point 27	2,200.5 ft	44.5 ft
Point 28	2,216.75 ft	46.486842 ft
Point 29	2,187.4545 ft	41.249984 ft
Point 30	2,125 ft	0 ft
Point 31	2,125.207 ft	26.928325 ft
Point 32	2,275 ft	40.25 ft
Point 33	2,185.0909 ft	40.249999 ft
Point 34	2,275 ft	32 ft
Point 35	2,125.2464 ft	32 ft
Point 36	2,203 ft	39 ft
Point 37	2,203 ft	40.249999 ft
Point 38	2,197 ft	39 ft
Point 39	2,197.0011 ft	40.249999 ft

Point 40	2,198.5 ft	44.5 ft
Point 41	2,195 ft	39 ft
Point 42	2,195 ft	43.470164 ft
Point 43	2,195 ft	40.249999 ft
Point 44	2,195 ft	41.249997 ft
Point 45	2,205.2957 ft	40.249999 ft

Regions

	Material	Points	Area
Region 1	Alluvium-Coarse (Top)	6,13,32,45,36,38,41,43,33	345.61 ft ²
Region 2	Potomac Group	12,30,31,14	4,023.1 ft ²
Region 3	New Compacted Fill	28,7,17,16,22,26,21,20,19,37,36,45	104.2 ft ²
Region 4	Concrete	19,20,21,26,22,15,23,27,40,24,25,18,39,38,36,37	28.934 ft ²
Region 5	New Compacted Fill	18,25,24,40,42,44,43,41,38,39	12.949 ft ²
Region 6	Alluvium-Fine	3,4,5,6,13,34,35,2	564.43 ft ²
Region 7	Existing Fill	11,10,9,8,16,17,7,28,45,32	427.24 ft ²
Region 8	Alluvium-Coarse (Top)	14,31,35,34	772.96 ft ²
Region 9	Existing Fill	29,33,43,44	8.7272 ft ²
Region 10	Existing Fill	29,44,42	8.3761 ft ²

Slip Results

Slip Surfaces Analysed: 7647 of 13006 converged

Current Slip Surface

Slip Surface: 13,006
 Factor of Safety: 2.083
 Volume: 327.22727 ft³
 Weight: 38,939.702 lbf
 Resisting Moment: 863,673.44 lbf-ft
 Activating Moment: 414,547.55 lbf-ft
 Resisting Force: 20,337.502 lbf
 Activating Force: 9,761.1756 lbf
 Slip Rank: 1 of 13,006 slip surfaces
 Exit: (2,161.8405, 34.544407) ft
 Entry: (2,211.1828, 47.743168) ft
 Radius: 24.892475 ft
 Center: (2,178.8085, 68.910578) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
						50 psf	0 psf	

Slice 1	2,162.5587 ft	34.147204 ft	-24.797504 psf	96.079749 psf	51.086509 psf			Alluvium-Fine
Slice 2	2,163.5134 ft	33.61916 ft	8.1683883 psf	182.17541 psf	92.521176 psf	50 psf	0 psf	Alluvium-Fine
Slice 3	2,163.8275 ft	33.445429 ft	19.014416 psf	210.79058 psf	101.96919 psf	50 psf	0 psf	Alluvium-Fine
Slice 4	2,164.9194 ft	32.983012 ft	47.883205 psf	285.20171 psf	126.18449 psf	50 psf	0 psf	Alluvium-Fine
Slice 5	2,166.9415 ft	32.281743 ft	91.663593 psf	407.22692 psf	167.788 psf	50 psf	0 psf	Alluvium-Fine
Slice 6	2,169.0103 ft	31.703451 ft	127.76644 psf	546.47823 psf	241.74336 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 7	2,170.2856 ft	31.369679 ft	148.60391 psf	586.76799 psf	252.97415 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 8	2,171.4722 ft	31.163665 ft	161.46535 psf	643.40013 psf	278.24518 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 9	2,173.4166 ft	30.826086 ft	182.54051 psf	736.19934 psf	319.65507 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 10	2,174.4541 ft	30.651789 ft	193.42193 psf	746.17736 psf	319.1335 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 11	2,175.7118 ft	30.545713 ft	200.04427 psf	815.75191 psf	355.47897 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 12	2,177.8257 ft	30.470409 ft	204.74547 psf	868.67145 psf	383.31784 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 13	2,179.6689 ft	30.52094 ft	201.59084 psf	942.32633 psf	427.66383 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 14	2,181.5697 ft	30.686589 ft	191.24933 psf	947.12674 psf	436.40603 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 15	2,183.5282 ft	30.967357 ft	173.72093 psf	994.99252 psf	474.16137 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 16	2,184.7992 ft	31.172148 ft	160.93581 psf	985.06308 psf	475.8101 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 17	2,185.4929 ft	31.325304 ft	151.37426 psf	998.36441 psf	489.00999 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 18	2,186.6746 ft	31.623891 ft	132.73337 psf	996.94977 psf	498.95557 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 19	2,187.7635 ft	31.916865 ft	114.44298 psf	1,010.5746 psf	517.38182 psf	50 psf	0 psf	Alluvium-Coarse (Top)
						50 psf	0 psf	

Slice 20	2,188.2862 ft	32.057524 ft	105.66161 psf	1,012.2798 psf	482.05743 psf			Alluvium-Fine
Slice 21	2,189.3778 ft	32.351255 ft	87.323904 psf	1,015.147 psf	493.33227 psf	50 psf	0 psf	Alluvium-Fine
Slice 22	2,191.1336 ft	32.82367 ft	57.830932 psf	1,019.7583 psf	511.46587 psf	50 psf	0 psf	Alluvium-Fine
Slice 23	2,192.9939 ft	33.404939 ft	21.542223 psf	976.68591 psf	507.85891 psf	50 psf	0 psf	Alluvium-Fine
Slice 24	2,194.4882 ft	33.92974 ft	-11.221172 psf	967.40192 psf	514.37673 psf	50 psf	0 psf	Alluvium-Fine
Slice 25	2,195.9824 ft	34.454517 ft	-43.98313 psf	979.97938 psf	521.06428 psf	50 psf	0 psf	Alluvium-Fine
Slice 26	2,196.983 ft	34.808829 ft	-66.102922 psf	905.32573 psf	481.37023 psf	50 psf	0 psf	Alluvium-Fine
Slice 27	2,197.7506 ft	35.202123 ft	-90.656283 psf	965.45426 psf	513.34114 psf	50 psf	0 psf	Alluvium-Fine
Slice 28	2,199.4349 ft	36.06521 ft	-144.539 psf	967.30065 psf	514.32288 psf	50 psf	0 psf	Alluvium-Fine
Slice 29	2,200.4349 ft	36.60461 ft	-178.21383 psf	763.48526 psf	440.79842 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 30	2,201 ft	37.128668 ft	-210.93088 psf	1,086.9315 psf	627.54017 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 31	2,201.9227 ft	37.98443 ft	-264.35627 psf	889.30239 psf	513.43898 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 32	2,202.6727 ft	38.703298 ft	-309.23534 psf	807.29799 psf	466.09371 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 33	2,203.7318 ft	39.760904 ft	-375.26187 psf	658.6415 psf	380.26685 psf	50 psf	0 psf	New Compacted Fill
Slice 34	2,205.1955 ft	41.22245 ft	-466.50644 psf	536.62677 psf	309.82161 psf	50 psf	0 psf	New Compacted Fill
Slice 35	2,206.6591 ft	42.683995 ft	-557.75101 psf	414.61204 psf	239.37637 psf	50 psf	0 psf	New Compacted Fill
Slice 36	2,208.0341 ft	44.117075 ft	-647.21843 psf	283.91764 psf	163.91992 psf	50 psf	0 psf	New Compacted Fill
Slice 37	2,209.3204 ft	45.521688 ft	-734.90872 psf	170.62207 psf	98.508697 psf	50 psf	0 psf	New Compacted Fill
Slice 38	2,210.5732 ft	46.983581 ft	-826.17497 psf	47.777115 psf	27.58413 psf	50 psf	0 psf	New Compacted Fill

Optimized, Undrained (Short-Term) (2)

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File Information

File Version: 10.02
 Title: [Shirlington Pedestrian Bridge](#)
 Created By: [Mathson, Braque D](#)
 Last Edited By: [Mathson, Braque D](#)
 Revision Number: 67
 Date: 02/02/2021
 Time: 02:40:42 PM
 Tool Version: 10.2.2.20559
 File Name: [Existing Slope.gsz](#)
 Directory: [\\dcmetrowest1\Data\Projects\2020\JD205151\Working Files\Calculations-Analyses\Slope Stability](#)
 Last Solved Date: 02/02/2021
 Last Solved Time: 02:41:08 PM

Project Settings

Unit System: [U.S. Customary Units](#)

Analysis Settings

Optimized, Undrained (Short-Term) (2)

Kind: [SLOPE/W](#)
 Method: [Spencer](#)
 Settings
 PWP Conditions from: [Piezometric Line](#)
 Apply Phreatic Correction: [No](#)
 Use Staged Rapid Drawdown: [No](#)
 Unit Weight of Water: [62.430189 pcf](#)
 Slip Surface
 Direction of movement: [Right to Left](#)
 Use Passive Mode: [No](#)
 Slip Surface Option: [Entry and Exit](#)
 Critical slip surfaces saved: [1](#)
 Optimize Critical Slip Surface Location: [Yes](#)
 Optimizations Settings
 Maximum Iterations: [2,000](#)
 Starting Points: [8](#)
 Ending Points: [16](#)
 Driving Side Maximum Convex Angle: [5 °](#)
 Resisting Side Maximum Convex Angle: [1 °](#)
 Tension Crack Option: [\(none\)](#)
 Distribution
 F of S Calculation Option: [Constant](#)
 Advanced
 Geometry Settings
 Minimum Slip Surface Depth: [0.1 ft](#)
 Number of Slices: [30](#)

Factor of Safety Convergence Settings
 Maximum Number of Iterations: [100](#)
 Tolerable difference in F of S: [0.001](#)

Solution Settings

Search Method: [Root Finder](#)
 Tolerable difference between starting and converged F of S: [3](#)
 Maximum iterations to calculate converged lambda: [20](#)
 Max Absolute Lambda: [2](#)

Materials

Existing Fill

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [28 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Potomac Group

Model: [Mohr-Coulomb](#)
 Unit Weight: [125 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [34 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Alluvium-Fine (Undrained)

Model: [Mohr-Coulomb](#)
 Unit Weight: [115 pcf](#)
 Cohesion: [500 psf](#)
 Phi: [0 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

New Compacted Fill

Model: [Mohr-Coulomb](#)
 Unit Weight: [120 pcf](#)
 Cohesion: [50 psf](#)
 Phi: [30 °](#)
 Phi-B: [0 °](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Concrete

Model: [High Strength](#)
 Unit Weight: [150 pcf](#)
 Pore Water Pressure
 Piezometric Line: [1](#)

Alluvium-Coarse (Top)

Model: Mohr-Coulomb
 Unit Weight: 115 pcf
 Cohesion: 50 psf
 Phi: 30 °
 Phi-B: 0 °
 Pore Water Pressure
 Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
 Left-Zone Left Coordinate: (2,125.75, 32.726744) ft
 Left-Zone Right Coordinate: (2,175.9325, 37.000013) ft
 Left-Zone Increment: 50
 Right Type: Range
 Right-Zone Left Coordinate: (2,183.582, 39.714545) ft
 Right-Zone Right Coordinate: (2,240.7332, 47.356179) ft
 Right-Zone Increment: 50
 Radius Increments: 4

Slip Surface Limits

Left Coordinate: (2,125, 0) ft
 Right Coordinate: (2,275, 47.25) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	2,139.25 ft	33.75 ft
Coordinate 2	2,170.5 ft	33.75 ft
Coordinate 3	2,188.5 ft	33.75 ft
Coordinate 4	2,275 ft	33.75 ft

Surcharge Loads

Surcharge Load 1

Surcharge (Unit Weight): 75 pcf
 Direction: Vertical

Coordinates

	X	Y
	2,200.5 ft	48.000222 ft
	2,253 ft	47.232143 ft

Geometry

Name: Existing Slope

Settings

View: 2D
 Element Thickness: 1 ft

Points

	X	Y
Point 1		
Point 2	2,125.25 ft	32.75 ft
Point 3	2,136 ft	32.25 ft
Point 4	2,142.25 ft	35 ft
Point 5	2,163.75 ft	34.5 ft
Point 6	2,174.5194 ft	36.498555 ft
Point 7	2,232.5 ft	46.5 ft
Point 8	2,253.5 ft	47.25 ft
Point 9	2,262.75 ft	48 ft
Point 10	2,263 ft	47.25 ft
Point 11	2,275 ft	47.25 ft
Point 12	2,275 ft	0 ft
Point 13	2,275 ft	36.5 ft
Point 14	2,275 ft	26.75 ft
Point 15	2,200.5 ft	48.000222 ft
Point 16	2,252.25 ft	47.205357 ft
Point 17	2,240.75 ft	46.794643 ft
Point 18	2,197 ft	41.25 ft
Point 19	2,203 ft	41.25 ft
Point 20	2,203 ft	42 ft
Point 21	2,201.5 ft	42 ft
Point 22	2,201.5 ft	47.869972 ft
Point 23	2,200.5 ft	46.5 ft
Point 24	2,198.5 ft	42 ft
Point 25	2,197 ft	42 ft
Point 26	2,201.5 ft	46.5 ft
Point 27	2,200.5 ft	44.5 ft
Point 28	2,216.75 ft	46.486842 ft
Point 29	2,187.4545 ft	41.249984 ft
Point 30	2,125 ft	0 ft
Point 31	2,125.207 ft	26.928325 ft
Point 32	2,275 ft	40.25 ft
Point 33	2,185.0909 ft	40.249999 ft
Point 34	2,275 ft	32 ft
Point 35	2,125.2464 ft	32 ft
Point 36	2,203 ft	39 ft
Point 37	2,203 ft	40.249999 ft
Point 38	2,197 ft	39 ft
Point 39	2,197.0011 ft	40.249999 ft
Point 40	2,198.5 ft	44.5 ft
Point 41	2,195 ft	39 ft

Point 42	2,195 ft	43.470164 ft
Point 43	2,195 ft	40.249999 ft
Point 44	2,195 ft	41.249997 ft
Point 45	2,205.2957 ft	40.249999 ft

Regions

	Material	Points	Area
Region 1	Alluvium-Coarse (Top)	6,13,32,45,36,38,41,43,33	345.61 ft ²
Region 2	Potomac Group	12,30,31,14	4,023.1 ft ²
Region 3	New Compacted Fill	28,7,17,16,22,26,21,20,19,37,36,45	104.2 ft ²
Region 4	Concrete	19,20,21,26,22,15,23,27,40,24,25,18,39,38,36,37	28.934 ft ²
Region 5	New Compacted Fill	18,25,24,40,42,44,43,41,38,39	12.949 ft ²
Region 6	Alluvium-Fine (Undrained)	3,4,5,6,13,34,35,2	564.43 ft ²
Region 7	Existing Fill	11,10,9,8,16,17,7,28,45,32	427.24 ft ²
Region 8	Alluvium-Coarse (Top)	14,31,35,34	772.96 ft ²
Region 9	Existing Fill	29,33,43,44	8.7272 ft ²
Region 10	New Compacted Fill	29,44,42	8.3761 ft ²

Slip Results

Slip Surfaces Analysed: 7497 of 13006 converged

Current Slip Surface

Slip Surface: 13,006
 Factor of Safety: 2.126
 Volume: 402.43994 ft³
 Weight: 47,694.012 lbf
 Resisting Moment: 1,076,639.9 lbf-ft
 Activating Moment: 506,296.57 lbf-ft
 Resisting Force: 23,110.585 lbf
 Activating Force: 10,868.568 lbf
 Slip Rank: 1 of 13,006 slip surfaces
 Exit: (2,160.4286, 34.577241) ft
 Entry: (2,212.8934, 47.720766) ft
 Radius: 26.19093 ft
 Center: (2,179.4937, 71.294543) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	2,160.9535 ft	34.163621 ft	-25.822412 psf	328.73144 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 2	2,162.591 ft	32.873275 ft	54.734107 psf	499.18335 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)

Slice 3	2,163.7268 ft	31.988316 ft	109.98224 psf	365.74599 psf	147.66527 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 4	2,164.5973 ft	31.679381 ft	129.26911 psf	430.66552 psf	174.0113 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 5	2,166.2919 ft	31.077978 ft	166.81481 psf	558.43415 psf	226.10153 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 6	2,168.4138 ft	30.444251 ft	206.37853 psf	668.59605 psf	266.86141 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 7	2,170.0943 ft	30.044568 ft	231.33082 psf	728.57824 psf	287.08593 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 8	2,171.4415 ft	29.823241 ft	245.14834 psf	789.35262 psf	314.19649 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 9	2,173.3245 ft	29.5139 ft	264.46055 psf	874.29466 psf	352.08789 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 10	2,174.3927 ft	29.34748 ft	274.85013 psf	891.20564 psf	355.85302 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 11	2,175.763 ft	29.220416 ft	282.78279 psf	965.88331 psf	394.38827 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 12	2,177.9443 ft	29.138633 ft	287.88853 psf	1,014.5867 psf	419.55938 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 13	2,179.8197 ft	29.205698 ft	283.70162 psf	1,086.2198 psf	463.33407 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 14	2,181.8219 ft	29.403393 ft	271.35949 psf	1,091.3131 psf	473.40045 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 15	2,183.9508 ft	29.731717 ft	250.86217 psf	1,139.764 psf	513.20769 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 16	2,185.0531 ft	29.906535 ft	239.94824 psf	1,104.6799 psf	499.25306 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 17	2,186.2727 ft	30.250349 ft	218.4839 psf	1,122.3024 psf	521.81986 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 18	2,187.9068 ft	30.711013 ft	189.72456 psf	1,140.6863 psf	549.03803 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 19	2,188.4295 ft	30.861441 ft	180.3333 psf	1,121.4238 psf	543.33885 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 20	2,189.2296 ft	31.121738 ft	164.08289 psf	1,119.3733 psf	551.53717 psf	50 psf	0 psf	Alluvium-Coarse (Top)

Slice 21	2,190.6887 ft	31.596489 ft	134.44408 psf	1,115.6334 psf	566.48992 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 22	2,191.7611 ft	31.916933 ft	114.43875 psf	1,156.2615 psf	601.49664 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 23	2,192.8279 ft	32.175462 ft	98.298721 psf	1,166.9305 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 24	2,194.276 ft	32.526385 ft	76.390503 psf	1,177.2133 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 25	2,196 ft	32.944185 ft	50.307188 psf	1,200.1935 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 26	2,197.3245 ft	33.265149 ft	30.269312 psf	1,295.5003 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 27	2,198.0745 ft	33.536289 ft	13.342041 psf	1,196.6502 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 28	2,198.5234 ft	33.739401 ft	0.66172006 psf	1,257.8662 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 29	2,199.5234 ft	34.191786 ft	-27.580791 psf	1,210.0961 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 30	2,200.5163 ft	34.640946 ft	-55.621934 psf	1,644.6032 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 31	2,201.0163 ft	35.090968 ft	-83.716884 psf	1,377.0334 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 32	2,202.0274 ft	36.016287 ft	-141.48473 psf	1,132.4404 psf	0 psf	500 psf	0 psf	Alluvium-Fine (Undrained)
Slice 33	2,202.6585 ft	36.593825 ft	-177.54054 psf	1,033.2921 psf	596.57147 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 34	2,202.8811 ft	36.81811 ft	-191.5427 psf	954.93158 psf	551.33001 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 35	2,204.1478 ft	38.196921 ft	-277.6221 psf	780.64073 psf	450.70314 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 36	2,205.6649 ft	39.848156 ft	-380.70903 psf	645.6569 psf	372.77019 psf	50 psf	0 psf	Alluvium-Coarse (Top)
Slice 37	2,206.4036 ft	40.652236 ft	-430.90788 psf	587.64763 psf	312.45779 psf	50 psf	0 psf	Existing Fill
Slice 38	2,206.8932 ft	41.18511 ft	-464.17534 psf	536.1405 psf	309.54086 psf	50 psf	0 psf	New Compacted Fill
						50 psf	0 psf	

Slice 39	2,207.6944 ft	42.061609 ft	-518.8953 psf	461.91322 psf	266.68572 psf			New Compacted Fill
Slice 40	2,209.0566 ft	43.55333 ft	-612.02376 psf	337.68039 psf	194.95986 psf	50 psf	0 psf	New Compacted Fill
Slice 41	2,210.5267 ft	45.154585 ft	-711.99038 psf	205.19394 psf	118.46878 psf	50 psf	0 psf	New Compacted Fill
Slice 42	2,212.1045 ft	46.865372 ft	-818.79516 psf	62.207925 psf	35.915762 psf	50 psf	0 psf	New Compacted Fill



ENGINEER
DEPARTMENT OF
ENVIRONMENTAL SERVICES

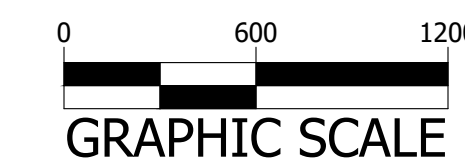
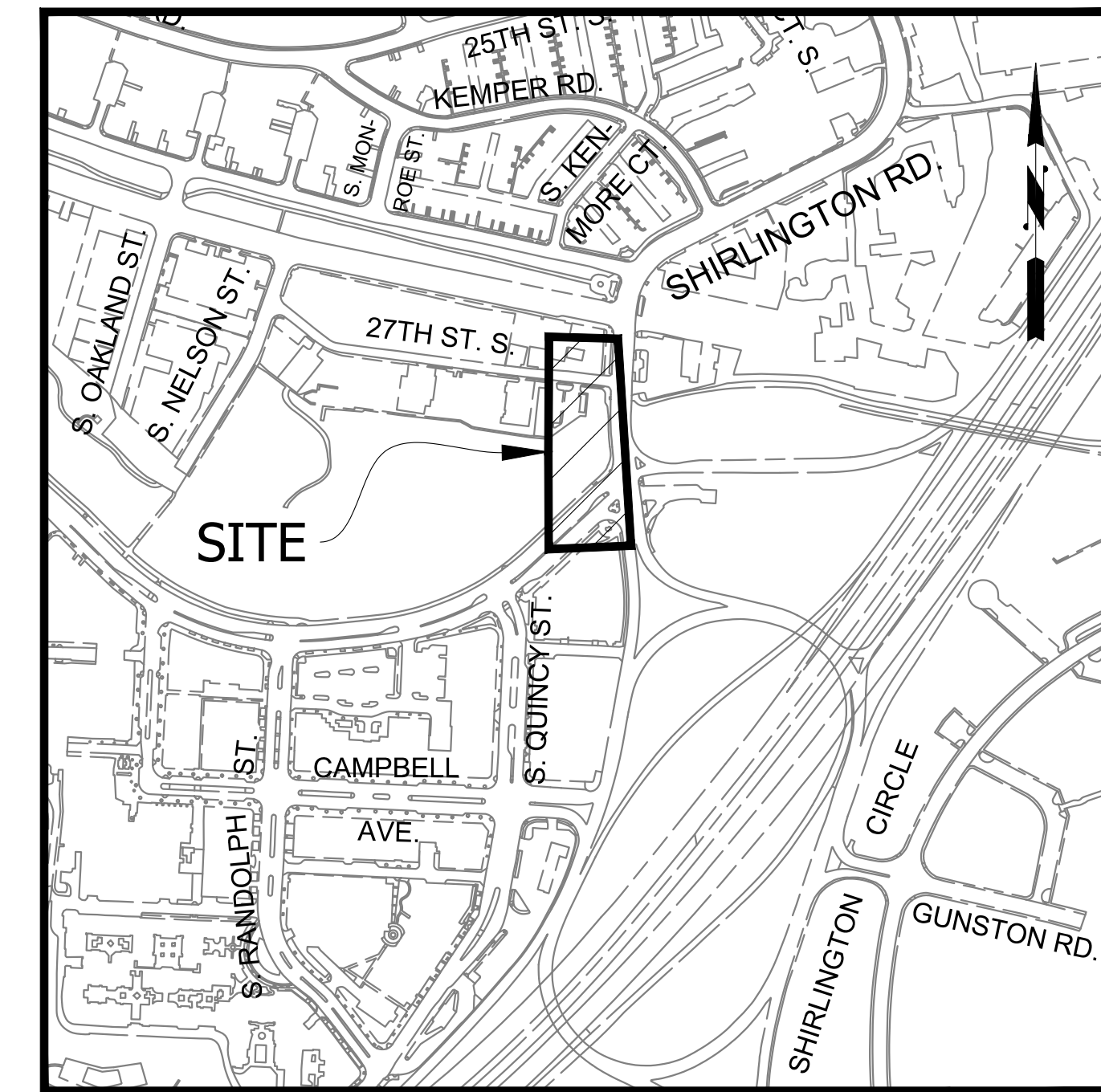
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629 FAX: 703.228.3606
WWW.ARLINGTONVA.US

EXHIBIT G

OWNER
DES/OD/WSS

CONTRACTOR
TO BE DETERMINED

LOCATION MAP



CONSTRUCTION DRAWINGS FOR:
SHIRLINGTON ROAD PEDESTRIAN BRIDGE
SHIRLINGTON ROAD
PROJECT NUMBER: BR02

GENERAL NOTES:

GENERAL CONSTRUCTION NOTES

- 1. ALL CONSTRUCTION WORK FOR THIS PROJECT SHALL CONFORM TO THE ARLINGTON COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES, CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND WHERE APPLICABLE THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE SPECIFICATIONS, AND ROAD AND BRIDGE STANDARDS. THE LATEST EDITIONS OF EACH RELEVANT MANUAL SHALL BE USED.
- 2. ALL CONSTRUCTION AND WORK ACTIVITIES SHALL COMPLY WITH THE VIRGINIA WORK AREA PROTECTION MANUAL AND ALL OTHER RELEVANT WORK SAFETY REQUIREMENTS, LATEST EDITIONS.
- 3. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT OFFICER OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE APPROVED PLANS.
- 4. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" AT 811 FOR MARKING THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES (i.e. WATER, SEWER, GAS, TELEPHONE, ELECTRIC, AND CABLE TV) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION OR CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO IDENTIFY AND PROTECT ALL OTHER UTILITY LINES FOUND IN THE WORK SITE AREA BELONGING TO OTHER OWNERS THAT ARE NOT MEMBERS OF "MISS UTILITY". PRIVATE WATER, SEWER AND GAS LATERALS WILL NOT BE MARKED BY MISS UTILITY OR THE COUNTY. THE CONTRACTOR SHALL LOCATE AND PROTECT THESE SERVICES DURING CONSTRUCTION.
- 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT THE WORK AND SHALL RETAIN A PROFESSIONAL LAND SURVEYOR LICENSED IN THE COMMONWEALTH OF VIRGINIA TO PROVIDE ALL NECESSARY CONSTRUCTION LAYOUTS AND ESTABLISH ALL CONTROL LINES, GRADES, AND ELEVATION DURING CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A COPY OF ALL CUT SHEETS FOR REVIEW, PER THE SPECIFICATIONS. THE COST OF ALL NECESSARY SURVEYING SERVICES SHALL BE CONSIDERED INCIDENTAL TO THE WORK AND, UNLESS OTHERWISE SPECIFIED, THE COST SHALL BE INCORPORATED INTO THE COSTS FOR RELEVANT ITEMS.
- 6. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE FROM BEST AVAILABLE RECORDS AND SHALL BE CONSIDERED TO BE APPROXIMATE. WHEN CONSTRUCTION ACTIVITY REACHES IN PROXIMITY TO EXISTING UTILITIES, THE TRENCH(ES) SHALL BE OPENED A SUFFICIENT DISTANCE AHEAD OF THE WORK OR TEST PITS SHALL BE MADE TO VERIFY THE EXACT LOCATION AND INVERTS OF THE UTILITY TO ALLOW FOR POSSIBLE CHANGES IN THE LINE OR GRADE AS DIRECTED BY OFFICER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING UTILITIES AND THE RELATED STRUCTURES. ALL EXISTING UTILITY SYSTEMS SHALL BE PROTECTED TO PREVENT DAMAGE DURING THE CONTRACTOR'S OPERATIONS. ANY SYSTEM DAMAGED SHALL BE PROMPTLY REPAIRED AT NO COST TO THE OWNER.
- 7. EXISTING MANHOLE FRAMES, COVERS, VALVE BOXES, AND OTHER APPURTENANCES SHALL BE ADJUSTED TO THE FINAL GRADE OR REPLACED, AS NECESSARY. UNLESS OTHERWISE SPECIFIED, THE COST FOR THIS SHALL BE CONSIDERED INCIDENTAL TO THE WORK, AND SHALL BE INCORPORATED INTO THE COSTS FOR RELEVANT ITEMS.
- 8. THE CONTRACTOR SHALL PROVIDE ADA COMPLIANT ACCESS THROUGH OR AROUND THE SITE AT ALL TIMES AND SHALL ENSURE THE SAFETY OF ALL THOSE PASSING THROUGH OR ADJACENT TO THE SITE.
- 9. ALL SIDEWALK AND CURB AND GUTTER DEMOLITION SHALL BEGIN AND END AT THE CONSTRUCTION JOINT NEAREST TO THE DEPICTED DEMOLITION EXTENTS WITH A NEAT SAWCUT LINE TO FULL DEPTH OF PAVEMENT SECTION.
- 10. THE CONTRACTOR SHALL MOVE ALL MATERIALS AND EQUIPMENT TO THE TOP OF THE STREAM BANK DURING ANTICIPATED HIGH WATER EVENTS.

STORMWATER AND ENVIRONMENTAL PROTECTION

- 11. THE CONTRACTOR SHALL CONFINE ALL ACTIVITIES AT THE SITE ASSOCIATED WITH CONSTRUCTION ACTIVITIES, TO INCLUDE STORAGE OF EQUIPMENT AND OR MATERIALS, ACCESS TO THE WORK, FORMWORK, ETC. TO WITHIN THE DESIGNATED LIMITS OF DISTURBANCE (LOD).

TREE PROTECTION

- 12. TREES SHALL BE PROTECTED PER THE REQUIREMENTS OF ARLINGTON PARKS & RECREATION STANDARD.

TRAFFIC CONTROL

- 13. CONTRACTOR SHALL NOTIFY THE PROJECT OFFICER AT LEAST 3 WORKING DAYS PRIOR TO DISTURBING ANY EXISTING, OR INSTALLING ANY NEW, TRAFFIC SIGNS, SIGNALS, OR OTHER TRAFFIC CONTROL DEVICES.
- 14. THE CONTRACTOR SHALL PREMARK THE LAYOUT OF ANY PERMANENT TRAFFIC CONTROL STRIPING, INDICATING THE PROPOSED LOCATION AND TYPE OF MARKING TO BE INSTALLED. THE PREMARKING MAY CONSIST OF TYPE D TAPE, CHALK, OR LUMBER CRAYONS. THE CONTRACTOR SHALL ALLOW 3 WORKING DAYS FOR THE INSPECTION AND APPROVAL OF THE PREMARKINGS PRIOR TO PLACING THE PERMANENT MARKINGS.
- 15. THE CONTRACTOR SHALL SUBMIT ANY REQUESTS FOR TEMPORARY "NO PARKING" RESTRICTIONS TO THE PROJECT OFFICER AT LEAST 3 WORKING DAYS PRIOR TO THE DESIRED ONSET OF RESTRICTIONS. PRIOR TO A REQUEST FOR THE REMOVAL OF ACCESS TO ANY ADA PARKING SPACE THE CONTRACTOR MUST HAVE MADE PROVISION FOR ALTERNATIVE ADA PARKING AS INDICATED ON THE APPROVED PLAN OR AS DIRECTED BY THE PROJECT OFFICER.
- 16. WHEN THE APPROVED PLAN CALLS FOR THE REMOVAL OF ANY PARKING METER THE CONTRACTOR MUST MAKE A REQUEST TO THE PROJECT OFFICER AT LEAST ONE WEEK IN ADVANCE OF THE DESIRED REMOVAL. THE PROJECT OFFICER WILL THEN COORDINATE THE PARKING METER REMOVAL WITH TRAFFIC ENGINEERING AND OPERATIONS.
- 17. THE CONTRACTOR SHALL PRESERVE ALL BUS STOPS, INCLUDING MAINTAINING ADEQUATE ACCESSIBILITY THROUGH AND ADJACENT TO THE CONSTRUCTION FOR BUSES AND THEIR PASSENGERS. THE CONTRACTOR SHALL NOT CLOSE, RELOCATE, OR OTHERWISE MODIFY A BUS STOP WITHOUT PRIOR REQUEST OF THE PROJECT OFFICER. ANY RELOCATION OR CLOSURE OF A BUS STOP SHALL REQUIRE AT LEAST FOUR WEEKS ADVANCE NOTICE FOR COORDINATION WITH THE COUNTY'S BUS STOP COORDINATOR - 703-228-3049.
- 18. WHEN CONDITIONS WARRANT DUE TO TRAFFIC VOLUMES, PATTERNS, OR SPECIAL EVENTS, THE COUNTY MAY SUSPEND OR OTHERWISE DIRECT THE CONTRACTOR'S ACTIVITIES TO PROTECT THE PUBLIC AND OR THE COUNTY'S TRANSPORTATION NETWORK.

WATER DISTRIBUTION, STORM AND SANITARY SEWER SYSTEMS

- 19. UNLESS OTHERWISE DIRECTED, CONTRACTORS ARE EXPRESSLY PROHIBITED FROM OPERATING ANY WATER VALVES OR APPURTENANCES. CONTRACTORS SHALL SUBMIT ALL REQUESTS FOR VALVE OPERATIONS TO THE PROJECT OFFICER AT LEAST 1 WEEK IN ADVANCE OF THE REQUIRED OPERATION.
- 20. IN THE EVENT OF A WATER OR SEWER EMERGENCY, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE COUNTY'S WATER CONTROL CENTER AT 703-228-6555 AND THE PROJECT OFFICER.
- 21. THE CONTRACTOR SHALL COORDINATE ALL UTILITY SHUTOFFS, DISCONNECTS, AND/OR ABANDONMENT WITH UTILITY OWNER AND PROJECT OFFICER AT LEAST 1 WEEK IN ADVANCE OF THE REQUIRED INTERRUPTION.

FIRE DEPARTMENT NOTES:

- 22. ALL EXISTING FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS SHALL BE MAINTAINED UNOBSTRUCTED AND ACCESSIBLE AT ALL TIMES IN ACCORDANCE WITH SECTIONS 508.5.4 AND 508.5.5 OF THE ARLINGTON COUNTY FIRE PREVENTION CODE.
- 23. ACCESS TO BUILDINGS FOR FIREFIGHTING SHALL BE MAINTAINED AT ALL TIMES. EXISTING FIRE APPARATUS ACCESS ROADS (FIRE LANES) SHALL BE KEPT CLEAR OF OBSTRUCTIONS IN ACCORDANCE WITH SECTION 503.4 OF THE ARLINGTON COUNTY FIRE PREVENTION CODE. ACCESS TO CONSTRUCTION SITES SHALL BE PROVIDED AND MAINTAINED IN ACCORDANCE WITH SECTION 1410 OF THE ARLINGTON COUNTY FIRE PREVENTION CODE.
- 24. IN THE EVENT THAT EXISTING FIRE DEPARTMENT CONNECTIONS OR FIRE APPARATUS ACCESS ROADS (FIRE LANES) MUST BE OBSTRUCTED TO FACILITATE CONSTRUCTION ACTIVITIES, CONTACT THE ARLINGTON COUNTY FIRE DEPARTMENT FIRE PREVENTION OFFICE AT 703-228-4644 TO COORDINATE REVIEW AND APPROVAL OF TEMPORARY FIRE DEPARTMENT CONNECTIONS AND/OR FIRE APPARATUS ACCESS ROADS PRIOR TO CREATING THE OBSTRUCTION.

SHEET LIST

SHEET NUMBER	SHEET TITLE
C000.1	COVER
C004.1	TYPICAL SECTIONS
C006.1	LEGEND
C011.1	EXISTING CONDITIONS PLAN - 1
C011.2	EXISTING CONDITIONS PLAN - 2
C031.1	EROSION AND SEDIMENT CONTROL PLAN
C032.1	EROSION AND SEDIMENT CONTROL NOTES & DETAILS
C032.2	STORMWATER POLLUTION PREVENTION PLAN - 1
C035.1	STORMWATER POLLUTION PREVENTION PLAN - 2
C041.1	PLAN AND PROFILE
C042.1	CURB RAMP DETAILS
C044.1	CROSS SECTION SHEET
C045.1	GEOMETRIC CONTROL PLAN
C081.1	STORMWATER MANAGEMENT PLAN
C081.2	VRRM SPREADSHEET
C081.3	WQIA
C091.1	TREE INVENTORY
C091.2	LANDSCAPE PLAN AND DETAILS
C101.1	SIGN AND MARKING PLAN
C111.1	STREETLIGHT PLAN
C111.2	STREETLIGHT PHOTOMETRIC DATA
C120.1	MOT TMP
C121.1	MOT PLAN
C122.1	MOT TTC DETAILS - 1

SHEET NUMBER	SHEET TITLE
C122.2	MOT TTC DETAILS - 2
B001.1	PLAN AND ELEVATION
B001.2	BRIDGE ELEVATION AND TYPICAL SECTION
B001.3	RIPRAP LAYOUT AND DETAIL
B001.4	ABUTMENT A
B001.5	ABUTMENT A SECTION AND PEDESTRIAN HANDRAIL DETAILS
B001.6	ABUTMENT B
B001.7	ABUTMENT B FOOTING AND WINGWALL
B001.8	ABUTMENT B PEDESTRIAN HANDRAIL DETAILS
B001.9	REINFORCING STEEL SCHEDULE ABUTMENT A
B001.10	REINFORCING STEEL SCHEDULE ABUTMENT B

SWM#

SWM# 22-0124

ADT

18,000 - SHIRLINGTON ROAD (FROM QUAKER LANE TO FOUR MILES RUN DRIVE) - 2018 - SOURCE OF COUNT (VDOT)
11,000 - S. ARLINGTON MILLS DRIVE (FROM WALTER REED DRIVE TO SHIRLINGTON ROAD) - 2018 - SOURCE OF COUNT (VDOT)

STREET CLASSIFICATION

SHIRLINGTON ROAD - PRINCIPAL ARTERIAL
S. ARLINGTON MILL DRIVE - MINOR ARTERIAL

POSTED SPEED

SHIRLINGTON ROAD - 25 MPH
S. ARLINGTON MILL DRIVE - 30 MPH



ARLINGTON VIRGINIA
Approved: 10/3/2022
Subject to field inspection
LD22115

DEPARTMENT OF
ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL



APPROVALS **DATE**

<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>Dennis W. Leach</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>Rene Harris</i>	9/27/2022
PROJECT MANAGER	

REVISIONS **DATE**

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

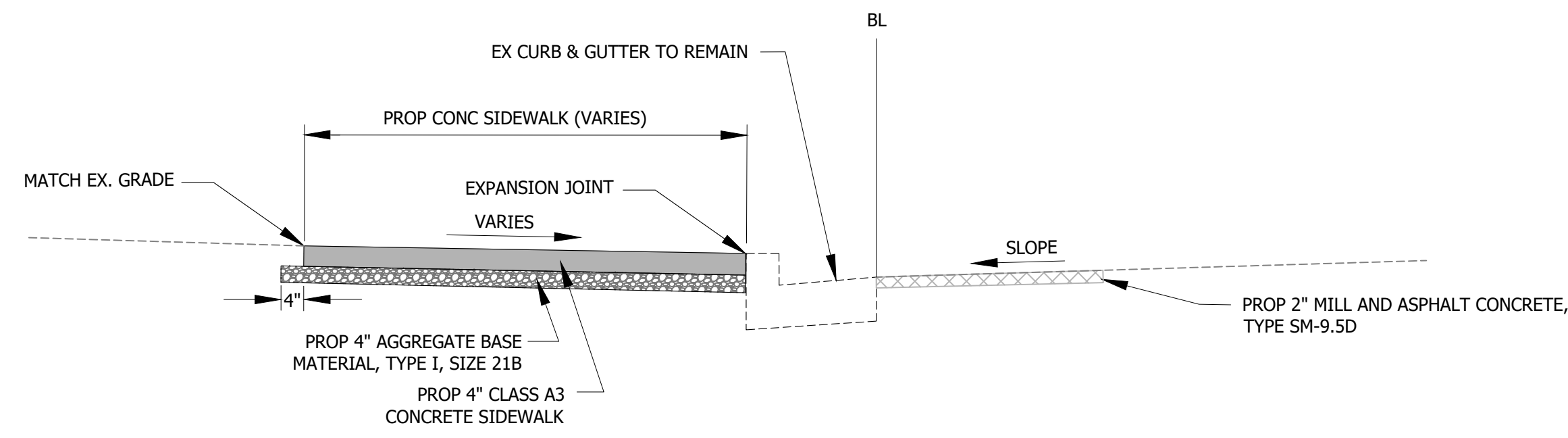
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CHECKED: BG

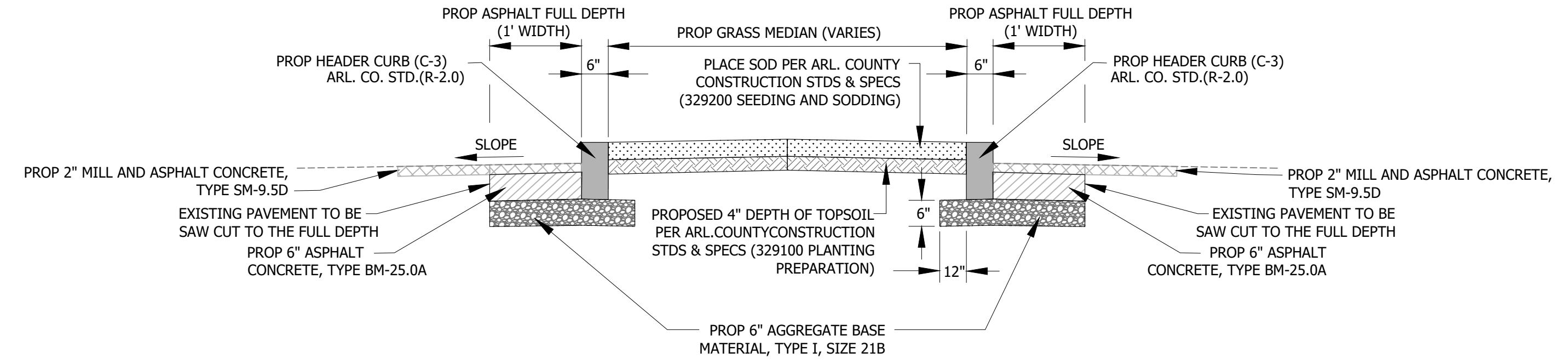
PLOTTED: JULY 13 2022

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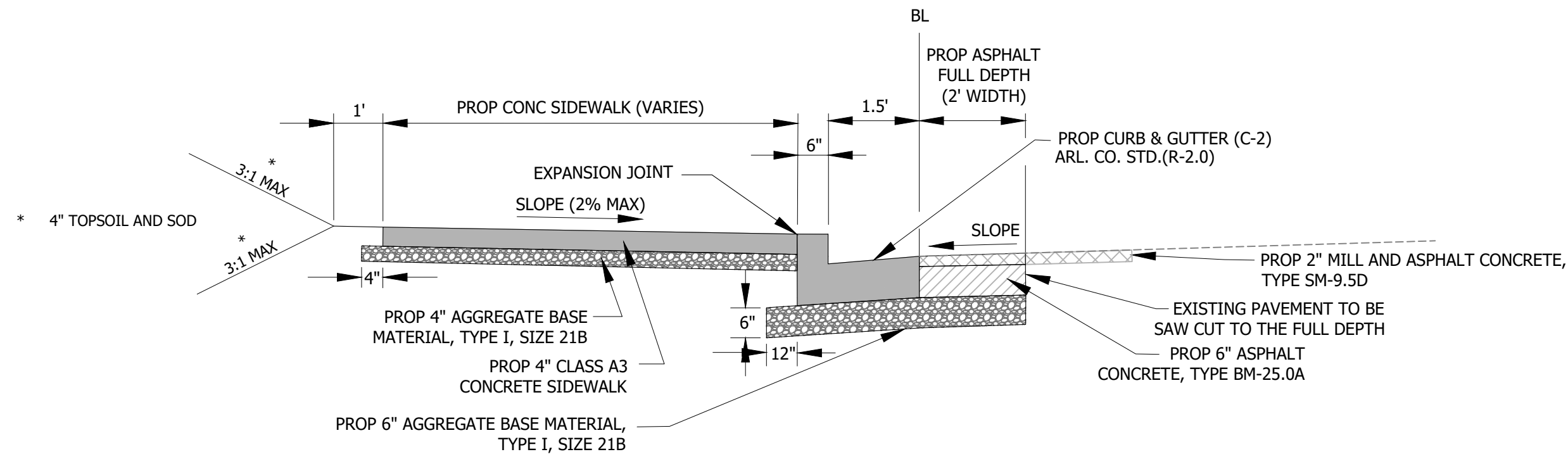
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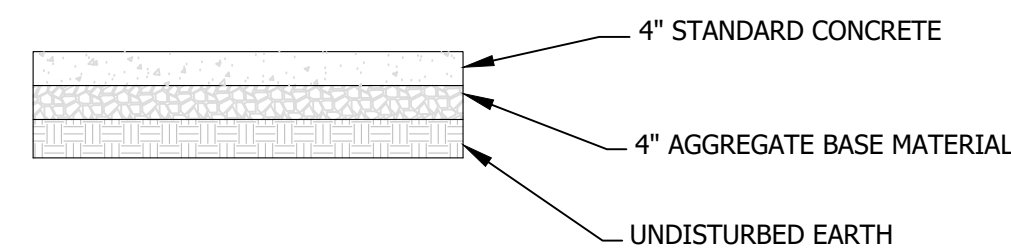
S ARLINGTON MILL ROAD EOP
 TYPICAL SECTION
 STA. 20+00 TO STA. 20+63
 SCALE: NTS



TYPICAL GRASS MEDIAN SECTION
 TYPICAL SECTION
 SCALE: NTS



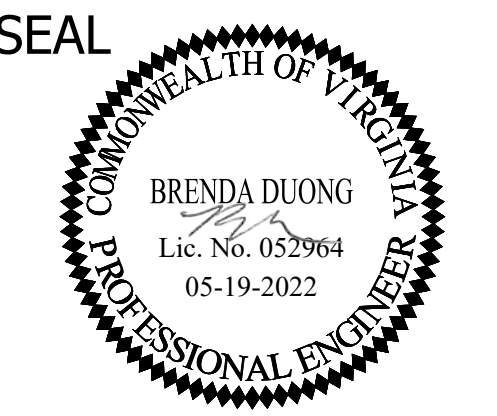
S ARLINGTON MILL ROAD EOP
 TYPICAL SECTION
 STA. 20+63 TO STA. 20+81.75
 SCALE: NTS



CONCRETE SIDEWALK ARL STD (R -2.0)
 TYPICAL SECTION
 SCALE: NTS

PERMIT REQUIREMENTS

- THE FOLLOWING PERMITS WILL BE REQUIRED FOR THIS PROJECT.
1. ARLINGTON COUNTY LAND DISTURBING ACTIVITY (LDA) PERMIT
 2. ARLINGTON COUNTY PUBLIC RIGHT-OF-WAY (PROW) PERMIT
 3. ARLINGTON COUNTY TRANSPORTATION RIGHT-OF-WAY (TROW) PERMIT
 4. VDOT PERMITS
 5. RPA AND FLOODPLAIN



APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>Dennis M. Leach</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>Rosa Harris</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
 BR02
 SHIRLINGTON ROAD
 TYPICAL SECTIONS

DESIGNED: BD
 DRAWN: BD
 CHECKED: BG
 PLOTTED: JULY 13 2022

SCALE:
 AS SHOWN

LINETYPE LEGEND

FEATURE	EXISTING	PROPOSED
BUILDING	---	---
CENTERLINE / BASELINE	---	---
COMMUNICATIONS CABLE	--- COM --- COM ---	--- COM --- COM ---
CONTOUR (MAJOR; MINOR)	--- 250 --- 250 ---	--- 250 --- 250 ---
CRITICAL ROOT ZONE	--- CRZ --- CRZ ---	--- CRZ --- CRZ ---
EASEMENT	---	---
ELECTRIC (UNDERGROUND)	--- UGE --- UGE ---	--- UGE --- UGE ---
FENCE (MATERIAL NOTED)	-X-X-X-X-X-	-X-X-X-X-X-
FIBER OPTIC	--- FO --- FO ---	--- FO --- FO ---
GAS LINE	--- GAS --- GAS ---	--- GAS --- GAS ---
X" GAS LINE (SIZE INCLUDED IF AVAILABLE)	---	---
GUARDRAIL	. o . o . o . o . o . o .	. o . o . o . o . o . o .
HARDSCAPE FEATURE (MATERIAL NOTED)	---	---
LIMITS OF DISTURBANCE	--- LOD --- LOD ---	--- LOD --- LOD ---
LIMITS OF WORK	--- LOW --- LOW ---	--- LOW --- LOW ---
OVERHEAD WIRES		
PAVEMENT MINI SKIP LINE	---	---
PAVEMENT SKIP LINE	---	---
PROPERTY LINE	---	---
RIGHT-OF-WAY LINE	---	---
ROOT PRUNING	--- RP --- RP ---	--- RP --- RP ---
SANITARY SEWER	--- SAN --- SAN ---	--- SAN --- SAN ---
X" SANITARY SEWER (SIZE INCLUDED IF AVAILABLE)	---	---
SILT FENCE	-X-X-X-X-X-	-X-X-X-X-X-
STORM (SIZE NOTED)	--- STM --- STM ---	---
STREAM	---	---
STREET LIGHT CONDUIT	--- SL --- SL ---	--- SL --- SL ---
TELEPHONE (UNDERGROUND)	--- UGT --- UGT ---	--- UGT --- UGT ---
TREE LINE	~ ~ ~ ~ ~	~ ~ ~ ~ ~
TREE PROTECTION FENCE	--- TP --- TP ---	--- TP --- TP ---
WALL	---	---
WATER	--- 6" w ---	---
X" WATER (SIZE INCLUDED IF AVAILABLE)	---	---

SYMBOL LEGEND

EXISTING FEATURE	PROPOSED FEATURE
EX CABLE PEDESTAL	PROP CABLE PEDESTAL
EX ELECTRIC BOX	PROP ELECTRIC BOX
EX FIRE HYDRANT	PROP FIRE HYDRANT
EX GAS VALVE	PROP GAS VALVE
EX GROUND LIGHT	PROP GROUND LIGHT
EX GUY WIRES	PROP GUY WIRES
EX IRON PIPE OR PIN	PROP IRON PIPE OR PIN
EX LIGHT POLE	PROP LIGHT POLE
EX MAILBOX	PROP MAILBOX
EX MONUMENT	PROP MONUMENT
EX PARKING METER	PROP PARKING METER
EX PAY STATION	PROP PAY STATION
EX SANITARY MANHOLE	PROP SANITARY MANHOLE
EX STORM BASIN	PROP STORM CATCH BASIN (TO SCALE)
EX STORM MANHOLE	PROP STORM MANHOLE
EX TELEPHONE PEDESTAL	PROP TELEPHONE PEDESTAL
EX TRAFFIC CONTROL BOX	PROP TRAFFIC CONTROL BOX
EX TRAFFIC SIGN	PROP TRAFFIC SIGN
EX TRASH CAN	PROP TRASH CAN
EX TRAVERSE	PROP TRAVERSE
EX TREES, WOODED AREA	PROPOSED TREE REMOVAL
EX UTILITY MANHOLE (TYPE INDICATED ELEC, TELE, ETC)	PROP UTILITY MANHOLE
EX UTILITY POLE	PROP UTILITY POLE
EX WATER MANHOLE	PROP WATER MANHOLE
EX WATER METER	PROP WATER METER
EX WATER VALVE	PROP WATER VALVE
EX YARD INLET	PROP YARD INLET (TO SCALE)
EX BENCHMARK	CONSTRUCTION NOTES (LEADER TO AREA AFFECTED)
	CURVE NUMBER (SEE CURVE TABLE)
	LINE NUMBER (SEE LINE TABLE)
	TEST HOLE
	NORTH ARROW

LABEL LEGEND

EXISTING	PROPOSED
EXISTING SANITARY STRUCTURE NUMBER	PROPOSED SANITARY SEWER STRUCTURE NUMBER
EXISTING STORM SEWER STRUCTURE NUMBER	PROPOSED STORM SEWER STRUCTURE NUMBER

HATCH LEGEND

PROP MILL & OVERLAY (SEE TYPICAL SECTION FOR DETAILS)	[Hatch Pattern]
PROP FULL DEPTH ASPHALT (SEE TYPICAL SECTION FOR DETAILS)	[Hatch Pattern]
PROP CONCRETE	[Hatch Pattern]
REPLACE & MATCH EXISTING DRIVEWAY OR LEADWALK. SEE CONSTRUCTION NOTES	[Hatch Pattern]
DEMOLITION AREA	[Hatch Pattern]

Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL

COMMONWEALTH OF VIRGINIA
BRENDA DUONG
Lic. No. 052964
05-19-2022
PROFESSIONAL ENGINEER

APPROVALS	DATE
[Signature]	9/28/2022 DESIGN TEAM ENGINEER SUPERVISOR
[Signature]	10/13/22 CONSTRUCTION MANAGEMENT SUPERVISOR
[Signature]	10/5/22 WATER/SEWER, STREETS BUREAU CHIEF
[Signature]	10/5/22 TRANSPORTATION DIRECTOR
[Signature]	9/27/2022 PROJECT MANAGER

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD
LEGEND

DESIGNED: BD
DRAWN: BD
CHECKED: BG

PLOTTED: JULY 13 2022
SCALE: N/A

REVISED ON 1/24/2022

FILENAME: BR02-214-EXISTING_CONDITIONS.DWG PATH: T:\1009400 - MASTER-ARLINGTON COUNTY ON-CALL\1009400 - SHIRLINGTON RD PEDESTRIAN BRIDGE\07 DESIGN\DWG PLOTTED BY: BRENDA DUONG



Approved: 10/3/2022
Subject to field inspection
LD22115
ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
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APPROVALS DATE

9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR

10/13/22
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10/5/22
WATER/SEWER, STREETS BUREAU CHIEF

10/5/22
TRANSPORTATION DIRECTOR

9/27/2022
PROJECT MANAGER

REVISIONS DATE

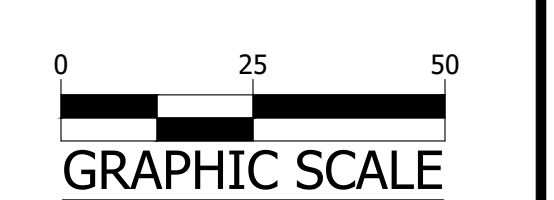
REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD
EXISTING CONDITIONS PLAN - 1

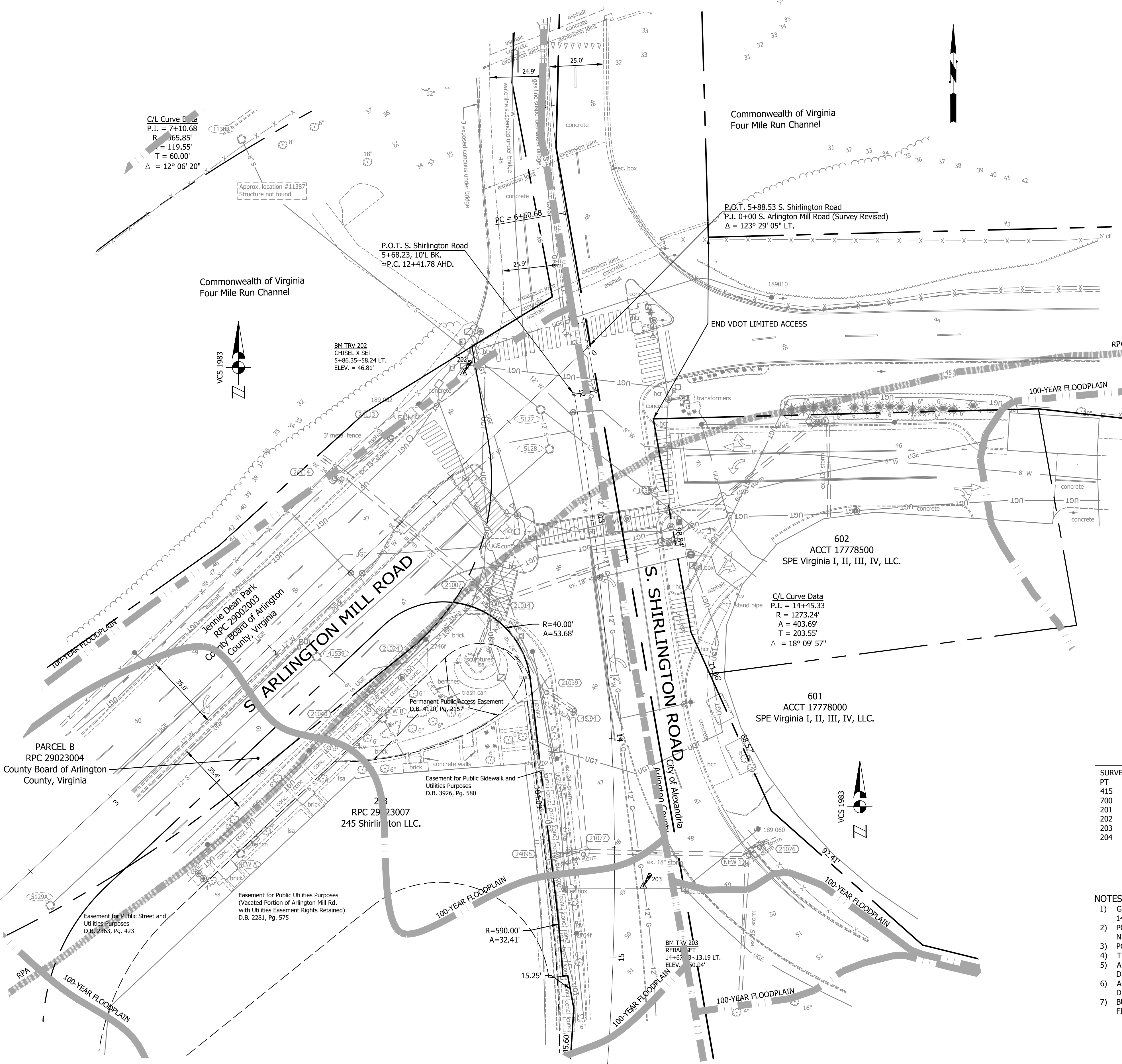
DESIGNED: BD
DRAWN: BD
CHECKED: BG

PLOTTED: JULY 13 2022

SCALE:



C011.1



SANITARY SEWER

STORM SEWER

NEW "A" TOP = 50.82 C/L INV. = 45.33	NEW 1 TOP = 48.08 18" RCP INV. IN = 44.20 (21076) 15" RCP INV. IN = 43.97 (SOUTH) 18" RCP INV. OUT = 43.73 (21077)	NEW 2 TOP = 51.33 15" RCP INV. IN = 47.95 (WEST) 15" RCP INV. OUT = 47.45 (20704)
NEW "B" TOP = 48.34 C/L INV. = 40.09	#20976 TOP = 45.77 8" RCP INV. IN = 42.83 (BUILDING) 15" RCP INV. OUT = 42.69 (20994)	NEW 3 TOP = 50.01 24" RCP INV. IN = 38.19 (20742) 24" RCP INV. OUT = 38.12 (25511)
#628 TOP = 51.07 C/L INV. = 39.87	#20981 (PIPE OUTFALL) TOP = 50.78 24" RCP INV. OUT = 38.70	#20665 TOP = 50.78 24" RCP INV. OUT = 44.45 (20699)
#629 TOP = 50.29 C/L INV. = 40.29	#20994 TOP = 45.50 15" RCP INV. IN = 42.37 (20976) 18" RCP INV. OUT = 42.34 (21014)	#20699 TOP = 50.51 24" RCP INV. IN = 43.77 (20665) 15" RCP INV. IN = 45.91 (20704) 15" RCP INV. IN = 45.41 (20705) 24" RCP INV. OUT = 43.58 (20742)
#630 TOP = 54.62 C/L INV. = 41.78	#21007 TOP = 46.24 24" RCP INV. IN = 40.34 (21014) 18" RCP INV. IN = 40.28 (21024) 24" RCP INV. OUT = 40.24 (24114)	#20704 TOP = 50.84 15" RCP INV. IN = 47.39 (NEW) 15" RCP INV. OUT = 46.71 (20699)
#952 TOP = 51.22 C/L INV. = 42.42	#21014 TOP = 45.97 24" RCP INV. IN = 40.97 (21039) 15" RCP INV. IN = 41.25 (21032) 18" RCP INV. IN = 41.13 (20994) 24" RCP INV. OUT = 40.82 (21007)	#20705 TOP = 50.68 15" RCP INV. OUT = 46.15 (20699)
#953 TOP = 51.42 C/L INV. = 43.08	#21024 TOP = 47.18 18" RCP INV. IN = 42.99 (21040) 18" RCP INV. OUT = 42.93 (21007)	#20717 TOP = 50.39 18" RCP INV. IN = 44.95 (WEST) 18" RCP INV. OUT = 44.72 (20729)
#5127 TOP = 46.39 C/L INV. = 31.36	#21039 TOP = 46.10 24" RCP INV. IN = 41.85 (24096) 24" RCP INV. OUT = 41.83 (21014)	#20729 TOP = 50.07 18" RCP INV. IN = 44.31 (20717) 18" RCP INV. OUT = 41.71 (20742)
#5128 TOP = 46.09 C/L INV. = 31.39	#21040 TOP = 48.21 18" RCP INV. OUT = 43.55 (21024)	#20742 TOP = 50.52 24" RCP INV. IN = 39.07 (20699) 18" RCP INV. IN = 41.38 (20729) 24" RCP INV. OUT = 38.27 (NEW 3)
#5129A TOP = 52.15 C/L INV. = 34.69	#21076 TOP = 48.50 15" RCP INV. IN = 44.49 (POL) 18" RCP INV. OUT = 44.41 (NEW)	#20837 TOP = 46.77 18" RCP INV. IN = 41.34 (25517) 15" RCP INV. IN = 42.72 (25513) 15" RCP INV. IN = 40.93 (25514) 18" RCP INV. OUT = 38.10 (20838)
#10215 TOP = 51.77 C/L INV. = 38.28	#21077 TOP = 47.67 15" RCP INV. IN = 43.03 (24095) 18" RCP INV. IN = 42.38 (NEW) 24" RCP INV. OUT = 42.32 (24096)	#20838 TOP = 47.06 24" RCP INV. IN = 37.21 (25511) 18" RCP INV. IN = 37.81 (20837) 15" RCP INV. IN = 42.73 (25512) 24" RCP INV. OUT = 37.18 (20841)
#11388 TOP = 46.14 C/L INV. = 33.12	#24095 TOP = 47.93 15" RCP INV. IN = 43.55 (BUILDING) 15" RCP INV. OUT = 43.31 (21077)	#20941 TOP = 46.92 24" RCP INV. IN = CANT READ (20838) 24" RCP INV. OUT = 36.81 (20885)
#11389 TOP = 45.17 C/L INV. = 32.52	#24096 TOP = 45.94 24" RCP INV. IN = 42.04 (21077) 24" RCP INV. OUT = 41.96 (21039)	#20885 (PIPE OUTFALL) 24" RCP INV. OUT = 28.11
#41539 TOP = 48.04 C/L INV. = 33.22	#24113 TOP = 46.18 15" RCP INV. OUT = 41.56 (24114)	#24114 TOP = 46.83 24" RCP INV. IN = 39.23 (21007) 15" RCP INV. IN = 39.71 (24113) 24" RCP INV. OUT = 38.88 (20981)
	#24114 TOP = 46.83 24" RCP INV. IN = 39.23 (21007) 15" RCP INV. IN = 39.71 (24113) 24" RCP INV. OUT = 38.88 (20981)	#25511 TOP = 47.73 24" RCP INV. IN = 37.60 (NEW 3) 24" RCP INV. OUT = 37.58 (20838)
		#25512 TOP = 47.90 15" RCP INV. OUT = 44.57 (20838)
		#25513 TOP = 46.95 (DOMED GRATE TOP) 12" RCP INV. OUT = 43.77 (20837)
		#25514 TOP = 46.93 15" RCP INV. OUT = 41.57 (20837)
		#25517 TOP = 45.89 18" RCP INV. OUT = 42.56 (20837)

PT	NORTHING	EASTING	ELEVATION	DESCRIPTION
415	6993642.9208	11885498.0078	56.68	TRV 415
700	6993493.1659	11885775.5839	50.95	TRV 700
201	6993308.14789	11885686.46761	48.00	TRV 201
202	6993150.94474	11885677.80146	46.81	TRV 202
203	6992916.4597	11885759.9601	50.04	TRV 203
204	6993153.47155	11885981.73055	44.61	TRV 204

- NOTES:
- GPS COORDINATES ESTABLISHED ON POINTS 415 AND 700 BY ARLINGTON COUNTY ON MAY 14, 2015.
 - POINTS WERE SCALED BY A FACTOR OF 1.00006 USING A BASE POINT WITH COORDINATES N7009718, E11878491.
 - POINT 700 WAS HELD FOR POSITION AND POINT 415 WAS HELD FOR LINE.
 - THE GPS ELEVATION OF POINT 700 (50.95') WAS HELD.
 - ALL OTHER CONTROL POINT COORDINATES ESTABLISHED BY CONVENTIONAL TRAVERSE AND DIFFERENTIAL LEVELLING.
 - ALL PAINTED UTILITIES LOCATED BY MAUL ON 06/05/2015 BASED ON THEIR OWN DESIGNATIONS.
 - BUILDING LOCATIONS ARE SHOWN FROM A COMBINATION OF AVAILABLE GIS RECORDS AND FIELD LOCATIONS.

GENERAL SURVEY NOTES:

- THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF THE COUNTY SURVEY SECTION FROM AN ACTUAL GROUND SURVEY; THE IMAGE AND/OR ORIGINAL DATA WAS OBTAINED IN MAY AND JUNE 2015; AND THIS PLAT, MAP OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
- HORIZONTAL DATUM: VIRGINIA COORDINATE SYSTEM 1983.
- VERTICAL DATUM: NORTH AMERICA VERTICAL DATUM 1988.
- CONTOUR INTERVAL: 1'
- BOUNDARY INFORMATION SHOWN HEREON WAS COMPILED FROM EXISTING LAND RECORDS AND DOES NOT REPRESENT A FIELD RUN BOUNDARY SURVEY.

SEAL

APPROVALS DATE

	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
	10/5/22
TRANSPORTATION DIRECTOR	
	9/27/2022
PROJECT MANAGER	

REVISIONS DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

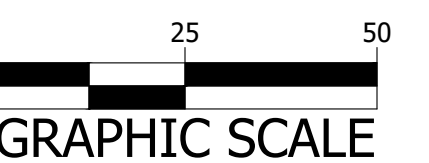
SHIRLINGTON ROAD

EXISTING CONDITIONS PLAN - 2

DESIGNED: BD
DRAWN: BD
CHECKED: BG

PLOTTED: JULY 13 2022

SCALE:



C011.2

SANITARY SEWER

NEW "A" TOP = 50.82 C/L INV. = 45.33	NEW "B" TOP = 48.34 C/L INV. = 40.09	#628 TOP = 51.07 C/L INV. = 39.87	#629 TOP = 50.29 C/L INV. = 40.29	#630 TOP = 54.62 C/L INV. = 41.78	#952 TOP = 51.22 C/L INV. = 42.42	#953 TOP = 51.42 C/L INV. = 43.08	#5127 TOP = 46.39 C/L INV. = 31.36	#5128 TOP = 46.09 C/L INV. = 31.39	#5129A TOP = 52.15 C/L INV. = 34.69	#10215 TOP = 51.77 C/L INV. = 38.28	#11388 TOP = 46.14 C/L INV. = 33.12	#11389 TOP = 45.17 C/L INV. = 32.52	#11539 TOP = 48.04 C/L INV. = 33.22
--	--	---	---	---	---	---	--	--	---	---	---	---	---

STORM SEWER

NEW 1 TOP = 48.08 18" RCP INV. IN = 44.20 (21076) 15" RCP INV. IN = 43.97 (SOUTH) 18" RCP INV. OUT = 43.73 (21077)	NEW 2 TOP = 51.53 15" RCP INV. IN = 47.95 (WEST) 15" RCP INV. OUT = 47.45 (20704)	NEW 3 TOP = 50.01 24" RCP INV. IN = 38.19 (20742) 24" RCP INV. OUT = 38.12 (25511)	#20976 TOP = 45.77 8" RCP INV. IN = 42.83 (BUILDING) 15" RCP INV. OUT = 42.69 (20994)	#20981 (PIPE OUTFALL) TOP = 50.78 24" RCP INV. OUT = 38.70	#20994 TOP = 45.50 15" RCP INV. IN = 42.37 (20976) 18" RCP INV. OUT = 42.34 (21014)	#21007 TOP = 46.24 24" RCP INV. IN = 40.34 (21014) 18" RCP INV. IN = 40.28 (21024) 24" RCP INV. OUT = 40.24 (24114)	#21014 TOP = 45.97 24" RCP INV. IN = 40.97 (21039) 15" RCP INV. IN = 41.25 (21032) 18" RCP INV. IN = 41.13 (20994) 24" RCP INV. OUT = 40.82 (21007)	#21024 TOP = 47.18 18" RCP INV. IN = 42.99 (21040) 18" RCP INV. OUT = 42.93 (21007)	#21039 TOP = 46.10 24" RCP INV. IN = 41.85 (24096) 24" RCP INV. OUT = 41.83 (21014)	#21040 TOP = 48.21 18" RCP INV. OUT = 43.55 (21024)	#21076 TOP = 48.50 15" RCP INV. IN = 44.49 (POL) 18" RCP INV. OUT = 44.41 (NEW)	#21077 TOP = 47.67 15" RCP INV. IN = 43.03 (24095) 18" RCP INV. IN = 42.38 (NEW) 24" RCP INV. OUT = 42.32 (24096)	#24095 TOP = 47.93 15" RCP INV. IN = 43.55 (BUILDING) 15" RCP INV. OUT = 43.31 (21077)	#24096 TOP = 45.94 24" RCP INV. IN = 42.04 (21077) 24" RCP INV. OUT = 41.96 (21039)	#24113 TOP = 46.18 15" RCP INV. OUT = 41.56 (24114)	#24114 TOP = 46.83 24" RCP INV. IN = 39.23 (21007) 15" RCP INV. IN = 39.71 (24113) 24" RCP INV. OUT = 38.88 (20981)	#25111 TOP = 47.73 24" RCP INV. IN = 37.60 (NEW 3) 24" RCP INV. OUT = 37.58 (20838)	#25512 TOP = 47.90 15" RCP INV. OUT = 44.57 (20838)	#25513 TOP = 46.95 (DOMED GRATE TOP) 12" RCP INV. OUT = 43.77 (20837)	#25514 TOP = 46.93 15" RCP INV. OUT = 41.57 (20837)	#25517 TOP = 45.89 18" RCP INV. OUT = 42.56 (20837)
--	--	---	--	--	--	---	--	--	--	---	--	---	---	--	---	---	--	---	---	---	---

SURVEY CONTROL	NORTHING	EASTING	ELEVATION	DESCRIPTION
PT 415	6993642.9208	11885498.0078	56.68	TRV 415
700	6993493.1659	11885775.5839	50.95	TRV 700
201	6993308.14789	11885686.46761	48.00	TRV 201
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203	6992916.4597	11885759.9601	50.04	TRV 203
204	6993153.47155	11885981.73055	44.61	TRV 204

NOTES:

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- HORIZONTAL DATUM: VIRGINIA COORDINATE SYSTEM 1983.
- VERTICAL DATUM: NORTH AMERICA VERTICAL DATUM 1988.
- CONTOUR INTERVAL: 1'
- BOUNDARY INFORMATION SHOWN HEREON WAS COMPILED FROM EXISTING LAND RECORDS AND DOES NOT REPRESENT A FIELD RUN BOUNDARY SURVEY.



PT. of Nauck
RPC 31034005
Chasco INC.

Abandoned W&OD Railroad Property
RPC 31034039
Virginia Concrete Company

501
ACCT 17776000
Mount Vernon Petroleum
Realty LLC.

Commonwealth of Virginia
Four Mile Run Channel

S. FOUR MILE RUN DRIVE

S. FOUR MILE RUN DRIVE

27th STREET S.

S. SHIRLINGTON ROAD

Arlington County
City of Alexandria

Abandoned RF&P Railroad Property
RPC 21010020
Northern Virginia Regional Park Authority $\Delta = 16^\circ 55' 00''$

2, 3, 4, PT. 1
RPC 29022001
ISS Management Group LLC.

5, 6
RPC 29022002
Smith

7, PT. 9
RPC 29022003
Crocker

Jennie Dean Park
RPC 29002003
County Board of Arlington
County, Virginia

C/L Curve Data
P.I. = 9+89.33
R = 473.21'
A = 139.72'
T = 70.37'

C/L Curve Data
P.I. = 8+29.10
R = 4330.30'
A = 30'
T = 20.00'

C/L Curve Data
P.I. = 7+10.68
R = 665.85'
A = 119.55'
T = 60.00'

A = 2.31'
R = 20.00'

P.O.C. 9+46.90 S. Shirlington Road
P.I. 0+00.74 S. Four Mile Run Drive
 $\Delta = 84^\circ 35' 35''$ LT.

P.O.T. 8+02.14 S. Shirlington Road
P.I. 8+99.76 27th Street S. (Survey Revised)
 $\Delta = 94^\circ 21' 45''$

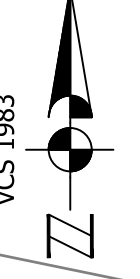
Easement for Public Street and Utilities
D.B. 2342, Pg. 258

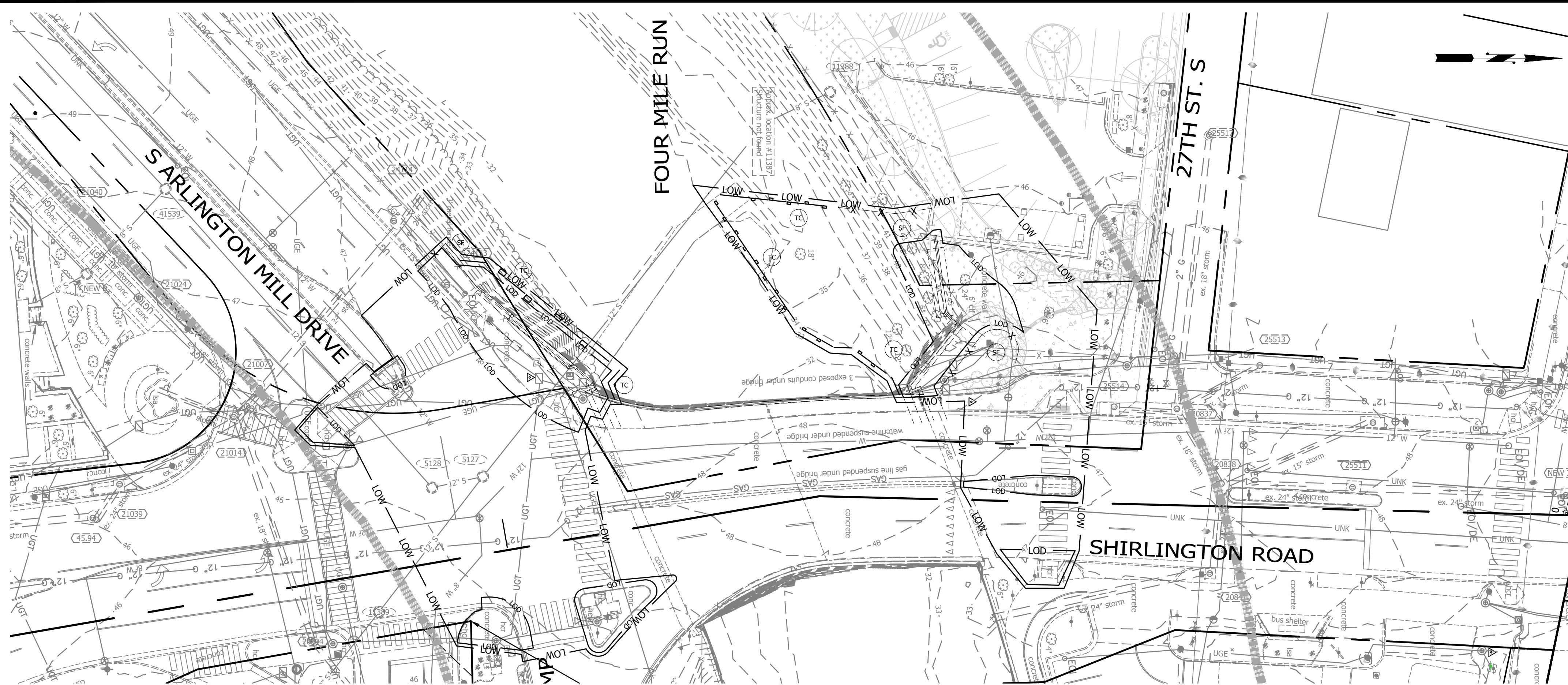
Easement for Public Street and Utilities
D.B. 2706, Pg. 127

BM TRV 201
CHISEL SET
7+31.29 29.78 LT.
ELEV. = 46.00'

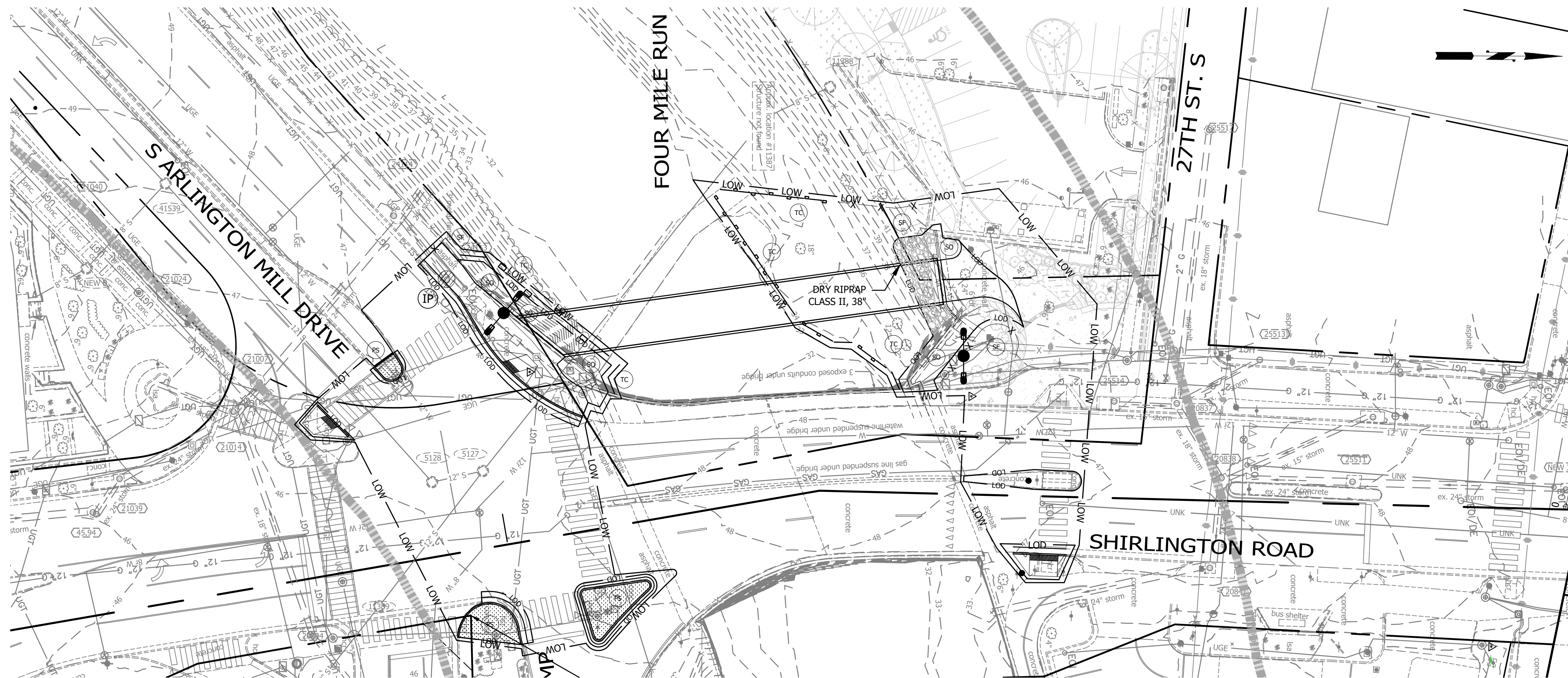
BM TRV 700
REBAR SET
9+23.37 ~ 51.90 RT.
ELEV. = 50.95'

Approx. location #11387
Structure not found





EROSION & SEDIMENT CONTROL PLAN - PHASE ONE



EROSION & SEDIMENT CONTROL PLAN - PHASE TWO

EROSION AND SEDIMENT CONTROL LEGEND

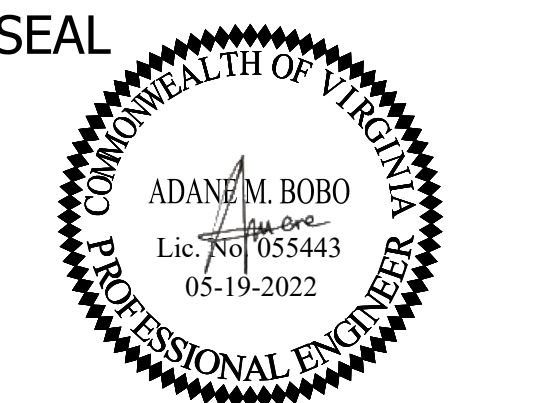
3.05	TEMPORARY SILT FENCE	SF	-X-X-
3.27	TURBIDITY CURTAIN	TC	- _
3.07	STORM DRAIN INLET PROTECTION	IP	⊗
3.32	PERMANENT SEEDING	PS	⊙
3.33	SODDING	SO	⊙
LIMITS OF DISTURBANCE			- LOD -
LIMITS OF WORK			- LOW -

Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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APPROVALS	DATE
<i>[Signature]</i> DESIGN TEAM ENGINEER SUPERVISOR	9/28/2022
<i>[Signature]</i> CONSTRUCTION MANAGEMENT SUPERVISOR	10/13/22
<i>[Signature]</i> WATER/SEWER, STREETS BUREAU CHIEF	10/5/22
<i>[Signature]</i> TRANSPORTATION DIRECTOR	10/5/22
<i>[Signature]</i> PROJECT MANAGER	9/27/2022

REVISIONS DATE

REVISIONS	DATE

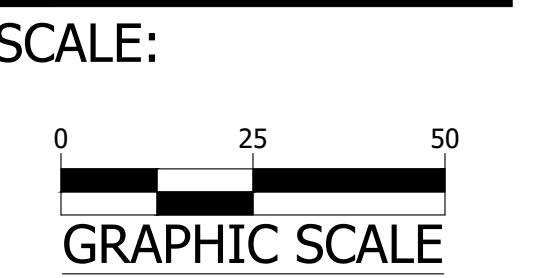
SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

EROSION AND SEDIMENT CONTROL PLAN

DESIGNED: BD
DRAWN: BD
CHECKED: BG

PLOTTED: JULY 13 2022



NOT FOR CONSTRUCTION
THIS SHEET FOR CALCULATION PURPOSES ONLY

REVISED ON 1/24/2022

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION:

THE SHIRLINGTON ROAD PEDESTRIAN BRIDGE PROJECT CONSISTS OF THE CONSTRUCTION OF A PEDESTRIAN BRIDGE OVER FOUR MILE RUN ADJACENT TO THE EXISTING BRIDGE ON SHIRLINGTON ROAD LOCATED IN ARLINGTON COUNTY, VIRGINIA. THE PROPOSED PEDESTRIAN BRIDGE WILL HELP IMPROVE ACCESS BETWEEN GREEN VALLEY AND SHIRLINGTON FOR CIVILIANS WHO ARE WALKING, BIKING, AND ROLLING. THE TOTAL PROJECT WORK AREA IS 18,856 SF (0.43 AC), WITH 4,567 SF (0.11 AC) SUBJECT TO LAND DISTURBING ACTIVITY. THE IMPERVIOUS AREA WILL NOT BE INCREASED BY THE PROPOSED IMPROVEMENT.

PROJECT WORK INCLUDES:

- INSTALLING THE PROPOSED PEDESTRIAN BRIDGE
- SIDEWALK TIE-IN FROM THE EXISTING SIDEWALK FROM THE JEANIE DEAN PROJECT
- REMOVING AND INSTALLING OF NEW CURB & GUTTER
- SIGNING AND PAVEMENT MARKINGS

EXISTING SITE CONDITIONS:

THE PROJECT IS LOCATED AROUND WHERE THE SHIRLINGTON ROAD CROSSES OVER THE FOUR MILE RUN. THE ROADWAY IS A PRIMARY ROAD WITH THE CLASSIFICATION OF URBAN PRINCIPAL ARTERIAL. THE SITE IS LOCATED WITH IN POTOMAC RIVER-FOUR MILE RUN SUB- WATERSHED WITH THE 8 DIGIT HYDROLOGIC UNIT CODE (HUC) OF 02070010 AND IT HAS HYDROLOGY SOIL GROUP OF MAINLY B/D. THE SOIL TYPE IS "URBAN LAND-UDORTHENTS COMPLEX," THE SITE HAVE A SLOPES BETWEEN 2% AND 15%.

ADJACENT PROPERTIES:

THERE IS A SMALL PARK ON THE NORTH WEST SIDE ALONG WITH SEVERAL COMMERCIAL INFRASTRUCTURES SURROUNDING THE PROJECT SITE. WHERE ADJACENT AREAS ARE AT A LOWER ELEVATION, SILT FENCE IS PROPOSED TO BE USED AS A PERIMETER CONTROL.

OFF-SITE AREAS:

A MINIMAL AMOUNT OF OFFSITE BORROW MAY BE REQUIRED FOR TOPSOIL IN PROJECT SITE. THE LOCATION AND ENSURING MAINTENANCE OF THE BORROW AREAS IS THE CONTRACTOR'S RESPONSIBILITY.

CRITICAL AREAS:

THERE IS DELINEATED FLOODPLAIN AND RESOURCE PROTECTION AREA WITHIN THE PROJECT LIMIT. DISTURBED AREAS SHALL BE MONITORED ROUTINELY FOR SIGNS OF EROSION, AND TEMPORARY STABILIZATION SHALL BE PUT IN PLACE AS NEEDED. PERIMETER CONTROLS, PARTICULARLY INLET PROTECTION, SHALL BE MONITORED FREQUENTLY AND CLEARED AS NEEDED. THE PROJECT AREA IS HIGHLY DEVELOPED AND WELL GRADED AND THE PROPOSED IMPROVEMENT WILL NOT INCREASE THE EXISTING IMPERVIOUS FOOT PRINT.

EROSION AND SEDIMENT CONTROL MEASURES:

THE EROSION AND SEDIMENT CONTROL MEASURES FOR THIS PROJECT AREA SHALL INCLUDE PERIMETER CONTROLS SUCH AS SILT FENCE TO PREVENT SILTY WATER FROM LEAVING THE SITE, INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING THE EXISTING STORM SEWER SYSTEM, AND STABILIZATION WITH SOD, MULCH, OR SEEDING AND STRAW OR HAY. FOR SPECIFICS REGARDING INSTALLATION, MAINTENANCE, INSPECTION, AND REMOVAL, REFER TO OTHER SECTIONS OF THIS NARRATIVE AND THE PLANS.

PERMANENT STABILIZATION:

ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH GRASS, MULCH OR SOD. SEE THE PROPOSED PLANS FOR ADDITIONAL INFORMATION.

STORMWATER RUNOFF CONSIDERATIONS:

THERE WILL BE A MINOR INCREASE IN IMPERVIOUS AREA TO THIS PROJECT.

TOTAL LAND DISTURBANCE.....=	4,567 SF (0.11 ACRES)
PRE-IMPROVEMENT IMPERVIOUS AREA.....=	2,852 SF (0.07 ACRES)
PRE-IMPROVEMENT PERVIOUS AREA.....=	1,715 SF (0.04 ACRES)
POST-IMPROVEMENT IMPERVIOUS AREA.....=	3,037 SF (0.07 ACRES)
POST-IMPROVEMENT PERVIOUS AREA.....=	1,530 SF (0.04 ACRES)
INCREASED IMPERVIOUS AREA.....=	185 SF (0.0042 ACRES)

SOILS INFORMATION:

THE FOLLOWING SOIL INFORMATION IS LISTED BELOW

SOIL #:	SOIL NAME:	HYDROLOGIC GROUP:	ERODABILITY:
12	URBAN LAND-UDORTHENTS	VARIES	N/A

FLOODPLAIN AND RESOURCE PROTECTION AREA (RPA):

THERE ARE FLOODPLAIN OR RESOURCE PROTECTION AREAS LOCATED WITHIN THIS PROJECT SITE

EROSION & SEDIMENT CONTROL PROJECT PHASING

1. EXISTING CONDITION:

- PRE-CONSTRUCTION MEETING WITH THE PROJECT OFFICER, CONTRACTOR, AND COUNTY INSPECTOR.
- INSTALL INLET PROTECTION (IP) AT STORM DRAIN INLET NEAR THE SOUTH SIDE OF THE PROPOSED BRIDGE.
- PERFORM INITIAL PERIMETER CLEARING TO INSTALL REMAINDER OF PERIMETER CONTROLS SUCH AS SILT FENCE (SF) PER THE PHASE I PLAN.
- SEED AND MULCH ALL EARTHEN CONTROLS.
- CONTACT ARLINGTON COUNTY PROJECT OFFICER FOR A PERIMETER INSPECTION PRIOR TO CLEARING THE REMAINDER OF THE SITE IN ORDER TO OBTAIN PHASE II GRADING PERMIT.
- REMOVE EXISTING VEGETATION AS REQUIRED WITHIN THE LIMITS OF WORK SHOWN IN THE PLANS. TREE REMOVAL, OTHER THAN WHAT IS SHOW IN THE PLANS, WILL NOT BE PERMITTED WITHOUT APPROVAL FROM THE URBAN FORESTER & EROSION CONTROL INSPECTOR.

2. PROPOSED CONDITION:

- EXCAVATE, CONSTRUCT & BACKFILL PROPOSED ABUTMENTS.
- SET PEDESTRIAN BRIDGE BEGIN SITE GRADING.
- INLET PROTECTION (IP) SHALL BE PROVIDED AT STORM DRAIN INLETS AFTER INLET MODIFICATIONS ARE COMPLETED.
- ONCE THE SITE IS BROUGHT TO NEAR FINAL GRADE, COMMENCE CONSTRUCTION OF CURB & GUTTER, SIDEWALKS, AND OTHER IMPROVEMENTS
- THE CONTROL MEASURES MAY NOT BE REMOVED UNTIL ALL OF THE DISTURBED AREAS HAVE BEEN STABILIZED AND ONLY AS APPROVED AND DIRECTED BY THE INSPECTOR.

RUNOFF SHALL BE TREATED WITH SILT FENCE AND INLET PROTECTION PRIOR TO ENTERING MAJOR STORM SEWER SYSTEMS.

EROSION AND SEDIMENT CONTROL MEASURES

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE ARLINGTON COUNTY EROSION AND SEDIMENT CONTROL ORDINANCE. THE MINIMUM STANDARDS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE.

1. STRUCTURAL PRACTICES

- SILT FENCE - VESCH 3.05
 - SILT FENCE WILL BE INSTALLED WITH THE E&S PLAN TO FILTER RUNOFF FROM DISTURBED AREAS. RUNOFF SHALL NOT BE DIRECTED PARALLEL TO THE INSTALLATION OF SILT FENCE.
 - SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
 - CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED SILT FENCE RESULTING FROM UNDERCUTTING.
 - SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE, THE FABRIC SHALL BE REPLACED IMMEDIATELY.
 - SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
 - ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, THEN PREPARED AND SEEDED.
- STORM DRAIN INLET PROTECTION - VESCH 3.07
 - ALL EXISTING & PROPOSED STORM SEWER INLETS IN AND AROUND THE PROJECT LIMITS SHALL BE PROTECTED DURING CONSTRUCTION. SEDIMENT-LADEN WATER SHALL BE FILTERED BEFORE ENTERING THE STORM SEWER INLETS.
 - THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN EVENT AND REPAIRS SHALL BE MADE AS NECESSARY. STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
- TURBIDITY CURTAIN- VESCH 3.27
 - TURBIDITY CURTAIN WILL BE INSTALLED WITH THE E&S PLAN TO PROVIDE SEDIMENTATION PROTECTION FOR A WATERCOURSE FROM UP-SLOPE LAND DISTURBANCE OR FROM DREDGING OR FILLING WITHIN THE WATERCOURSE.

- SHOULD REPAIRS TO THE GEOTEXTILE FABRIC BECOME NECESSARY, MANUFACTURER'S INSTRUCTIONS MUST BE FOLLOWED TO ENSURE THE ADEQUACY OF THE REPAIR.
- WHEN THE CURTAIN IS NO LONGER REQUIRED AS DETERMINED BY THE INSPECTOR, THE CURTAIN AND RELATED COMPONENTS SHALL BE REMOVED IN SUCH A MANNER AS TO MINIMIZE TURBIDITY.

2. VEGETATIVE PRACTICES

- TOPSOILING (STOCKPILE) - VESCH 3.30
 - TOPSOIL WILL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATIONS MAY HAVE TO BE LOCATED OFF-SITE AND ARE TO BE STABILIZED WITH TEMPORARY VEGETATION. PRIOR TO LAND-DISTURBING ACTIVITIES, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY E&S PLAN (IF THE STOCKPILE IS LOCATED OFF-SITE). THIS SUPPLEMENTAL PLAN WOULD HAVE TO BE APPROVED BY THE PLAN APPROVING AUTHORITY BEFORE ANY OFF-SITE ACTIVITY COMMENCES.
- TEMPORARY SEEDING - VESCH 3.31
 - ALL DENUDEED AREAS, WHICH WILL BE LEFT DORMANT FOR EXTENDED PERIODS OF TIME SHALL BE SEEDED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING. SELECTION OF THE SEED MIXTURE WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED.
 - USE TEMPORARY SEEDING SPECIFICATIONS OF THE DEQ EROSION & SEDIMENT CONTROL TECHNICAL BULLETIN NO. 4 - TABLE 3.31-B SEE FOR ALLOWABLE PLANTING MATERIAL, SEEDING RATES, AND DATES.

TABLE 3.31-B
(Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS QUICK REFERENCE FOR ALL REGIONS

APPLICATION DATES	SEED	
	SPECIES	APPLICATION RATES
Sep. 1-Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50-100 (lbs/acre)
Feb. 16-Apr. 30 May 1 Aug. 31	Annual Ryegrass (lolium multi-florum) German Millet	60-100 (lbs/acre) 50 (lbs/acre)
FERTILIZER & LIME		
. Apply 10-10-10 fertilizer at a rate of 450 lbs./acre (or 10 lbs./ 1,000 sq.ft.)		
. Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs./ 1,000 sq. ft.)		
NOTE:		
1- A soil test is necessary to detmine the actual amount of lime required to adjust the soil pH of site.		
2. Incorporate the lime and fertizer into the top 4-6 inches of the soil by disking or by other means.		
3. When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient management for Development Sites at http://www.dcr.state.va.us/sw/e/s.htm#pubs		

- EROSION CONTROL BLANKET AND MULCHING - VESCH 3.36 AND 3.35
 - EROSION CONTROL BLANKETS WILL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT THE SLOPES FROM RILL AND GULLY EROSION AND TO ALLOW SEED TO GERMINATE PROPERLY. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS AND WILL BE APPLIED AS A SECOND STEP IN SEEDING OPERATION.
 - DUST CONTROL - VESCH 3.39
 - DUST SHALL BE CONTROLLED USING A VARIETY OF METHODS SUCH AS VEGETATIVE COVER, MULCH, TILLAGE, IRRIGATION, SPRAY-ON ADHESIVES, STONE BARRIERS, AND CALCIUM CHLORIDE. THE IMPLEMENTATION OF THE DUST CONTROL METHODS SHALL BE INSTALLED PER SECTION 3.39 OF VESCH
 - PERMANENT SEEDING - VESCH 3.32
 - SINCE THE SUBJECT SITE IS LOCATED WITHIN THE RESOURCE PROTECTED AREA (RPA), A NATIVE SEED MIX SPECIFIED IN THE TABLE SHOWN AT THE END OF SHEET C032.2 SHALL BE FOLLOWED FOR FINAL SEEDING MATERIAL, SEEDING RATES, AND DATES OF APPLICATION.
 - SODDING - VESCH 3.33
 - SODDED AREAS SHALL BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLANS. SOIL TESTS SHALL BE MADE TO DETERMINE THE EXACT REQUIREMENTS FOR LIME AND FERTILIZER. PRIOR TO LAYING SOD, SOIL SURFACE SHALL BE CLEAR OF TRASH, DEBRIS AND LARGE OBJECTS. QUALITY OF SOD SHALL BE STATE CERTIFIED TO ENSURE GENETIC PURITY AND HIGH QUALITY. SOD SHALL NOT BE LAID ON FROZEN SOIL SURFACE, OR IN EXCESSIVELY WET OR DRY WEATHER. SOD SHALL BE DELIVERED AND INSTALLED WITHIN 36 HOURS, AND SHALL BE INSTALLED PER PAGE III-339 OF VESCH.
- THE EROSION AND SEDIMENT CONTROL INSPECTOR SHALL HAVE THE AUTHORITY TO ADD OR DELETE EROSION AND SEDIMENT CONTROLS AS NEEDED IN THE FIELD. IN ADDITION, NO SEDIMENT TRAPS OR BASINS MAY BE REMOVED WITHOUT PRIOR APPROVAL OF THE INSPECTOR.

EROSION AND SEDIMENT CONTROL MANAGEMENT MEASURES

LANDSCAPE / TREE PRESERVATION NOTES

PRIOR TO ANY LAND DISTURBING ACTIVITY, THE CONTRACTOR SHALL CONTACT THE ARLINGTON COUNTY ARBORIST TO SCHEDULE AN INSPECTION.

LAND CONSERVATION NOTES:

- NO DISTURBED AREA WILL REMAIN DENUDEED FOR MORE THAN 7 CALENDAR DAYS UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OR HIS AGENT.
- ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING. FIRST AREAS TO BE CLEARED ARE TO BE THOSE REQUIRED FOR THE PERIMETER CONTROLS.
- ALL STORM AND SANITARY SEWER LINES NOT IN STREETS ARE TO BE MULCHED AND SEEDED WITHIN 5 DAYS AFTER BACKFILL. NO MORE THAN 100 FEET ARE TO BE OPEN AT ANY ONE TIME.
- ELECTRIC POWER, TELEPHONE AND GAS SUPPLY TRENCHES ARE TO BE COMPACTED, SEEDED AND MULCHED WITHIN 5 DAYS AFTER BACKFILLING.
- ALL TEMPORARY EARTH BERMS, DIVERSIONS AND SEDIMENT CONTROL DAMS ARE TO BE MULCHED AND SEEDED FOR TEMPORARY VEGETATIVE COVER IMMEDIATELY AFTER GRADING. STRAW OR HAY MULCH IS REQUIRED. THE SAME APPLIES TO ALL SOIL STOCKPILES.
- DURING CONSTRUCTION, ALL STORM SEWER INLETS WILL BE PROTECTED BY INLET PROTECTION.
- ANY DISTURBED AREA NOT COVERED BY NOTE 1 ABOVE AND NOT PAVED, SODDED OR BUILT UPON BY NOV. 1, OR DISTURBED AFTER THAT DATE, SHALL BE MULCHED IMMEDIATELY WITH HAY OR STRAW MULCH AT THE RATE OF 2 TONS/ACRE AND OVER-SEEDED BY APRIL 15.
- AT THE COMPLETION OF ANY PROJECT CONSTRUCTION AND PRIOR TO BOND RELEASE, ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENUDEED AREAS SHALL BE STABILIZED.

EROSION & SEDIMENT CONTROL PROGRAM:

- THE EROSION CONTROL PLAN IS INTENDED TO ESTABLISH ENTRANCES AND PERIMETER CONTROL MEASURES WHICH INCLUDES SILT FENCE (SF), INLET PROTECTION (IP), AND OTHER CONTROLS SPECIFIED ON THE PLANS.
- WHERE CONSISTENT WITH JOB SAFETY REQUIREMENTS, ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES. NO MATERIAL SHALL BE PLACED IN STREAMBEDS, ANY STOCKPILED MATERIAL WHICH WILL REMAIN IN PLACE LONGER THAN 7 DAYS SHALL BE SEEDED AND MULCHED. WHEN SPOIL IS PLACED ON THE DOWNHILL SIDE OF TRENCH, IT SHALL BE BACKSLOPED TO DRAIN TOWARD THE TRENCH, WHEN NECESSARY TO DEWATER THE TRENCH, THE PUMP DISCHARGE HOSE SHALL OUTLET IN A STABILIZED AREA OR A SEDIMENT TRAPPING DEVICE.
- ALL PRACTICES AND CONTROL DEVICES DESCRIBED HEREIN SHALL CONFORM TO THE CURRENT VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH). IN ADDITION, THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS TO MINIMIZE THE VOLUME OF SILT:
 - CONTRACTOR SHALL EVALUATE THE SITE TO DETERMINE EXTENSIVE CUT AND FILL AREAS, AND SHALL WORK THOSE AREAS TO MINIMIZE THE USE OF HEAVY EQUIPMENT. CONTRACTOR SHALL BRING DISTURBED AREAS TO GRADE (ROUGH OR FINISHED) AND STABILIZE THOSE AREAS WITH TEMPORARY OR PERMANENT VEGETATION. THESE DISTURBED AREAS SHALL BE STABILIZED PRIOR TO BEGINNING WORK IN ANOTHER AREA.
 - FILL AREAS SHALL BE COMPACTED COMPLETELY PRIOR TO THE END OF EACH WORK DAY. FILL SLOPE SURFACES SHALL BE KEPT ROUGH TO REDUCE SHEET EROSION OF THE SLOPES. CONTRACTOR SHALL RE-DIRECT CONCENTRATED RUNOFF, BY EARTH BERMS OR OTHER DEVICES, AROUND ACTIVELY DISTURBED AREAS TO STABILIZED OUTLETS.
 - CUT SLOPES SHALL BE PROTECTED FROM CONCENTRATED FLOW BY BERMS (ABOVE THE SLOPE) AND DIRECTED AROUND THE DISTURBED AREA TO STABILIZED OUTLETS.
- MEASURES TO CONTROL EROSION AND SILTATION SHALL BE PROVIDED PURSUANT TO AND IN COMPLIANCE WITH CURRENT STATE AND LOCAL REGULATIONS. THE INFORMATION CONTAINED IN THE CONSTRUCTION PLANS AND/OR THE APPROVAL OF THE PLANS SHALL IN NO WAY RELIEVE THE CONTRACTOR OR HIS AGENT OF ANY LEGAL RESPONSIBILITY WHICH MAY BE REQUIRED BY THE CODE OF VIRGINIA AND CHAPTER 57 OF THE ARLINGTON COUNTY CODE.
- ALL AREAS, ON OR OFF-SITE, THAT ARE DISTURBED BY THIS CONSTRUCTION AND WHICH ARE NOT PAVED OR BUILT UPON SHALL BE ADEQUATELY STABILIZED TO CONTROL EROSION AND SEDIMENTATION. ACCEPTABLE STABILIZATION SHALL CONSIST OF PERMANENT GRASS SEED MIXTURE OR SOD THAT IS INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. ALL SLOPES 3:1 AND GREATER SHALL BE RECEIVE SOIL STABILIZATION IN ACCORDANCE WITH THE SPECIFICATIONS.
- WHERE STREAM CROSSINGS ARE REQUIRED FOR EQUIPMENT, TEMPORARY CULVERTS SHALL BE PROVIDED.
- FOR FURTHER REQUIREMENTS AND DETAILS OF TREE PRESERVATION, PLANTING, EROSION AND SEDIMENT CONTROL, SEE COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND/OR THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VRS 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.

- THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
- ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
- A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN THE AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION AND SEDIMENT CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
- ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
- DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- THE CONTRACTOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
- ALL BIOFILTERS SHALL BE KEPT OFF-LINE UNTIL CONSTRUCTION IS COMPLETED AND ALL AREAS HAVE BEEN PROPERLY STABILIZED. THIS SHALL BE ACHIEVED BY USING INLET PROTECTION AT THE CURB CUTS AND STORMWATER CATCH BASINS LEADING DIRECTLY INTO THE BIOFILTERS.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED.

PRE-STORM EROSION & SEDIMENTATION CHECKLIST:

PER GENERAL EROSION AND SEDIMENT CONTROL NOTE 6, THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ANY ADDITIONAL EROSION AND SEDIMENT CONTROL (ESC) MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE COUNTY. THESE SUPPLEMENTARY PRACTICES ARE IN ADDITION TO THOSE SHOWN IN AN EROSION AND SEDIMENT CONTROL PLAN. EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE MODIFIED AS NEEDED TO ENSURE ONLY CLEAR WATER IS DISCHARGED FROM THE SITE.

THE FOLLOWING ACTIONS SHALL BE TAKEN PRIOR TO STORM EVENTS WITH PREDICTED HEAVY AND/OR LARGE VOLUME RAINFALL TO PREVENT SEDIMENT DISCHARGES FROM A CONSTRUCTION SITE. A TYPICAL SUMMER THUNDERSTORM IS AN EXAMPLE OF A STORM EVENT WITH PREDICTED HEAVY AND/OR LARGE VOLUME RAINFALL.

- PERIMETER CONTROLS
 - SILT FENCE SHALL BE CHECKED FOR UNDERMINING, HOLES, OR DETERIORATION OF THE FABRIC. FENCING SHALL BE REPLACED IMMEDIATELY IF THE FABRIC IS DAMAGED OR WON. SILT FENCE MUST BE TRENCHED INTO THE GROUND PER STATE SPECIFICATIONS (VESCH STD & SPEC 3.09).
 - WOODEN STAKES OR STEEL POSTS SHALL BE PROPERLY SECURED UPRIGHT INTO THE GROUND. DAMAGED POSTS OR STAKES MUST BE REPLACED.
 - SEDIMENT THAT HAS ACCUMULATED AGAINST THE SILT FENCE SHALL BE REMOVED. ACCUMULATED SEDIMENT MUST BE REMOVED WHEN THE LEVEL REACHES ONE-HALF THE HEIGHT OF THE FENCING.
 - HAY BALES OR A STONE BERM SHALL BE PLACED ACROSS THE CONSTRUCTION ENTRANCE TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE.
- EXPOSED SLOPES AND SOIL
 - EXPOSED SLOPES NOT AT THE FINAL STABILIZATION PHASE SHALL BE COVERED WITH TARPS, PLASTIC SHEETING, OR EROSION CONTROL MATTING. COVERING MATERIAL SHALL BE PROPERLY SECURED/ANCHORED.
 - CONTROLS SHALL BE INSTALLED TO PREVENT CONCENTRATED FLOW DOWN AN EXPOSED SLOPE. BERMS OR DIVERSION DIKES SHALL BE INSTALLED AT THE TOP OF CUT/EXPOSED SLOPES TO DIRECT STORM FLOW AROUND THE DISTURBED AREA.
 - EXPOSED SLOPES AT THE FINAL STABILIZATION PHASE SHALL BE STABILIZED USING SLOPE STABILIZATION PRACTICES SUCH AS SOIL STABILIZATION BLANKETS OR MATTING AS SPECIFIED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH STD & SPEC 3.36). BLANKETS OR MATS MUST BE PROPERLY SECURED AND ANCHORED TO THE SLOPE USING STAPLES, PINS, OR STAKES.
 - SEEDED AREAS SHALL BE CHECKED AND RESEEDED AS NECESSARY TO COVER EXPOSED SOIL. RECENTLY SEEDED AREAS SHALL BE PROTECTED BY STRAW OR SOIL STABILIZATION BLANKETS TO PREVENT SEEDING FROM BEING WASHED AWAY.
- STOCKPILES
 - STOCKPILED SOIL AND OTHER LOOSE MATERIALS THAT CAN BE WASHED AWAY SHALL BE COVERED WITH A TARP, PLASTIC SHEETING, OR OTHER STABILIZATION MATTING. THE COVER MUST BE PROPERLY SECURED/ANCHORED DOWN TO PREVENT IT FROM BEING BLOWN OFF AND EXPOSING MATERIALS TO RAIN. CONTROLS SUCH AS HAY BALES OR BOOMS SHALL BE PLACED ALONG THE PERIMETER OF THE STOCKPILE (DOWNHILL SIDE).
- INLET PROTECTION
 - INLET PROTECTION CONTROLS SHALL BE INSPECTED TO ENSURE THEY ARE FUNCTIONING PROPERLY AND FLOODING WILL NOT OCCUR. CLOGGED OR DAMAGED CONTROLS MUST BE REPLACED IMMEDIATELY. ENSURE CONTROLS ALLOW FOR OVERFLOW/BYPASS OF STORMWATER RUNOFF DURING SIGNIFICANT STORM EVENTS.

IN ADDITION TO THESE PRE-STORM ACTIONS, ALL EROSION AND SEDIMENT CONTROL (ESC) MEASURES MUST BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL.

POLLUTION PREVENTION PLAN NOTES (STORMWATER MANUAL - SECTION 2.4)

- ONLY THE FOLLOWING NON-STORMWATER DISCHARGES ARE AUTHORIZED BY ARLINGTON COUNTY'S M54 PERMIT, UNLESS THE STATE WATER CONTROL BOARD, THE VIRGINIA SOIL AND WATER CONSERVATION BOARD (BOARD), OR ARLINGTON COUNTY DETERMINES THE DISCHARGE TO BE A SIGNIFICANT SOURCE OF POLLUTANTS TO SURFACE WATERS:
 - WATER LINE FLUSHING; LANDSCAPE IRRIGATION; DIVERTED STREAM FLOWS; RISING GROUND WATERS; UNCONTAMINATED GROUND WATER INFILTRATION (AS DEFINED AT 40 CFR 35.2005(20)); UNCONTAMINATED PUMPED GROUND WATER; DISCHARGES FROM POTABLE WATER SOURCES; FOUNDATION DRAINS; AIR CONDITIONING CONDENSATION; IRRIGATION WATER; SPRINGS; WATER FROM CRAWL SPACE PUMPS; FOOTING DRAINS; LAWN WATERING; INDIVIDUAL RESIDENTIAL CAR WASHING; FLOWS FROM RIPARIAN HABITATS AND WETLANDS; DECHLORINATED SWIMMING POOL DISCHARGES; DISCHARGES OR FLOWS FROM FIREFIGHTING; AND, OTHER ACTIVITIES GENERATING DISCHARGES IDENTIFIED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY AS NOT REQUIRING VPDES AUTHORIZATION.
- APPROPRIATE CONTROLS MUST BE IMPLEMENTED TO PREVENT ANY NON-STORMWATER DISCHARGES NOT INCLUDED ON THE ABOVE LIST (E.G., CONCRETE WASH WATER, PAINT WASH WATER, VEHICLE WASH WATER, DETERGENT WASH WATER, ETC.) FROM BEING DISCHARGED INTO ARLINGTON COUNTY'S M54 SYSTEM, WHICH INCLUDES THE CURB AND GUTTER SYSTEM, AS WELL AS CATCH BASINS AND OTHER STORM DRAIN INLETS, OR STREAM NETWORK.
- PER CHAPTER 26 OF THE ARLINGTON COUNTY CODE, IT SHALL BE UNLAWFUL FOR ANY PERSON TO DISCHARGE DIRECTLY OR INDIRECTLY INTO THE STORM SEWER SYSTEM OR STATE WATERS, ANY SUBSTANCE LIKELY, IN THE OPINION OF THE COUNTY MANAGER, TO HAVE AN ADVERSE EFFECT ON THE STORM SEWER SYSTEM OR STATE WATERS.

UTILITY INSTALLATION:

UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

- NO MORE THAN 100 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
- EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
- EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
- MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
- STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
- APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
- ANY DISTURBED AREA NOT COVERED BY NOTE #1 ABOVE AND PAVED, SODDED OR BUILT UPON BY NOVEMBER 1ST, OR DISTURBED AFTER THAT DATE, SHALL BE MULCHED WITH HAY OR STRAW AT THE RATE OF 2 TONS PER ACRE AND OVER-SEEDED NO LATER THAN MAY 15TH.
- AT THE COMPLETION OF THE CONSTRUCTION PROJECT AND PRIOR TO BOND RELEASE, ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENUDEED AREAS SHALL BE STABILIZED. ARLINGTON COUNTY INSPECTOR TO APPROVE REMOVAL OF ALL TEMPORARY SILTATION MEASURES.

MAINTENANCE PROGRAM:

THE FOLLOWING IS A PROGRAM OF MAINTENANCE FOR THE MECHANICAL CONTROLS SPECIFIED IN THIS NARRATIVE AND ON THE PLAN:

- THE SITE SUPERINTENDENT OR HIS/HER REPRESENTATIVE SHALL MAKE A VISUAL INSPECTION OF ALL MECHANICAL CONTROLS AND NEWLY STABILIZED AREA (I.E. SEEDED AND MULCHED AND/OR SODDED AREAS) ON A DAILY BASIS; ESPECIALLY AFTER A HEAVY RAINFALL EVENT TO ENSURE THAT ALL CONTROLS ARE MAINTAINED AND PROPERLY FUNCTIONING. ANY DAMAGED CONTROLS SHALL BE REPAIRED PRIOR TO THE END OF THE WORK DAY INCLUDING RE-SEEDING AND MULCHING OR RE-SODDING IF NECESSARY.
- ALL SEDIMENT TRAPPING DEVICES SHALL BE CLEARED OUT AT 50% TRAP CAPACITY AND THE SEDIMENT SHALL BE DISPOSED OF BY SPREADING ON THE SITE OR IF NOT SUITABLE FOR FILL, HAULING AWAY AND DEPOSITING AT AN ACCEPTABLE DUMP SITE.
- THE CONTRACTOR SHALL TAKE SPECIAL CARE TO PREVENT MUD AND/OR OTHER DEBRIS FROM BEING ENTERED ONTO EXISTING SWM/BMP FACILITIES OR DOWNSTREAM WATER WAYS. SHOULD OFF-SITE AREAS BECOME POLLUTED BY CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING THE AFFECTED AREAS TO THE SATISFACTION OF THE INSPECTOR.
- AT THE COMPLETION OF CONSTRUCTION AND PRIOR TO BOND RELEASE, ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ANY REMAINING DENUDEED AREAS SHALL BE STABILIZED. CERTAIN DEVICES MAY BE REMOVED PRIOR TO CONSTRUCTION COMPLETION BUT ONLY WITH THE APPROVAL OF THE COUNTY INSPECTOR.
- AFTER CONSTRUCTION OPERATIONS HAVE ENDED, ALL DISTURBED AREAS SHALL BE STABILIZED. UPON APPROVAL OF THE COUNTY INSPECTOR, MECHANICAL SEDIMENT CONTROLS SHALL BE REMOVED AND THE GROUND PERMANENTLY STABILIZED WITH VEGETATION WITHIN 30 DAYS.

**NOT FOR CONSTRUCTION
THIS SHEET FOR CALCULATION PURPOSES ONLY**



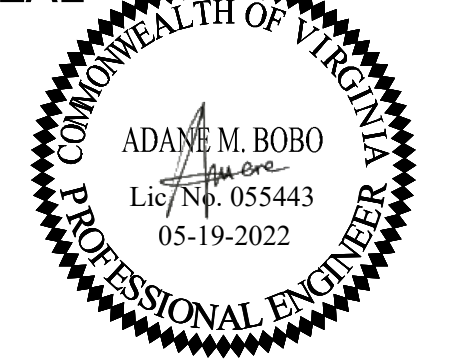
Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL

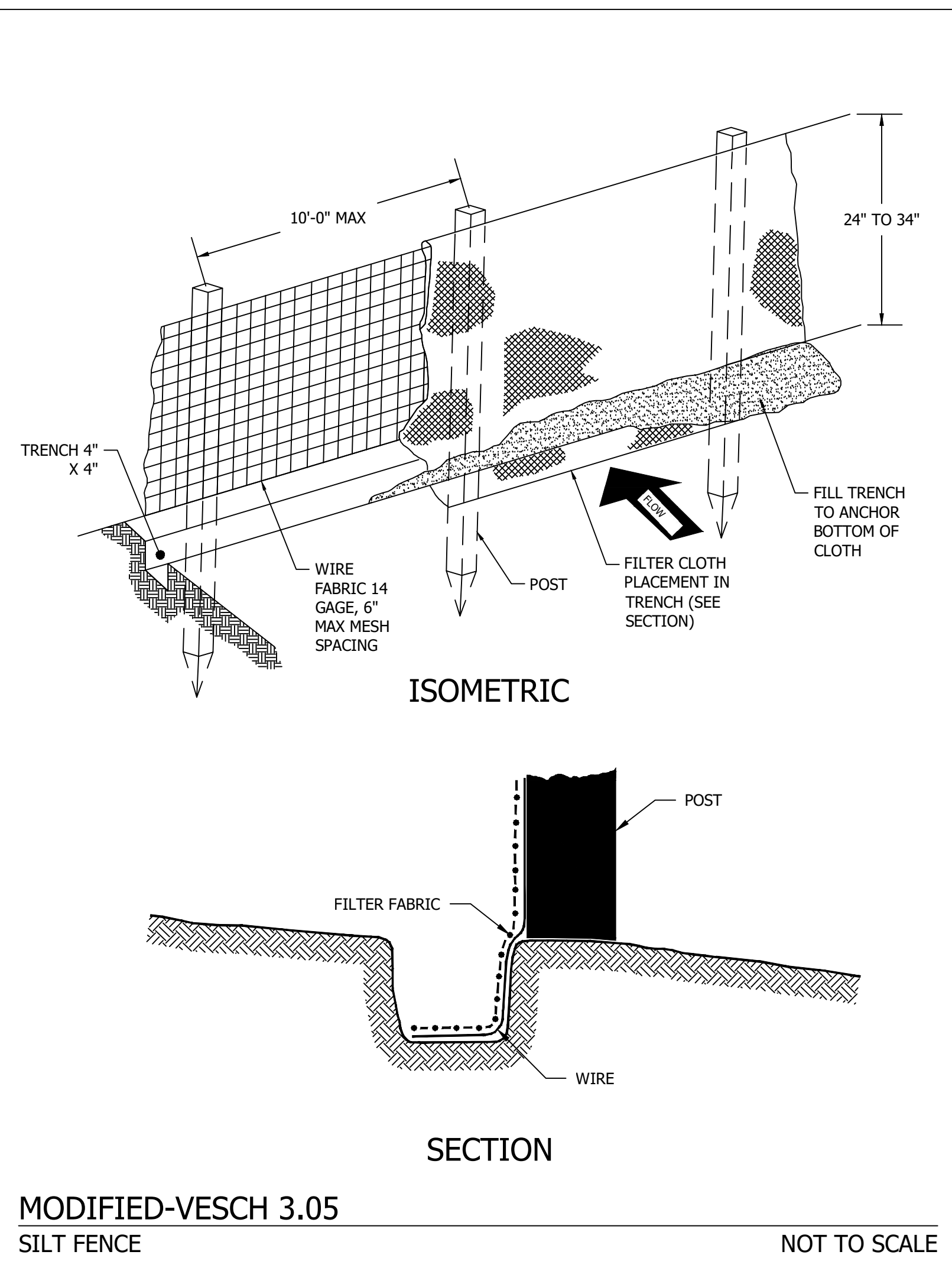


APPROVALS	DATE
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	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
	10/5/22
TRANSPORTATION DIRECTOR	
	9/27/2022
PROJECT MANAGER	

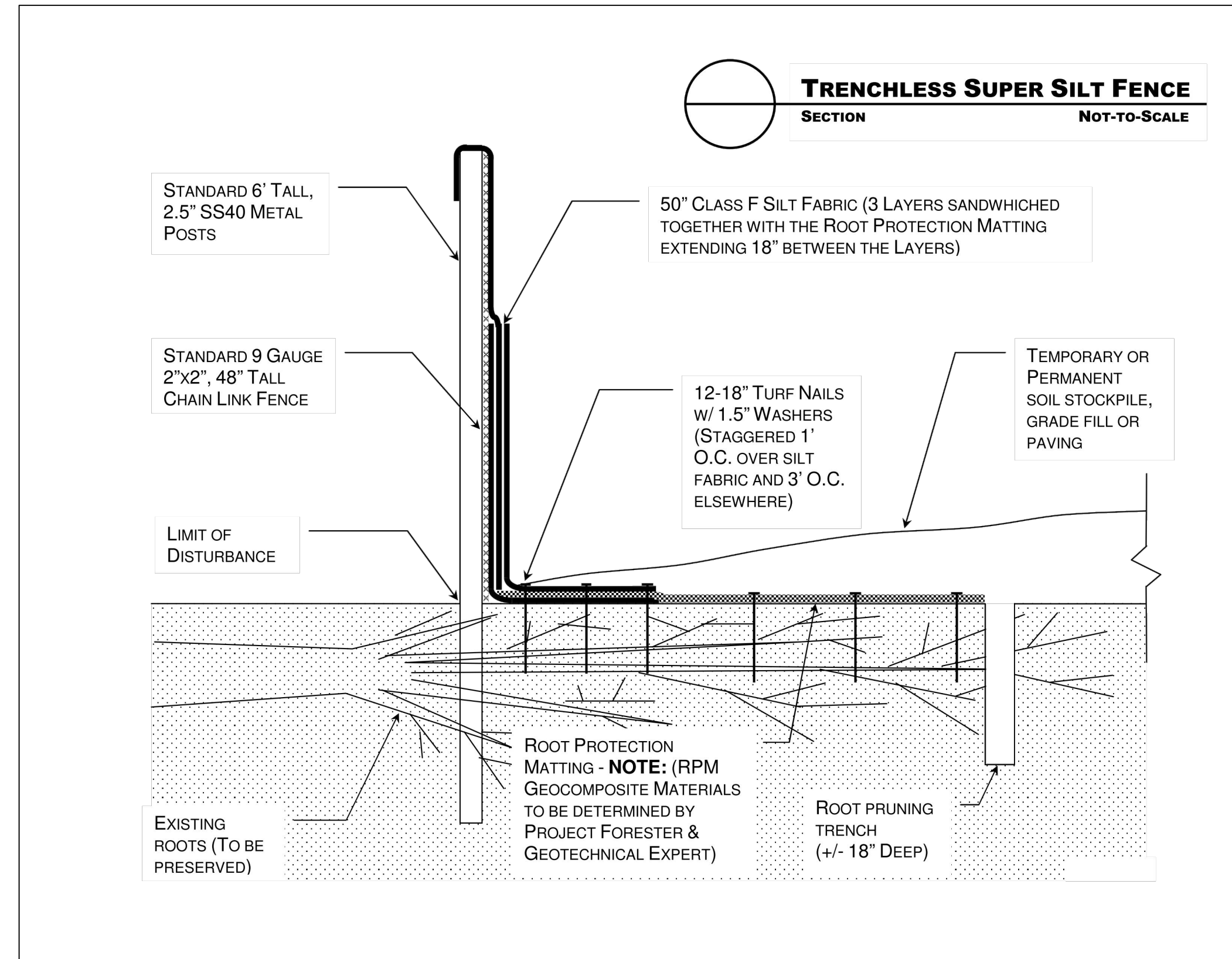
REVISIONS	DATE
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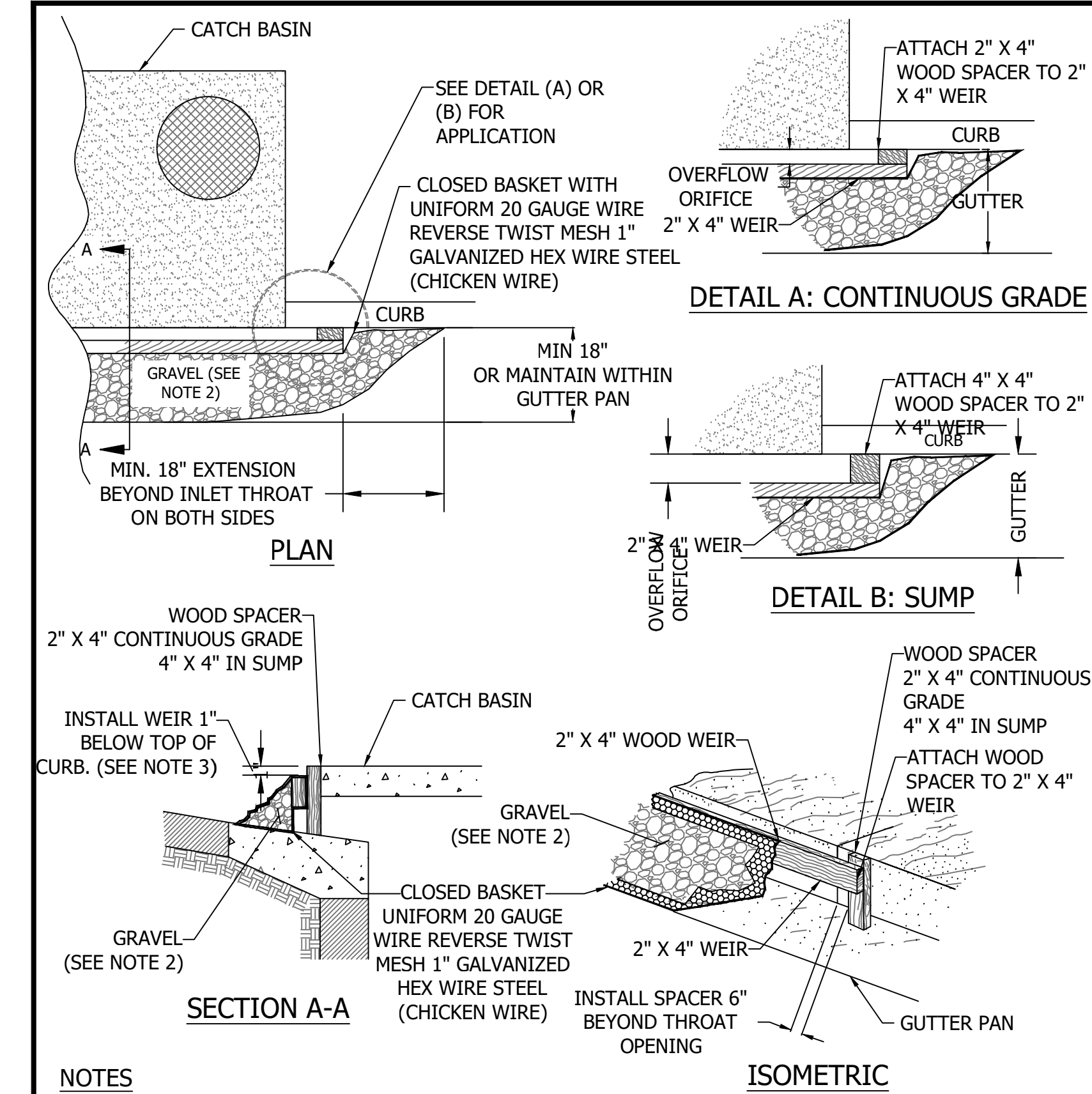


MODIFIED-VESCH 3.05
SILT FENCE

NOT TO SCALE



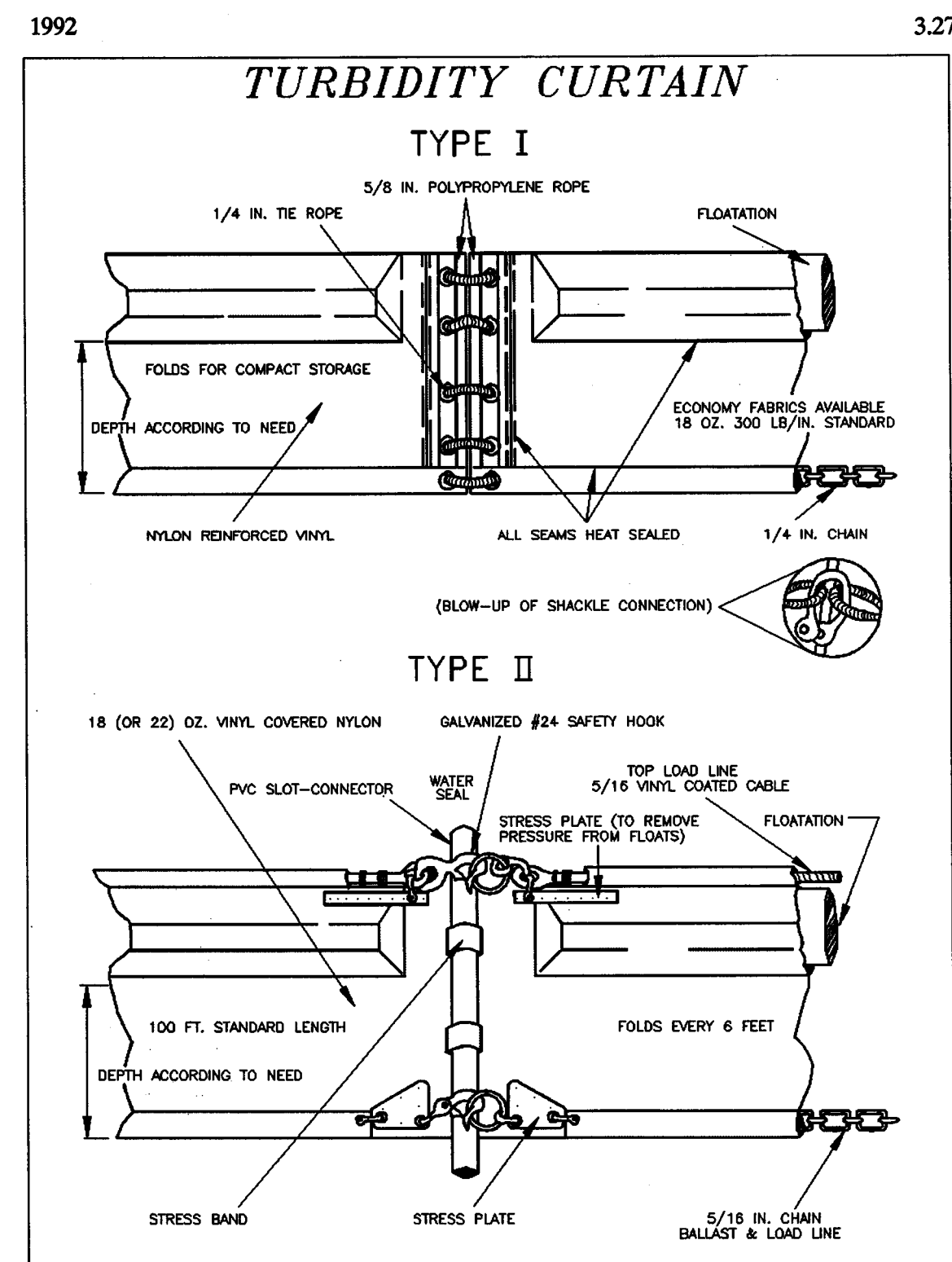
TRENCHLESS SUPER SILT FENCE
SECTION NOT-TO-SCALE



NOTES

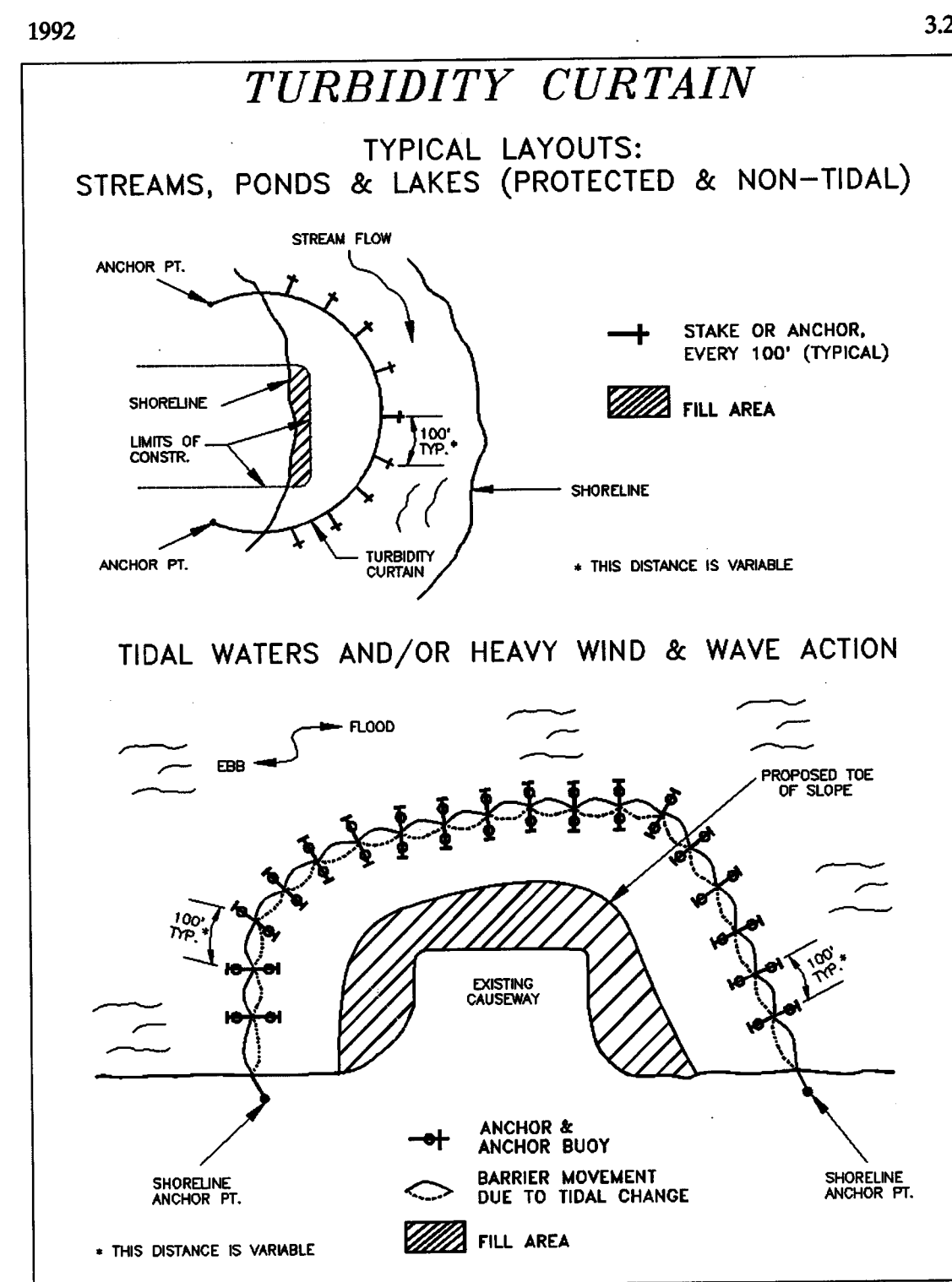
1. DIMENSIONAL LUMBER SIZES SHOW.
2. GRAVEL SHALL BE VDOT COARSE AGGREGATE #3, # 357 OR #5.
3. WEIR HEIGHT MAY BE ADJUSTED BY PROJECT OFFICER OR INSPECTOR IN FLOOD PRONE AREAS.
4. PAINT 2"x4" WEIR, CLOSED BASKET, AND GUTTER WITH HIGH VISIBILITY INCANDESCENT ORANGE PAINT.
5. REMOVE SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE THE PROTECTION.

CURB INLET PROTECTION		REVISION & DATE
ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES		DRAWING NO. 3.07-7 (ACG)



Source: American Boom and Barrier Corp. product literature Plate 3.27-1

III - 249



Source: Adapted from Florida Department of Transportation Road and Design Specifications Plate 3.27-3

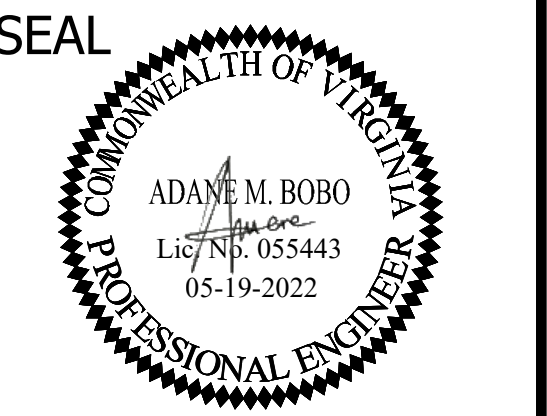
III - 252

ARLINGTON COUNTY - RESOURCE PROTECTION AREA NATIVE SEED MIX:

Percent of Mix (%)	Latin Name	Common Name
20	<i>Lolium multiflorum</i>	Annual rye
30	<i>Elymus virginicus</i>	Virginia wild rye
25	<i>Panicum clandestinum</i>	Deer-tongue grass
15	<i>Elymus riparius</i>	Riverbank wild rye
5	<i>Elymus hystrix</i>	Bottlebrush grass
2	<i>Chamaecrista fasciculata</i>	Partridge pea
1	<i>Solidago rugosa</i>	Rough-stemmed goldenrod
1	<i>Asclepias syriaca</i>	Common milkweed
1	<i>Euthamia graminifolia</i>	Grass-leaved goldenrod

Apply at 50 lbs/acre (2 lb/1000 sf) between August 15th and May 15th.

NOT FOR CONSTRUCTION
THIS SHEET FOR CALCULATION PURPOSES ONLY



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	9/28/2022
CONSTRUCTION MANAGEMENT SUPERVISOR	10/13/22
WATER/SEWER, STREETS BUREAU CHIEF	10/5/22
TRANSPORTATION DIRECTOR	10/5/22
PROJECT MANAGER	9/27/2022

REVISIONS

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
SHIRLINGTON ROAD
EROSION AND SEDIMENT CONTROL
NOTES & DETAILS

DESIGNED: BD
DRAWN: BD
CHECKED: BG

PLOTTED: AUGUST 30 2022

SCALE:

N/A

C032.2

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) COVER PAGE

For Construction Activities At:
BR02 - Shirlington Road Pedestrian Bridge
From Shirlington Road to South Arlington Mill Drive
Arlington, VA 22202

Latitude: 38.8433 N (decimal degrees)
Longitude: -77.0855 W (decimal degrees)

Construction Activity Operator:
Insert Company/Organization Name
Insert Name
Insert Address
Insert City, State, Zip Code
Insert Telephone Number
Insert Email Address
Insert 24-hour Emergency Contact

SWPPP Preparation Date:
January 21, 2022

CERTIFICATION

"I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Operator Name: _____
Title: _____
Signature: _____
Date: _____

Arlington County - SWPPP 9/2016

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

1.0 SWPPP Documents Located Onsite & Available for Review

SWPPP Document Type	Located Onsite & Available for Review?	
Registration Statement	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> NA
Notice of Coverage Letter	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> NA
Construction General Permit	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> NA
Pollution Prevention Plan	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> NA
Erosion & Sediment Control Plan (or agreement in lieu of)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> NA
Stormwater Management Plan	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> NA

2.0 Authorized Non-Stormwater Discharges

Type of Authorized Non-Stormwater Discharge	Likely Present at Your Project Site?	
External buildings wash down	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Uncontaminated foundation or footing drains	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Uncontaminated excavation dewatering	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Landscape irrigation	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Others [describe]	<input type="checkbox"/> Yes	<input type="checkbox"/> No

3.0 Pollution Prevention Awareness

Employees will be given a "walk through" of the site identifying areas of possible pollution and will be shown Erosion and Sediment Controls and Pollution Prevention Practices (identified in Sections 4.0 and 5.0 of this SWPPP) that are applicable to their assigned job duties. A refresher meeting and "walk through" will be conducted on an as needed basis.

4.0 Erosion & Sediment Controls

Select all that apply	Erosion & Sediment Control	Estimated Installation Date	Estimated Removal Date	Responsible Party
<input checked="" type="checkbox"/>	Construction Entrance (Std. & Spec. 3.02)			Construction Activity Operator (See Cover Page of this SWPPP)
<input checked="" type="checkbox"/>	Silt Fence (Std. & Spec. 3.05)			
<input type="checkbox"/>	Culvert Inlet Protection (Std. & Spec. 3.08)		NA	
<input type="checkbox"/>	Outlet Protection (Std. & Spec. 3.18)		NA	
<input checked="" type="checkbox"/>	Temporary Seeding (Std. & Spec. 3.31)	As required by 3.31	NA	
<input checked="" type="checkbox"/>	Permanent Seeding (Std. & Spec. 3.32)		NA	
<input type="checkbox"/>	Sodding (Std. & Spec. 3.33)		NA	
<input type="checkbox"/>	Mulching (Std. & Spec. 3.35)		NA	
<input type="checkbox"/>	Safety Fence (Std. & Spec 3.01)			

Arlington County - SWPPP 9/2016

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

	Storm Drain Inlet Protection (Std. & Spec 3.08)		
<input checked="" type="checkbox"/>	Dewatering (Std. & Spec 3.26)		
<input type="checkbox"/>	Turbidity Curtain (Std. & Spec 3.27)		
<input type="checkbox"/>	Tree Protection (Arlington County Std. & Spec.)		
<input type="checkbox"/>	Others [describe]		

Arlington County - SWPPP 9/2016

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

5.0 Potential Sources of Pollution & Pollution Prevention Practices

Pollutant-Generating Activity	Likely Present at your Project Site?	Pollutants										Pollution Prevention Practice	Responsible Party
		Sediment	Nutrients	Heavy Metals	pH (acids and bases)	Pesticides & Herbicides	Oil & Grease	Bacteria & Viruses	Trash, Debris, Solids	Other Toxic Chemicals			
Clearing, grading, excavating, and un-stabilized areas	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X									X	(1)	Construction Activity Operator (See Cover Page of this SWPPP)
Paving operations	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X					X	X			X	(2)	
Concrete washout and cement waste	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			X	X						X	(3)	
Structure construction, stucco, painting, and cleaning	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			X	X						X	(4)	
Dewatering operations	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	X	X								X	(5)	
Material delivery and storage	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X	X	X	X		X	X	X		X	(6)	
Material use during building process	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		X	X	X		X	X	X		X	(7)	
Solid waste disposal	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No										X	(8)	
Sanitary waste	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		X	X						X		(9)	
Landscaping operations	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X	X			X				X	X	(10)	
Others [describe]	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	(11)	

Arlington County - SWPPP 9/2016

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

Pollution Prevention Practices:

- Clearing, grading, excavating and un-stabilized areas** - Utilize erosion and sediment controls to prevent sediment laden or turbid runoff from leaving the construction site. Dispose of clearing debris at acceptable disposal sites. Apply permanent or temporary stabilization, sodding and/or mulching to denuded areas in accordance with the erosion and sediment control specifications and the general VPDES permit for discharges of stormwater from construction activities.
- Paving operations** - Cover storm drain inlets during paving operations and utilize pollution prevention materials such as drip pans and absorbent/oil dry for all paving machines to limit leaks and spills of paving materials and fluids.
- Concrete washout and cement waste** - Direct concrete wash water into a leak-proof container or leak-proof settling basin that is designed so that no overflows can occur due to inadequate sizing or precipitation. Hardened concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wastes.
- Structure construction, stucco, painting and cleaning** - Enclose, cover or berm building material storage areas if susceptible to contaminated stormwater runoff. Conduct painting operations consistent with local air quality and OSHA regulations. Mix paint indoors, in a containment area or in a flat unpaved area. Prevent the discharge of soaps, solvents, detergents and wash water from construction materials, including the clean-up of stucco paint, form release oils and curing compounds.
- Dewatering operations** - Construction site dewatering from building footings or other sources may not be discharged without treatment. Sediment laden or turbid water shall be filtered, settled or similarly treated prior to discharge.
- Material delivery and storage** - Designate areas of the construction site for material delivery and storage. Place near construction entrances, away from waterways, and avoid transport near drainage paths or waterways.
- Material use during building process** - Use materials only where and when needed to complete the construction activity. Follow manufacturer's instructions regarding uses, protective equipment, ventilation, flammability and mixing of chemicals.
- Solid waste disposal** - Designate a waste collection area on the construction site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterway. Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible. Schedule waste collection to prevent the containers from overflowing.
- Sanitary waste** - Prevent the discharge of sanitary waste by providing convenient and well-maintained portable sanitary facilities. Locate sanitary facilities in a convenient location away from waterways.
- Landscaping operations** - Maintain as much existing vegetation as practicable. Apply permanent or temporary stabilization, sodding and/or mulching to denuded areas in accordance with the erosion and sediment control specifications and the general VPDES permit for discharges of stormwater from construction activities. Apply nutrients in accordance with manufacturer's recommendations and not during rainfall events.
- Others** - If applicable, describe your Pollution Prevention Practices.

6.0 Stormwater Management Controls

Select all that apply	Stormwater Management Control	Estimated Installation Date	Responsible Party
<input type="checkbox"/>	Post-development Stormwater Management Controls provided by a Larger Common Plan of Development or Sale	NA	Common Plan Construction Activity Operator
<input type="checkbox"/>	Rooftop Disconnection		Construction Activity Operator (See Cover Page of this SWPPP)
<input type="checkbox"/>	Sheet flow to Vegetated Filter (1 or 2)		
<input type="checkbox"/>	Grass Channel		
<input type="checkbox"/>	Rainwater Harvesting		
<input type="checkbox"/>	Permeable Pavement (1 or 2)		

Arlington County - SWPPP 9/2016

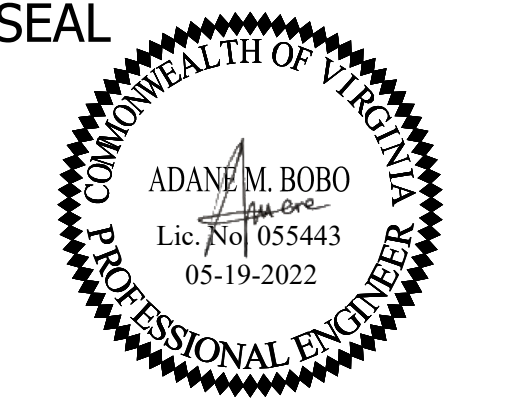
NOT FOR CONSTRUCTION
THIS SHEET FOR CALCULATION PURPOSES ONLY

Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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APPROVALS	DATE
<i>[Signature]</i> DESIGN TEAM ENGINEER SUPERVISOR	9/28/2022
<i>[Signature]</i> CONSTRUCTION MANAGEMENT SUPERVISOR	10/13/22
<i>[Signature]</i> WATER/SEWER, STREETS BUREAU CHIEF	10/5/22
<i>[Signature]</i> TRANSPORTATION DIRECTOR	10/5/22
<i>[Signature]</i> PROJECT MANAGER	9/27/2022

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD

STORMWATER POLLUTION PREVENTION PLAN - 1

DESIGNED: BD
DRAWN: BD
CHECKED: BG

PLOTTED: JULY 13 2022

SCALE:

N/A

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

Table with 4 columns: Best Management Practices (BMPs), In Compliance with SWPPP?, Corrective Action Needed; Responsible Party & Notes, Date Corrective Action Taken. Rows include questions about slopes, washout facilities, trash/litter, non-stormwater discharges, natural resources, vehicle maintenance, and disturbed areas.

Non - Compliance
Describe any incidents of non-compliance not described above (use another page is necessary)

Certification

"I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Operator or Assigned Qualified Personnel Name: _____

Signature: _____

Date: _____

Arlington County - SWPPP 9/2016

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

Table with 4 columns: Select all that apply, Stormwater Management Control, Estimated Installation Date, Responsible Party. Rows include Infiltration (1 or 2), Bioretention (1 or 2), Others [describe], and Exempted.

7.0 Spill Prevention & Response

Most spills can be cleaned up following manufacturer specifications. Absorbent/oil dry, sealable containers, plastic bags, and shovels/brooms are suggested minimum spill response items that should be available at this location.

- 1st Priority: Protect all people
2nd Priority: Protect equipment and property
3rd Priority: Protect the environment

- 1. Check for hazards (flammable material, noxious fumes, cause of spill) - if flammable liquid, turn off engines and nearby electrical equipment. If serious hazards are present leave the area and call 911. LARGE SPILLS ARE LIKELY TO PRESENT A HAZARD.
2. Make Sure the spill area is safe to enter and that it does not pose an immediate threat to health or safety of any person.
3. Stop the spill source.
4. Call co-workers and supervisor for assistance and to make them aware of the spill and potential dangers.
5. If possible, stop spill from entering drains (use absorbent or other material as necessary).
6. Stop spill from spreading (use absorbent or other material)
7. If spilled material has entered a storm sewer, contact locality's storm water department.
8. Clean up spilled material according to manufacturer specifications, for liquid spills use absorbent materials and do not flush area with water.
9. Properly dispose of cleaning materials and used absorbent material according to manufacturer specifications.

Emergency Contacts:

Normal Working Hours

DEQ Northern Regional Office 703-583-3800

Nights, Holidays & Weekends

VA Dept. of Emergency Management 804-674-2400
24 Hour Reporting Service

Local Contacts

Arlington County Fire & Police 703-558-2222
DES Water, Sewer, Streets 24-Hour Emergency 703-228-6555
Washington Gas Emergency 703-750-1400

Arlington County - SWPPP 9/2016

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

8.0 Self Inspections Report & Corrective Action Log (make additional copies as necessary)

Qualified Inspector

Form fields for Company/Organization, Name, Telephone Number, and Qualifications.

Inspection Schedule

Discharges to impaired waters, surface waters within a TMDL watershed, or exceptional waters:

Once every 4 business days.

Inspection Date:

Type of Inspection: Regular Pre-storm event During storm event Post-storm event

Phase of construction: Pre-Con DEMO Clearing Building Grading Final Stabilization

Is a copy of the SWPPP available on site? Yes No Is the SWPPP complete? Yes No

Are there any discharges at the time of this inspection? Yes No If yes, describe:

Have any discharge occurred since the last inspection? Yes No If yes, describe:

Table with 4 columns: Best Management Practices (BMPs), In Compliance with SWPPP?, Corrective Action Needed; Responsible Party & Notes, Date Corrective Action Taken. Rows include construction exits, perimeter controls, storm drain inlets, and discharge points.

Arlington County - SWPPP 9/2016

STORMWATER POLLUTION PREVENTION PLAN
BR02 - Shirlington Road Pedestrian Bridge Project

9.0 Grading & Stabilization Activities Log

Table with 5 columns: Date Grading Activity Initiated, Description of the Grading Activity (including location), Date Grading Activity Ceased, Date Stabilization Measures Initiated, Description of the Stabilization Measure (including location).

10.0 SWPPP Modification & Update Log

Table with 3 columns: Modification Date, Description of the Modification / Update (name & title that request the modification), Modification Prepared By (name & title).

Arlington County - SWPPP 9/2016

INSTRUCTIONS FOR COMPLETING THE
SINGLE FAMILY RESIDENCE, COMMON PLAN OF DEVELOPMENT or SALE
STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

General
A Stormwater Pollution Prevention Plan (SWPPP) must be developed prior to obtaining locality (e.g., City, County, Town) authorization to commence land disturbance.

SWPPP Cover Page
For a construction activity, enter the project/site name and physical address (if available), including city (or town), state and zip code. Enter the latitude and longitude in decimal degrees of the construction activity.

Enter the Construction Activity Operator's company/organization name, the Operator's name and mailing address, including city (or town), state, and zip code, telephone number, email address (if available), and a 24-hour emergency contact.

Enter the SWPPP preparation date.
The Construction Activity Operator identified on the cover page of the SWPPP is responsible for certifying the information contained therein. Please sign the certification in INK. Please note that state statutes require the SWPPP to be signed as follows:

- (1) For a corporation: by a responsible corporate officer;
(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
(3) For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

Section 1.0 SWPPP Documents Located Onsite & Available for Review
Utilize the provided checklist to ensure that the required SWPPP documents are located onsite and are available for review, if applicable.

Section 2.0 Authorized Non-Stormwater Discharges
Identify the authorized non-stormwater discharges likely to be present at the project site. If an unlisted authorized non-stormwater discharge is likely to be present at the project site, provide it here.

Section 3.0 Pollution Prevention Awareness
Provide employees with a "walk through" of the project site and identify areas of possible pollution, erosion and sediment controls, and pollution prevention practices which are applicable to their assigned job duties. Conduct refresher meetings and perform additional "walk throughs" on an as needed basis.

Section 4.0 Erosion & Sediment Controls
Identify the erosion and sediment controls to be implemented at the project site. For each erosion and sediment control, enter the estimated installation date and estimated removal date. If an unlisted erosion and sediment control will be implemented at the project site, provide the applicable information here.

Section 5.0 Potential Sources of Pollution & Pollution Prevention Practices
Identify the pollutant-generating activities likely to be present at the project site; implement and maintain the corresponding pollution prevention practices. If an unlisted pollutant-generating activity is likely to be present at the project site, describe it, identify the associated pollutant(s), and provide the corresponding pollution prevention practice(s) to be implemented and maintained.

Section 6.0 Stormwater Management Controls
Identify the stormwater management controls to be implemented at the project site, if applicable. For each stormwater management control, enter the estimated installation date. If an unlisted stormwater management control will be implemented at the project site, provide the applicable information here.

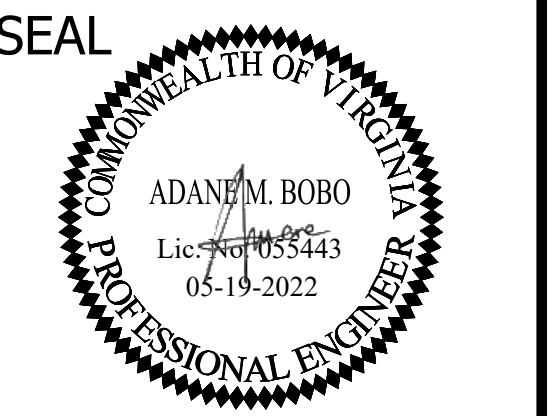
Section 7.0 Spill Prevention & Response
Most spills can be cleaned up following manufacturer specifications. The priority should be to protect all people, equipment, property, and the environment. Enter the telephone number of your local fire and police departments.

Section 8.0 Inspections & Corrective Action Log
Enter the qualified inspector's company/organization name, the inspector's name, telephone number, and qualifications. Select the applicable inspection type, enter the construction activity inspection date, and enter the date and rainfall amount of the last measurable storm event (if applicable). Identify if the implemented best management practices are in compliance with the SWPPP. Enter corrective actions needed, the party responsible for implementing the corrective actions, and the date corrective actions were taken, if applicable. Make additional copies of the inspection and corrective action log as necessary.

Section 9.0 Grading & Stabilization Activities Log
Enter the date grading activities were initiated, a description of the grading activities including location, the date grading activities ceased, the date stabilization measures were initiated, and a description of the stabilization measures including location.

Section 10.0 SWPPP Modification & Update Log
Enter the SWPPP modification date, description of the SWPPP modification/update, and the name and title of the SWPPP modification preparer, if applicable.

Arlington County - SWPPP 9/2016



APPROVALS DATE

9/28/2022
BEST TEAM ENGINEER SUPERVISOR
10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR
10/5/22
WATER/SEWER, STREETS BUREAU CHIEF
10/5/22
TRANSPORTATION DIRECTOR
9/27/2022
PROJECT MANAGER

REVISIONS DATE

Table with 2 columns: REVISIONS, DATE. Multiple empty rows for revisions.

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD
STORMWATER POLLUTION PREVENTION
PLAN - 2

DESIGNED: BD
DRAWN: BD
CHECKED: BG
PLOTTED: JULY 13 2022

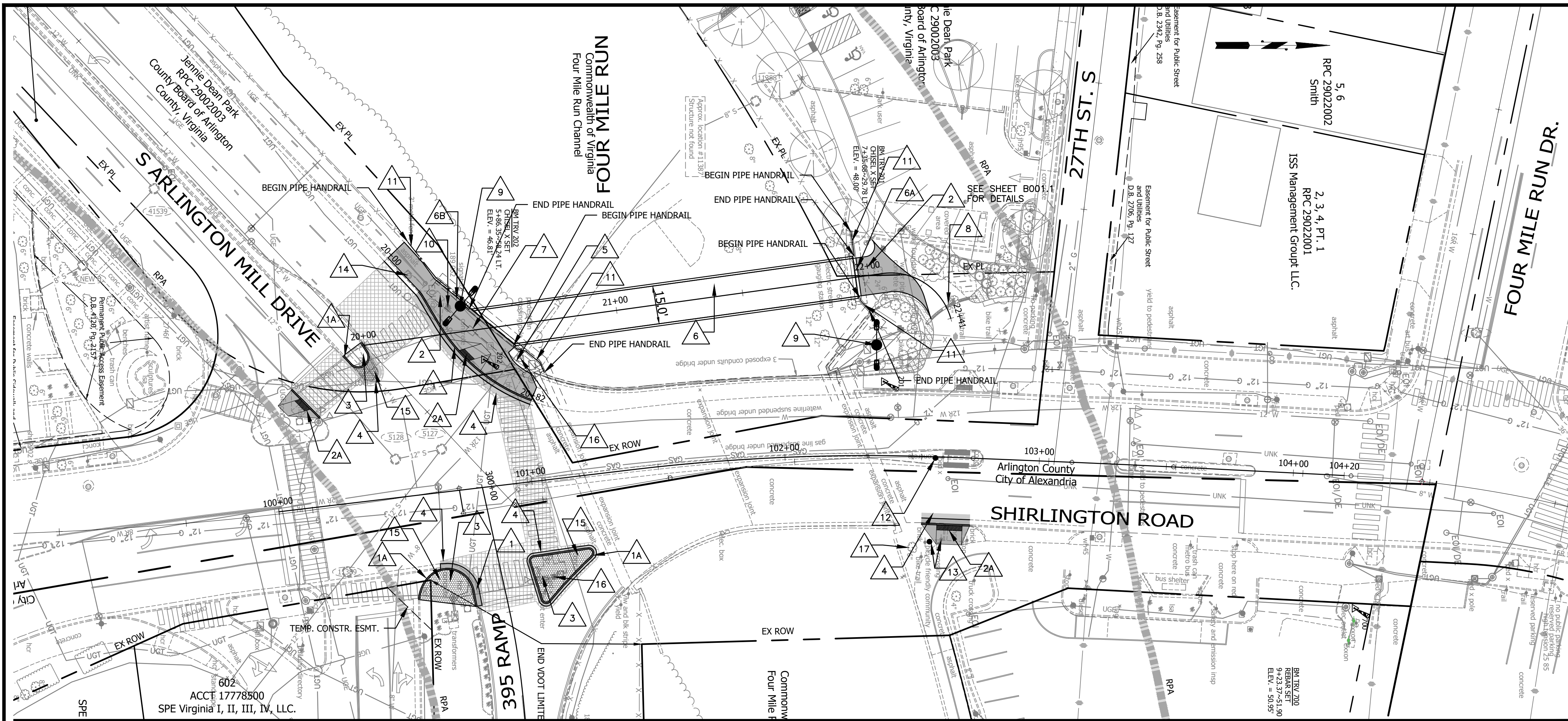
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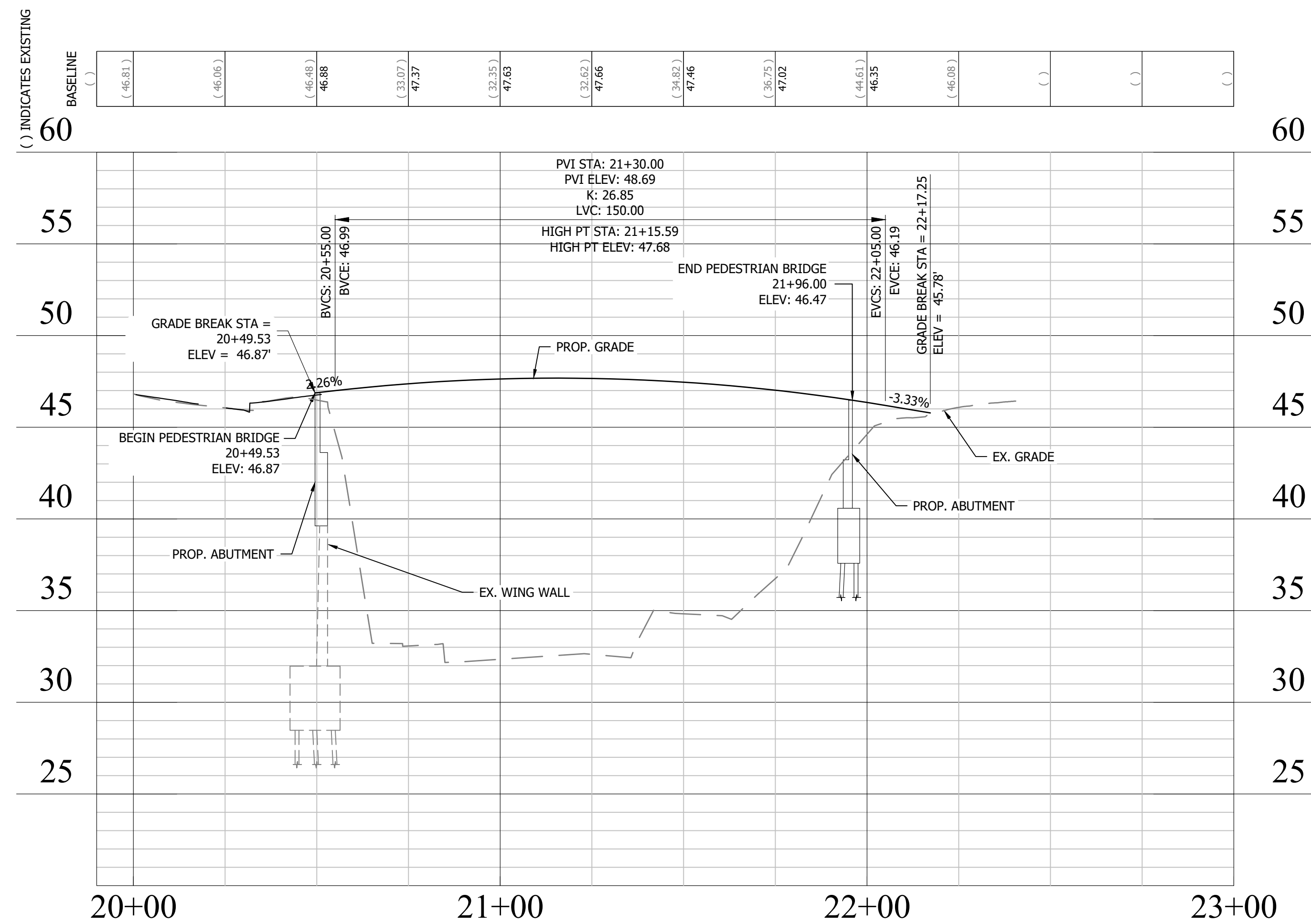
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REVISED ON 1/24/2022

FILENAME: BR02-230-PLAN_PROFILE.DWG PATH: T:\11009400 - MASTER-ARLINGTON COUNTY ON-CALL\11009450 - SHIRLINGTON RD PEDESTRIAN BRIDGE\07 DESIGN\DWG PLOTTED BY: BRENDA DUONG



SHIRLINGTON ROAD PEDESTRIAN BRIDGE PROFILE



CONSTRUCTION NOTES

- 1 PROP CURB AND GUTTER (C-2) ARL STD (R-2.0)
- 1A PROP HEADER CURB (C-3) ARL STD (R-2.0)
- 2 PROP SIDEWALK ARL STD (R-2.0).
- 2A PROP RAMP (CG-12A) VDOT ROAD & BRIDGE STANDARDS (204.02) SEE CURB RAMP DETAIL SHEET #C042.1
- 3 PROP SOD AND 4" TOPSOIL PER ARL. DES SUPPLEMENTAL SPECS 329100 AND 329200
- 4 SAWCUT AND RESTORE FULL DEPTH ASPHALT, SEE TYPICAL SECTIONS AND DETAILS FOR DEPTHS
- 5 REMOVE EXISTING GUARDRAIL. GUARDRAIL SECTION BETWEEN THE CONCRETE BRIDGE RAILING AND THE FIRST GUARDRAIL POST IS TO REMAIN. INSTALL ROUNDED END SECTION (VDOT STD. GR-HDW) ON END OF REMAINING GUARDRAIL SECTION. SEE SHEET C042.1 FOR DETAILS.
- 6 PROP PRE-FABRICATED PEDESTRIAN BRIDGE
- 6A PROP ABUTMENT FOR PEDESTRIAN BRIDGE
- 6B MODIFY EXISTING WING WALL TO ABUTMENT FOR PEDESTRIAN BRIDGE
- 7 CONTRACTOR SHALL INVESTIGATE THE CIRCUIT FOR THE EXISTING VDH JUNCTION BOX AND REMOVE THE JUNCTION BOX IF IT IS NO LONGER REQUIRED. IF THE JUNCTION BOX IS REQUIRED FOR THE EXISTING CIRCUIT, CONTRACTOR SHALL RELOCATE THE JUNCTION BOX ON THE PROPOSED SIDEWALK AS NECESSARY TO COMPLETE THE WINGALL MODIFICATIONS. COST FOR REMOVING OR RELOCATING THE EXISTING JUNCTION BOX SHALL BE INCIDENTAL TO OTHER ITEMS.
- 8 EXISTING PARK SIGN SHALL BE TEMPORARILY REMOVED AND REPLACED IF NECESSARY FOR CONSTRUCTION ACCESS. IF THE SIGN IS DAMAGED AS A RESULT OF REMOVING, STORING, OR REINSTALLING THE SIGN, IT SHALL BE REPAIRED OR REPLACED AT THE SOLE EXPENSE OF THE CONTRACTOR. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS IN THE PARK TO THEIR ORIGINAL CONDITION. COST SHALL BE INCLUDED IN THE BID PRICE FOR CONSTRUCTION ACCESS.
- 9 PROPOSED STREETLIGHT BY OTHERS. FOR CONDUIT AND JUNCTION BOX LOCATIONS, SEE SHEET C111.1.
- 10 EXISTING STREETLIGHT AND POLE TO BE REMOVED AND DELIVERED TO VDOT AT 8010 MASON KING COURT, MANASSAS, VA 20109. THE EXISTING FOUNDATION SHALL BE REMOVED TO BELOW THE PROPOSED SIDEWALK.
- 11 PROP PIPE HANDRAIL ARL. STD. (R-3.1) SEE SHEETS B001.4, B001.5, B001.6, AND B001.8 FOR DETAILS.
- 12 INSTALL FOUNDATION AND RRFB
- 13 RELOCATE EXISTING RRFB
- 14 REMOVE AND REPLACE EXISTING DROP INLET STRUCTURE TOP IN KIND
- 15 REMOVE EXISTING CONCRETE MEDIAN
- 16 REMOVE EXISTING PEDESTRIAN SIGNAL HEAD FOR NORTH LEG OF SHIRLINGTON ROAD AND ARLINGTON MILL DRIVE INTERSECTION
- 17 REMOVE AND REPLACE EXISTING TREE. LOCATION OF PROPOSED NEW TREE TO BE DETERMINED.

Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL

COMMONWEALTH OF VIRGINIA
BRENDA DUONG
Lic. No. 052964
05-19-2022
PROFESSIONAL ENGINEER

APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>[Signature]</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>[Signature]</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

PLAN AND PROFILE

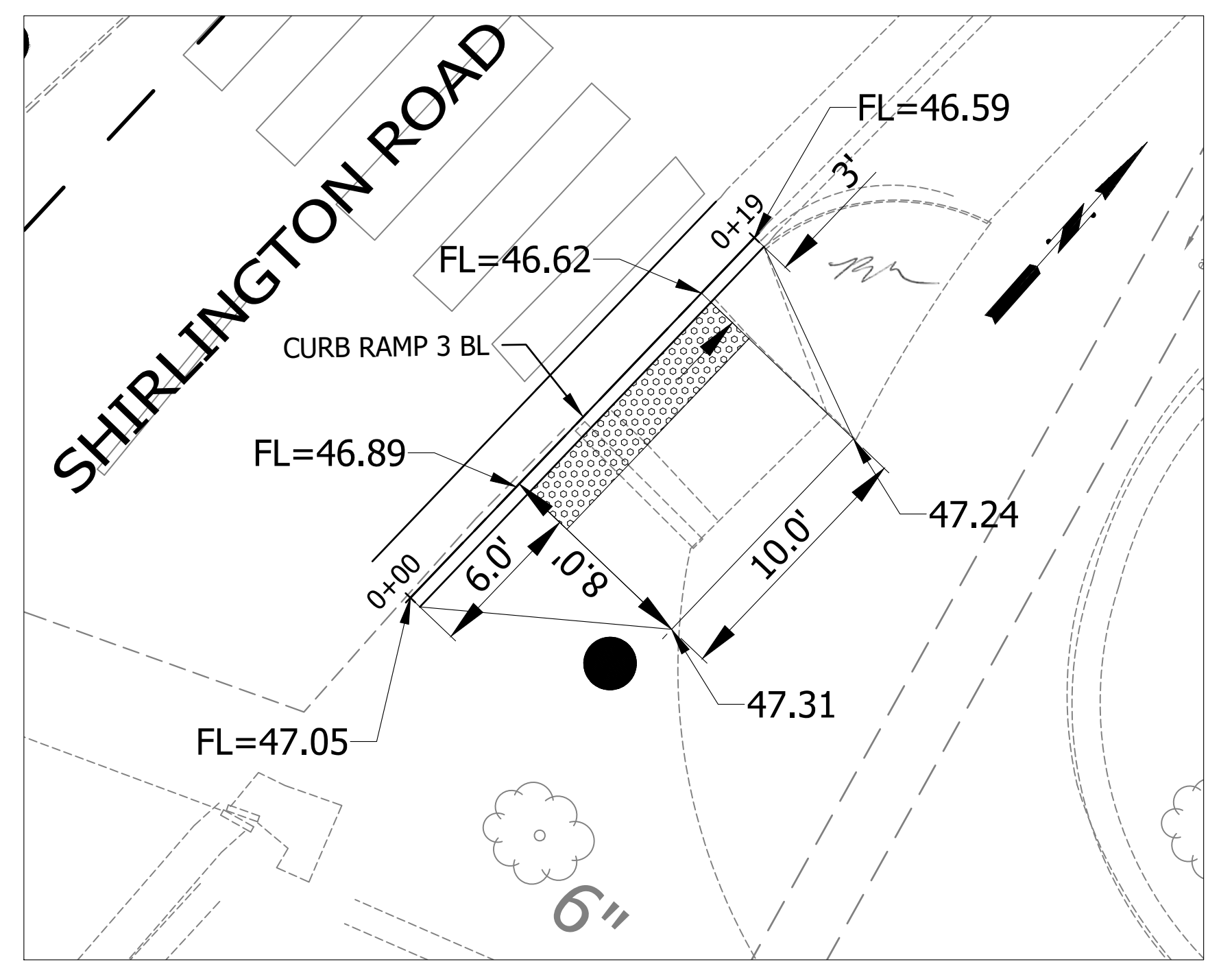
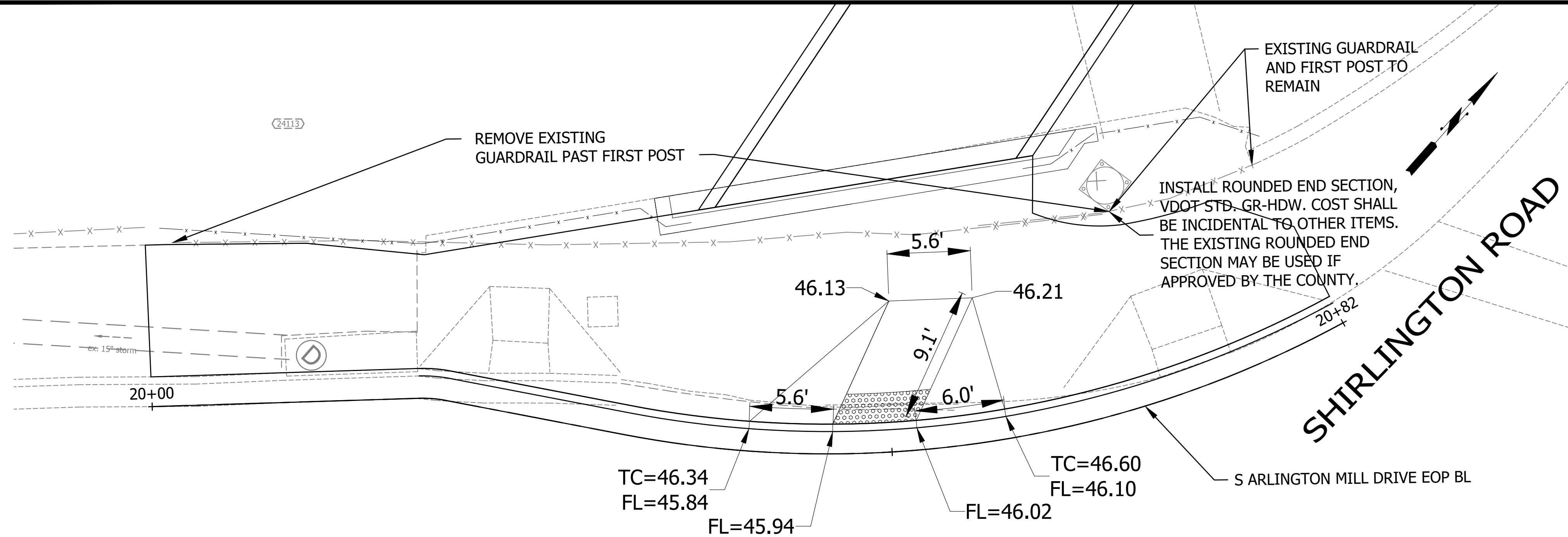
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PLOTTED: JULY 13 2022

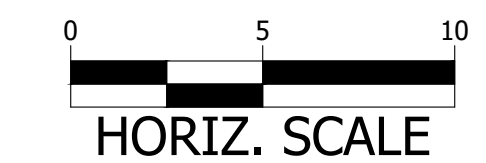
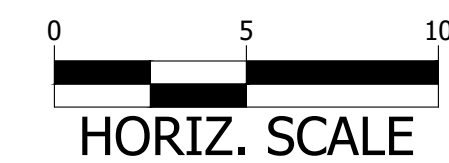
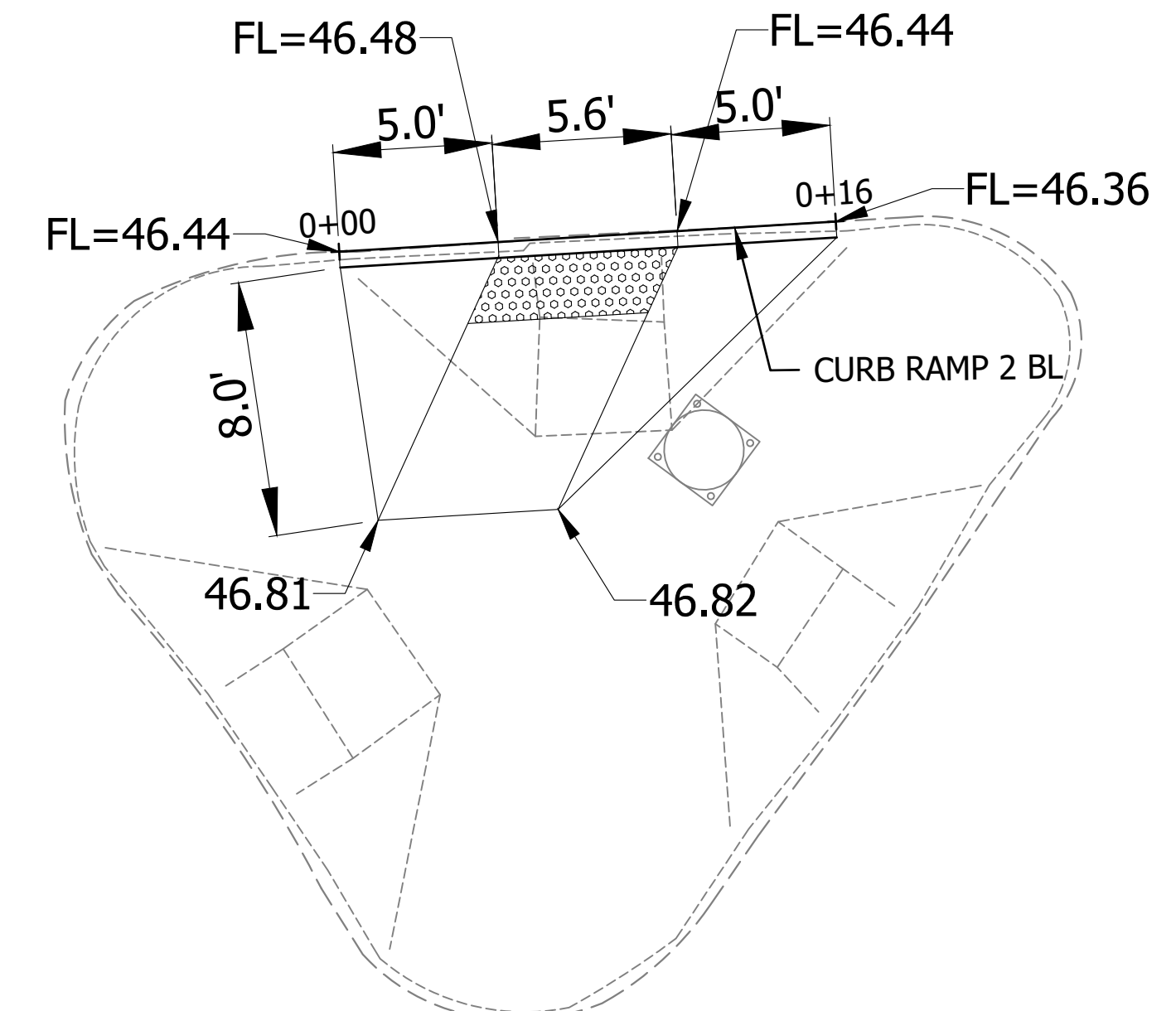
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VERT. SCALE
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HORIZ. SCALE

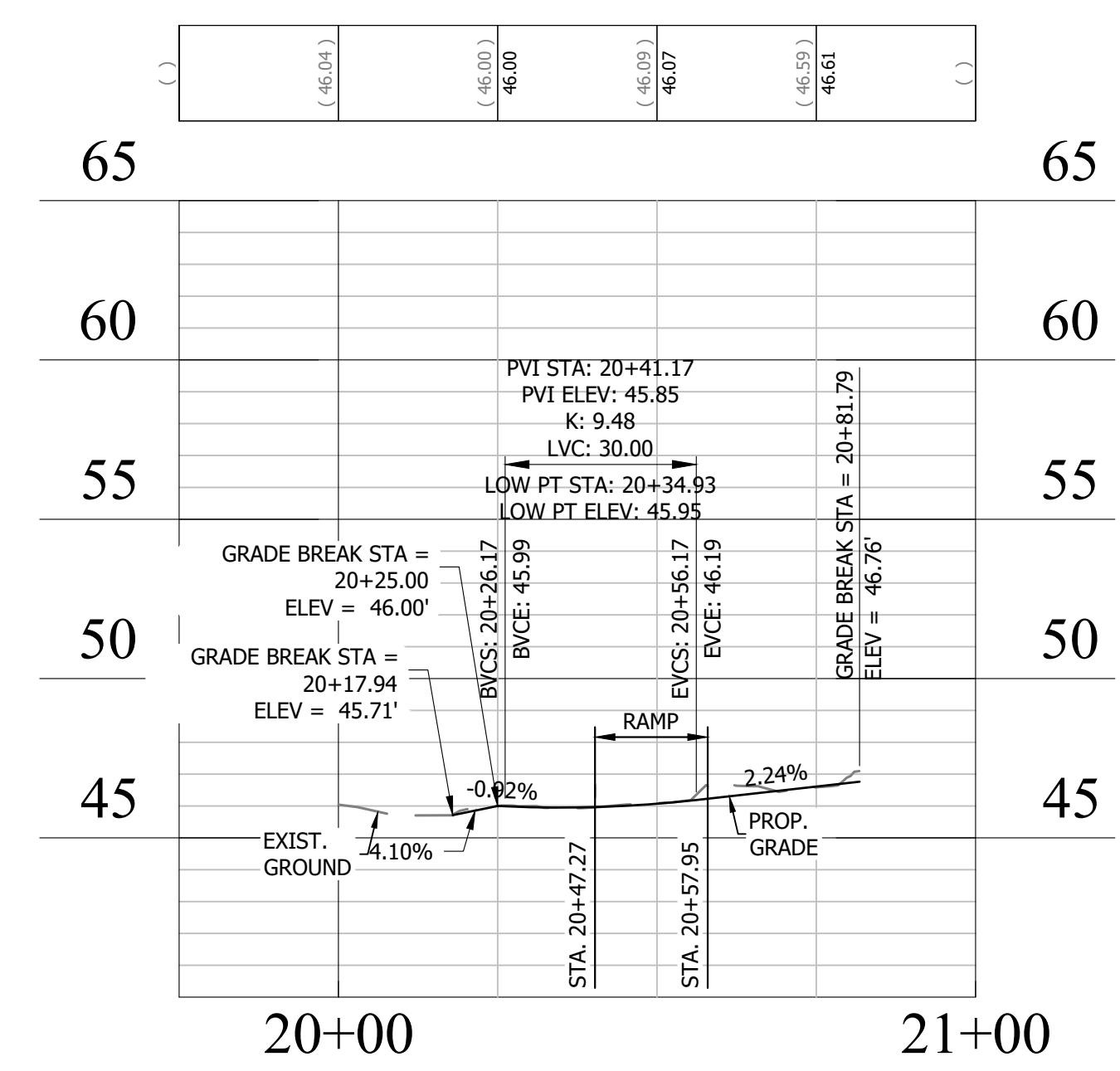
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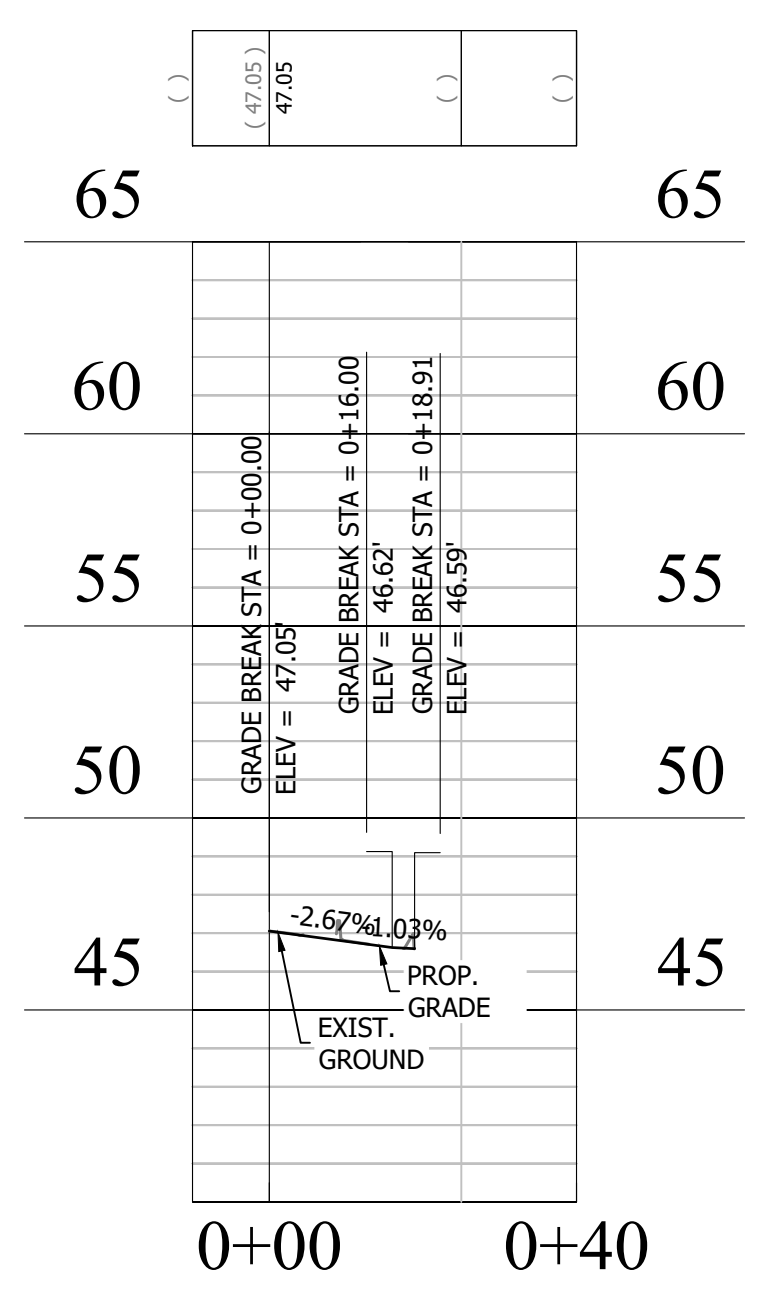
**S ARLINGTON MILL DRIVE
MEDIAN NOT SHOWN**



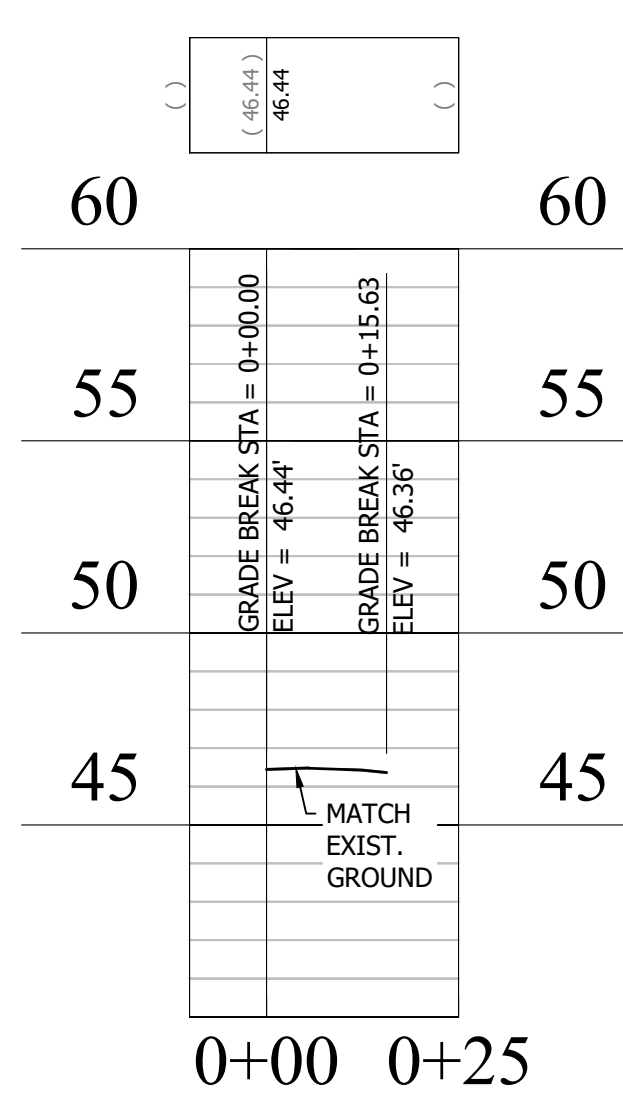
S ARLINGTON MILL DRIVE EOP PROFILE



CURB RAMP 3 PROFILE



CURB RAMP 2 PROFILE



2016 ROAD & BRIDGE STANDARDS

NOTES:

- FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.
- THIS DESIGN TO BE USED FOR CONSTRUCTION THAT INCORPORATES WIDER SIDEWALK, LANDING (4' WIDE) REQUIRED AT TOP OF CURB RAMP. MINIMUM CURB RAMP LENGTH 8 FEET FOR NEW CONSTRUCTION.
- GUTTER PAN SHALL BE A MAXIMUM SLOPE OF 20:1 AT THE RAMP OPENING.
- DIAGONAL PLACEMENT IS NOT PERMITTED.

EXAMPLE INSTALLATION METHODS - SEE PLANS FOR LAYOUT

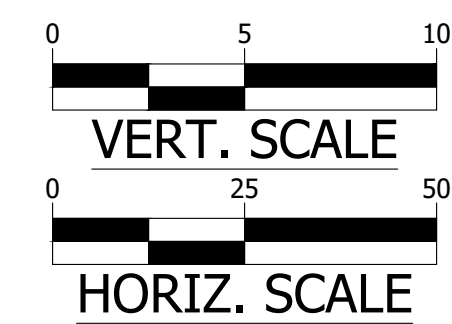
**CG-12 DETECTABLE WARNING SURFACE
TYPE A (PERPENDICULAR) APPLICATION**

VDOT ROAD AND BRIDGE STANDARDS
REVISION DATE: 04/19 SHEET 2 OF 5
204.02

SPECIFICATION REFERENCE: 105, 502, 504

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

2016 ROAD & BRIDGE STANDARDS



Approved: 10/3/2022
Subject to field inspection
ARLINGTON VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL

BRENDA DUONG
Lic. No. 052964
05-19-2022
PROFESSIONAL ENGINEER

APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
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<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>[Signature]</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>[Signature]</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD

CURB RAMP DETAILS

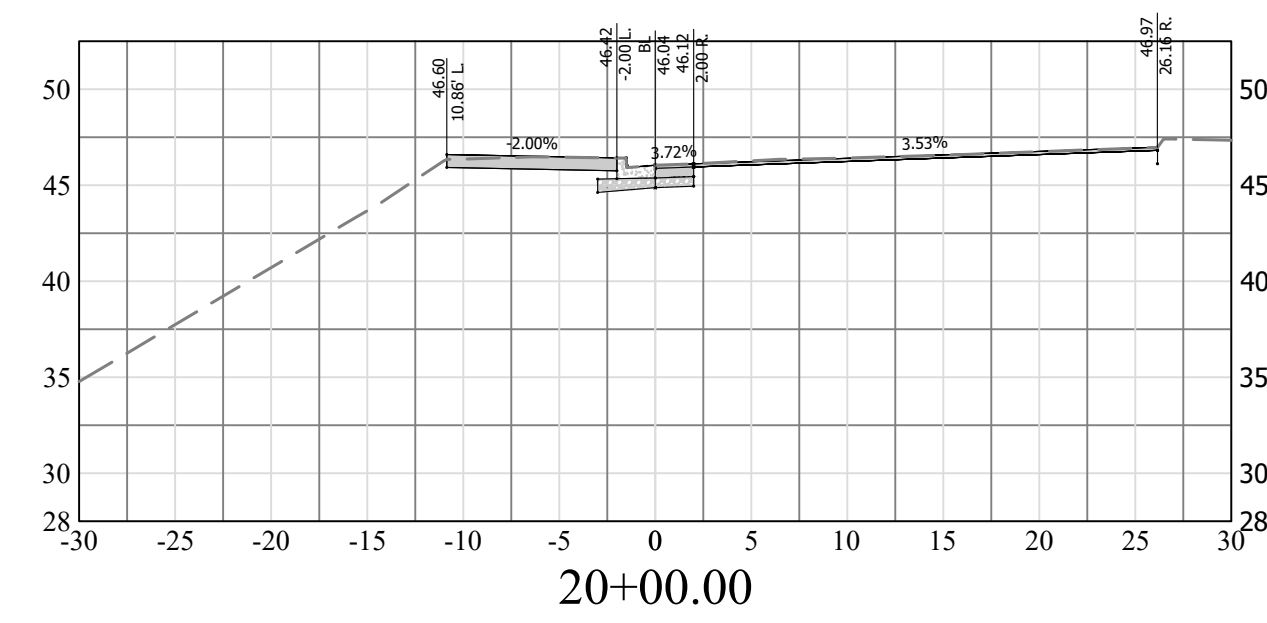
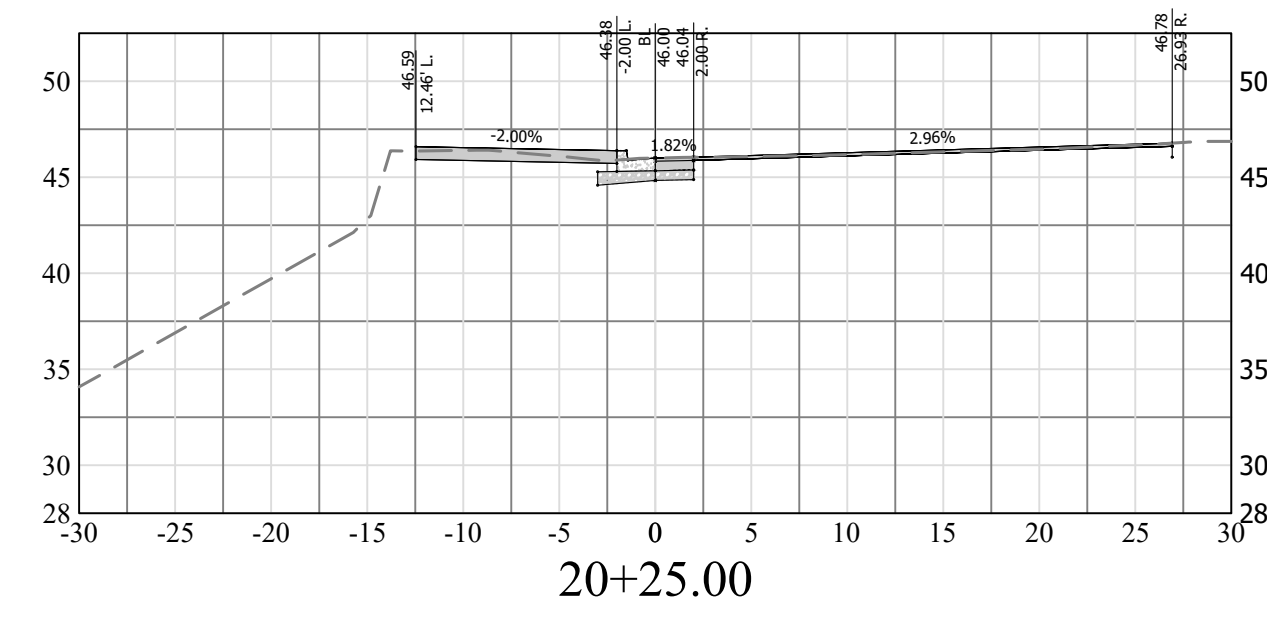
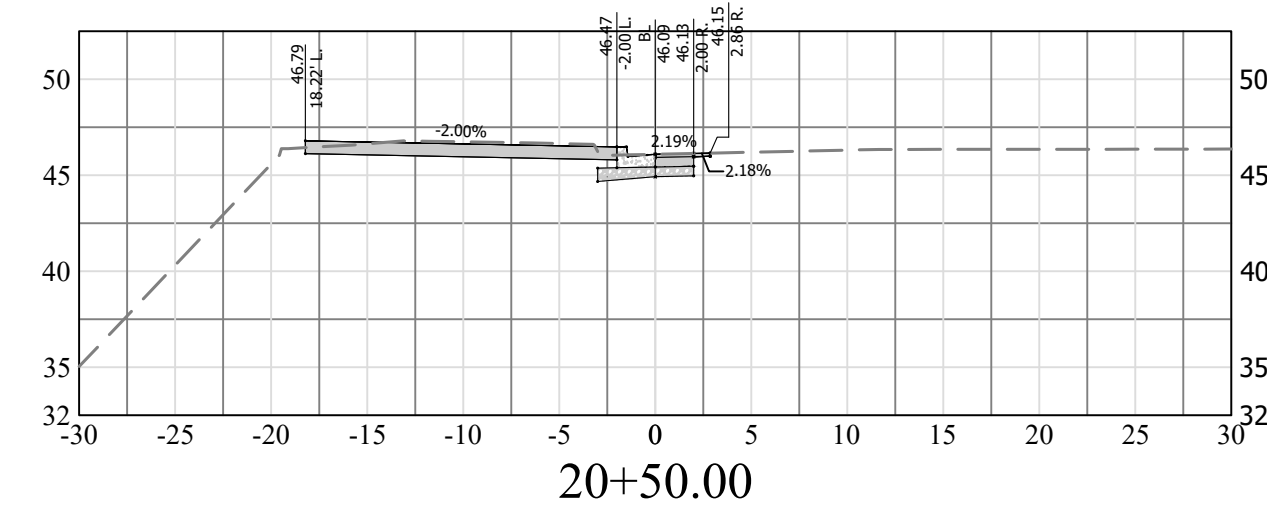
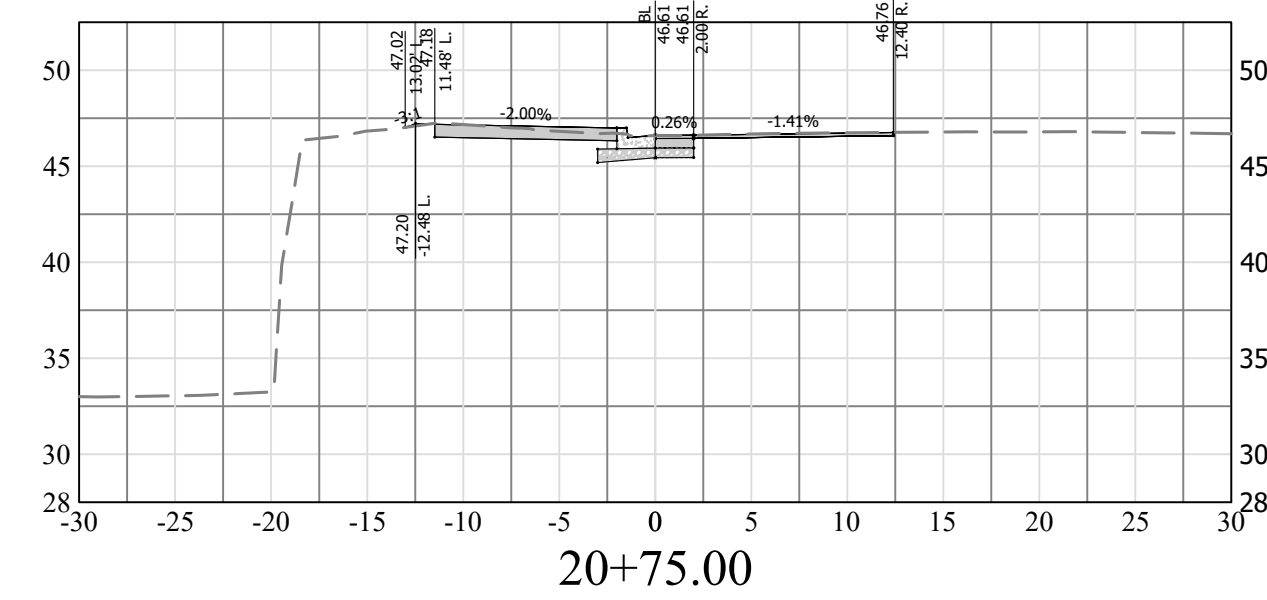
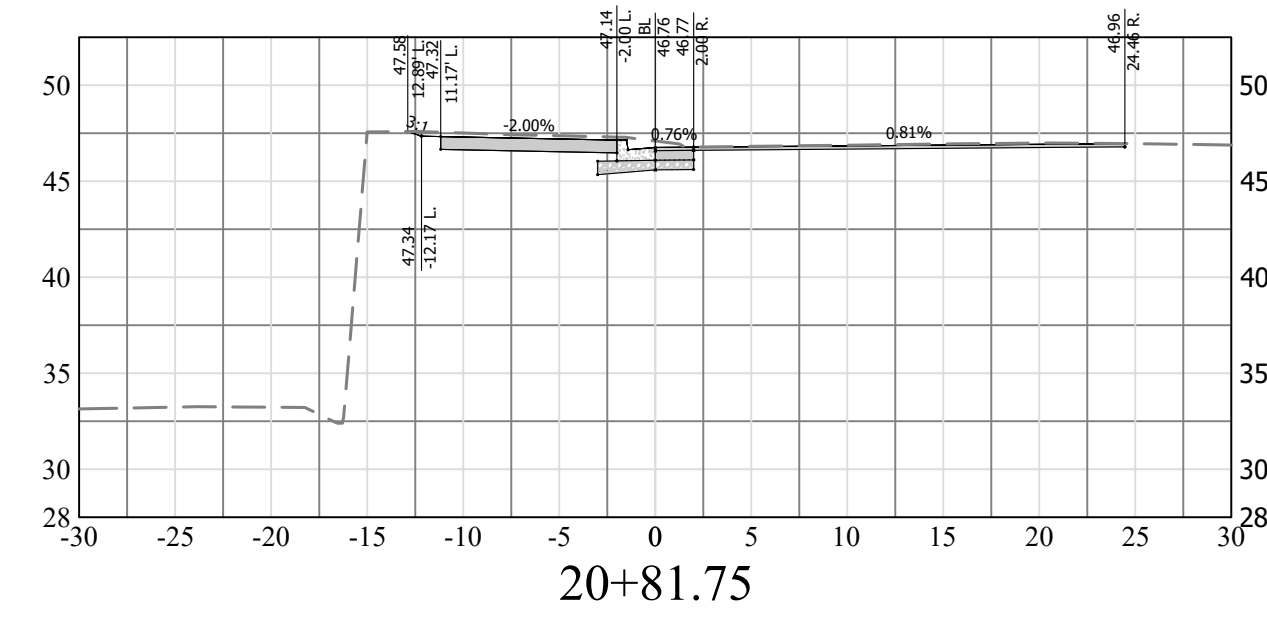
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PLOTTED: JULY 13 2022

SCALE:
AS SHOWN

C042.1

S ARLINGTON MILL DRIVE EOP CROSS SECTIONS



Approved: 10/3/2022

 Subject to field inspection

 LD A22115

ARLINGTON VIRGINIA

 DEPARTMENT OF ENVIRONMENTAL SERVICES

 FACILITIES & ENGINEERING DIVISION

 ENGINEERING BUREAU

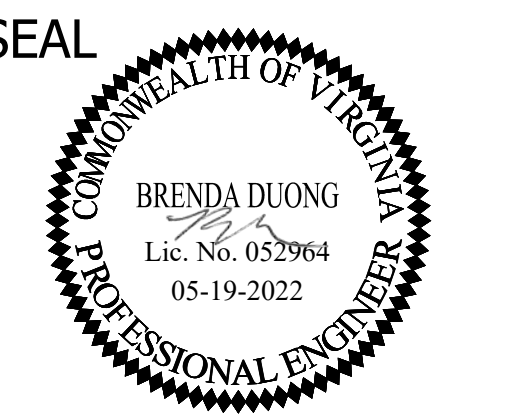
 2100 CLARENDON BOULEVARD, SUITE 813

 ARLINGTON, VA 22201

 PHONE: 703.228.3629

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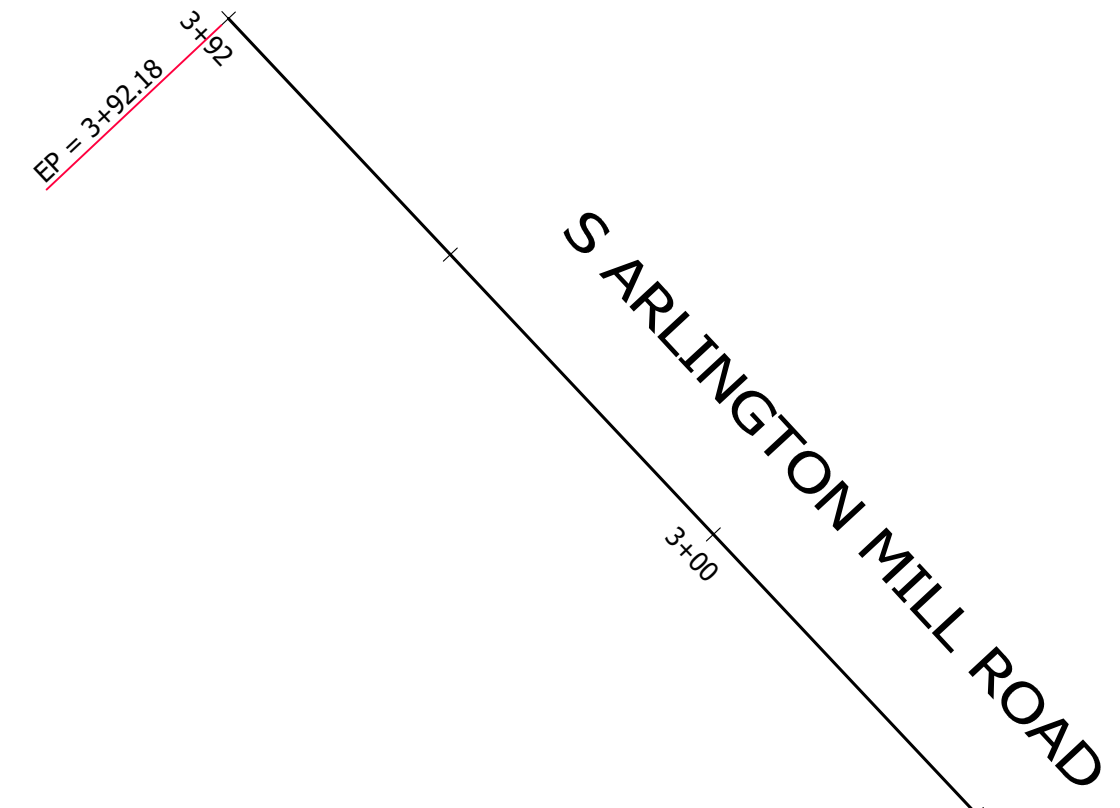


APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>Dennis M. Leach</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>Rosa Harris</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
 BR02
 SHIRLINGTON ROAD
 CROSS SECTION SHEET

DESIGNED: BD
 DRAWN: BD
 CHECKED: BG
 PLOTTED: JULY 13 2022
 SCALE:
 AS SHOWN



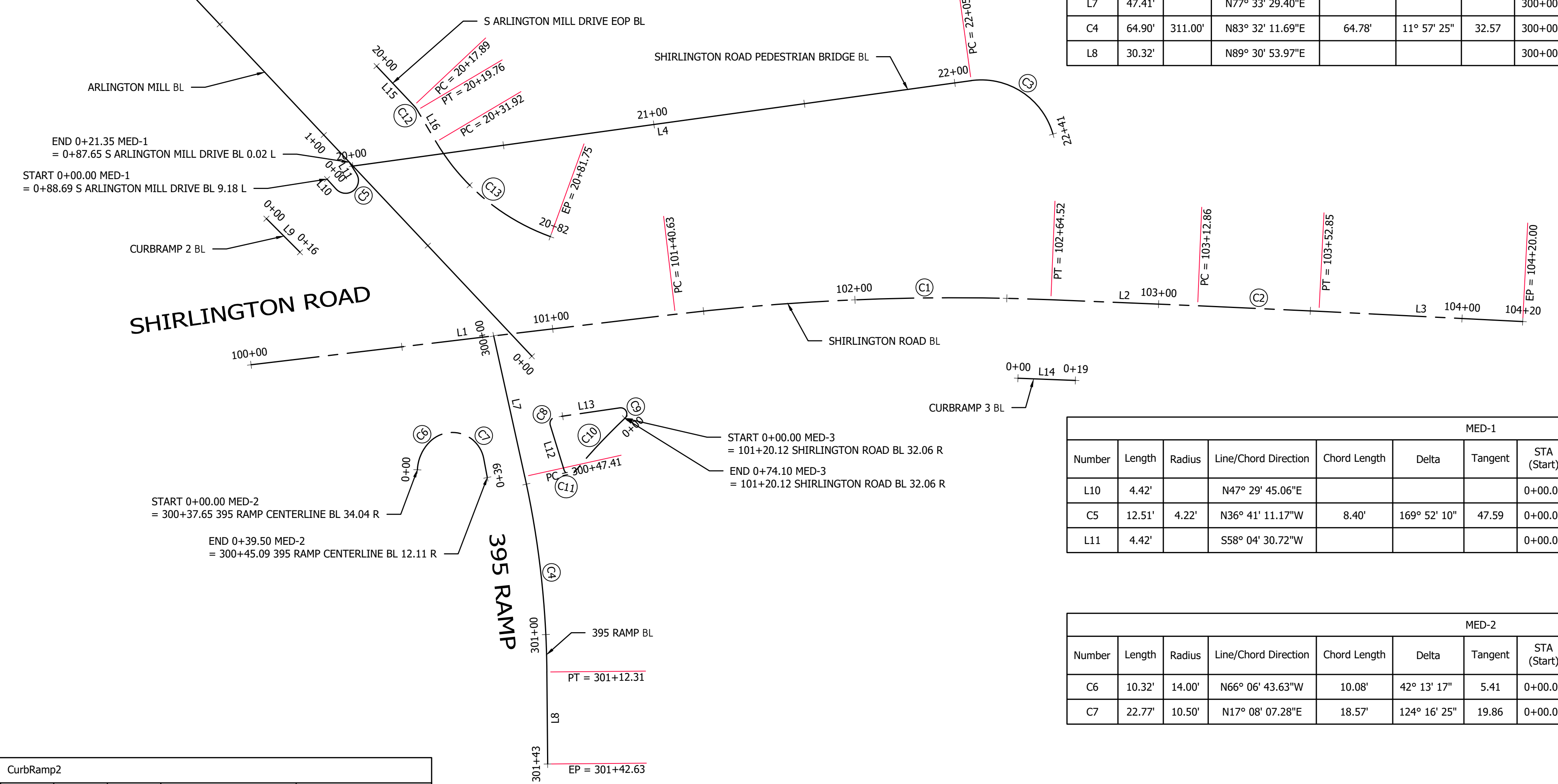
S Arlington Mill Drive EOP										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
L15	17.89'		N46° 42' 14.89"E				20+00.00	20+81.75	6993111.83, 11885639.28	6993124.10, 11885652.29
C12	1.88'	8.50'	N53° 01' 39.64"E	1.87'	12° 38' 50"	0.94	20+00.00	20+81.75	6993124.10, 11885652.29	6993125.23, 11885653.79
L16	12.15'		N59° 21' 04.39"E				20+00.00	20+81.75	6993125.23, 11885653.79	6993131.42, 11885664.25
C13	49.83'	72.50'	N39° 39' 39.05"E	48.86'	39° 22' 51"	25.95	20+00.00	20+81.75	6993131.42, 11885664.25	6993169.03, 11885695.43

Shirlington Road										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
L1	140.63'		N06° 47' 31.83"W				100+00.00	104+20.00	6993070.52, 11885737.64	6993210.17, 11885721.01
C1	123.89'	776.00'	N02° 13' 07.17"W	123.75'	9° 08' 49"	62.07	100+00.00	104+20.00	6993210.17, 11885721.01	6993333.83, 11885716.22
L2	48.34'		N02° 21' 17.49"E				100+00.00	104+20.00	6993333.83, 11885716.22	6993382.13, 11885718.20
C2	39.99'	4330.00'	N02° 37' 09.99"E	39.99'	0° 31' 45"	20.00	100+00.00	104+20.00	6993382.13, 11885718.20	6993422.08, 11885720.03
L3	67.15'		N02° 53' 02.48"E				100+00.00	104+20.00	6993422.08, 11885720.03	6993489.14, 11885723.41

Shirlington Road Pedestrian Bridge										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
L4	205.43'		N07° 52' 12.34"W				20+00.00	22+40.52	6993104.07, 11885672.20	6993307.57, 11885644.07
C3	35.09'	24.50'	N33° 09' 28.16"E	32.16'	82° 03' 21"	21.32	20+00.00	22+40.52	6993307.57, 11885644.07	6993334.49, 11885661.67

ARLINGTON MILL										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
L6	392.18'		S46° 45' 52.57"W				0+00.00	3+92.18	6993162.96, 11885734.83	6992894.31, 11885449.11

395 Ramp										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
L7	47.41'		N77° 33' 29.40"E				300+00.00	301+42.63	6993150.40, 11885728.13	6993160.61, 11885774.43
C4	64.90'	311.00'	N83° 32' 11.69"E	64.78'	11° 57' 25"	32.57	300+00.00	301+42.63	6993160.61, 11885774.43	6993167.90, 11885838.80
L8	30.32'		N89° 30' 53.97"E				300+00.00	301+42.63	6993167.90, 11885838.80	6993168.16, 11885869.11



MED-1										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
L10	4.42'		N47° 29' 45.06"E				0+00.00	0+21.35	6993095.52, 11885676.50	6993098.50, 11885679.76
C5	12.51'	4.22'	N36° 41' 11.17"W	8.40'	169° 52' 10"	47.59	0+00.00	0+21.35	6993098.50, 11885679.76	6993105.24, 11885674.74
L11	4.42'		S58° 04' 30.72"W				0+00.00	0+21.35	6993105.24, 11885674.74	6993102.91, 11885670.99

MED-2										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
C6	10.32'	14.00'	N66° 06' 43.63"W	10.08'	42° 13' 17"	5.41	0+00.00	0+39.50	6993125.27, 11885772.23	6993129.35, 11885763.01
C7	22.77'	10.50'	N17° 08' 07.28"E	18.57'	124° 16' 25"	19.86	0+00.00	0+39.50	6993129.35, 11885763.01	6993147.09, 11885768.48

MED-3										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
C10	24.26'	185.70'	S46° 53' 56.81"E	24.25'	7° 29' 12"	12.15	0+00.00	0+74.10	6993193.59, 11885755.27	6993177.02, 11885772.97
C11	4.31'	2.00'	S11° 07' 05.97"W	3.52'	123° 31' 17"	3.72	0+00.00	0+74.10	6993177.02, 11885772.97	6993173.57, 11885772.29
L12	15.48'		S72° 52' 44.65"W				0+00.00	0+74.10	6993173.57, 11885772.29	6993169.01, 11885757.50
C8	3.45'	2.00'	N57° 41' 56.47"W	3.04'	98° 50' 38"	2.34	0+00.00	0+74.10	6993169.01, 11885757.50	6993170.63, 11885754.93
L13	21.53'		N08° 16' 37.58"W				0+00.00	0+74.10	6993170.63, 11885754.93	6993191.94, 11885751.83
C9	5.07'	2.00'	N64° 17' 00.76"E	3.82'	145° 07' 17"	6.37	0+00.00	0+74.10	6993191.94, 11885751.83	6993193.59, 11885755.27

CurbRamp2										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
L9	15.63'		N45° 01' 36.54"E				0+00.00	0+15.63	6993075.58, 11885689.52	6993086.62, 11885700.58

CurbRamp3										
Number	Length	Radius	Line/Chord Direction	Chord Length	Delta	Tangent	STA (Start)	STA (End)	Northing, Easting (Start)	Northing, Easting (End)
L14	18.91'		N02° 11' 03.25"E				0+00.00	0+18.91	6993322.97, 11885742.07	6993341.87, 11885742.79

Approved: 10/3/2022
Subject to field inspection
LD22115

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL

BRENDA DUONG
Lic. No. 052964
05-19-2022
PROFESSIONAL ENGINEER

APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
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<i>[Signature]</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>[Signature]</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

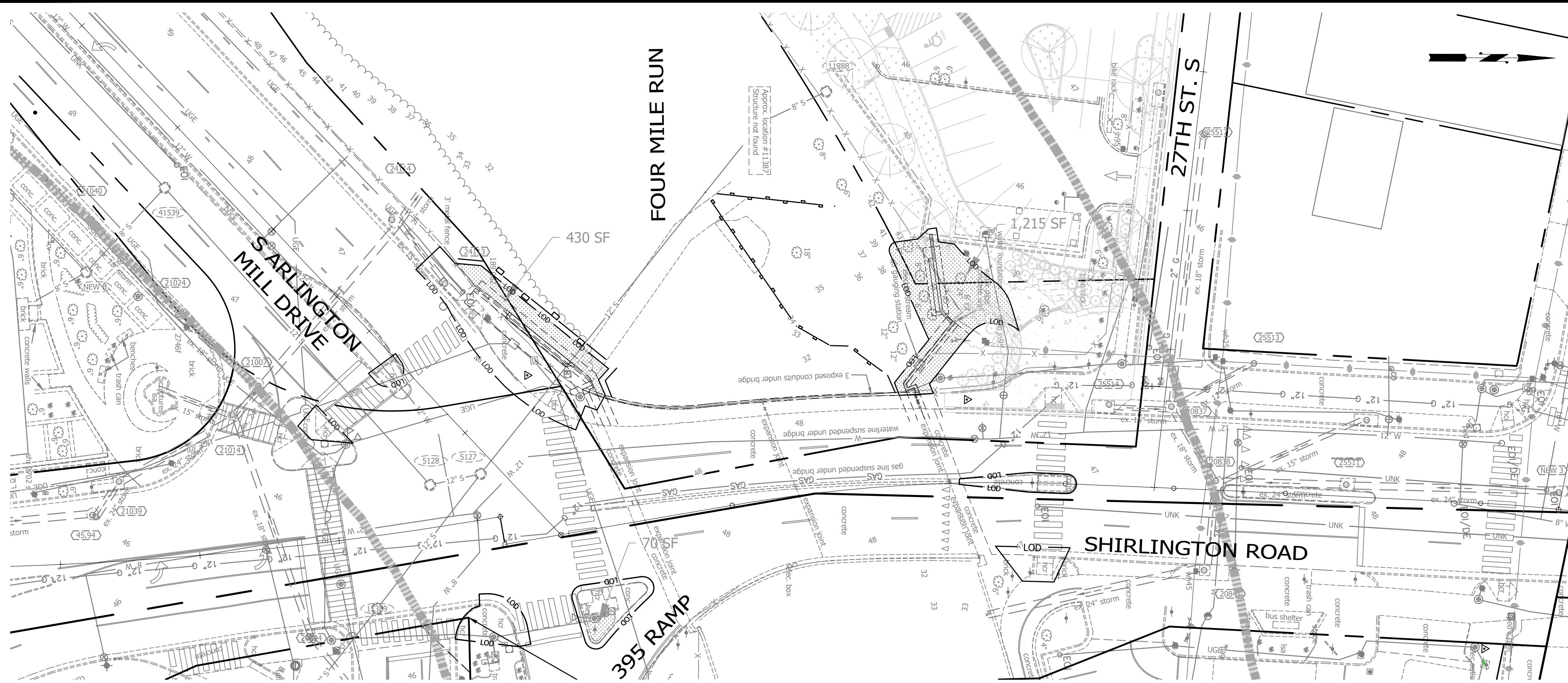
GEOMETRIC CONTROL PLAN

DESIGNED: BD
DRAWN: BD
CHECKED: BG

PLOTTED: JULY 13 2022

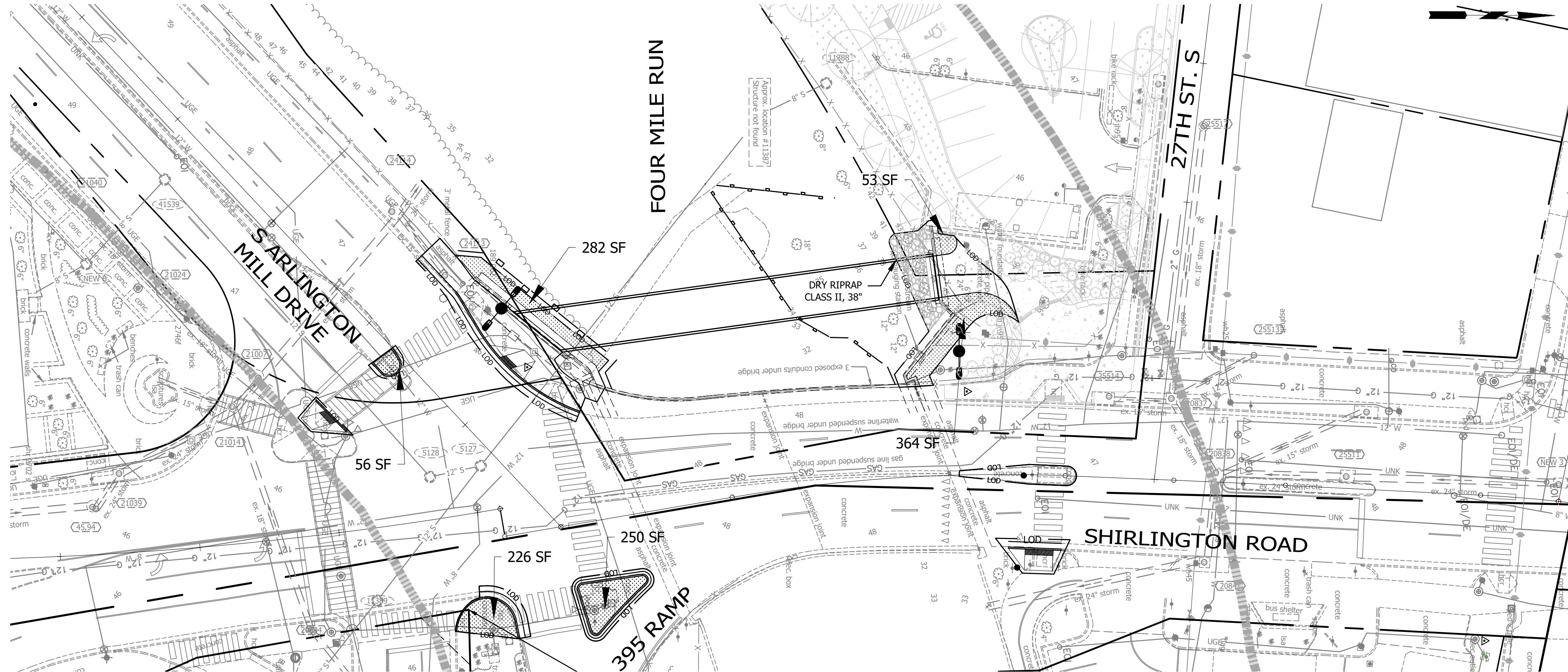
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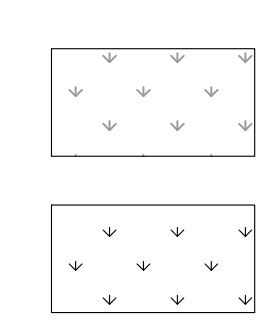
STORMWATER MANAGEMENT PLAN PRE-DEVELOPMENT CONDITIONS

	TOTAL PROJECT AREA				Change in impervious
	PRE		POST		
	sf	ac	sf	ac	
Project Limits of DISTURBANCE	4567	0.1048	4567	0.1048	
Pervious	1715	0.0394	1530	0.0351	
Impervious	2852	0.0655	3037	0.0697	0.0042 ac (6.5%)



STORMWATER MANAGEMENT PLAN POST-DEVELOPMENT CONDITIONS

LEGEND



GRASS AREA FOR PRE-DEVELOPMENT CONDITIONS

GRASS AREA FOR POST-DEVELOPMENT CONDITIONS

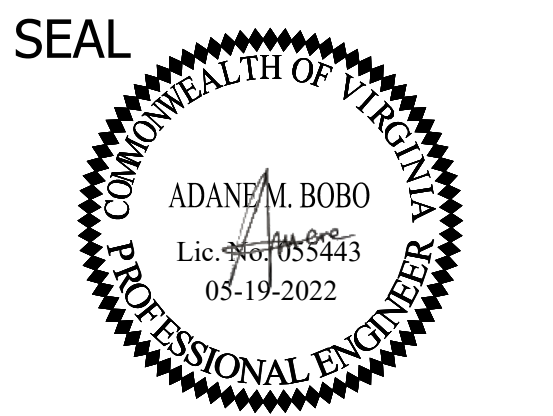
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FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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TRANSPORTATION DIRECTOR	
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PROJECT MANAGER	

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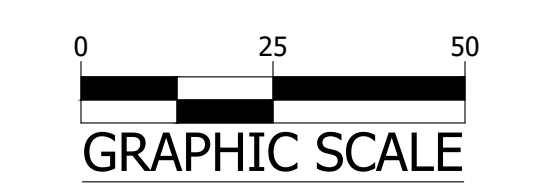
SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

STORMWATER MANAGEMENT PLAN

DESIGNED: BD
DRAWN: BD
CHECKED: BG

PLOTTED: JULY 13 2022



SCALE:

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

2011 BMP Standards and Specifications		2013 Draft BMP Standards and Specifications		CLEAR ALL (Ctrl+Shift+R)		data input cells	
Project Name: Shirlington Pedestrian Bridge		Date: 2/17/2022		Linear Development Project? Yes		constant values	
Site Information						calculation cells	
Post-Development Project (Treatment Volume and Loads)		Enter Total Disturbed Area (acres) → 0.11		Check: 2013 Draft Stds & Specs		Linear project? Yes	
Maximum reduction required: 20%		The site's net increase in impervious cover (acres) is: 0		Land cover areas entered correctly? ✓		Total disturbed area entered? ✓	
Post-Development TP Load Reduction for Site (lb/yr): 0.03							
Pre-Development Land Cover (acres)							
	A Soils	B Soils	C Soils	D Soils	Totals		
Forest/Open Space (acres) - undisturbed forest/open space				0.04	0.04		
Managed Turf (acres) - disturbed, graded for yards or other turf to be mowed/managed					0.00		
Impervious Cover (acres)				0.07	0.07		
					0.11		
Post-Development Land Cover (acres)							
	A Soils	B Soils	C Soils	D Soils	Totals		
Forest/Open Space (acres) - undisturbed, protected forest/open space or reforested land				0.04	0.04		
Managed Turf (acres) - disturbed, graded for yards or other turf to be mowed/managed					0.00		
Impervious Cover (acres)				0.07	0.07		
					0.11		
Area Check		OK	OK	OK	OK		
* Forest/Open Space areas must be protected in accordance with the Virginia Runoff Reduction Method							
Constants				Runoff Coefficients (Rv)			
Annual Rainfall (inches)	43	A Soils		B Soils	C Soils	D Soils	
Target Rainfall Event (inches)	1.00	Forest/Open Space		0.02	0.03	0.04	0.05
Total Phosphorus (TP) EMC (mg/L)	0.25	Managed Turf		0.15	0.20	0.22	0.25
Total Nitrogen (TN) EMC (mg/L)	1.86	Impervious Cover		0.95	0.95	0.95	0.95
Target TP Load (lb/acre/yr)	0.41						
PJ (unitless correction factor)	0.90						
LAND COVER SUMMARY -- PRE-REDEVELOPMENT				LAND COVER SUMMARY -- POST DEVELOPMENT			
Land Cover Summary-Pre				Land Cover Summary-Post (Final)			
Pre-Development	Listed	Adjusted ¹		Post ReDev. & New Impervious	Post-Development	Post-Development New Impervious	
Forest/Open Space Cover (acres)	0.04	0.04		Forest/Open Space Cover (acres)	0.04		
Weighted Rv(forest)	0.05	0.05		Weighted Rv(forest)	0.05		
% Forest	36%	36%		% Forest	36%		
Managed Turf Cover (acres)	0.00	0.00		Managed Turf Cover (acres)	0.00		
Weighted Rv(turf)	0.00	0.00		Weighted Rv (turf)	0.00		
% Managed Turf	0%	0%		% Managed Turf	0%		
Impervious Cover (acres)	0.07	0.07		Impervious Cover (acres)	0.07	New Impervious Cover (acres)	0.00
Rv(impervious)	0.95	0.95		Rv(impervious)	0.95	Rv(impervious)	--
% Impervious	64%	64%		% Impervious	64%		
Total Site Area (acres)	0.11	0.11		Final Site Area (acres)	0.11	Total ReDev. Site Area (acres)	0.11
Site Rv	0.62	0.62		Final Post Dev Site Rv	0.62	ReDev Site Rv	0.62
Treatment Volume and Nutrient Load				Treatment Volume and Nutrient Load			
Pre-Development Treatment Volume (acre-ft)	0.0057	0.0057		Final Post-Development Treatment Volume (acre-ft)	0.0057	Post-Development Treatment Volume (acre-ft)	--
Pre-Development Treatment Volume (cubic feet)	249	249		Final Post-Development Treatment Volume (cubic feet)	249	Post-Development Treatment Volume (cubic feet)	--
Pre-Development TP Load (lb/yr)	0.16	0.16		Final Post-Development TP Load (lb/yr)	0.16	Post-Development TP Load (lb/yr)	--
Pre-Development TP Load per acre (lb/acre/yr)	1.42	1.42		Final Post-Development TP Load per acre (lb/acre/yr)	1.42	Post-Development TP Load per acre (lb/acre/yr)	1.42
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		0.05		Max. Reduction Required (Below Pre-Development Load)	20%		
¹ Adjusted Land Cover Summary: Pre-Development land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.				TP Load Reduction Required for Redeveloped Area (lb/yr)			
Adjusted total acreage is consistent with Post-Development acreage (minus: acreage of new impervious cover).				0.03			
Column 1 shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).				TP Load Reduction Required for New Impervious Area (lb/yr)			
				0			
Post-Development Requirement for Site Area							
TP Load Reduction Required (lb/yr)				0.03			
Linear Project TP Load Reduction Required (lb/yr): 0.03							
Nitrogen Loads (Informational Purposes Only)							
Pre-Development TN Load (lb/yr)				1.12			
Final Post-Development TN Load (Post-Development & New Impervious) (lb/yr)				1.12			

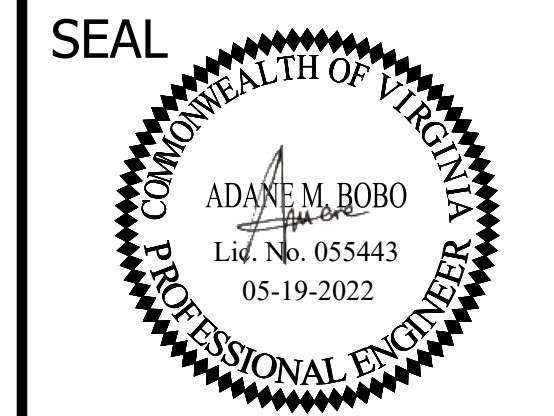
STORMWATER NARRATIVE

The Runoff Reduction Spreadsheet information on this plan is for data tracking purposes to document the area of land disturbance and to characterize pre-and post development land use conditions.

In accordance with Arlington County's Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan, approved by the Virginia Department of Environmental Quality (DEQ) on September 1, 2015, linear development projects conducted by the County are administered and tracked as follows consistent with 9vac25-870-69.A.4, 9VAC25-870-76, and 9VAC25-870-92:

- Pollutant load changes will be computed as described in Section 3.A of the Action Plan.
- Retrofit opportunities will be evaluated for each project, using the screening and selection criteria applied and described in the adopted Stormwater Master Plan.
- Retrofit projects that meet the screening criteria and are determined by Arlington to be feasible and cost effective will be implemented with specific linear development projects. Pollutant load reductions from retrofit projects will be computed as described in Section 5 of the Action Plan.
- In cases where retrofit projects are not feasible and cost-effective for a particular linear project, any POC load increases that might occur for that project will be addresses by larger overall POC load reductions in place or added through TMDL action plan implementation.

In the above manner Arlington, as the MS4 operator and construction site operator for its linear development projects, implements linear projects and retrofit projects in a manner that achieves the most TMDL POC reduction for the least cost, while fully accounting for load changes occur with linear development project activity consistent with the DEW Chesapeake Bay TMDL Special Condition Guidance.



APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>[Signature]</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>[Signature]</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
 BR02
 SHIRLINGTON ROAD
 VRRM SPREADSHEET

DESIGNED:	BD
DRAWN:	BD
CHECKED:	BG
PLOTTED: JULY 13 2022	
SCALE:	
GRAPHIC SCALE	

NOT FOR CONSTRUCTION
 THIS SHEET FOR CALCULATION PURPOSES ONLY

Appendix C. Water Quality Impact Assessment Data Sheet

Project Address: S Arlington Mill Drive intersecting Shirlington Road Date: January 27, 2022
Applicant Name/Affiliation: DES/OD/WSS
Applicant Contact Information (phone and email): Zoran Dragacevac, P.E.: zdragacevac@arlingtonva.us
Owner/Client Name: DES/OD/WSS
Owner/Client Contact Information (phone and email): Zoran Dragacevac, P.E.: 703-228-6509

Section 1: Type of activity proposed

Activity type (check all that apply):
New construction (residential, commercial, public, etc.)
Alteration of non-residential structure
Residential addition
Detached residential structure
Deck, patio, or retaining wall
Landscaping (includes tree removal)
Utility work
Fence
Other (please describe): Public Works Pedestrian Bridge Project PN: BR02

Section 2: Key details of the proposed activity

Table with 2 columns: Complete all that apply, Explanation. Rows include: Total area of disturbance on parcel (sf) 4,567 SF; Area of disturbance within RPA (sf) 4,567 SF; Area of disturbance on slopes greater than or equal to 15 percent located adjacent to landward RPA boundary (sf) 0 SF; RPA encroachment (ft) table; Total development footprint in RPA (sf) 4,567 SF; Impervious footprint in RPA (sf) 2,852 SF.

STAFF USE ONLY

Building/demolition/LDA/Fence permit number(s):
Major WQIA required? Yes No
Date WQIA/Exception request information complete:
Date Chesapeake Bay Preservation Ordinance and E/S ordinance (if applicable) approvals issued in Permits Plus:

Section 3: Plan and Narrative

Provide a plan showing the location of the proposed activity, along with the RPA boundary. Briefly describe the proposed project, including any potential water quality impacts and mitigation measures proposed.
The narrative must address three impact categories:
1. Tree/vegetation impacts
2. Stormwater and runoff
3. Erosion and sediment control.

PROJECT DESCRIPTION

The Shirlington Road Pedestrian Bridge Project proposes to construct a pedestrian bridge over Four Mile Run adjacent to the existing bridge on Shirlington Road along with a sidewalk tie-in from the existing sidewalk from the Jeanie Dean Project and removal and installation of a new curb and gutter along South Arlington Mill Drive.

APPLICABILITY OF SWM CRITERIA

Per the Virginia Stormwater Management Program (VSMP) criteria set forth in 9VAC25-870-66, the developmental regulations and post-construction requirements of Technical Criteria Part IIB are applicable to any re-development or new-development projects with Regulated Land Disturbance Area of one acre or greater, or 2,500 square feet or greater in designated Chesapeake Bay Preservation Areas (CBPA), including Resource Protection Areas (RPA). The RPA Map included in the Appendix B of this document shows that the project is within the limits of the RPA for the Four Mile Run base channel. Therefore, the 2,500 square foot limit of land disturbance area applies to Stormwater Management (SWM) and Erosion and Sediment Control (ESC) requirements.

The proposed pedestrian bridge will have newly constructed components for the superstructure and the substructure. The superstructure will be a prefabricated steel truss bridge with a wooden deck using southern yellow pine with a span of 142' - 4" from the center of bearings. The substructure will have the concrete abutments supported by driven H-piles. All equipment and work activities will be within the designated limits of work and the stream will be protected with erosion and sediment controls. No in-stream work will be permitted. All equipment and materials will be moved to the top of the stream bank during anticipated storm events.

The work area near the stream is provided to give the Contractor enough space for the large equipment that will be needed to set the new bridge in place. The substructure will be installed in segments. If the Contractor determines that he needs to set up a crane in this area, it will only be there long enough to set the new bridge in place. Once the equipment is no longer needed, it will be removed and the area will be restored to its original condition. At no point will the Contractor be allowed to set equipment or construct temporary supports outside of the designated LOW.

Tree removal and protection details are included in the construction plans. Trees that are in direct conflict with the proposed bridge abutment and riprap slope protection will be removed. All other trees in the work area will be protected with chain link tree protection fence.

The total regulated land disturbance for the proposed improvement is 4,567 SF, which is greater than the 2,500 SF limit. Therefore, to comply with the VSMP requirements, the stormwater management plan is required to be developed for the project. Based on the Part IIB Technical Criteria, the Total Phosphorus generated by the proposed improvements and that needs to be treated is calculated using the VRRM spreadsheet. The total phosphorus load reduction required for the project is 0.03 lb/yr. The water quality requirements of the VSMP will be achieved through the purchase of nutrient credits. The whole disturbance is located within the Arlington County Right of Way; therefore, the County will use its

own nutrient credits available in its database. The stormwater from the disturbed area is discharged into the Four Miles Run. One percent rule is used to meet the water quantity requirements of the VSMP. The regulated land disturbance for the project is 4,567 SF (0.105 ac), which is less than 1% of the total drainage area that drains into the stream immediately upstream of the bridge (8,064 ac). The outfall points are also located within the FEMA regulated floodplain; therefore, the water quantity requirement of the VSMP for the project is met at the project site using the one percent rule.

WATER QUALITY DISCUSSION

The proposed improvement will generate the Total Phosphorus, which will need to be treated using the VRRM spreadsheet to calculate the Total Phosphorus load reduction. As discussed in the previous section, the water quality requirements will be met through the purchase of nutrient credits where Arlington County will use its own nutrient credits available in its database.

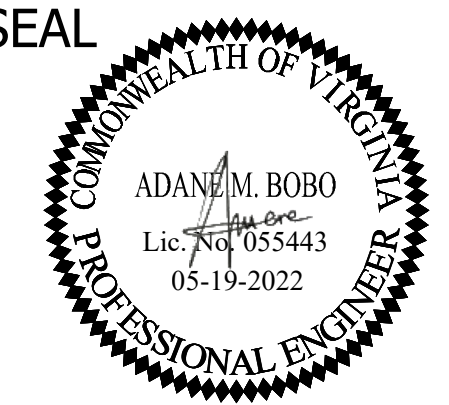
EROSION AND SEDIMENT CONTROL

E&C is limited to placement of sod.

Additional Water Quality Impact Assessment Information

The information supplied on this form satisfies the minimum requirements for a Minor Water Quality Impact Assessment. For projects that disturb over 2500 square feet, elements of a Major Water Quality Impact Assessment may also be required, depending on the nature and extent of the proposed RPA encroachment, as outlined in Section 61-12 of the ordinance.

ARLINGTON VIRGINIA logo and contact information: DEPARTMENT OF ENVIRONMENTAL SERVICES, FACILITIES & ENGINEERING DIVISION, ENGINEERING BUREAU, 2100 CLARENDON BOULEVARD, SUITE 813, ARLINGTON, VA 22201. PHONE: 703.228.3629, FAX: 703.228.3606. COPYRIGHT © 2022 ARLINGTON COUNTY VIRGINIA - ALL RIGHTS RESERVED.

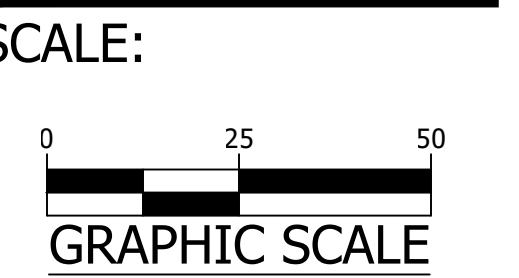


APPROVALS table with columns for Name, Title, and Date. Signatures and dates for Design Team Engineer Supervisor, Construction Management Supervisor, Water/Sewer/Streets Bureau Chief, Transportation Director, and Project Manager.

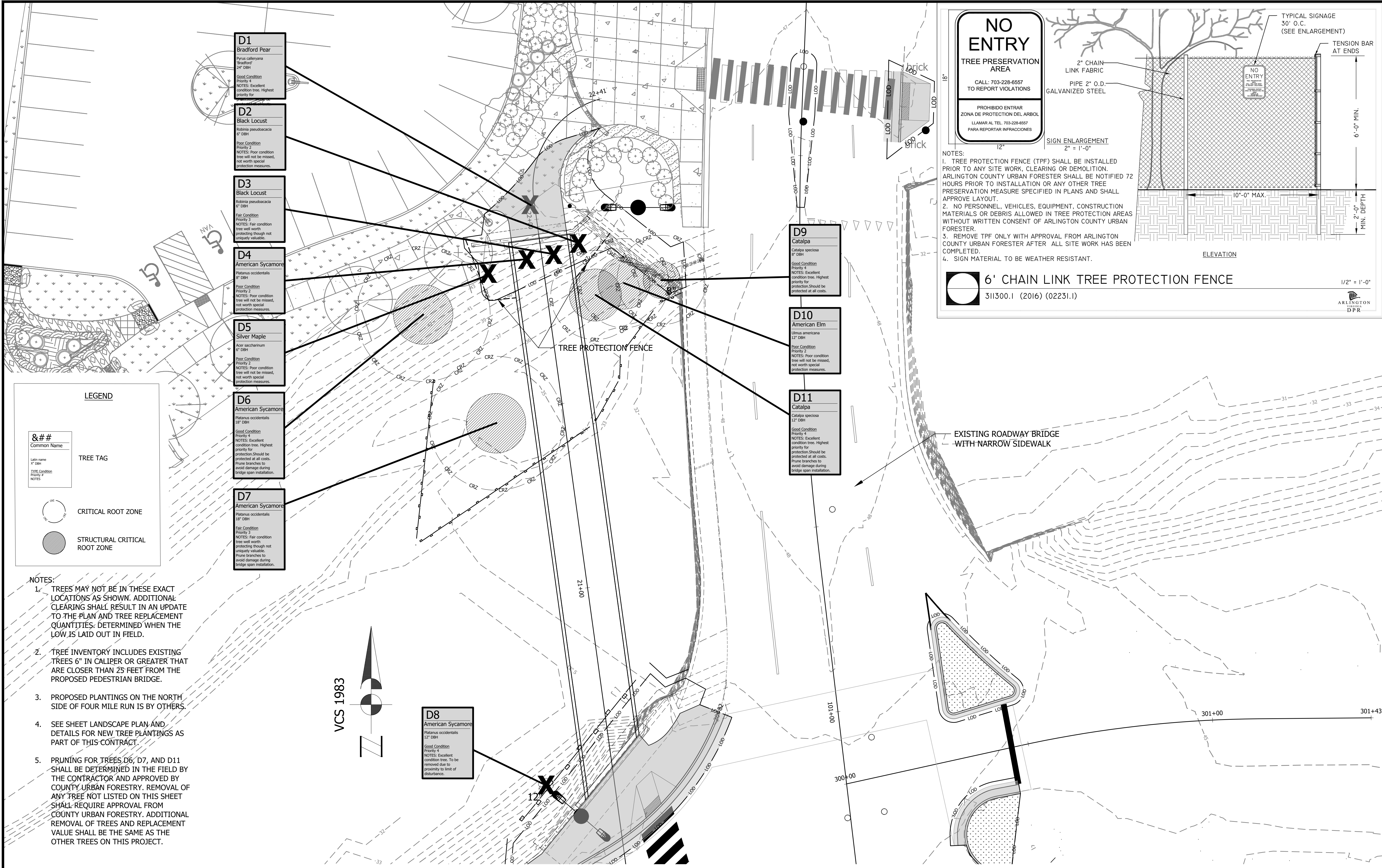
REVISIONS table with columns for Revision Number, Description, and Date.

SHIRLINGTON ROAD PEDESTRIAN BRIDGE BR02 SHIRLINGTON ROAD WATER QUALITY IMPACT ASSESSMENT DATA SHEET

DESIGNED: BD
DRAWN: BD
CHECKED: BG
PLOTTED: AUGUST 30 2022



NOT FOR CONSTRUCTION
THIS SHEET FOR CALCULATION PURPOSES ONLY



NO ENTRY
TREE PRESERVATION AREA

CALL: 703-228-6557
TO REPORT VIOLATIONS

PROHIBIDO ENTRAR
ZONA DE PROTECCION DEL ARBOL
LLAMAR AL TEL. 703-228-6557
PARA REPORTAR INFRACCIONES

SIGN ENLARGEMENT
2" = 1'-0"

ELEVATION

1/2" = 1'-0"

6' CHAIN LINK TREE PROTECTION FENCE
311300.1 (2016) (02231.1)

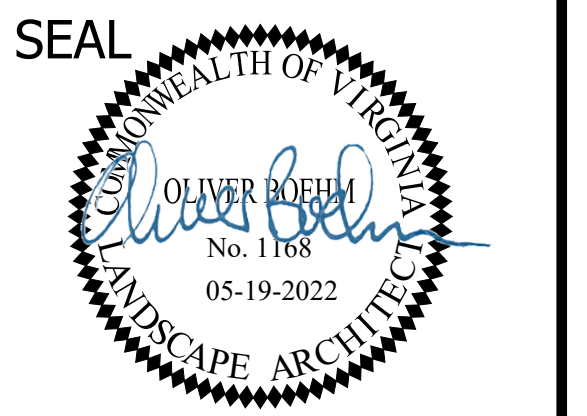
ARLINGTON DPR

Approved: 10/3/2022
Subject to field inspection
LD 22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	9/28/2022
CONSTRUCTION MANAGEMENT SUPERVISOR	10/13/22
WATER/SEWER, STREETS BUREAU CHIEF	10/5/22
TRANSPORTATION DIRECTOR	10/5/22
PROJECT MANAGER	9/27/2022

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

TREE INVENTORY

DESIGNED/DB
DRAWN: DB
CHECKED: OB

PLOTTED: AUGUST 31 2022

SCALE:

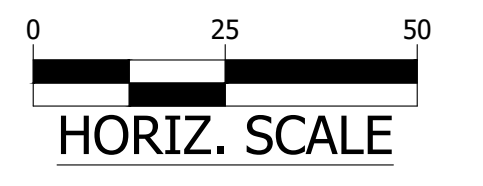
C091.1

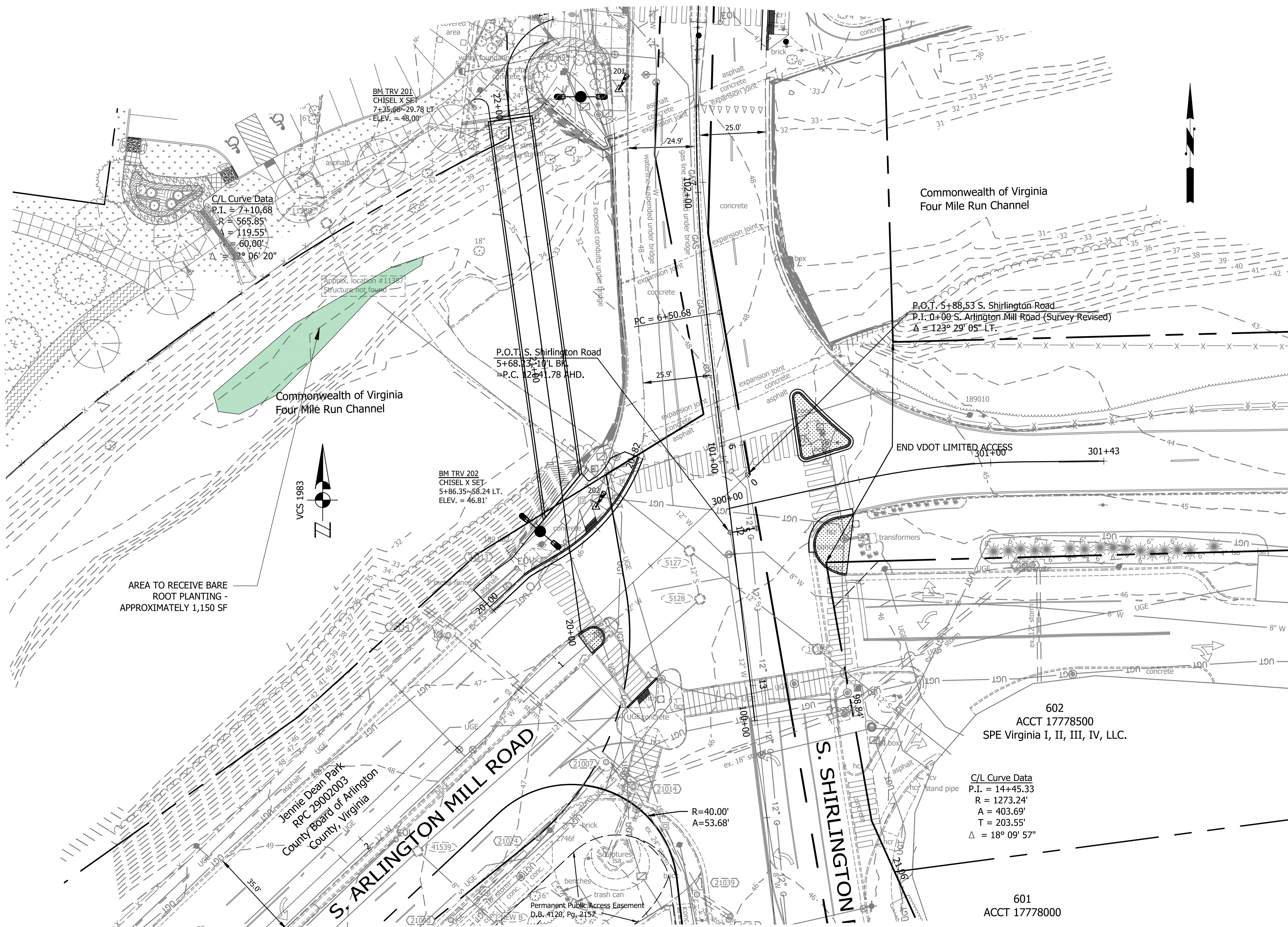
- NOTES:**
- TREES MAY NOT BE IN THESE EXACT LOCATIONS AS SHOWN. ADDITIONAL CLEARING SHALL RESULT IN AN UPDATE TO THE PLAN AND TREE REPLACEMENT QUANTITIES. DETERMINED WHEN THE LOW IS LAID OUT IN FIELD.
 - TREE INVENTORY INCLUDES EXISTING TREES 6" IN CALIPER OR GREATER THAT ARE CLOSER THAN 25 FEET FROM THE PROPOSED PEDESTRIAN BRIDGE.
 - PROPOSED PLANTINGS ON THE NORTH SIDE OF FOUR MILE RUN IS BY OTHERS.
 - SEE SHEET LANDSCAPE PLAN AND DETAILS FOR NEW TREE PLANTINGS AS PART OF THIS CONTRACT.
 - PRUNING FOR TREES D6, D7, AND D11 SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY COUNTY URBAN FORESTRY. REMOVAL OF ANY TREE NOT LISTED ON THIS SHEET SHALL REQUIRE APPROVAL FROM COUNTY URBAN FORESTRY. ADDITIONAL REMOVAL OF TREES AND REPLACEMENT VALUE SHALL BE THE SAME AS THE OTHER TREES ON THIS PROJECT.

Priority - this is meant to capture a tree's "priority for preservation" relating to tree preservation planning on development projects. The tree is rated using it's condition as a guide, but assessor also takes into account other factors, such as: species desirability, species longevity, uniqueness, aesthetics both of the tree itself and it's relation to the site and other factors as seen fit. This is meant to be a qualitative rating based solely on the site at the time of the inventory (and does not account for any proposed plans).

- Priority 4 = highest priority for protection (i.e. particularly good condition, unique tree and/or should be protected at all reasonable cost).
- Priority 3 = high fair condition tree well worth protecting though not uniquely valuable.
- Priority 2 = poor condition average tree that will not be missed if it were gone, not worth any special protection measures.
- Priority 1 = trees that should be removed under most any circumstances (invasive/undesirable species, poor or dead trees, particularly high risk situations, etc).

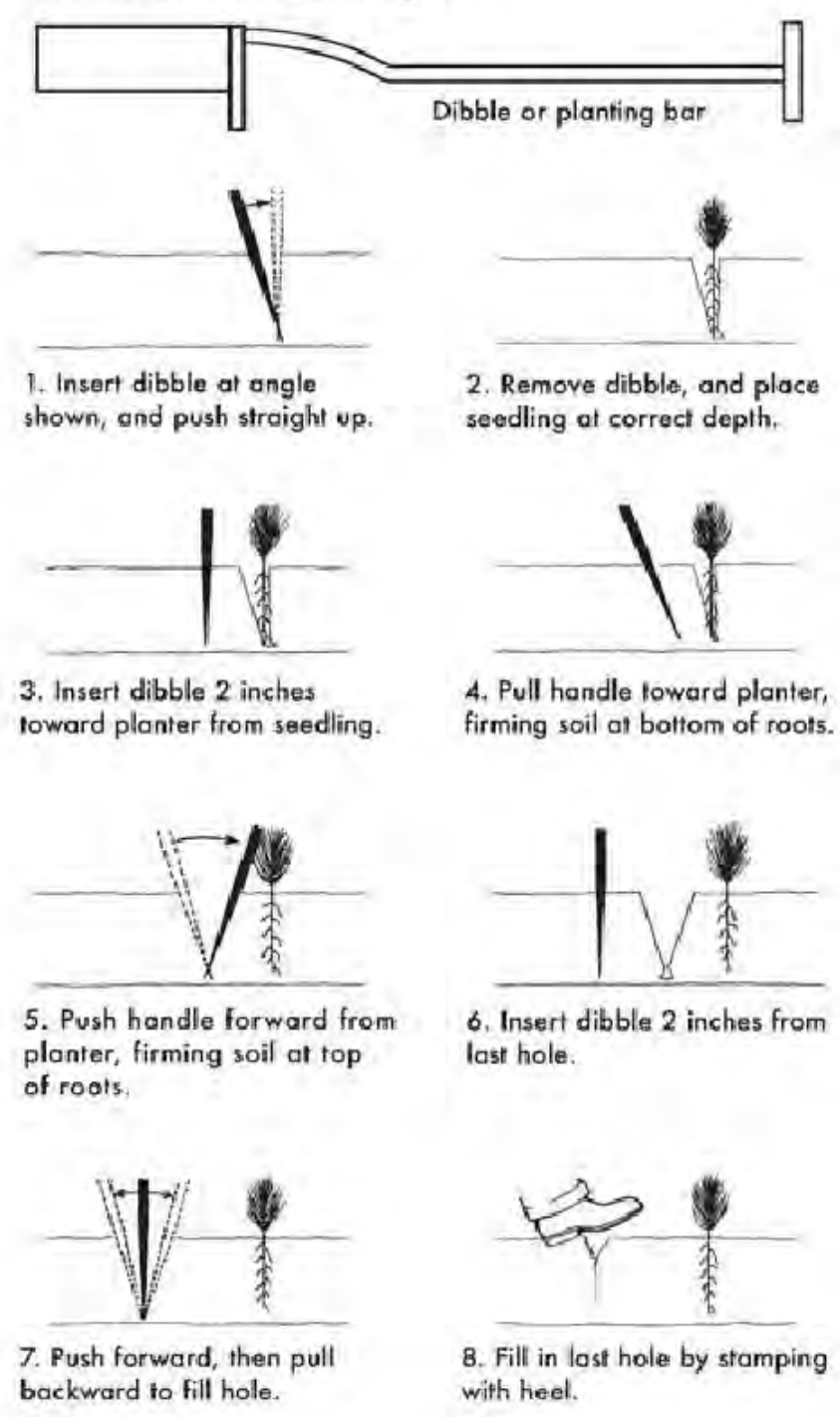
TREE PRESERVATION AND REMOVAL TABLE													
	Preserve or Remove	Tree #	DBH (Inches)	CRZ (Feet)	S-CRZ (Feet)	Condition Rating %	Species	Common name	Species Rating	Replacement Value	Replacements	Priority (1-4)	Comments
LANDSCAPE PLAN - 1	Remove	D01	20	20	5	90%	<i>Pyrus calleryana</i> 'Bradford'	Bradford Pear	80	14.4	3	4	
	Remove	D02	8	12	5	30%	<i>Robinia pseudoacacia</i>	Black Locust	50	1.2	1	2	
	Remove	D03	8	12	5	60%	<i>Robinia pseudoacacia</i>	Black Locust	50	2.4	1	3	
	Remove	D04	12	12	7	30%	<i>Platanus occidentalis</i>	American Sycamore	70	2.52	1	2	
	Remove	D05	8	12	5	30%	<i>Acer saccharinum</i>	Silver Maple	60	1.44	1	2	
	Preserve	D06	18	18	5	90%	<i>Platanus occidentalis</i>	American Sycamore	70			4	See Note Above
	Preserve	D07	18	18	5	60%	<i>Platanus occidentalis</i>	American Sycamore	70			3	See Note Above
	Remove	D08	12	12	9	90%	<i>Platanus occidentalis</i>	American Sycamore	70	7.56	2	4	
	Preserve	D09	8	12	5	90%	<i>Catalpa speciosa</i>	Catalpa	60			4	
	Preserve	D10	12	12	0	30%	<i>Ulmus americana</i>	American Elm	70			2	
	Preserve	D11	12	12	0	90%	<i>Catalpa speciosa</i>	Catalpa	60			4	See Note Above
										TOTAL	9		





CONTRACTOR SHALL FOLLOW THE HAND PLANTING TECHNIQUE SHOWN BELOW FOR THE INSTALLATION OF BARE ROOT PLANTING:

With Dibble or Planting Bar



THE CONTRACTOR SHALL PLANT SEEDLINGS IN MIXED SPECIES CLUSTERS OF 6 - 10. TREE REPLACEMENT VALUE FOR THIS PROJECT SHALL BE 1:10. THE TABLE BELOW SHOWS THE TREE PLANTINGS FOR THIS PROJECT.

SPECIES	COMMON NAME	NUMBER OF TREES
Salix nigra	Black Willow	14
Acer negundo	Boxelder Maple	11
Platanus occidentalis	American Sycamore	20
Celtis occidentalis	Hackberry	20
Acer saccharinum	Silver Maple	9
Betula nigra	River Birch	9
Juglans nigra	Eastern Black Walnut	7
	Total	90

NOTES:

- TREE PLANTINGS SHALL BE INSTALLED RANDOMLY THROUGHOUT THE PLANTING AREA SHOWN IN PLAN.
- TREE PLANTINGS SHALL BE 12 INCHES TO 24 INCHES IN SIZE AND SPACED 4' TO 5' O.C.
- CONTRACTOR SHALL PROVIDE A PLANTING PLAN DIAGRAM PRIOR TO INSTALLATION TO THE OWNER FOR APPROVAL.
- CONTRACTOR SHALL PLANT ROOT SYSTEM DEEP ENOUGH FOR THE PLANT TO BE STRAIGHT AND ROOTS ARE NOT CURLED IN THE PLANTING HOLE. LIFT TREE UP IN THE HOLE SO THE ROOT COLLAR IS SLIGHTLY BELOW THE SOIL LEVEL.
- DO NOT BEND THE ROOTS WHILE PLANTING. CONTRACTOR SHALL ENSURE HOLE IS DEEP AND WIDE ENOUGH FOR THE ROOTS TO BE PLACED STRAIGHT DOWN. TREE SHALL BE PACKED FIRMLY IN THE SOIL. TEST PLANTING WITH A FIRM PULL. PULL SHALL NOT MOVE THE PLANT.
- PLANTING SHALL BE DONE WHEN GROUND CONDITIONS HAVE GOOD SOIL MOISTURE. AVOID PLANTING WHEN GROUND IS FROZEN. PLANTING PERIOD SHALL BE BETWEEN LATE DECEMBER AND EARLY APRIL UNLESS ANOTHER PLANTING PERIOD IS APPROVED BY OWNER.
- CONTRACTOR SHALL PROVIDE A 1 YEAR WARRANTY FOR BARE ROOT PLANTINGS. WARRANTY PERIOD SHALL START ON THE DAY OF THE PLANTING. PROVIDED PLANTING IS ACCEPTED BY THE OWNER. AFTER 1 YEAR PERIOD, THE PLANTING WILL BE EVALUATED FOR FINAL ACCEPTANCE. ACCEPTABLE PLANTINGS SHALL BE DETERMINED BY 75% OF THE TREE SHOWING HEALTHY AND VIGOROUS GROWING HABITS.
- CONTRACTOR SHALL REPLACE UNACCEPTABLE TREES WITH IN-KIND REPLACEMENTS.
- LOCATION OF REFORESTATION TREES IS ILLUSTRATIVE ONLY. FINAL LOCATION TO BE DETERMINED IN FIELD AND APPROVED BY URBAN FORESTRY. THE CONTRACTOR SHOULD NOTE THAT TREES MAY NOT BE EXACTLY IN THESE LOCATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ADDITIONAL TREE REPLACEMENTS IF CLEARING AND DISTURBANCE OCCURS OUTSIDE THE LIMIT OF WORK AS SHOWN IN THE PLANS.
- CONTRACTOR SHALL NOT PERFORM ANY WORK INCLUDING SOIL PREPARATION OR SOIL INSTALLATION WITHIN CRITICAL ROOT ZONE OF TREES TO BE PRESERVED, EXCEPT WHERE APPROVED OR DIRECTED BY URBAN FORESTRY.



APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>Dennis M. Leach</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>Rene Harris</i>	9/27/2022
PROJECT MANAGER	

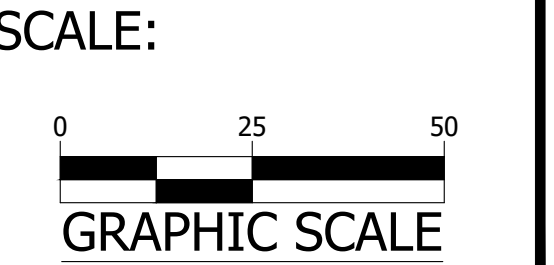
REVISIONS DATE

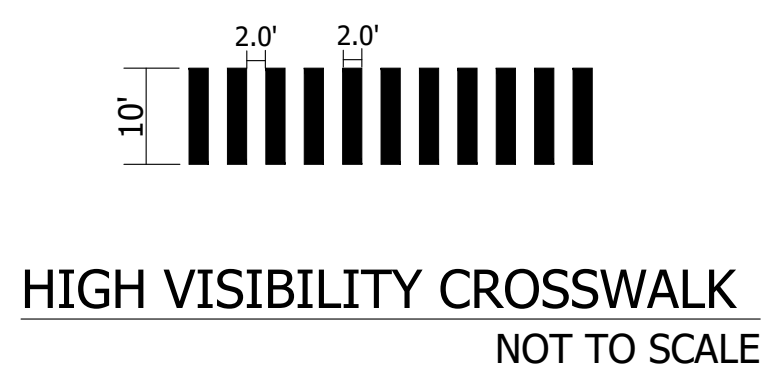
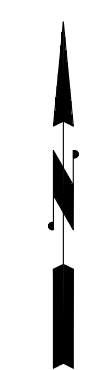
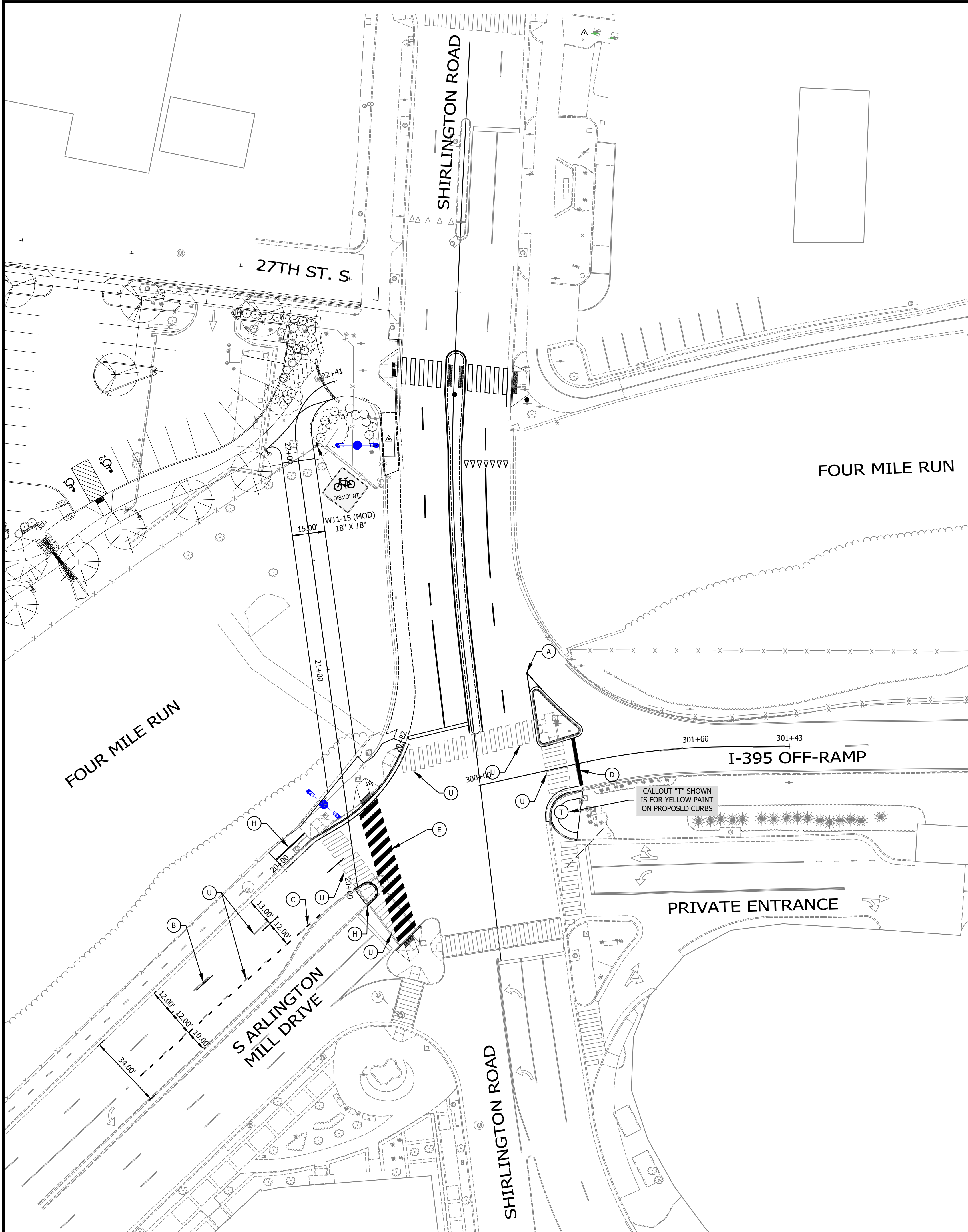
REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD
LANDSCAPE PLAN AND DETAILS

DESIGNED: DB
DRAWN: DB
CHECKED: OB

PLOTTED: JULY 13 2022



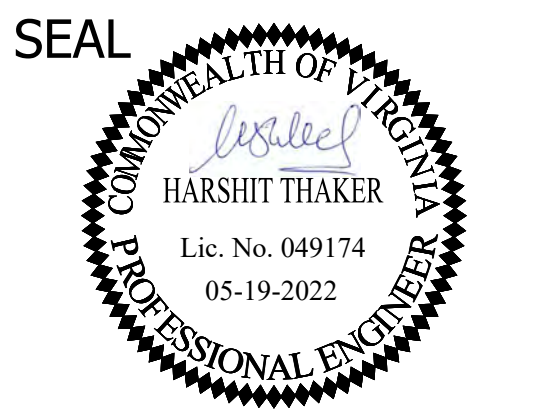
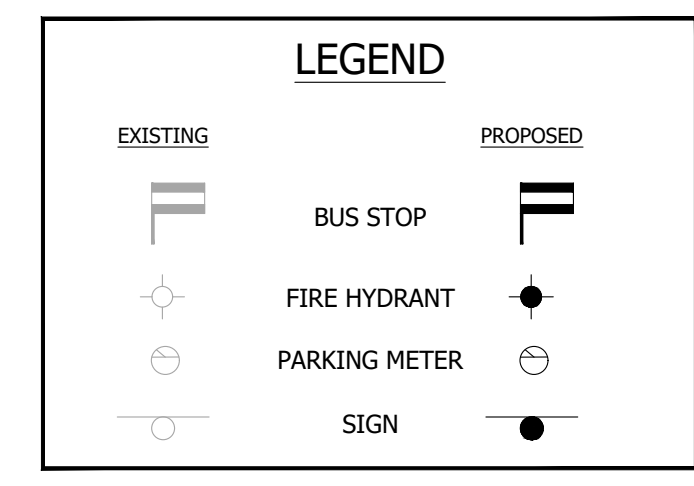
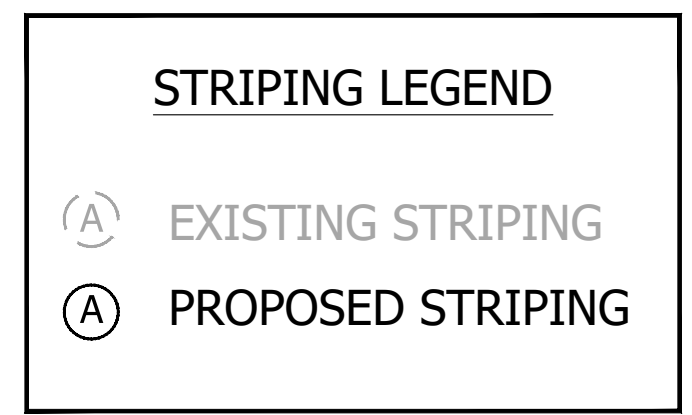


STANDARD PAVEMENT MARKING LEGEND

(A)	TYPE B CLASS 1	WHITE 4" WIDTH	PARKING LANES, EDGE LINES, LANE LINES
(B)	TYPE B CLASS 1	WHITE 4" WIDTH, 10' LONG, 30' SPACING	DASHED LANE LINES
(C)	TYPE B CLASS 1	WHITE 4" WIDTH, 2' LONG 10' SPACING	LANE TRANSITIONS, TURN LANE SKIPS
(D)	TYPE B CLASS 1	WHITE 18" WIDTH	STOP BARS
(E)	TYPE B CLASS 1	WHITE 24" WIDTH	CONTINENTAL CROSS WALKS
(F)	TYPE B CLASS 1	WHITE 6" WIDTH	TURN LANES, TRANSVERSE CROSS WALKS, BIKE LANES
(G)	TYPE B CLASS 1	YELLOW 4" WIDTH, 10' LONG, 30' SPACING	DIVIDED TRAFFIC, TWO WAY TURN LANES
(H)	TYPE B CLASS 1	YELLOW 4" WIDTH	EDGE LINES
(I)	TYPE B CLASS 1	YELLOW 4" WIDTH, DOUBLE LINE, 4" SPACING	CENTERLINES
(J)	TYPE B CLASS 1	WHITE 6" WIDTH, 10' SPACING @45 DEGREE	HATCH LINES, SAFETY ZONES
(K)	TYPE B CLASS 1	WHITE SINGLE ARROW	TURN LANES
(L)	TYPE B CLASS 1	WHITE COMBINATION ARROW	TURN LANES
(M)	TYPE B CLASS 1	WHITE 8" LETTERS	PAVEMENT LETTERS (STOP, YIELD, BUS, ONLY, etc.)
(N)	TYPE B CLASS 1	WHITE 6" WIDTH, 2' LONG, 10' SPACING	LANE TRANSITIONS, TURN LANE SKIPS
(O)	TYPE B CLASS 1	WHITE 12" WIDTH, 20' SPACING @45 DEGREE	GORE MARKINGS
(P)	TYPE B CLASS 1	YELLOW 8" WIDTH @45 DEGREE	GORE MARKINGS
(Q)	TYPE B CLASS 1	WHITE 6" WIDTH, 2' LONG, 4" SPACING	LANE TRANSITIONS
(R)	TYPE B CLASS 1	WHITE 4" WIDTH, DOUBLE LINE, 4" SPACING	CURB EXTENSIONS
(S)	TYPE B CLASS 1	WHITE 24" WIDTH	VDOT - STOP BARS
(T)	TYPE A	YELLOW 4" WIDTH	EDGE LINES
(U)	ERADICATION OF EXISTING PAVEMENT MARKINGS THROUGH MILLING AND OVERLAY OPERATION		

SIGN AND PAVEMENT MARKING NOTES:

- STREET WIDTH MEASUREMENTS ARE FROM FACE OF CURB TO FACE OF CURB. LANES ARE MEASURED FROM CENTER OF MARKING TO CENTER OF MARKING.
- CONTACT DES-TRANSPORTATION ENGINEERING & OPERATIONS CONSTRUCTION MANAGEMENT SPECIALIST OR HIS DESIGNEE AT 703-228-6598 OR 571-437-1077 TO APPROVE MARKING LAYOUT 48 HOURS PRIOR TO INSTALLATION OF MARKINGS.
- PAVEMENT MARKINGS TO BE IN ACCORDANCE WITH THE FOLLOWING AND ANY REVISIONS HERE TO:
 - THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
 - ARLINGTON COUNTY MARKING STANDARDS.
- ALL MARKINGS SHALL BE THERMOPLASTIC PER ARLINGTON COUNTY MARKING STANDARDS UNLESS OTHERWISE NOTED.
- STOP BARS SHALL BE A MINIMUM OF 4' IN ADVANCE OF A MARKED CROSSWALK. IF THERE IS NO MARKED CROSSWALK, STOP BAR SHALL BE NO MORE THAN 30' FROM THE NEAREST EDGE OF THE INTERSECTED TRAVELED WAY.
- CROSSWALKS SHALL BE 10' WIDE UNLESS OTHERWISE NOTED.
- LEFT TURN ARROWS SHALL BE LOCATED 25' BACK FROM STOP BAR. FOR ADDITIONAL ARROWS FOLLOW COUNTY MARKING STANDARDS.
- ON-STREET PARKING LANE IS 7' WIDE (UNLESS OTHERWISE NOTED) AND MARKED WITH 4" WIDE WHITE LINES. BEGINNING AND END OF PARKING SHALL BE MARKED WITH AN END LINE PERPENDICULAR TO CURB EXCEPT AT NUBS OR WHERE OTHERWISE INDICATED.
- SHARED LANE MARKINGS SHALL BE PLACED IN CENTER OF LANE, 250' APART UNLESS OTHERWISE SPECIFIED.
- BIKE LANE SYMBOLS TO BE PLACED 330' APART UNLESS OTHERWISE SPECIFIED.
- EDGE LINES ARE ONLY REQUIRED WHERE SHOWN ON THE PLANS.
- FOR DETAILS SEE ARLINGTON COUNTY PAVEMENT MARKING SPECIFICATION, DETAILS MK-1 TO MK-12
- THE ERADICATION OF PAVEMENT MARKING SHALL BE PERFORMED BY GRINDING, BLASTING OR A COMBINATION THEREOF. GRINDING SHALL BE LIMITED TO REMOVAL OF MATERIAL ABOVE THE PAVEMENT SURFACE EXCEPT WHEN REMOVING THERMOPLASTIC AND PREFORMED TAPE MARKINGS, WHICH MAY BE REMOVED BY GRINDING ALONE. BLASTING SHALL BE USED ON THE BRIDGE DECK TO REMOVE ALL OTHER TYPES OF MARKINGS.

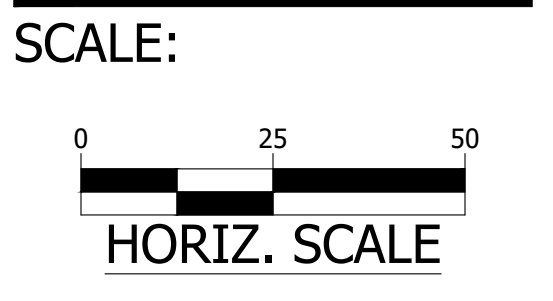


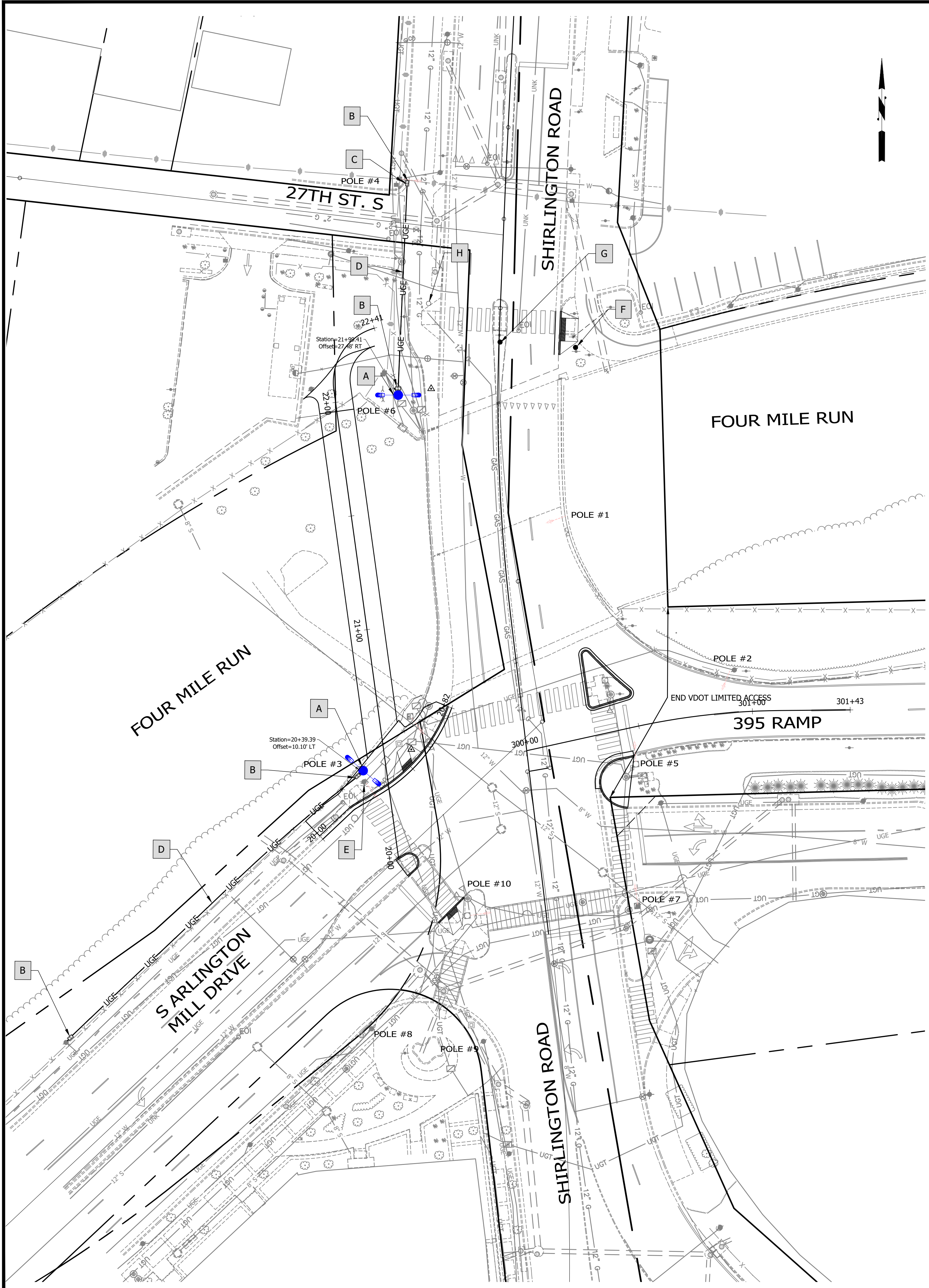
APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>[Signature]</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>[Signature]</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
 BR02
 SHIRLINGTON ROAD
SIGN AND MARKING PLAN

DESIGNED: JS
 DRAWN: JS/AG
 CHECKED: HT
 PLOTTED: JULY 13 2022





- STREETLIGHT KEY NOTES:**
- A PROPOSED LIGHT POLE WITH UPSWEEP LUMINAIRE ARMS, DOUBLE COBRA HEAD LED LUMINAIRES (BY OTHERS).
 - B CONTRACTOR SHALL FURNISH AND INSTALL DOMINION ENERGY'S SPLICE BOX (CU# SBOX24 STOCK# 42086295) AS SHOWN ON PLAN.
 - C CONTRACTOR SHALL FURNISH AND INSTALL 2" SCHEDULE 80 HDPE/SDR11 (FOR DIRECTIONAL BORING APPLICATIONS) ELECTRICAL CONDUIT PER ARL STD 14030-01.
 - D CONTRACTOR SHALL FURNISH AND INSTALL 2" SCHEDULE 40 PVC (FOR OPEN TRENCH APPLICATION) ELECTRICAL CONDUIT PER ARL STD 14030-01.
 - E REMOVE EXISTING HPS COBRA HEAD LUMINAIRE, LUMINAIRE ARM, TRANSFORMER BASE, STREETLIGHT POLE AND FOUNDATION (BY OTHERS).
 - F RELOCATE EXISTING RECTANGULAR RAPID-FLASHING BEACON (RRFB) POLE WITH TRANSFORMER BASE AS SHOWN ON PLAN.
 - G PROPOSED BACK-TO-BACK RECTANGULAR RAPID-FLASHING BEACON (RRFB) WITH POLE AND TRANSFORMER BASE.
 - H EXISTING RECTANGULAR RAPID-FLASHING BEACON (RRFB) POLE WITH TRANSFORMER BASE TO REMAIN.

- ELECTRICAL GENERAL NOTES:**
1. CONTRACTOR TO FIELD VERIFY (TEST PIT) EXACT LOCATION AND DEPTH OF PROPOSED UTILITY.
 2. CONDUITS RUNS ARE APPROXIMATE ONLY, FIELD LOCATE ALIGNMENT. BOX LOCATIONS ARE APPROXIMATE ONLY, FIELD LOCATE PLACEMENT.
 3. SIDEWALK PAVEMENT AND LANDSCAPING WITHIN PROPOSED AND REMOVED TRAFFIC SIGNAL STRUCTURES AND ELECTRICAL/COMMUNICATION UTILITY CUTS SHALL BE RESTORED TO COMPLY WITH EXISTING CONDITIONS OR PROPOSED PAVEMENT/LANDSCAPING.

POLE SCHEDULE

POLE TYPE	STANDARD # (COUNTY ONLY)	QUANTITY	MATERIAL	HEIGHT	COLOR	FOUNDATION TYPE	STOCK NUMBER (DOMINION ONLY)
ROADWAY		2	FIBERGLASS	30'	GRAY RAL-7038	DIRECT EMBEDDED	50502300

ARM SCHEDULE

ARM TYPE	STANDARD # (COUNTY ONLY)	QUANTITY	MATERIAL	LENGTH	COLOR	STOCK NUMBER (DOMINION ONLY)
UPSWEEP		4	ALUMINUM	6'	NATURAL ALUMINUM	42021269

LUMINAIRE SCHEDULE

LUMINAIRE TYPE	STANDARD # (COUNTY ONLY)	DRAWING SYMBOL	QUANTITY	WATTAGE	CCT	HOUSING COLOR	DISTRIBUTION TYPE	STOCK NUMBER (DOMINION ONLY)
LED COBRA			4	41W **	4000K	GRAY	TYPE III	42315897

** 100W HID EQUIVALENT
NOTE: POLES, ARMS AND LUMINAIRES TO BE PROVIDED AND INSTALLED BY DOMINION ENERGY.

Approved: 10/3/2022
Subject to field inspection
LD#22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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APPROVALS	DATE
	9/28/2022
	10/13/22
	10/5/22
	10/5/22
	9/27/2022

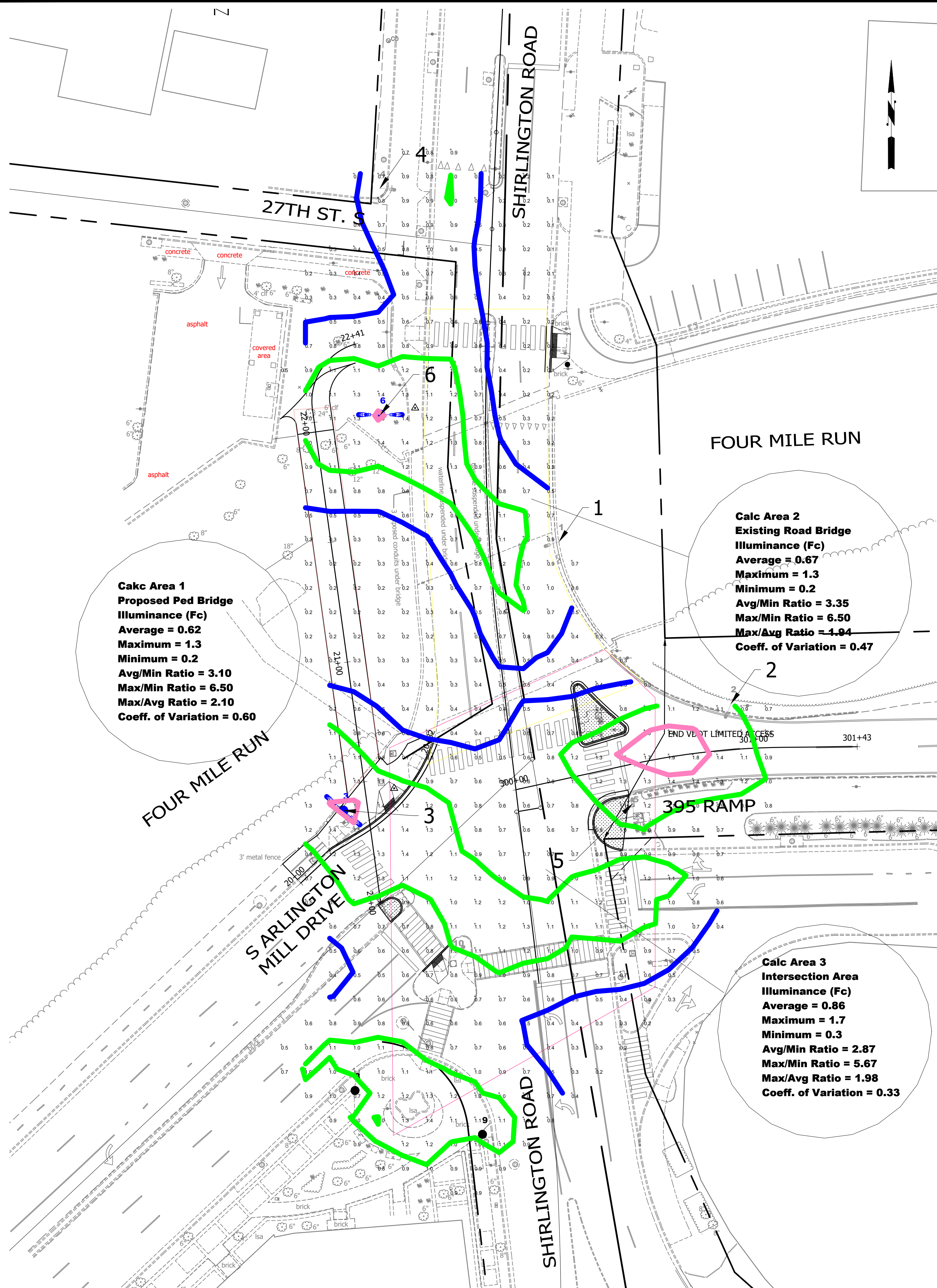
REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD
STREETLIGHT PLAN

DESIGNED: JS
DRAWN: JS
CHECKED: HT
PLOTTED: JULY 13 2022

SCALE:

GRAPHIC SCALE



Calc Area 1
Proposed Ped Bridge
Illuminance (Fc)
Average = 0.62
Maximum = 1.3
Minimum = 0.2
Avg/Min Ratio = 3.10
Max/Min Ratio = 6.50
Max/Avg Ratio = 2.10
Coeff. of Variation = 0.60

Calc Area 2
Existing Road Bridge
Illuminance (Fc)
Average = 0.67
Maximum = 1.3
Minimum = 0.2
Avg/Min Ratio = 3.35
Max/Min Ratio = 6.50
Max/Avg Ratio = 4.94
Coeff. of Variation = 0.47

Calc Area 3
Intersection Area
Illuminance (Fc)
Average = 0.86
Maximum = 1.7
Minimum = 0.3
Avg/Min Ratio = 2.87
Max/Min Ratio = 5.67
Max/Avg Ratio = 1.98
Coeff. of Variation = 0.33

Luminaire Schedule					
Project: Project_1					
Symbol	Qty	Arrangement	LLF	Description	Arr. Watts
	6	SINGLE	0.950	Existing Single Cobra Head	45
	2	BACK-BACK	0.950	Proposed Twin Cobra Head	90
	2	SINGLE	1.000	Existing Single Carlye	68

Calculation Summary								
CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Max/Avg	Description
Illuminance	Fc	0.76	1.9	0.1	7.60	19.00	2.50	
Illuminance	Fc	0.62	1.3	0.2	3.10	6.50	2.10	Proposed Ped Bridge
Illuminance	Fc	0.67	1.3	0.2	3.35	6.50	1.94	Existing Road Bridge
Illuminance	Fc	0.86	1.7	0.3	2.87	5.67	1.98	Intersection Area

Luminaire Location Summary						
LumNo	X	Y	Z	Orient	Tag (Qty)	
1	11885746	6993253	30	199.058	Existing Cobra Head Single (1)	
2	11885817	6993186	30	247.751	Existing Cobra Head Single (1)	
3	11885656.86	6993141.847	30	319.399	Proposed Cobra Head Twin (2)	
4	11885672	6993399	30	353.454	Existing Cobra Head Single (1)	
5	11885776.687	6993140.519	30	94.825	Existing Cobra Head Single (1)	
6	11885672.114	6993305.37	30	0	Proposed Cobra Head Twin (2)	
7	11885778.307	6993084.639	30	97.245	Existing Cobra Head Single (1)	
8	11885661.66	6993026.071	16	132.57	Existing Single Carlye (1)	
9	11885714.303	6993007.968	16	2.725	Existing Single Carlye (1)	
10	11885702.337	6993081.099	30	46.049	Existing Cobra Head Single (1)	

NOTES:
 POWER SOURCE AND VOLTAGE DROP CALCULATION WILL BE PROVIDED AT NEXT MILESTONE.

SEAL

APPROVALS	DATE
	9/28/2022
	10/13/22
	10/5/22
	10/5/22
	9/27/2022

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
 BR02
 SHIRLINGTON ROAD
 STREETLIGHT PHOTOMETRIC DATA

DESIGNED: BD
 DRAWN: BD
 CHECKED: BG
 PLOTTED: JULY 13 2022

SCALE:

TRANSPORTATION MANAGEMENT PLAN (TMP) (TYPE A - CATEGORY I)

Temporary Traffic Control Plan Notes

GENERAL NOTES:

- 1. TMP Type A Project Information: a. Identify the project's TMP Type: This project's TMP plan has been designed in conformance with Type A TMP plan. b. Identify the work zone location, length, and width: The project location and work zone areas have been delineated as shown on the MOT plan sheet C121.1. c. Note the hours Construction Areas will be active: Construction areas shall be considered active when any impact to traffic occurs, (1st cone in Road). Construction Areas hours have the following limitations: A. VDOT R-O-W: LANE CLOSURES (MAJOR ARTERIALS) B. Arlington County R-O-W: LANE CLOSURES (MINOR ARTERIAL) d. The TMP plan during construction shall be in accordance with Sections 512, 701,703, & 704 of the Virginia Department of Transportation Road and Bridge Specifications, dated 2020, the Virginia Work Area Protection Manual (VWAPM) dated 2020, the Manual on Uniform Traffic Control Devices (MUTCD), dated 2009 and the Virginia Supplement in the 2009 MUTCD, dated 2011. e. Note any existing entrances, existing intersection, or existing pedestrian access points that will be affected by the Construction Area or by the traffic control devices.

Table with lane closure schedules for VDOT R-O-W and Arlington County R-O-W. Columns include Day Time, Night Time, and specific days like Mon to Thu, Friday, Saturday, Sunday.

- g. The contractor, at no additional cost to the project and which shall be considered incidental to the cost of the project: Designate a person assigned to the project who will have the primary responsibility, with sufficient authority, for implementing the TMP and other safety and mobility aspects of the permit work. This person shall coordinate with the Arlington County Construction Manager for the duration of construction. Ensure that personnel assigned to the project are trained in traffic control to a level commensurate with their responsibilities in accordance with VDOT's work zone traffic control training guidelines. Inform the Engineer of any work requiring lane shifts, lane closure, and/or phase changes a minimum of two working days prior to implementing this activity. Perform reviews of the Construction Area to ensure compliance with contract documents at regularly scheduled intervals at the direction of the Engineer. Coordinate with Arlington County Police Department and Arlington County Fire/Rescue Department for all lane closures and detours of any nature, at no additional cost to the project. Schedule all phases of construction in such a manner that water, sanitary sewer, cable, fiber cable/optic cable; any overhanging utilities and any underground utilities services will not be interrupted.

During the first day of the new work zone traffic pattern, the project's Manager/Engineer and project's Construction Manager shall inspect the work zone to ensure compliance with the TMP. On the third to fifth day of implementation of the TMP's new work zone pattern, the Construction Manager shall conduct an on-site review of the work zone's performance in coordination with VDOT and recommend to the Contractor any required changes to the TMP to enhance the work zone's safety and mobility. All such changes shall be documented. An on-site review of the project's work zone traffic control by the County's Construction Manager and the Contractor shall be conducted (with coordination from VDOT) within 48 hours of any fatal incident/crash within the work zone.

9. PUBLIC COMMUNICATION PLAN

- The Contractor shall be responsible for: A. Notifying the Project Construction Manager and VDOT Field Engineer two weeks in advance of any scheduled work plan that may cause traffic delays. B. Notifying the Project Construction Manager and VDOT Field Engineer of any unscheduled traffic delays that may occur. C. Installing Portable Changeable Message Sign (PCMS) with project start date information approximately 500' before and after the project site limit three (3) weeks in advance prior to start of any roadwork and lane closure.

10. TRANSPORTATION OPERATIONS

- The contractor shall be responsible for implementing and providing the following: A. Notifying the VDOT Regional Transportation Operations Center (TOC) 48 hours in advance in order to place lane closure information on the 511 system and va-traffic. B. Post a list of local emergency response agencies inside the project's construction office/trailer or made readily available at the work site at all times. C. Immediately report any traffic incidents that may occur in the work zone. D. Notify the project's Construction Manager and corresponding VDOT Field Engineer of any incidents and expected traffic delays. E. Within 24 hours of any incidents within the construction work zone, a review of the traffic controls shall be implemented and necessary adjustments made to reduce the frequency and severity of any future accidents.

CONTACTS NUMBERS:

- Kamal Taktak - Construction Management Supervisor, DES - 703-228-7527
Scott Sedwick - DES Operation Manager, TE&O - 703-228-0650
Ajil Chauhan - Assistant Bureau Chief, Engineering Bureau, DES - 703-228-7542
DES R-O-W Permitting Section - 703-228-4798
Arlington County Transit Bureau - 703-228-3049
Arlington County Water, Sewer and Street Operation - 703-228-6555
Arlington County Police - 703-558-2222
Emergency Call - 911
VDOT Field Engineer - Mark Kaldma
VDOT's NRO (Northern Regional Operations) TOC - 703-877-3449

GENERAL CONSTRUCTION NOTE

- 1. The Contractor is to make any necessary adjustment during both working hours and non-working hours to ensure the protection and safety of the adjacent property owners, pedestrians, bicyclists, vehicular traffic and the general public from any construction related activity, construction equipment and the construction site itself.
2. The Contractor shall provide two weeks advance notification to Arlington County TE&O regarding the traffic signal timing modification at S Arlington Mill Dr and Shirlington Rd prior to removing any pedestrian signal head and push button, and replacing the associated crosswalk pavement markings.
3. All removed traffic signal equipment shall be returned to Arlington County Department of Environmental Services (DES) located at 4300 29th St S., Arlington, VA 22206.

VDOT OPERATIONS REQUIRES NOTIFICATION WHEN TRAFFIC CONTROL IMPACTS THE TRAVEL WAY. PLEASE CONTACT CARLENE MCWHIRT 571-350-2078 FOR ADDITIONAL INFORMATION OF LCAM REQUIREMENTS.

GENERAL MAINTENANCE OF TRAFFIC NOTES:

- 1. TRAFFIC CONTROL DEVICES AND SAFETY MEASURES SHALL COMPLY WITH THE VIRGINIA WORK AREA PROTECTION MANUAL, VDOT'S GUIDELINES FOR TEMPORARY TRAFFIC CONTROL, FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, ARLINGTON COUNTY STANDARDS, THE TRAFFIC CONTROL PLANS INCLUDED IN THE CONSTRUCTION DRAWINGS, AND/OR AS DIRECTED BY THE PROJECT OFFICER.
2. THE CONTRACTOR SHALL SUBMIT A DETAILED SCHEDULE WHICH INDICATES START AND FINISH DATES FOR EACH SEGMENT OF THE WORK. THE SCHEDULE SHALL INDICATE THE DURATION OF ALL LANE OR SHOULDER CLOSURES. THE CONTRACTOR SHALL NOTIFY THE PROJECT OFFICER A MINIMUM OF 3 BUSINESS DAYS IN ADVANCE OF PROCEEDING TO THE NEXT WORK SEGMENT.
3. THE CONTRACTOR SHALL NOTIFY THE PROJECT OFFICER OF PARKING RESTRICTION NEEDS A MINIMUM OF 3 BUSINESS DAYS PRIOR TO COMMENCEMENT OF WORK FOR EACH SEGMENT. COUNTY PROJECT OFFICER SHALL RESTRICT PARKING BY CONTACTING DES - PERMITTING SECTION, 703-228-4798.
4. DURING CONSTRUCTION, THE CONTRACTOR SHALL EITHER MAINTAIN APPROPRIATE SIGHT DISTANCE TO ALL TRAFFIC SIGNS OR PROVIDE FOR TEMPORARY SIGNAGE OR FLAGGERS TO GUIDE TRAFFIC THROUGH WORK ZONES.
5. THE CONTRACTOR SHALL MINIMIZE THE DURATION OF ANY BLOCKAGE TO PRIVATE ENTRANCES AND DRIVEWAYS. THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF DRIVEWAY CLOSURE FOR APPROVAL BY THE PROJECT OFFICER. THE PROJECT OFFICER SHALL BE NOTIFIED A MINIMUM OF 3 BUSINESS DAYS IN ADVANCE OF SUCH ACTIVITIES. THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE TEMPORARY CLOSURE OF ACCESS TO THE PROPERTY. THE CONTRACTOR SHALL MAKE ALL PRIVATE ENTRANCES AND DRIVEWAYS ACCESSIBLE AT THE CONCLUSION OF EACH WORKDAY.
6. ANY EXCAVATIONS WHICH ARE SPECIFICALLY APPROVED BY THE PROJECT OFFICER TO REMAIN OPEN PAST NORMAL WORKING HOURS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE PROTECTED IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL AND AS APPROVED BY THE PROJECT OFFICER.
7. PEDESTRIAN TRAFFIC SHALL BE MAINTAINED AT ALL TIMES, INCLUDING ACCESS TO BUS STOP SHELTERS, UNLESS OTHERWISE APPROVED IN THE PLANS.
8. PEDESTRIAN TRAFFIC SHALL BE SEPARATED FROM WORK ZONES WITH APPROPRIATE MEASURES IN ACCORDANCE WITH MUTCD.
9. ADEQUATE PROVISIONS FOR PERSONS WITH DISABILITIES SHALL BE PROVIDED AT ALL TIMES PER ADA REQUIREMENTS.
10. WHEN NECESSARY, PEDESTRIANS SHALL BE APPROPRIATELY DIRECTED WITH ADVANCED WARNING SIGNS PLACED AT INTERSECTIONS, TO CROSS TO THE OPPOSITE SIDE OF THE ROADWAY IN ORDER TO PREVENT CONFLICT WITH MIDBLOCK WORK SITES.
11. PEDESTRIANS SHALL NOT BE LED INTO CONFLICT WITH WORK SITE EQUIPMENT, OPERATIONS, AND/OR VEHICLES MOVING THROUGH OR AROUND THE WORK SITE.
12. ALL EXISTING FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS SHALL BE MAINTAINED UNOBSTRUCTED AND ACCESSIBLE AT ALL TIMES IN ACCORDANCE WITH SECTIONS 508.5.4 AND 508.5.5 OF THE ARLINGTON COUNTY FIRE PREVENTION CODE.
13. ACCESS TO BUILDINGS FOR FIREFIGHTING SHALL BE MAINTAINED AT ALL TIMES. EXISTING FIRE APPARATUS ACCESS ROADS (FIRE LANES) SHALL BE KEPT CLEAR OF OBSTRUCTIONS IN ACCORDANCE WITH SECTION 503.4 OF THE ARLINGTON COUNTY FIRE PREVENTION CODE. ACCESS TO CONSTRUCTION SITES SHALL BE PROVIDED AND MAINTAINED IN ACCORDANCE WITH SECTION 1410 OF THE ARLINGTON COUNTY FIRE PREVENTION CODE.
14. IN THE EVENT THAT EXISTING FIRE DEPARTMENT CONNECTIONS OR FIRE APPARATUS ACCESS ROADS (FIRE LANES) MUST BE OBSTRUCTED TO FACILITATE CONSTRUCTION ACTIVITIES, CONTACT THE ARLINGTON COUNTY FIRE DEPARTMENT FIRE PREVENTION OFFICE AT 703-228-4644 TO COORDINATE REVIEW AND APPROVAL OF TEMPORARY FIRE DEPARTMENT CONNECTIONS AND/OR FIRE APPARATUS ACCESS ROADS PRIOR TO CREATING THE OBSTRUCTION.
15. THE CONTRACTOR SHALL COORDINATE WITH ARLINGTON COUNTY TRANSIT BUREAU, 703-228-3049, A MINIMUM OF 4 WEEKS PRIOR TO COMMENCEMENT OF WORK IF TRANSIT IS AFFECTED OR IF THERE ARE ANY IMPACTS TO THE TRANSIT STOPS OR ROUTES. NOTE: ALL TEMPORARY AND FINAL BUS TRAVEL LANES MUST BE A MINIMUM OF 11' WIDE.
16. AT SIGNALIZED INTERSECTIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING VEHICLE DETECTION AT ALL TIMES DURING THE PROJECT. TRAFFIC SENSORS SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION STATE PRIOR TO THE COMPLETION OF THIS PROJECT.
17. WORK HOURS ARE RESTRICTED TO 8 AM TO 6 PM (MON-FRI).
18. CONTRACTOR SHALL COVER ANY EXISTING SIGNS WHICH ARE NOT APPLICABLE OR ARE IN CONFLICT WITH THIS MOT PLAN.
19. CONTRACTOR SHALL ERADICATE AND RE-STRIPE AS NECESSARY ANY EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH OR DO NOT ALIGN WITH THE TEMPORARY PAVEMENT MARKINGS OR NEW TRAFFIC PATTERNS.
20. CONTRACTOR SHALL ERADICATE ALL TEMPORARY PAVEMENT MARKING, INCLUDING TEMPORARY MARKED CROSSWALKS ONCE THE WORK AREA(S) ASSOCIATED WITH THE MARKINGS HAS BEEN COMPLETED.
21. COORDINATE WITH DES-TRANSIT BUREAU AT 703-228-3049 AT LEAST 4 WEEKS PRIOR TO COMMENCEMENT OF WORK IF TRANSIT IS AFFECTED OR IF THERE ARE ANY IMPACTS TO TRANSIT STOPS OR ROUTES.
22. ALL TEMPORARY AND FINAL BUS TRAVEL LANES MUST BE MINIMUM 11 FEET WIDE.
23. TEO SIGNAL CONSTRUCTION MANAGER SHALL BE INFORMED 1 WEEK PRIOR TO CHANGING ZONES/PHASES OF MOT.

Table with columns: MOT RECOMMENDED TTC, MOT ZONE#, TTC#, COMMENTS, DURATION. Lists various traffic control measures for zones A1 through H.

NOTE: THE DURATIONS SHOWN WERE DEVELOPED FOR PLANNING AND ESTIMATION PURPOSES ONLY. THE DURATIONS IN NO WAY ALTER THE CONTRACT TIME FOR COMPLETION, OR INFRINGES ON THE CONTRACTORS MEANS AND METHODS. THE CONTRACTOR'S SUBMITTED SCHEDULE SUPERSEDES THE ESTIMATED DURATIONS SHOWN.



ARLINGTON VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES FACILITIES & ENGINEERING DIVISION ENGINEERING BUREAU 2100 CLARENDON BOULEVARD, SUITE 813 ARLINGTON, VA 22201 PHONE: 703.228.3629 FAX: 703.228.3606

APPROVALS DATE
DESIGN TEAM ENGINEER SUPERVISOR 9/28/2022
CONSTRUCTION MANAGEMENT SUPERVISOR 10/13/22
WATER/SEWER, STREETS BUREAU CHIEF 10/5/22
TRANSPORTATION DIRECTOR 10/5/22
PROJECT MANAGER 9/27/2022

Table for REVISIONS with columns for REVISIONS and DATE.

SHIRLINGTON ROAD PEDESTRIAN BRIDGE BR02 SHIRLINGTON ROAD MAINTENANCE OF TRAFFIC - 01 TRANSPORTATION MANAGEMENT PLAN
DESIGNED: JS
DRAWN: JS
CHECKED: HT
PLOTTED: JULY 13 2022
SCALE:
GRAPHIC SCALE
C120.1

- ZONE A1** [Pattern]
- ZONE A2** [Pattern]
- ZONE B** [Pattern]
- ZONE C1** [Pattern]
- ZONE C2** [Pattern]
- ZONE D** [Pattern]
- ZONE E1** [Pattern]
- ZONE E2** [Pattern]
- ZONE F** [Pattern]
- ZONE G1** [Pattern]
- ZONE G2** [Pattern]
- ZONE H** (NOT SHOWN)

RRFB POLE INSTALLATION ON SHIRLINGTON RD

- PERFORM SINGLE LEFT-LANE CLOSURE ON NB AND SB SHIRLINGTON RD PER TTC-17.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.
- WORK AREA SHALL BE PROTECTED WITH TYPE III BARRICADES AND/OR TRAFFIC DRUMS.

EAST PEDESTRIAN RAMP CONSTRUCTION

- PERFORM SINGLE RIGHT-LANE CLOSURE ON I-395 OFF-RAMP PER TTC-16.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.
- WORK AREA SHALL BE PROTECTED WITH TYPE III BARRICADES AND/OR TRAFFIC DRUMS.
- MINIMUM 5 FOOT PEDESTRIAN PATHWAY SHALL BE MAINTAINED AT ALL TIMES.

SOUTH ENTRANCE FOR THE PEDESTRIAN BRIDGE CONSTRUCTION (AS SECONDARY ENTRANCE DURING THE OFF-PEAK LANE CLOSURE ONLY)

- PERFORM SINGLE RIGHT-LANE CLOSURE PER TTC-16.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED FOR CROSSWALK CLOSURES.
- PERFORM SIDEWALK CLOSURE PER TTC-35.1 ON AS NEEDED BASIS. SIDEWALK CLOSED (R9-9) SIGNS SHALL BE PLACED ON BOTH ENDS OF THE CLOSED ARLINGTON MILL TRAIL/SIDEWALKS WHILE SIDEWALK CLOSED AHEAD - CROSS HERE (R9-11R) SIGN SHALL BE PLACED AT THE NE QUADRANT OF S ARLINGTON MILL DR/S QUINCY ST INTERSECTION BEFORE THE EAST LEG CROSSWALK DURING THE SIDEWALK CLOSURE. ANOTHER SIDEWALK CLOSED AHEAD - CROSS HERE (R9-11L) SHALL BE PLACED AT THE NW QUADRANT OF S ARLINGTON MILL DR/SHIRLINGTON RD INTERSECTION BEFORE THE NORTH LEG CROSSWALK ADA WHEELCHAIR RAMP.
- REMOVE THE PEDESTRIAN SIGNAL HEAD FOR THE NORTH LEG CROSSWALK.
- MINIMUM 5 FOOT PEDESTRIAN PATHWAY ON EXISTING SIDEWALKS SHALL BE MAINTAINED AT ALL TIMES.

RECONSTRUCTION OF RAISED MEDIAN NOSE FOR THE WEST LEG OF SHIRLINGTON RD AND S ARLINGTON MILL DR INTERSECTION

- PERFORM SINGLE LEFT-LANE CLOSURE PER TTC-17.2 ON BOTH EB AND WB S ARLINGTON MILL DR DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.

PAVEMENT MARKING ERADICATION AND INSTALLATION ON S ARLINGTON MILL DR TO CONNECT BOTH PROPOSED AND EXISTING RAMPS

- PERFORM SINGLE LEFT- AND SINGLE RIGHT-LANE MOVING OPERATION PER TTC-13.2 FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.

PROPOSED RAMP CONSTRUCTION ON EB S ARLINGTON MILL DR

- PERFORM SINGLE RIGHT-LANE CLOSURE PER TTC-16.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- ADJUSTMENT SHALL BE MADE TO THE RIGHT-LANE CLOSURE TO ALLOW FOR RIGHT TURN MOVEMENT ONTO SB SHIRLINGTON RD THROUGH THE EXISTING RIGHT-TURN CHANNELIZED RAISED MEDIAN ISLAND.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.

RECONSTRUCTION OF RIGHT-TURN CHANNELIZED RAISED MEDIAN ISLAND AT THE I-395 OFF-RAMP APPROACH BEFORE THE INTERSECTION

- PERFORM SINGLE RIGHT-LANE CLOSURE ON BOTH I-395 OFF-RAMP AND ON NB SHIRLINGTON RD PER TTC-16.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- ADJUSTMENT SHALL BE MADE TO THE RIGHT-LANE CLOSURE ON THE I-395 OFF-RAMP APPROACH TO ALLOW FOR RIGHT TURN MOVEMENT ONTO NB SHIRLINGTON RD.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.
- REMOVE THE PEDESTRIAN SIGNAL HEAD AND PUSH BUTTON FOR THE NORTH LEG CROSSWALK.
- PERFORM MILLING/OVERLAY OPERATION PER TTC-57.2 AT THE END OF DAY.

PAVEMENT MARKING ERADICATION AND MILLING/OVERLAY OPERATION

- PERFORM SINGLE LEFT-LANE CLOSURE ON SHIRLINGTON RD PER TTC-17.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.
- PERFORM MILLING/OVERLAY OPERATION PER TTC-57.2 AT THE END OF DAY.

RECONSTRUCTION OF RAISED MEDIAN NOSE FOR EAST LEG OF SHIRLINGTON RD AND S ARLINGTON MILL DR INTERSECTION

- PERFORM SINGLE LEFT-LANE CLOSURE ON I-395 OFF-RAMP APPROACH PER TTC-17.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM SINGLE RIGHT-LANE CLOSURE ON S ARLINGTON MILL DR (EAST LEG) PER TTC-16.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM SINGLE RIGHT-LANE CLOSURE ON NB SHIRLINGTON RD PER TTC-16.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.
- PERFORM MILLING/OVERLAY OPERATION PER TTC-57.2 AT THE END OF DAY.

PAVEMENT MARKING ERADICATION AND MILLING/OVERLAY OPERATION

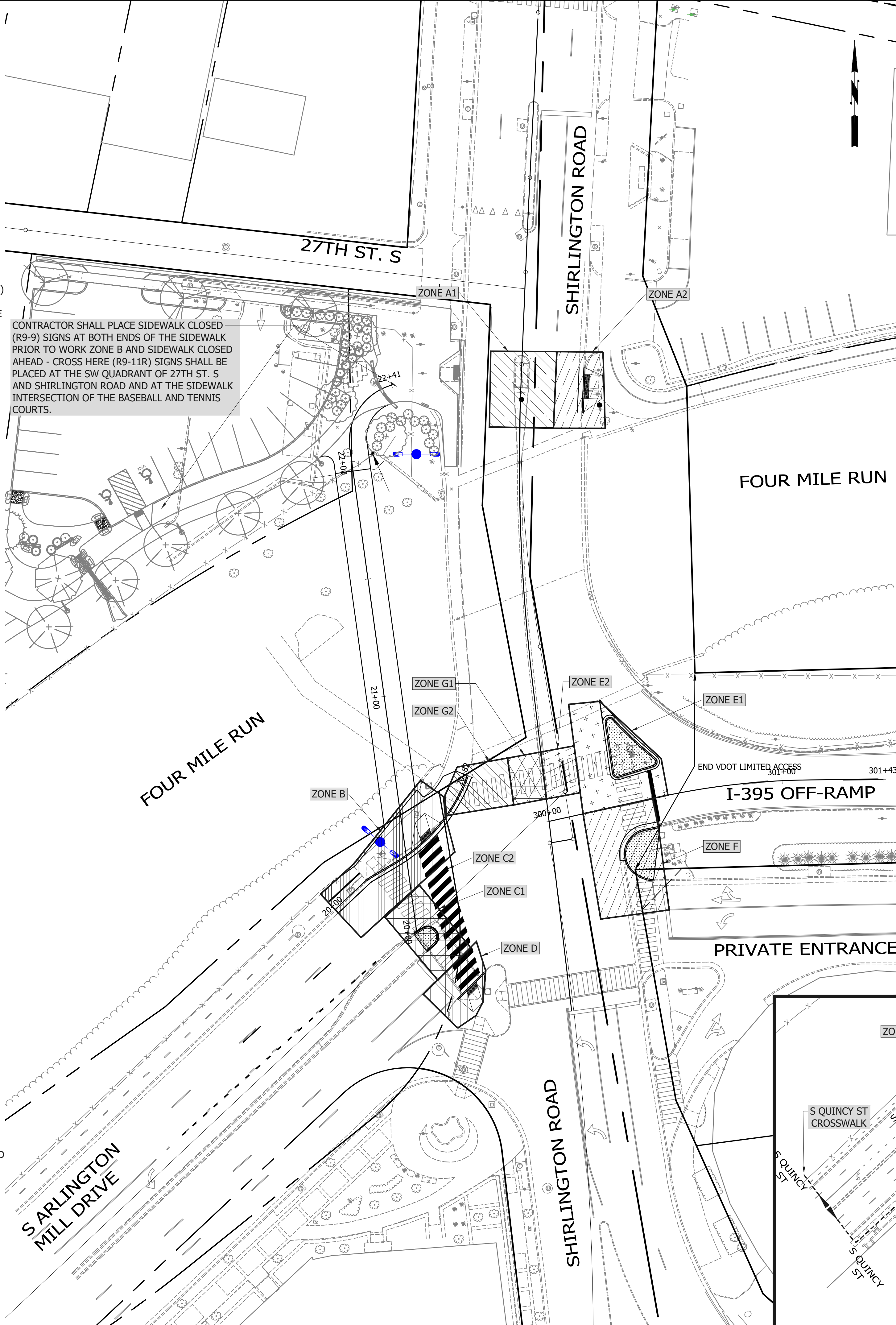
- PERFORM SINGLE LEFT-LANE CLOSURE ON SHIRLINGTON RD PER TTC-17.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.
- PERFORM MILLING/OVERLAY OPERATION PER TTC-57.2 AT THE END OF DAY.

PAVEMENT MARKING ERADICATION AND MILLING/OVERLAY OPERATION

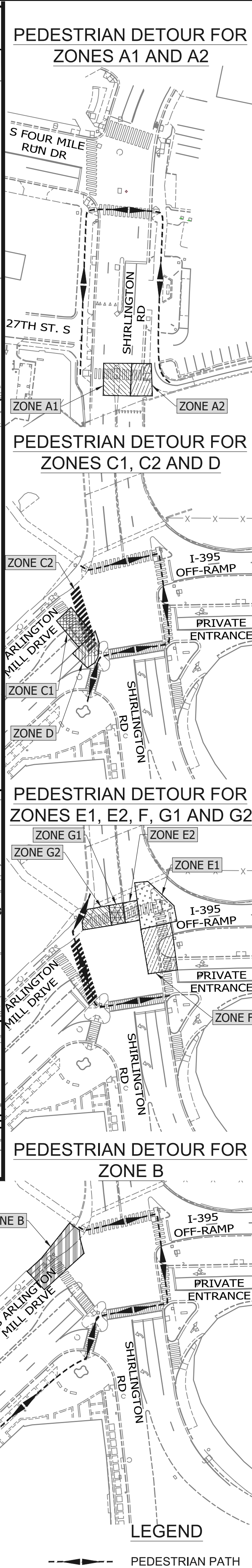
- PERFORM SINGLE RIGHT-LANE CLOSURE ON SHIRLINGTON RD PER TTC-16.2 DURING OFF-PEAK HOURS FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.
- PERFORM MILLING/OVERLAY OPERATION PER TTC-57.2 AT THE END OF DAY.

REMAINING PAVEMENT MARKING ERADICATION AND INSTALLATION WORK PER SIGN AND MARKING PLAN

- PERFORM SINGLE LEFT- AND RIGHT-LANE MOVING OPERATION PER TTC-13.2 FOR THE PROPOSED WORK.
- PERFORM CROSSWALK CLOSURE PER TTC-36.2 ON AS-NEEDED BASIS. CROSSWALK CLOSED - USE OTHER SIDE WITH LEFT AND/OR RIGHT ARROW(S) (R9-10(MOD)) SIGN SHALL BE USED TO DIVERT PEDESTRIANS/BICYCLISTS THROUGH ADJACENT CROSSWALKS.



CONTRACTOR SHALL PLACE SIDEWALK CLOSED (R9-9) SIGNS AT BOTH ENDS OF THE SIDEWALK PRIOR TO WORK ZONE B AND SIDEWALK CLOSED AHEAD - CROSS HERE (R9-11R) SIGNS SHALL BE PLACED AT THE SW QUADRANT OF 27TH ST. S AND SHIRLINGTON ROAD AND AT THE SIDEWALK INTERSECTION OF THE BASEBALL AND TENNIS COURTS.



Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL

APPROVALS	DATE
<i>[Signature]</i> BEST TEAM ENGINEER SUPERVISOR	9/28/2022
<i>[Signature]</i> CONSTRUCTION MANAGEMENT SUPERVISOR	10/13/22
<i>[Signature]</i> WATER/SEWER, STREETS BUREAU CHIEF	10/5/22
<i>[Signature]</i> TRANSPORTATION DIRECTOR	10/5/22
<i>[Signature]</i> PROJECT MANAGER	9/27/2022

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

MAINTENANCE OF TRAFFIC - 02

MOT PLAN

DESIGNED: JS
DRAWN: JS
CHECKED: HT
PLOTTED: JULY 13 2022

SCALE:

GRAPHIC SCALE

C121.1

Typical Traffic Control Moving/Mobile Operations on a Multi-Lane Roadway (Figure TTC-13.2) NOTES

- Standard: 1. Each vehicle involved in the moving/mobile operation shall be equipped with at least one high-intensity amber rotating, flashing, or oscillating light. Illuminated flashing arrows on the shadow vehicles and work operations vehicle shall be a Type B (60" x 30") or Type C (96" x 48"). Vehicle hazard warning signals shall not be used instead of rotating, flashing, or oscillating lights, but as a supplement. 2. Each vehicle involved in the moving operation shall have radio communications between vehicles. Option: 3. If the work operations vehicle is a motorized piece of equipment, such as a motor grader, grade-all, etc., the illuminated flashing arrow will not be required. 4. The static warning sign and arrow board may be replaced with a vehicle-mounted CMS with a minimum character height of 10". 5. Arrow direction and designation may change as needed. Guidance: 6. Spacing between vehicles may vary, depending on the speed, sight distance, and type of moving operation. Whenever adequate stopping sight distance exists to the rear, the shadow vehicle should maintain the minimum distance and proceed at the same speed as the work operation vehicle. The shadow vehicle should slow down in advance of vertical or horizontal curves that restrict sight distance. 7. Actual conditions could dictate more traffic control device needs in the operation. On high speed, high volume roads, a shadow vehicle on the shoulder with an arrow board and sign should be used. Also, in certain situations, appropriate stationary signing (SPRATING NEXT 5 MILES (W21-V5)) could be used to further enhance safety. Standard: 8. If Shadow Vehicle 1 cannot run completely on the shoulder and is partially in the travel lane, it shall be equipped with a truck-mounted attenuator (TMA). 9. When the work operations vehicle is stationary, Shadow Vehicle 2 following the work operations vehicle shall be in a position 80'-120' in advance of the work operations vehicle to provide protection. When the work operations vehicle is moving, Shadow Vehicle 2 following the work operations vehicle shall follow at a distance of 240'. Option: 10. For inside lane closure operations, Shadow Vehicle 1 may be positioned on the right shoulder without arrow designation but displaying the caution mode. 11. When the operation is completely off the travelway, only one shadow vehicle will be required. A truck-mounted attenuator will not be required. The second line of the sign message shall be changed to "Right Shoulder" and the arrows shall be changed to the four corner caution mode. Guidance: 12. When using a vehicle-mounted CMS to replace the static sign and arrow board, each word message phase should be followed by the Type B arrow display. 1: Revision 1 - 4/1/2015 2: Revision 2 - 9/1/2019

Typical Traffic Control Outside Lane Closure Operation on a Four-Lane Roadway (Figure TTC-16.2) NOTES

- Standard: 1. On divided highways having a median wider than 8', right and left sign assemblies shall be required. Guidance: 2. Sign spacing should be 1300'-1500' for Limited Access highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less. 3. When closing a lane, a PCMS should be used in advance of the first warning sign if all of the left side signs cannot be installed. 4. Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. For Limited Access highways a minimum of 1000' is desired. 5. All vehicles, equipment, workers, and their activities should be restricted to one side of the pavement. Standard: 6. Taper length (L) and channelizing device spacing shall be at the following: Table 6H-2: Taper Length L, Channelizing Device Spacing. 7. Channelizing device spacing shall be at the following: Table 6H-3: Channelizing Device Spacing. 8. An arrow board shall be used when a lane is closed. When more than one lane is closed, a separate arrow board shall be used for each closed lane (see Figure TTC-18). 9. The buffer space length shall be shown in Table 6H-3 on Page 6H-5 for the posted speed limit. 10. A shadow vehicle with either a Type B or C arrow board operating in the caution mode, or at least one high intensity amber rotating, flashing, or oscillating light shall be parked 80'-120' in advance of the first work crew. When the posted speed limit is 45 mph or greater, a truck-mounted attenuator shall be used. 11. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or oscillating lights but can be used to supplement the amber rotating, flashing, or oscillating lights. 12. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed as needed. Option: 13. PTRS and their supporting signs may be used, see Sections 6F.99 and 6G.25. Long-term transverse rumble strips may be used in long-term situations, see Section 6F.99 and TTC-20. 14. The supplemental PTRS may be eliminated. 1: Revision 1 - 4/1/2015 2: Revision 2 - 9/1/2019

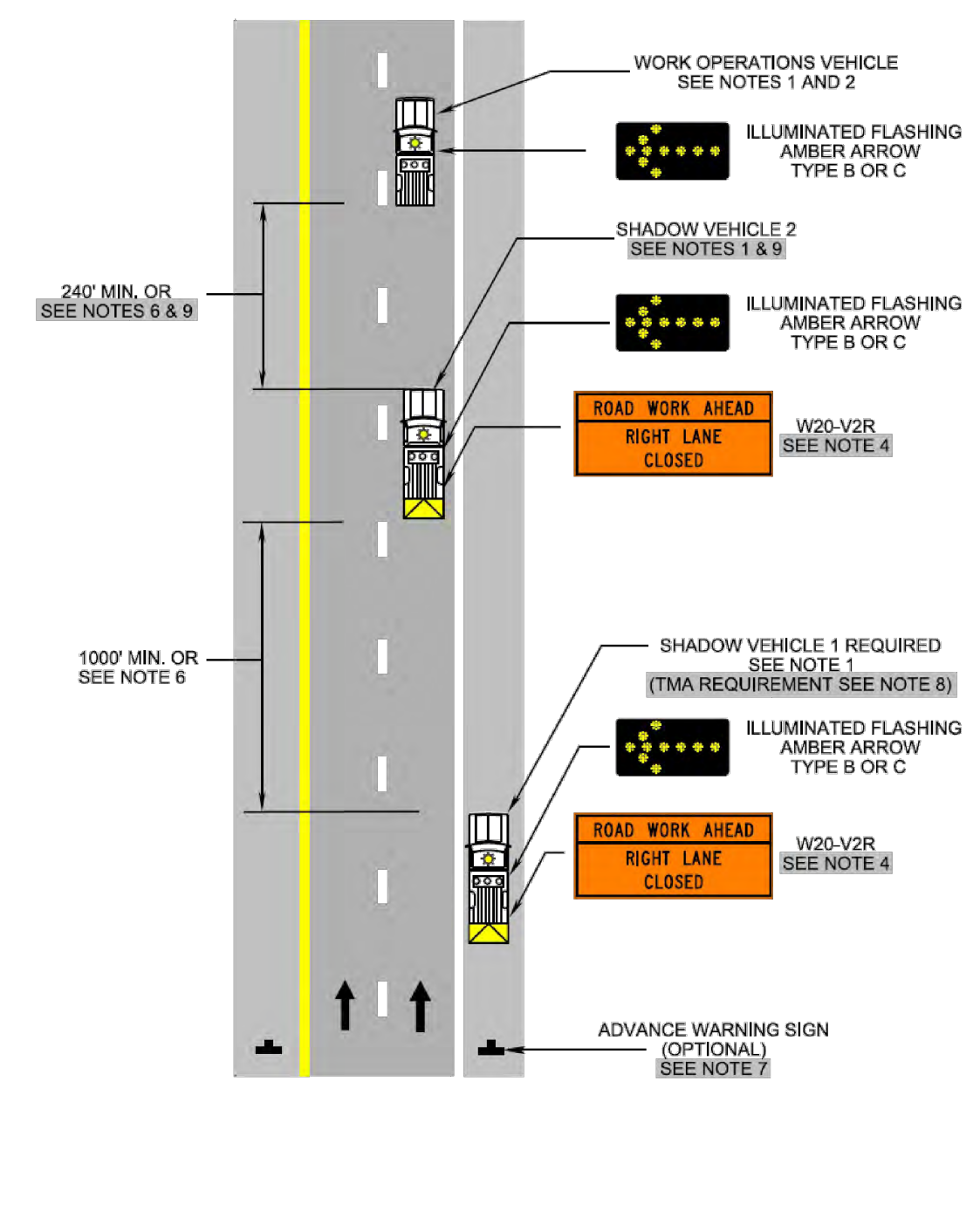
Typical Traffic Control Inside Lane Closure Operation on a Four-Lane Roadway (Figure TTC-17.2) NOTES

- Standard: 1. On divided highways having a median wider than 8', right and left sign assemblies shall be required. Guidance: 2. Sign spacing should be 1300'-1500' for Limited Access highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less. 3. When closing a lane, a PCMS should be used in advance of the first warning sign if all of the left side signs cannot be installed. 4. Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. For Limited Access highways a minimum of 1000' is desired. 5. All vehicles, equipment, workers, and their activities should be restricted to one side of the pavement. Standard: 6. Taper length (L) and channelizing device spacing shall be at the following: Table 6H-2: Taper Length L, Channelizing Device Spacing. 7. Channelizing device spacing shall be at the following: Table 6H-3: Channelizing Device Spacing. 8. An arrow board shall be used when a lane is closed. When more than one lane is closed, a separate arrow board shall be used for each closed lane (see Figure TTC-18). 9. The buffer space length shall be shown in Table 6H-3 on Page 6H-5 for the posted speed limit. 10. A shadow vehicle with either a Type B or C arrow board operating in the caution mode, or at least one high intensity amber rotating, flashing, or oscillating light shall be parked 80'-120' in advance of the first work crew. When the posted speed limit is 45 mph or greater, a truck-mounted attenuator shall be used. 11. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity amber rotating, flashing, or oscillating lights but can be used to supplement the amber rotating, flashing, or oscillating lights. 12. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed as needed. Option: 13. PTRS and their supporting signs may be used, see sections 6F.99 and 6G.25. Long-term transverse rumble strips may be used in long-term situations, see Section 6F.99 and TTC-20. 14. The supplemental PTRS may be eliminated. 1: Revision 1 - 4/1/2015

Typical Traffic Control Lane Closure Operation in an Intersection (Figure TTC-28.2) NOTES

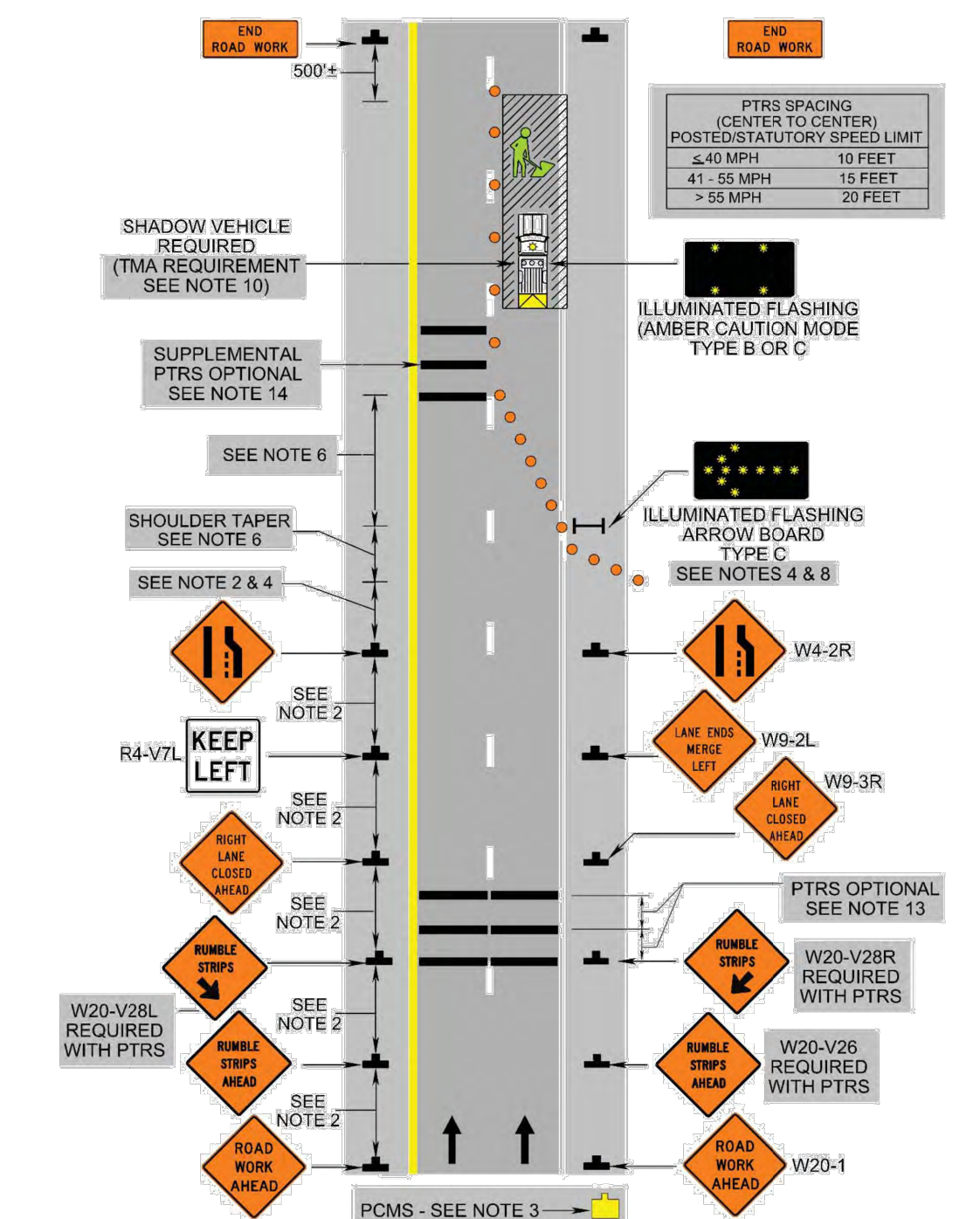
- Guidance: 1. The control of traffic through the intersection in order of preference should be: a. Obtain the services of law enforcement personnel. b. Detour the effective routes to other roads and streets as approved and directed by the District Traffic Engineer. c. Place a state certified flagger on each leg of the intersection controlling a single lane of traffic. Appropriate signing as shown should be used for law enforcement and flagging operations. For detour signs see Figure TTC-34. 2. Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, 500'-800' where the posted speed limit is greater than 45 mph. 3. To maintain efficient traffic flow in a flagging operation on a two-lane roadway the maximum time motorist should be stopped at a flagger station is 8 minutes for high volume roadways (average daily traffic of 500 or more vehicles per day) to a maximum of 12 minutes for low volume roadways (less than 500 vehicles per day). For additional information see Section 6E.07. Standard: 4. Channelizing device spacing shall be on 20' centers or less. 5. PTRS shall be used as noted in Section 6F.99. Guidance: 6. If room permits, a shadow vehicle with at least one rotating amber light or high intensity amber flashing or oscillating light should be parked 80'-120' in advance of the first work crew. Standard: 7. For emergency situations (any non-planned operation) of 30 minutes or less duration, two rotating amber lights or high intensity amber flashing or oscillating lights mounted on the vehicle and visible for 360° shall be required in addition to the channelizing devices shown around the vehicle. Also, vehicle hazard warning signals shall be used. Guidance: 8. If the work space extends across a crosswalk, the crosswalk should be closed using the information and devices shown in Figure TTC-36. Support: 9. Turns can be prohibited as required by vehicular traffic conditions. Unless the streets are wide, it might be physically impossible to make certain turns, especially for large vehicles. 1: Revision 1 - 4/1/2015 2: Revision 2 - 9/1/2019

Moving/Mobile Operations on a Multi-Lane Roadway (Figure TTC-13.2)



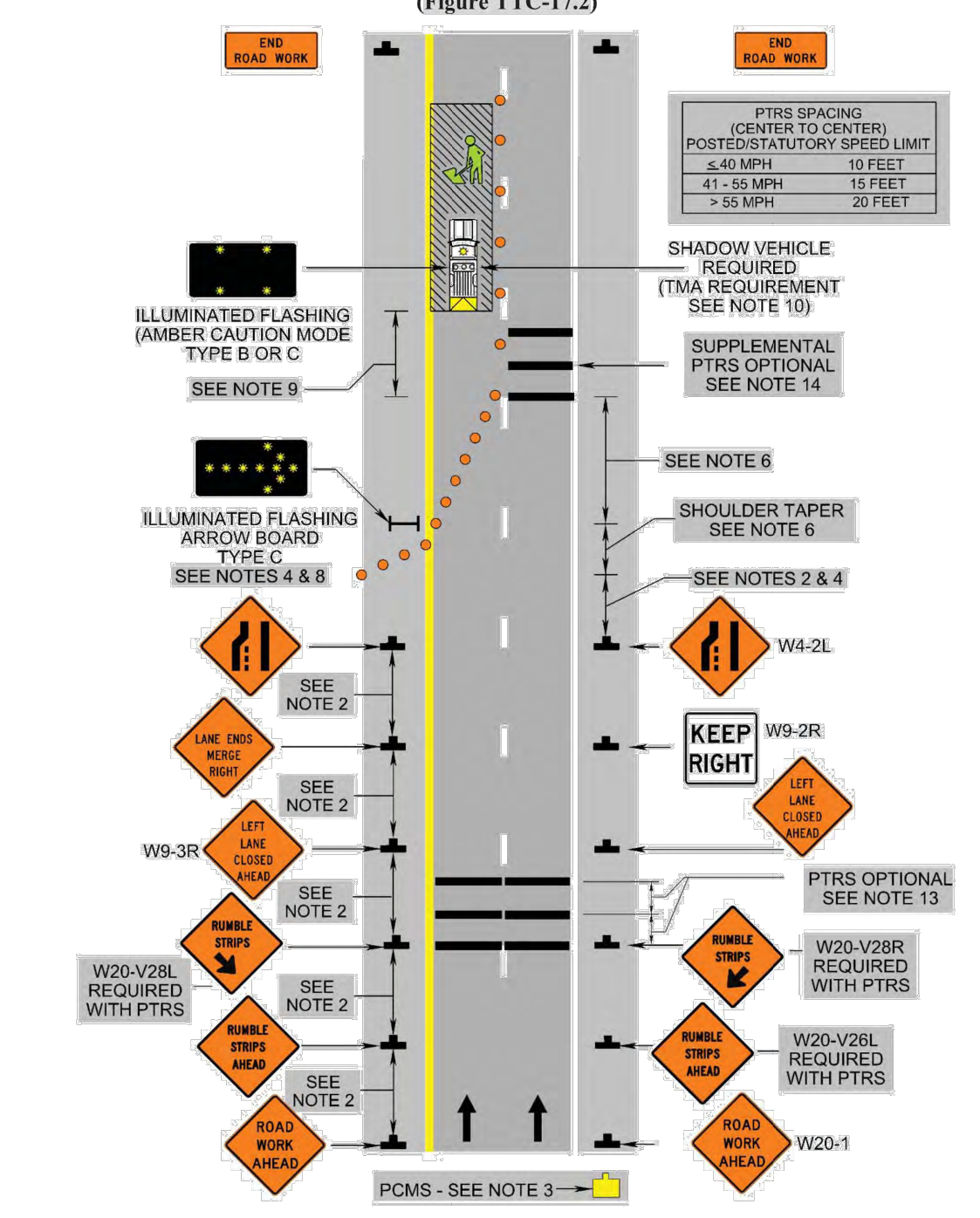
2: Revision 2 - 9/1/2019

Outside Lane Closure Operation on a Four-Lane Roadway (Figure TTC-16.2)



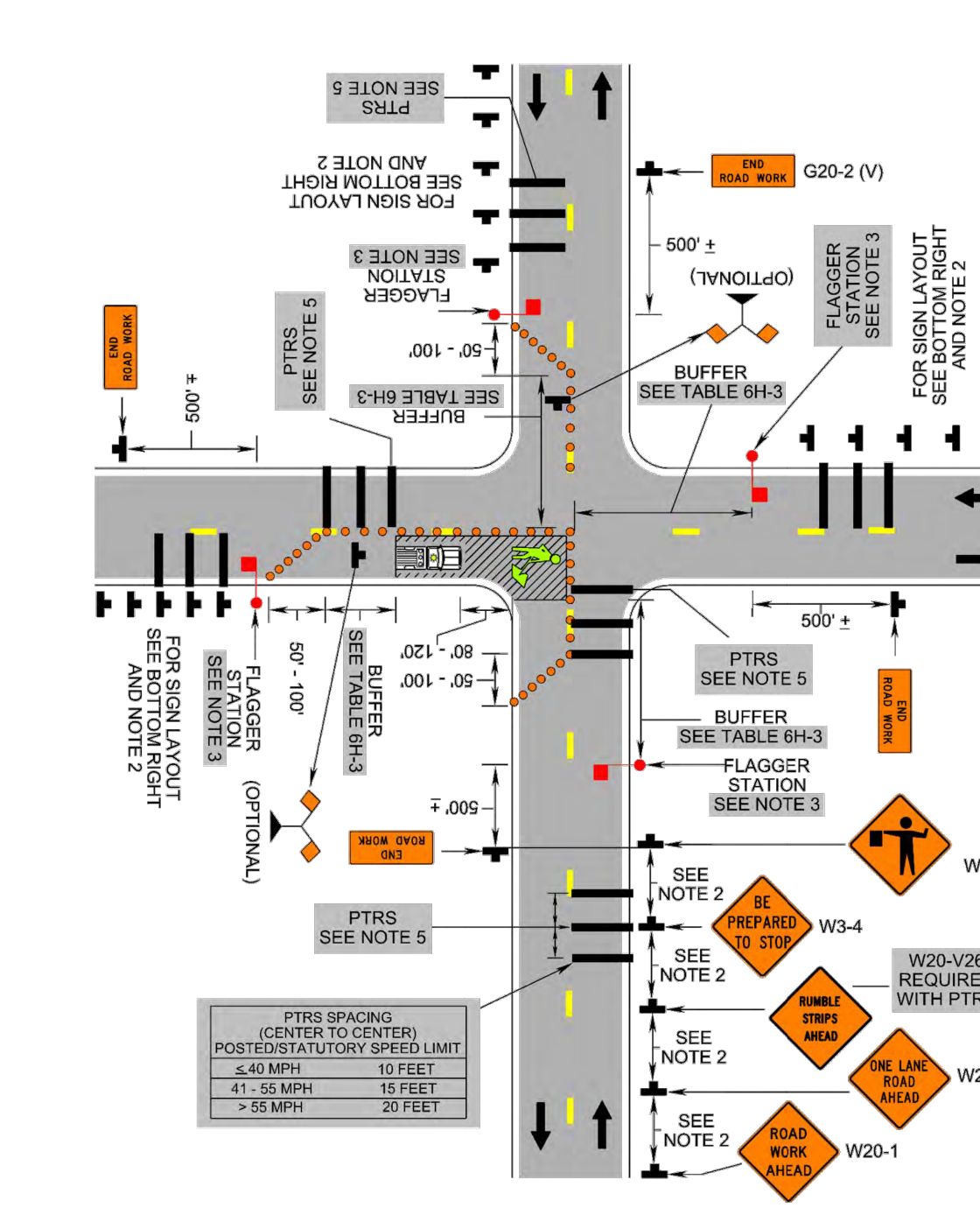
2: Revision 2 - 9/1/2019 3: Revision 2.1 - 11/1/2020

Inside Lane Closure Operation on a Four-Lane Roadway (Figure TTC-17.2)



2: Revision 2 - 9/1/2019 3: Revision 2.1 - 11/1/2020

Lane Closure Operation in an Intersection (Figure TTC-28.2)



2: Revision 2 - 9/1/2019

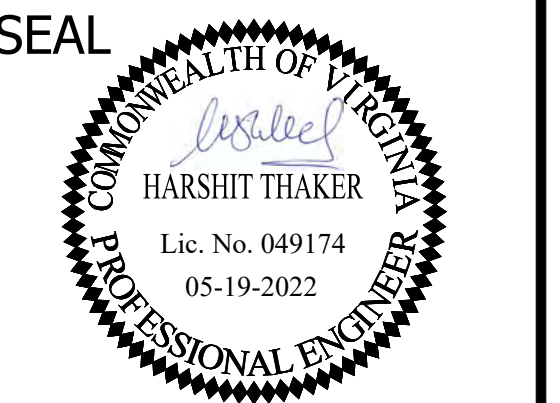
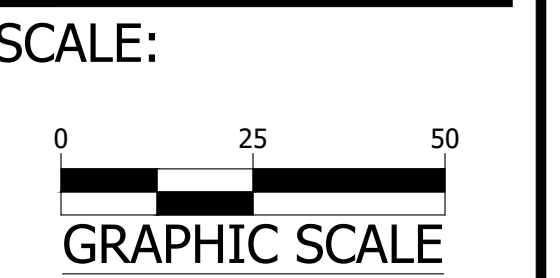


Table with columns APPROVALS and DATE. Includes signatures and dates for Design Team Engineer Supervisor (9/28/2022), Construction Management Supervisor (10/13/22), Water/Sewer, Streets Bureau Chief (10/5/22), Transportation Director (10/5/22), and Project Manager (9/27/2022).

Table with columns REVISIONS and DATE. Includes revision 1 (4/1/2015) and revision 2 (9/1/2019).

SHIRLINGTON ROAD PEDESTRIAN BRIDGE BR02 SHIRLINGTON ROAD MAINTENANCE OF TRAFFIC - 03 TTC DETAILS

DESIGNED: JS DRAWN: JS CHECKED: HT PLOTTED: JULY 13 2022



Typical Traffic Control Sidewalk Closure and Bypass Sidewalk Operation (Figure TTC-35.1) NOTES

- Standard: 1. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility. Guidance: 2. Where high speeds are anticipated, a temporary traffic barrier and, if necessary, a crash cushion should be used to separate the temporary sidewalks from vehicular traffic. 3. Audible information devices should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities. 4. Temporary markings should be considered for operations exceeding three days in duration. Option: 5. Only the TTC devices related to pedestrians are shown. Other devices, such as lane closure signing or ROAD NARROWS (W5-1) signs, may be used to control vehicular traffic. 6. For nighttime closures, Type A Flashing warning lights may be used on barricades that support signs and close sidewalks. 7. Signs, such as KEEP RIGHT (R4-V7R) and KEEP LEFT (R4-V7L), may be placed along a temporary sidewalk to guide or direct pedestrians. Standard: 8. All sidewalk closures shall be closed with Type 3 Barricades. The SIDEWALK CLOSED (R9-9) sign and the SIDEWALK CROSS HERE (R9-11) sign shall be installed above the Type 3 barricade. The KEEP RIGHT sign can cover the top rail of the Type 3 Barricade.

2: Revision 2 - 9/1/2019

Typical Traffic Control Crosswalk Closure and Pedestrian Detour Operation (Figure TTC-36.2) NOTES

- Standard: 1. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility. 2. Curb parking shall be prohibited for at least 50 feet in advance of the midblock crosswalk. Guidance: 3. Audible information devices should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities. 4. Pedestrian traffic signal displays controlling closed crosswalks should be covered or deactivated. 5. Temporary markings should be considered for operations exceeding three days in duration. Option: 6. Only the TTC devices related to pedestrians are shown. Other devices, such as lane closure signing or ROAD NARROWS (W5-1) signs, may be used to control vehicular traffic. 7. For nighttime closures, Type A Flashing warning lights may be used on barricades supporting signs and closing sidewalks. Standard: 8. In order to maintain the systematic use of the fluorescent yellow-green background for school warning signs in a jurisdiction, the fluorescent yellow-green background for school warning signs shall be used in TTC zones. 9. All sidewalk closures shall be closed with Type 3 Barricades. The SIDEWALK CLOSED (R9-9) sign and the SIDEWALK CROSS HERE (R9-11) sign shall be installed above the Type 3 Barricade. The KEEP RIGHT sign can cover the top rail of the Type 3 Barricade. Support: 10. Refer to Sections 3B-16 through 3B-18 of the 2009 MUTCD and the Virginia Supplement to the MUTCD for crosswalk lines, yield lines and other related TTC devices that may be used to control vehicular traffic at midblock crosswalks.

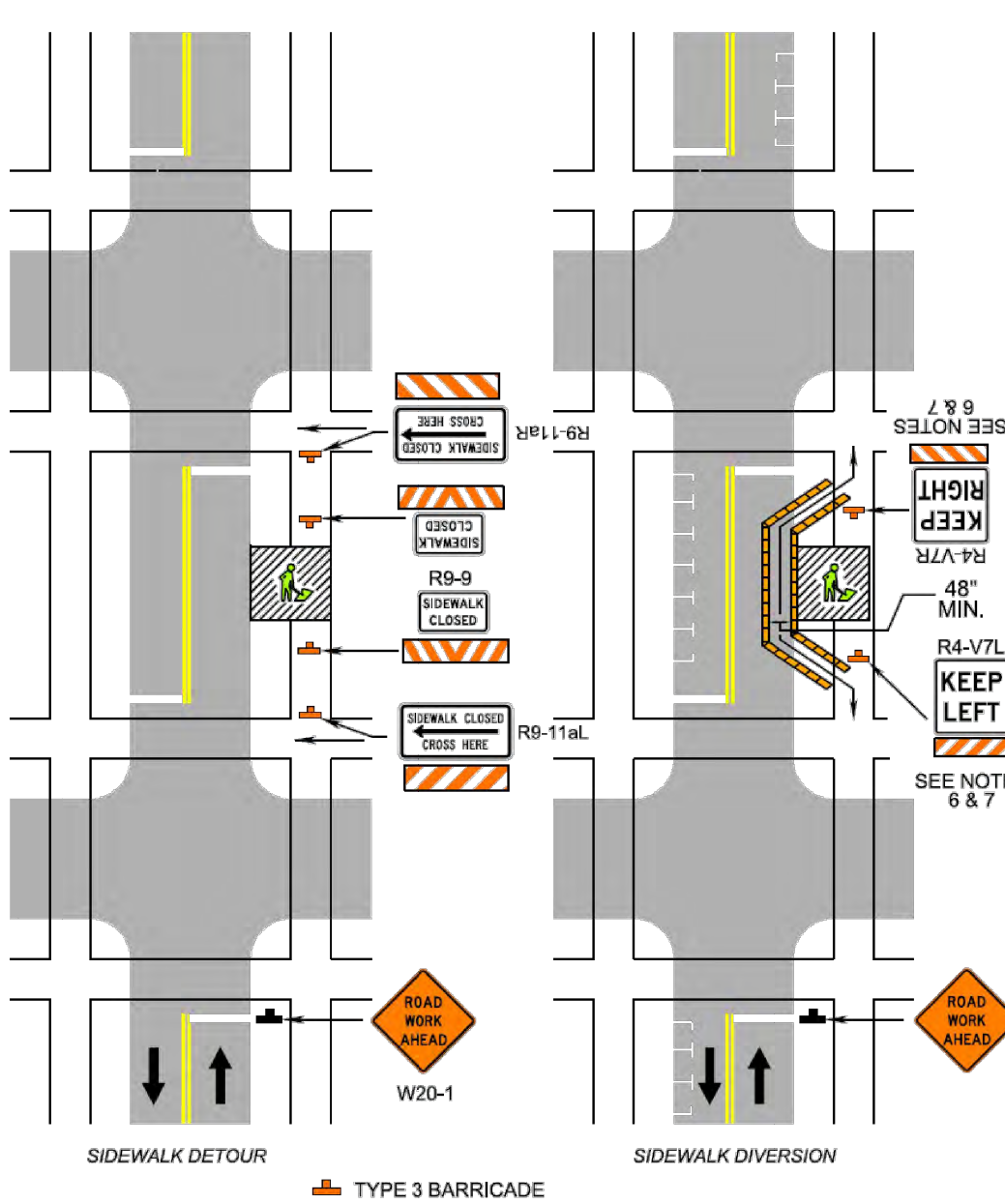
- Standard: 11. The YIELD HERE TO PEDESTRIANS (R1-5) sign shall be placed at the Yield Line. 12. Fluorescent yellow-green PEDESTRIAN TRAFFIC (W11-2) symbol sign, AHEAD (W16-9p) plaque and ARROW (W16-7p) plaque shall be used to identify the work zone crosswalk.

1: Revision 1 - 4/1/2015 2: Revision 2 - 9/1/2019

Typical Traffic Control End of Day Signing for Partial Paving Operations on a Multi-Lane Roadway (Figure TTC-57.2) NOTES

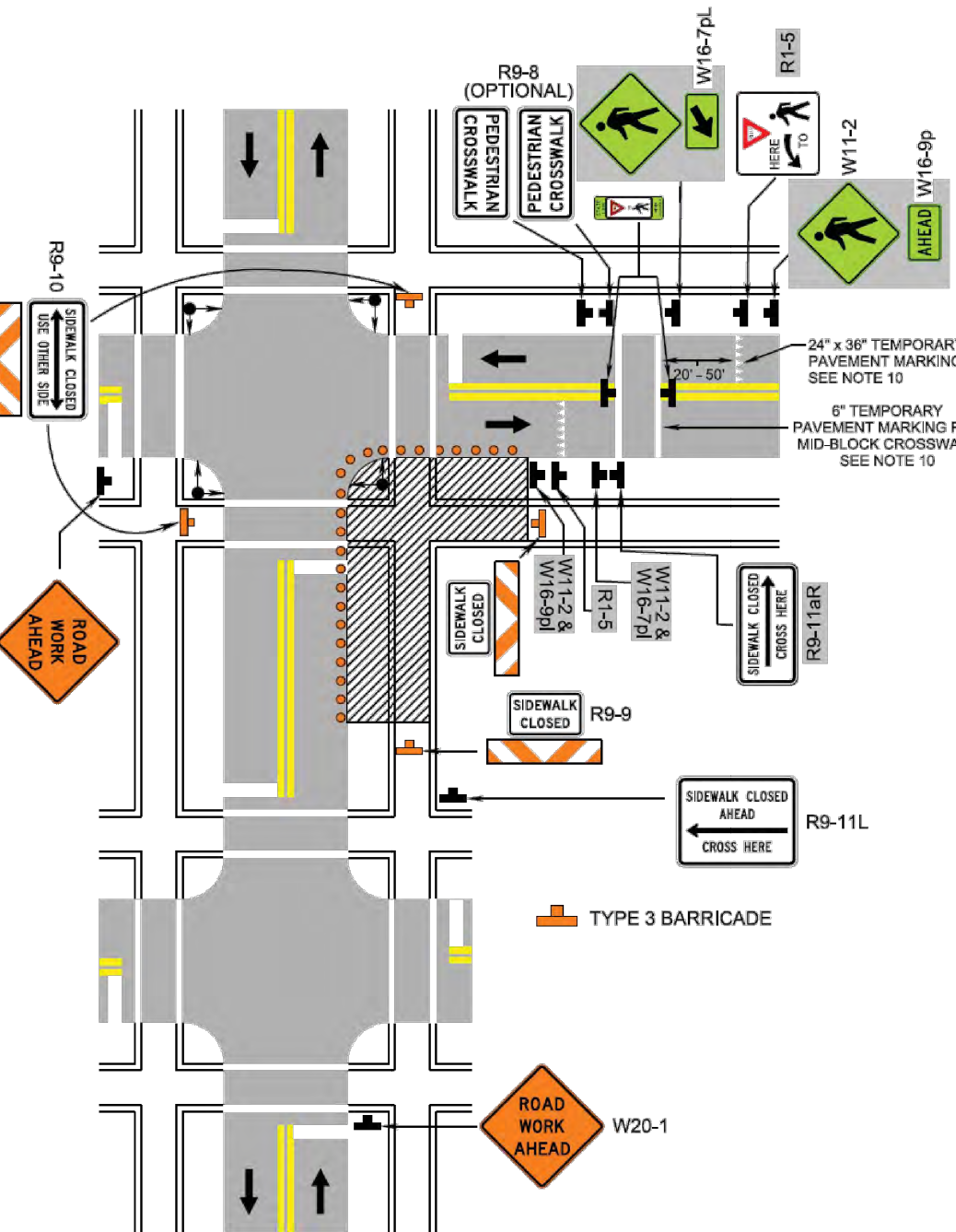
- Standard: 1. On divided highways having a median wider than 8' right and left sign assemblies shall be used. Median barrier is considered to be part of the shoulder and its measurement shall be used to determine the total width of the shoulder. 2. The maximum pavement edge drop-off between traffic lanes shall be 2 inches or less. 3. Open travel lane(s) shall not be exposed to more than 2 to 3 mile sections of milled or uneven surface. 4. A portable changeable message sign with "ROUGH ROAD AHEAD" and other appropriate messages shall be used. 5. A BUMP (W8-1) sign shall be placed in advance of the end of the pavement drop-off. 6. The District Traffic Engineer shall determine speed reductions. 7. The UNEVEN LANES (W8-11), STAY IN LANE (R4-9), and BUMP signs shall be adjusted daily with the work operation and their sign stand shall be supported with a sand bag weighing approximately 25-pounds on each leg or two (2) drum collar weights positioned on the center of the sign stand. Additional UNEVEN LANES signs shall be installed every 2 miles and on entrance ramps. 8. Where conditions warrant, ROUGH ROAD (W8-8) and BUMP signs shall be installed 500' ± in advance of the affected roadway surface on entrance ramps, and BUMP signs shall be installed 500' ± in advance of unaffected roadway surface on exit ramps. 9. All signs shall be post-mounted at locations after 72 consecutive hours of non-work activities. Guidance: 10. Sign spacing distance should be 1300'-1500' for Limited Access highways, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less. Option: 11. Only traffic control signing for partial pavement resurfacing is shown. Other devices may be used for the control of traffic through the work area. 12. Temporary pavement markers spaced at 10 foot centers for two-way traffic centerlines or three per skip line for lane division lines may be added as directed by the engineer. 13. The LOW SHOULDER (W8-9) sign may be used to warn of a shoulder condition where there is an elevation difference of less than 2 inches between the shoulder and the travel lane. Standard: 14. If used, the LOW SHOULDER sign shall be repeated at 1 mile intervals if the condition extends over a distance in excess of 1 mile. 15. The SHOULDER DROP OFF (W8-V5) sign shall be used when an unprotected shoulder drop-off, adjacent to the travel lane, exceeds 2 inches depth between the shoulder and the travel lane. Where the condition extends over a distance in excess of 1 mile, the sign shall be repeated at 1 mile intervals. Option: 16. The SHOULDER DROP OFF sign may be eliminated if a 6:1 (desirable) to 4:1 (minimum) wedge is used between the travel lane and the shoulder. Standard: 17. A temporary pavement wedge shall be constructed of surface mix asphalt a minimum of three (3) feet in length for every inch of depth of pavement milling on the approach and departure end of the milled travel lane(s). Refer to Standard ACOT-1 of the Road and Bridge Standards for details. 18. A minimum of four (4) drum channelizing devices shall be placed on the shoulder in advance of the PCMS in a taper for delineation (see Figure 6F-6). 1: Revision 1 - 4/1/2015; 2: Revision 2 - 9/1/2019

Sidewalk Closure and Bypass Sidewalk Operation (Figure TTC-35.1)



2: Revision 2 - 9/1/2019

Crosswalk Closure and Pedestrian Detour Operation (Figure TTC-36.2)



1: Revision 1 - 4/1/2015 2: Revision 2 - 7/1/2018

End of Day Signing for Partial Paving Operations on a Multi-Lane Roadway (Figure TTC-57.2)

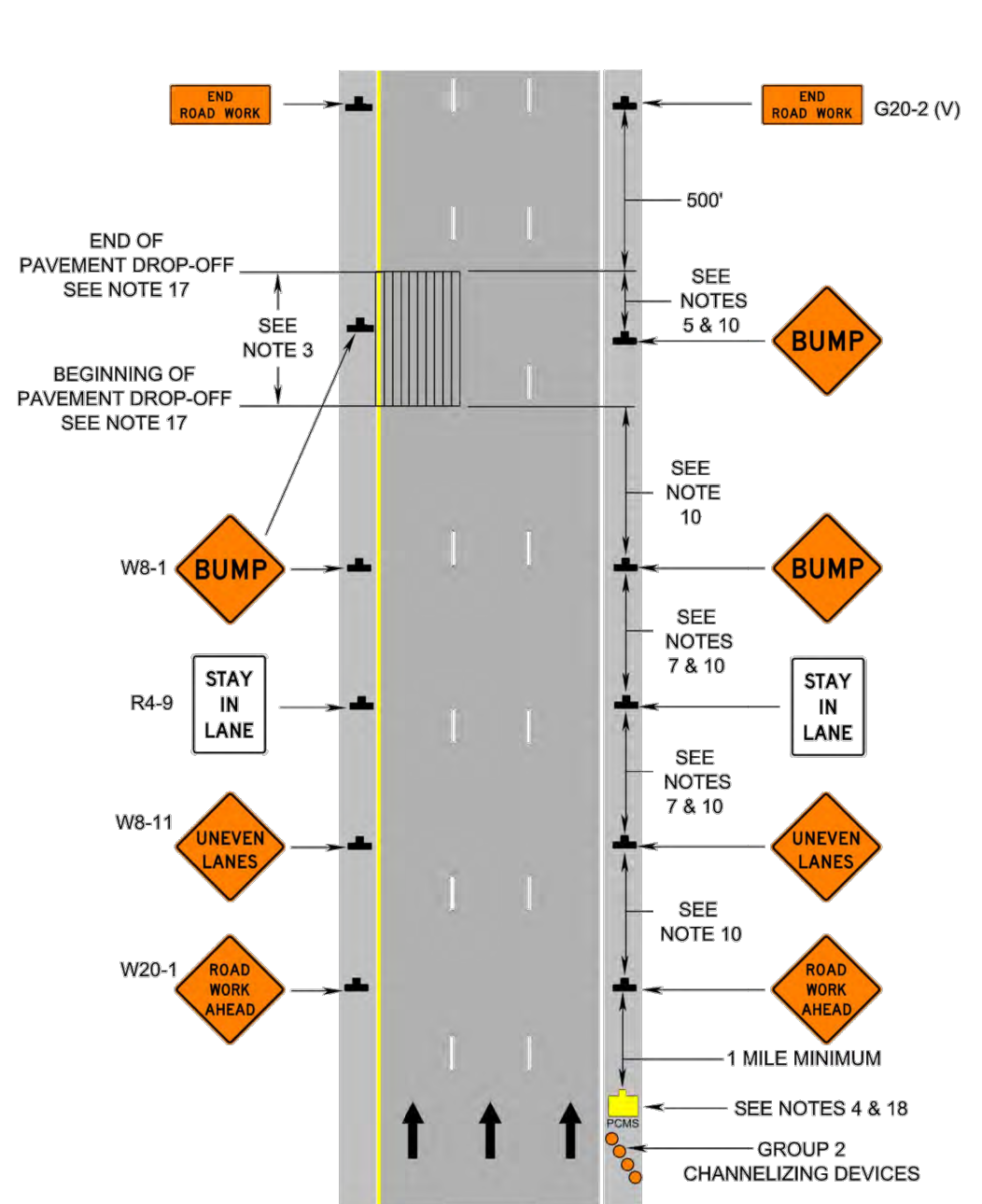
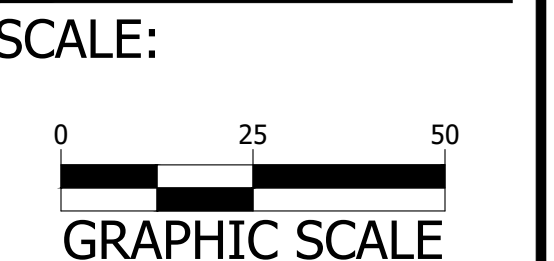


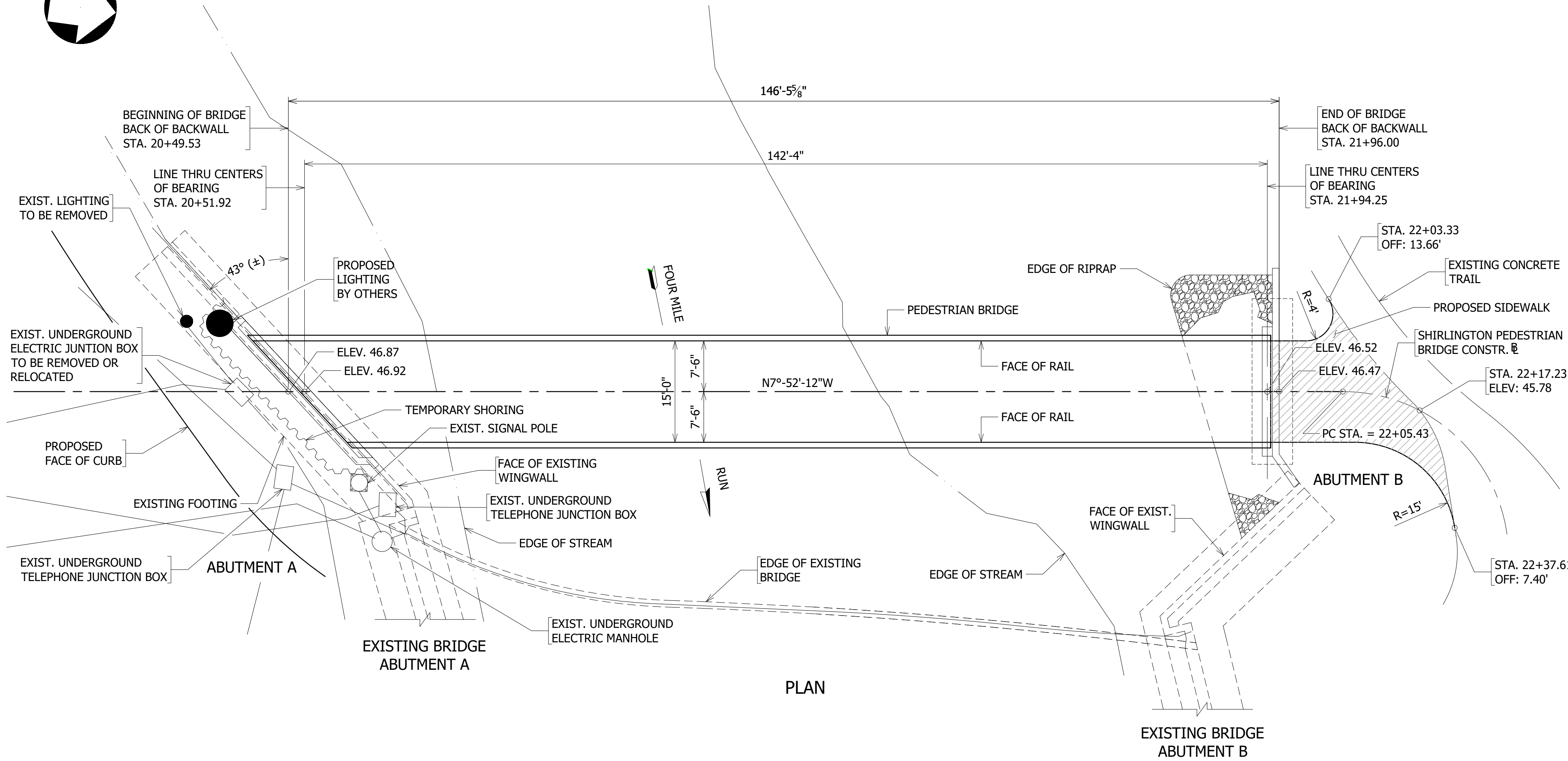
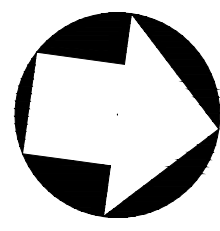
Table with columns for APPROVALS and DATE. Includes signatures and dates for Design Team Engineer Supervisor, Construction Management Supervisor, Water/Sewer, Streets Bureau Chief, Transportation Director, and Project Manager.

Table with columns for REVISIONS and DATE. Includes revision numbers and dates.

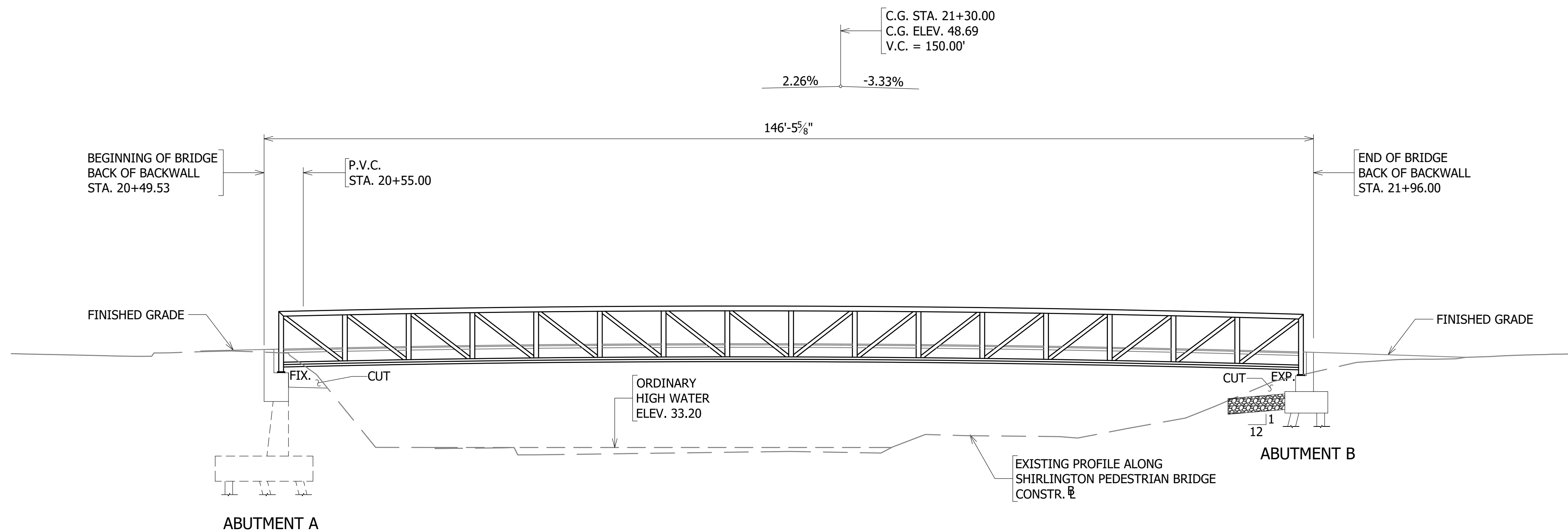
SHIRLINGTON ROAD PEDESTRIAN BRIDGE BR02 SHIRLINGTON ROAD MAINTENANCE OF TRAFFIC - 04 TTC DETAILS

DESIGNED: JS DRAWN: JS CHECKED: HT PLOTTED: JULY 13 2022





PLAN



ELEVATION

GENERAL NOTES

- WIDTH: 15'-0" FACE-TO-FACE RAILS.
- SPAN LAYOUT: 144'-1 1/4" STEEL TRUSS SPAN.
- CAPACITY: 90 PSF PEDESTRIAN LIVE LOAD AND 20,000 LB VEHICULAR LIVE LOAD
- SPECIFICATIONS:
 - CONSTRUCTION: VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, 2020.
 - DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017.
 - LRFD GUIDE SPECIFICATIONS FOR DESIGN OF PEDESTRIAN BRIDGES, 2ND EDITION.
- THESE PLANS ARE INCOMPLETE UNLESS ACCOMPANIED BY THE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENTS.
- CONCRETE IN SUBSTRUCTURE SHALL BE CLASS A3 IN ACCORDANCE WITH SECTION 217 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.
- PERMEABILITY TESTING DOES NOT APPLY TO THIS PROJECT.
- DEFORMED REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60. ALL REINFORCING BAR DIMENSIONS ON THE DETAILED DRAWINGS ARE TO CENTER OF BARS EXCEPT WHERE OTHERWISE NOTED AND ARE SUBJECT TO FABRICATION AND CONSTRUCTION TOLERANCES.
- H-PILES SHALL BE ASTM A709, GRADE 50 STEEL.
- THE CONTRACTOR SHALL BACKFILL AREAS WITH APPROVED MATERIALS PER THE REQUIREMENTS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION. THE COST OF BACKFILL IS INCLUDED IN THE COST OF STRUCTURAL EXCAVATION.
- PREFABRICATED STEEL TRUSS SHALL BE PAID ON A LUMP SUM BASIS, THE PRICE SHALL INCLUDE DESIGN, FABRICATION, DELIVERY, ERECTION, WOOD DECK, RUB RAILS, SAFETY RAILS, TOE PLATES, BEARING ASSEMBLIES, AND ANY ASSOCIATED FALSE WORK OR TEMPORARY SUPPORTS.
- ALL COST ASSOCIATED WITH SITE ACCESS AND STAGING SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR CONSTRUCTION ACCESS AND RESTORATION. THE LUMP SUM PRICE SHALL INCLUDE ALL COSTS FOR REMOVING AND REPLACING EXISTING SIGNS/STRUCTURES, STORING EQUIPMENT AND MATERIALS, TEMPORARY GRADING, AND RESTORING THE AREA TO ITS ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE.
- APPROXIMATE LIMITS OF TEMPORARY SHORING SHOWN ON THE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE ACTUAL LIMITS AND QUANTITIES OF TEMPORARY SHORING. THE COST OF DESIGN, INSTALLATION, AND REMOVAL OF THE TEMPORARY SHORING, WHEN NO LONGER REQUIRED, SHALL BE INCLUDED IN THE BID PRICE FOR THE TEMPORARY SHORING. THE PRICE SHALL BE FULL COMPENSATION FOR ALL LABOR, TOOLS, MATERIALS, EQUIPMENT, AND INCIDENTALS REQUIRED FOR THE SATISFACTORY COMPLETION OF THE WORK. THIS PRICE SHALL INCLUDE ALL TEMPORARY SHORING REQUIRED FOR CONSTRUCTION WHETHER OR NOT SHOWN ON THE PLANS. TEMPORARY SHORING SHALL BE PAID FOR ON A LUMP SUM BASIS.
- ALL INFORMATION AND DIMENSIONS USED IN THE DEVELOPMENT OF THESE PLANS WERE TAKEN FROM EXISTING PLANS, FIELD MEASUREMENTS, AND SURVEY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, DETAILS, AND OTHER INFORMATION SHOWN IN THESE PLANS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO ORDERING MATERIALS AND PERFORMING ANY WORK.
- PIPE HANDRAIL SHALL BE IN ACCORDANCE WITH ARLINGTON CO. STD. R-3.1 AND SECTION 05500 OF THE SPECIFICATIONS. THE COST OF THE CONCRETE FOUNDATIONS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF PIPE HANDRAIL.



APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>[Signature]</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>[Signature]</i>	9/27/2022
PROJECT MANAGER	

REVISIONS

REVISIONS	DATE

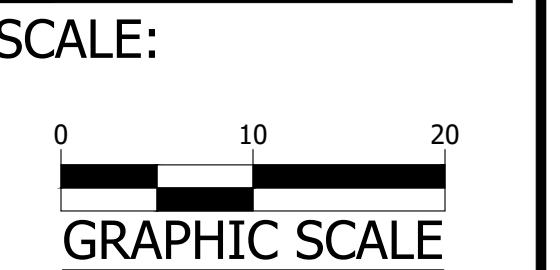
SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

PLAN AND ELEVATION

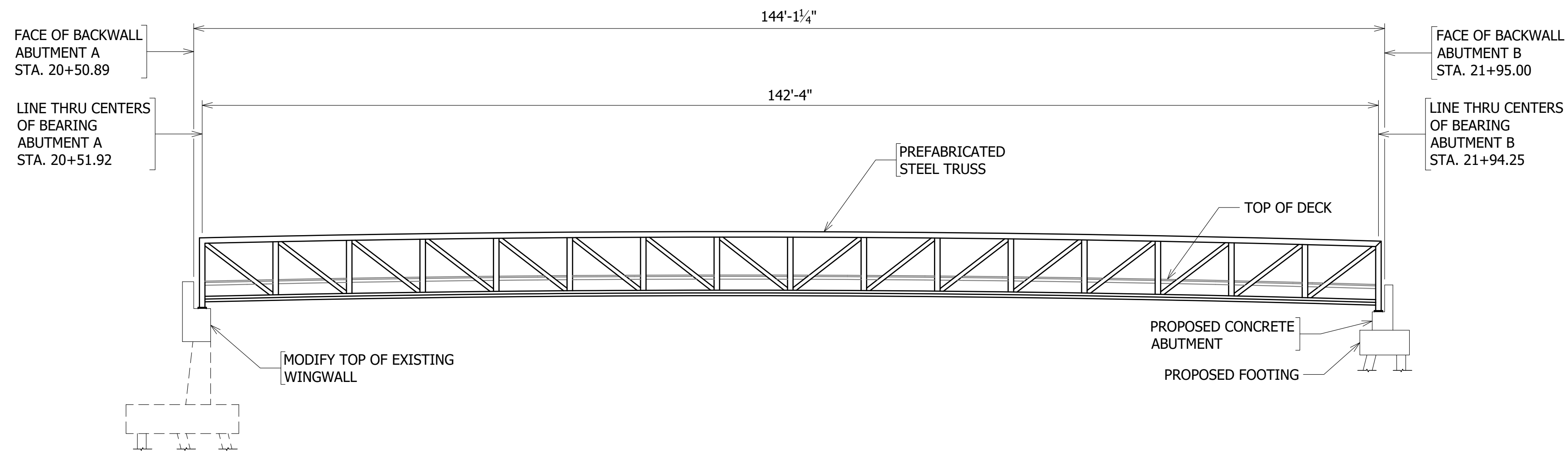
DESIGNED: DJ
DRAWN: DJ
CHECKED: AEE

PLOTTED: JULY 13 2022

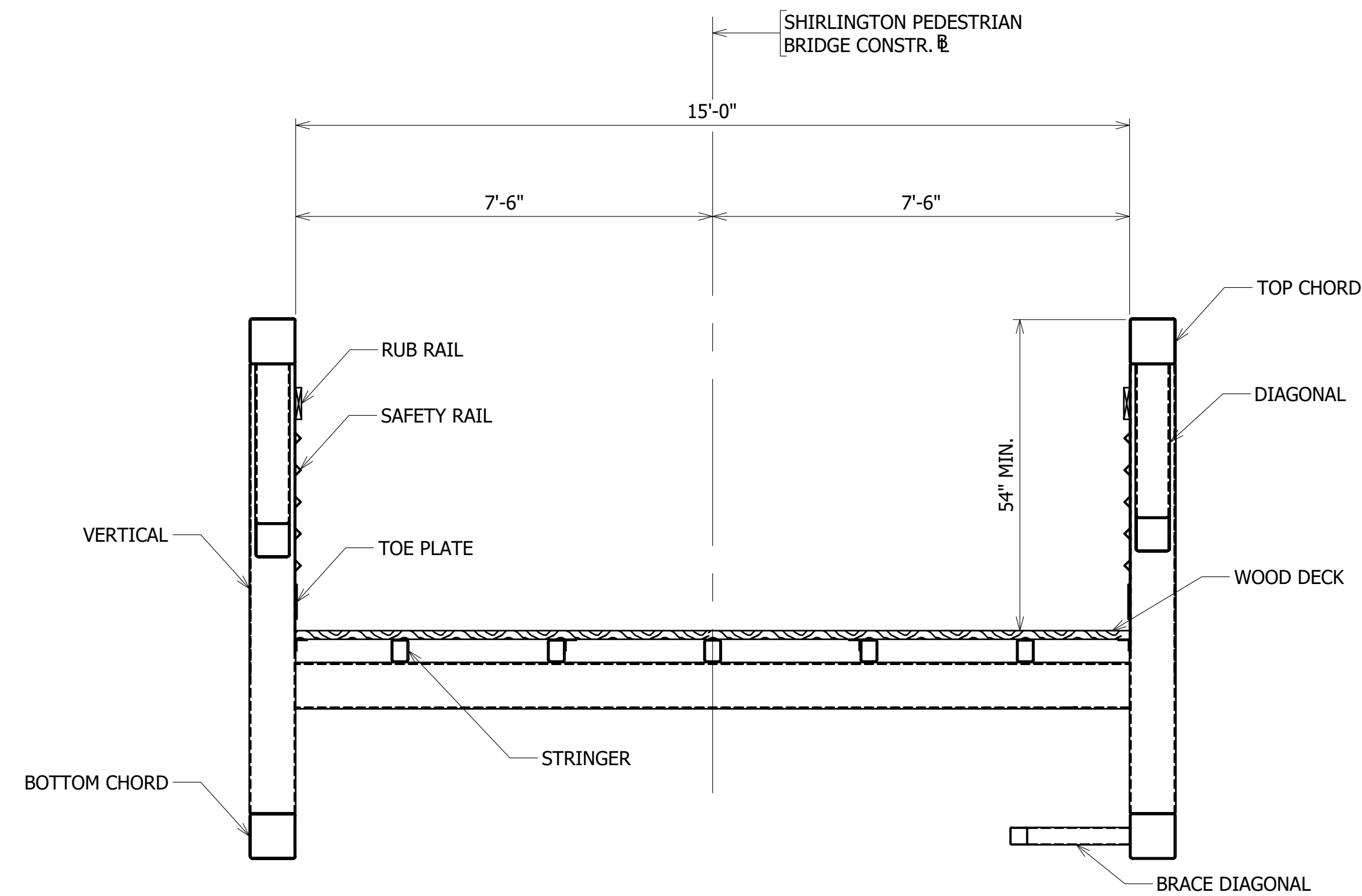


REVISED ON 1/24/2022

FILENAME: BR02-BRIDGE PLANS.DWG PATH: T:\1\009400 - MASTER-ARLINGTON COUNTY ON-CALL\1\009400 - SHIRLINGTON RD PEDESTRIAN BRIDGE\07 DESIGN\DWG PLOTTED BY: BRENDA DUONG



BRIDGE ELEVATION
NOT TO SCALE



BRIDGE TYPICAL SECTION
SCALE: 1/2" = 1'-0"

NOTES:

THE SUPERSTRUCTURE SHALL BE A STEEL TRUSS BRIDGE, SIMILAR TO THE CONTECH CONNECTOR TRUSS (WWW.CONTECHES.COM) OR EQUIVALENT AS APPROVED BY THE ENGINEER.

THE TRUSS SHALL INCLUDE A WOOD DECK CONSISTING OF SOUTHERN YELLOW PINE.

THE TRUSS FABRICATOR SHALL PROVIDE A PLATE ON BRIDGE WITH LOAD CAPACITY AND DATE OF MANUFACTURE.

CONTRACTOR SHALL COORDINATE WITH THE TRUSS MANUFACTURER FOR BEARING DETAILS AND SHALL PROVIDE BEARING DESIGN FOR ENGINEER'S REVIEW AND APPROVAL.

THE STRUCTURE DEPTH, MEASURED FROM THE TOP OF DECK TO THE LOWEST POINT ON THE STRUCTURE, SHALL BE MAXIMUM OF 3'-6".

LOWER CHORD MEMBERS SHALL ALLOW FOR FREE DRAINAGE AND BE CONFIGURED AS TO NOT CAPTURE DEBRIS.

THE SUBSTRUCTURE IS DESIGNED AND SIZED FOR A TOTAL SUPERSTRUCTURE WEIGHT OF 112,000 LBS. SHOULD THE WEIGHT BE GREATER THAN 112,000 LBS., THE TRUSS MANUFACTURER SHALL BRING IT TO THE ATTENTION OF THE ENGINEER TO RE-EVALUATE THE DESIGN OF SUBSTRUCTURE.

ALL PREFABRICATED TRUSS COMPONENTS SHALL BE UNPAINTED WEATHERING STEEL.



Approved: 10/3/2022
Subject to field inspection
LD22115
ARLINGTON VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL



APPROVALS DATE

<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>Dennis M. Leach</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>Rosa Harris</i>	9/27/2022
PROJECT MANAGER	

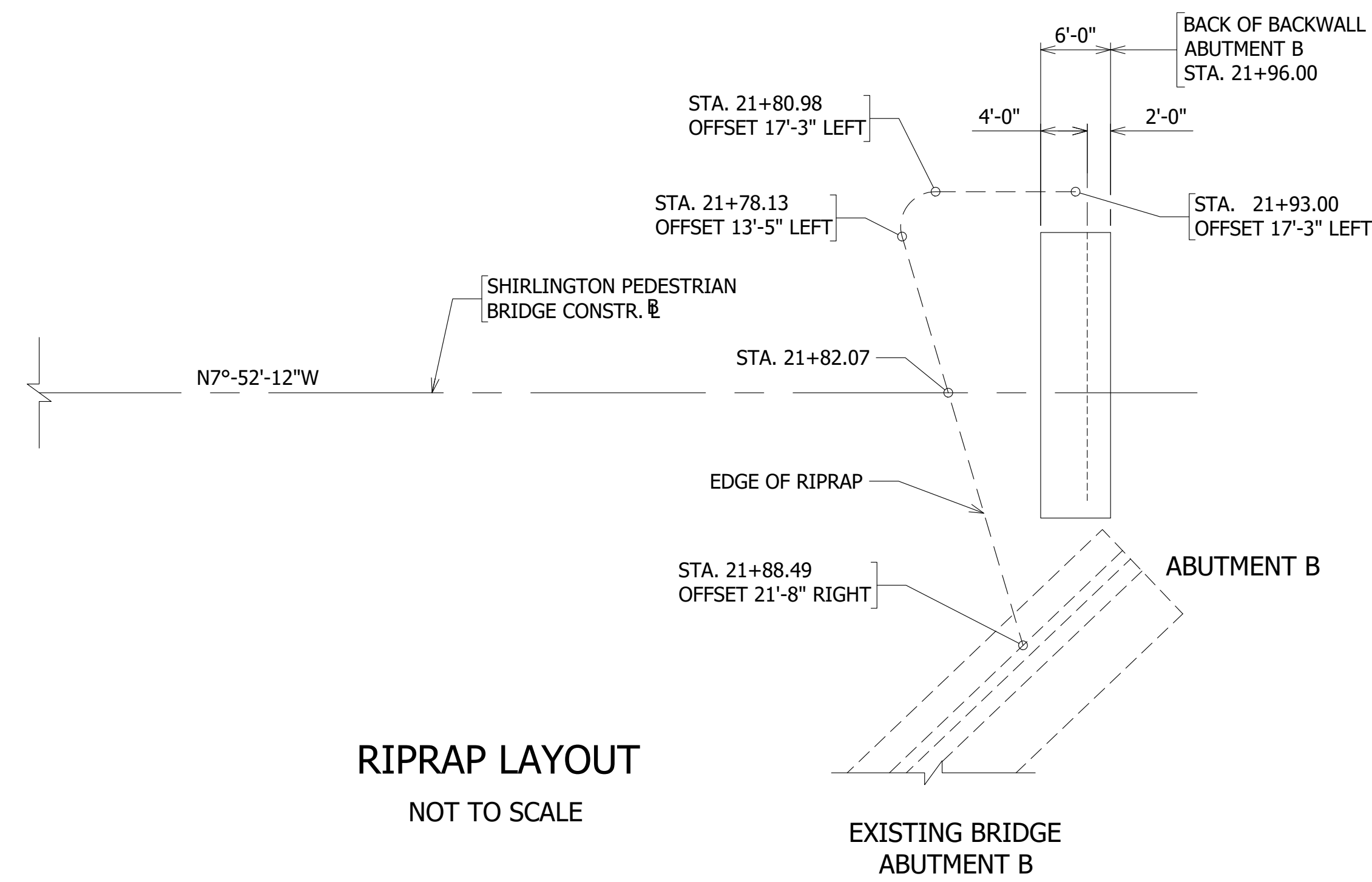
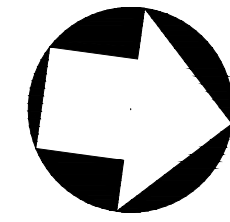
REVISIONS DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD
BRIDGE ELEVATION AND TYPICAL SECTION

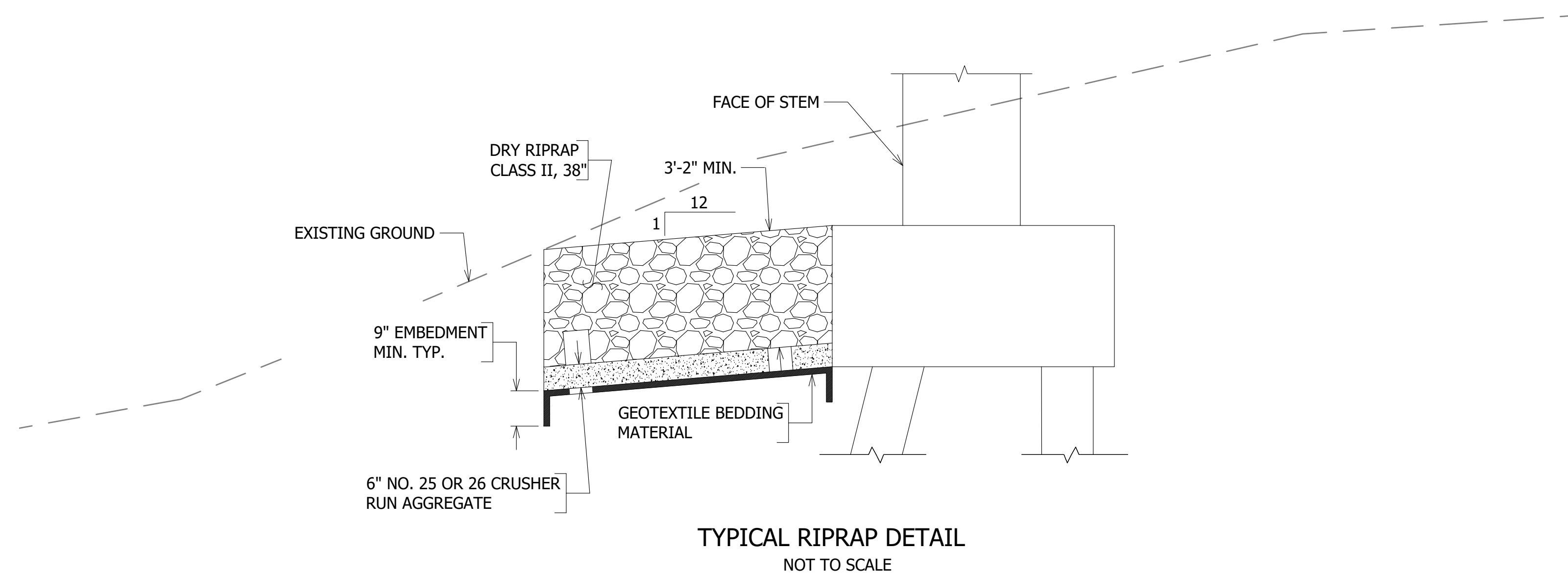
DESIGNED: DJ
DRAWN: DJ
CHECKED: AEE
PLOTTED: JULY 13 2022

SCALE:

AS SHOWN



RIPRAP LAYOUT
NOT TO SCALE



TYPICAL RIPRAP DETAIL
NOT TO SCALE

NOTES:

THIS LAYOUT IS TO BE USED ONLY FOR THE PURPOSE OF LOCATING FILL SLOPES AND LIMITS OF RIP RAP SLOPE PROTECTION. FOR ABUTMENT DETAILS, SEE SHEETS B001.6 AND B001.7.

RIPRAP SHALL BE IN ACCORDANCE WITH SECTION 414 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.



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ARLINGTON VIRGINIA

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ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
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APPROVALS	DATE
<i>[Signature]</i> DESIGN TEAM ENGINEER SUPERVISOR	9/28/2022
<i>[Signature]</i> CONSTRUCTION MANAGEMENT SUPERVISOR	10/13/22
<i>[Signature]</i> WATER/SEWER, STREETS BUREAU CHIEF	10/5/22
<i>Dennis M. Leach</i> TRANSPORTATION DIRECTOR	10/5/22
<i>Rosa Harris</i> PROJECT MANAGER	9/27/2022

REVISIONS

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

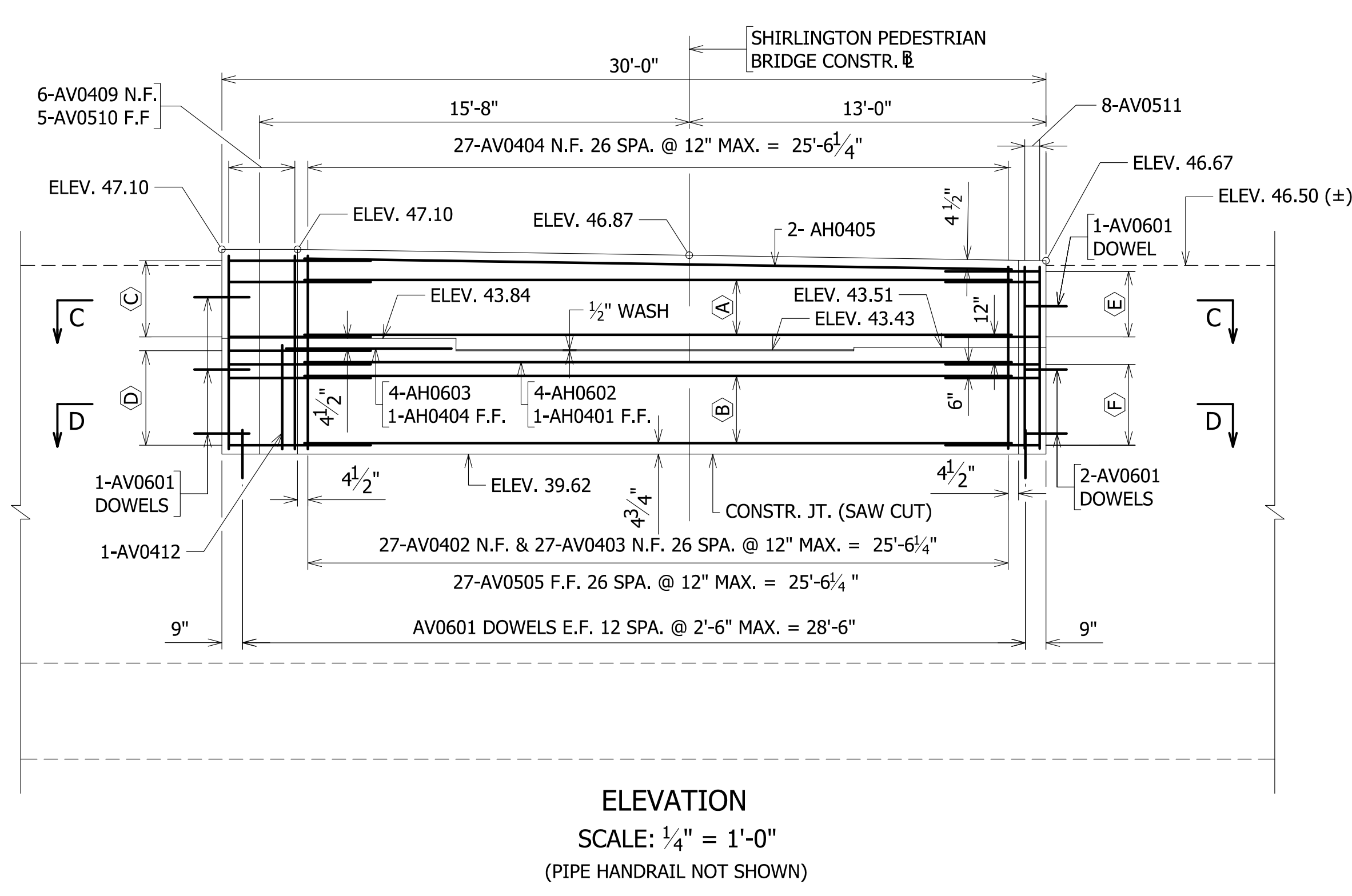
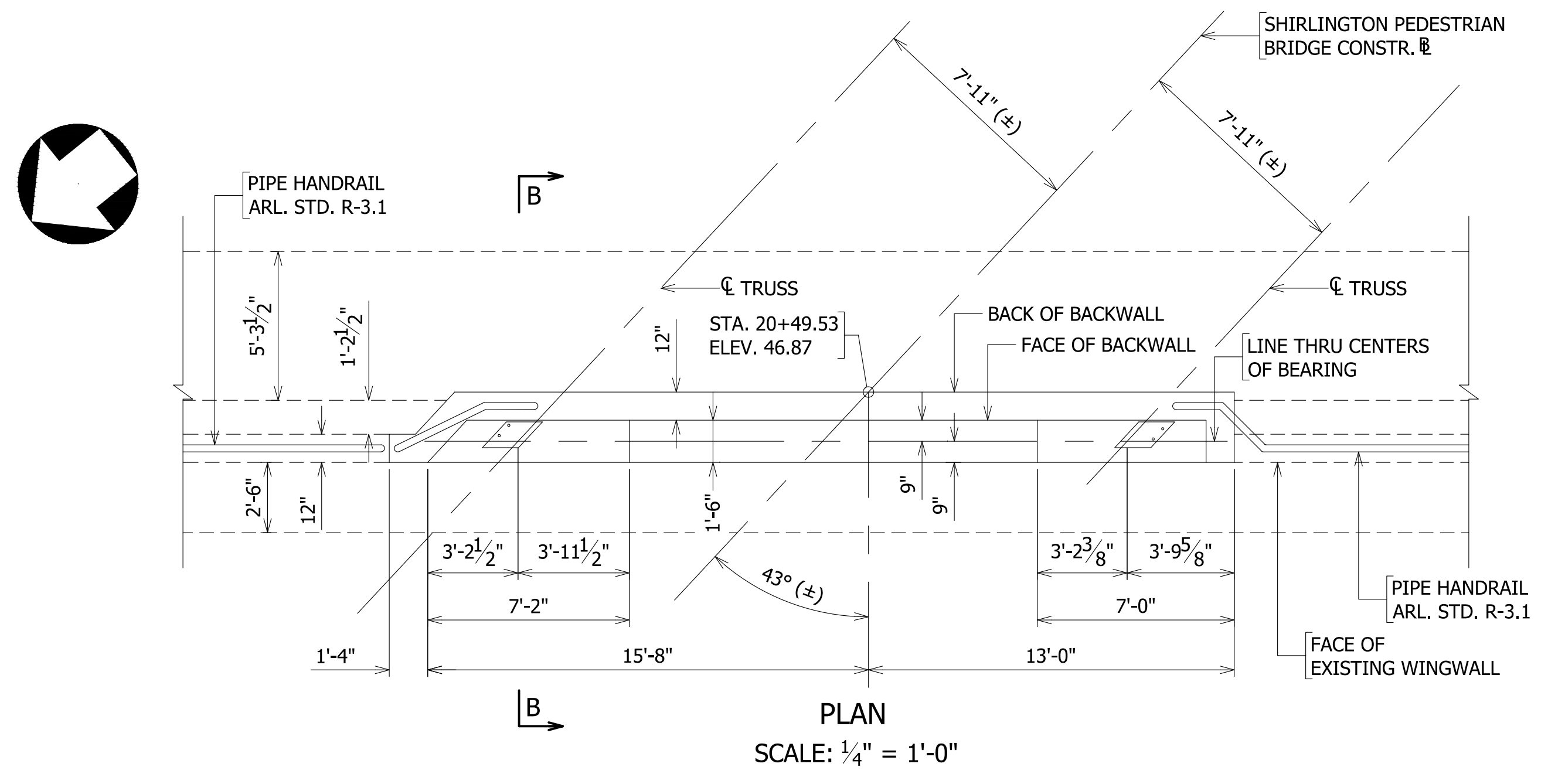
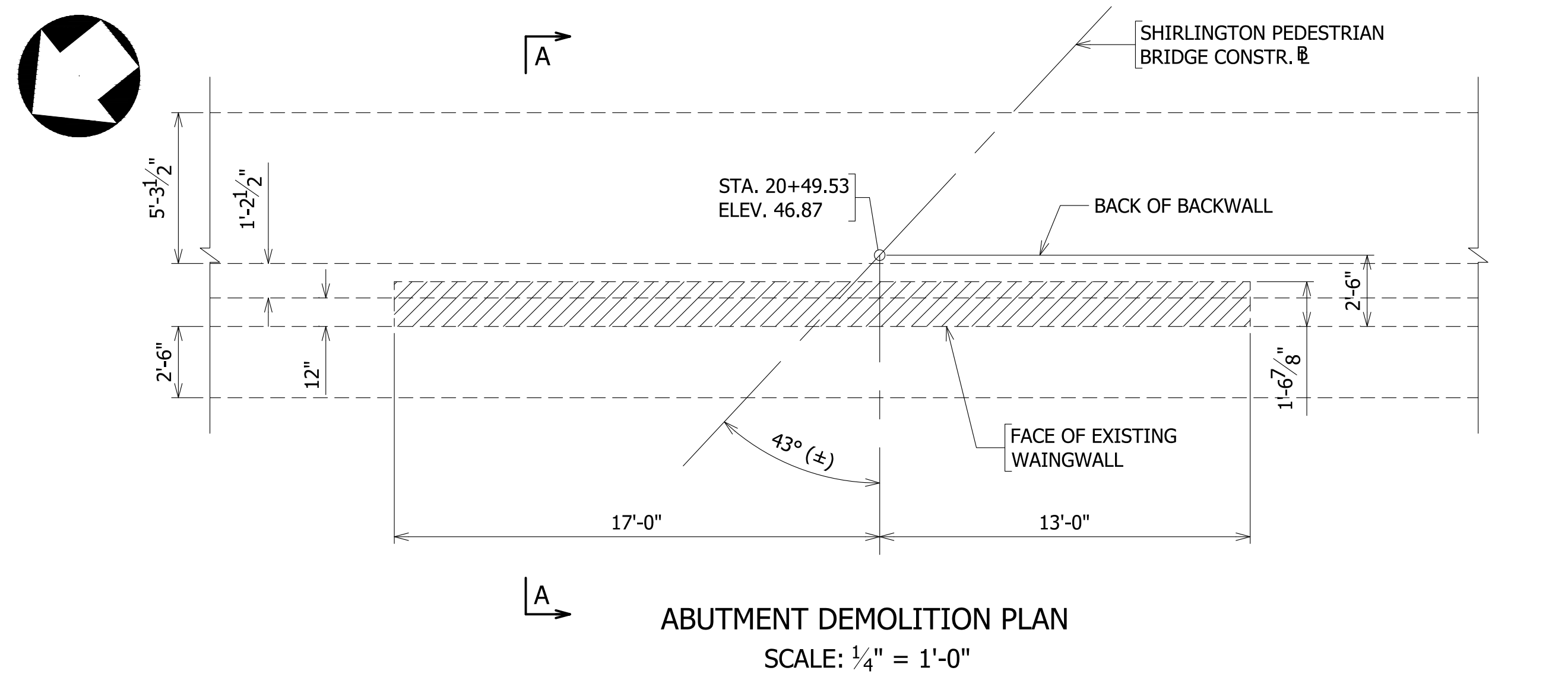
SHIRLINGTON ROAD

RIPRAP LAYOUT AND DETAIL

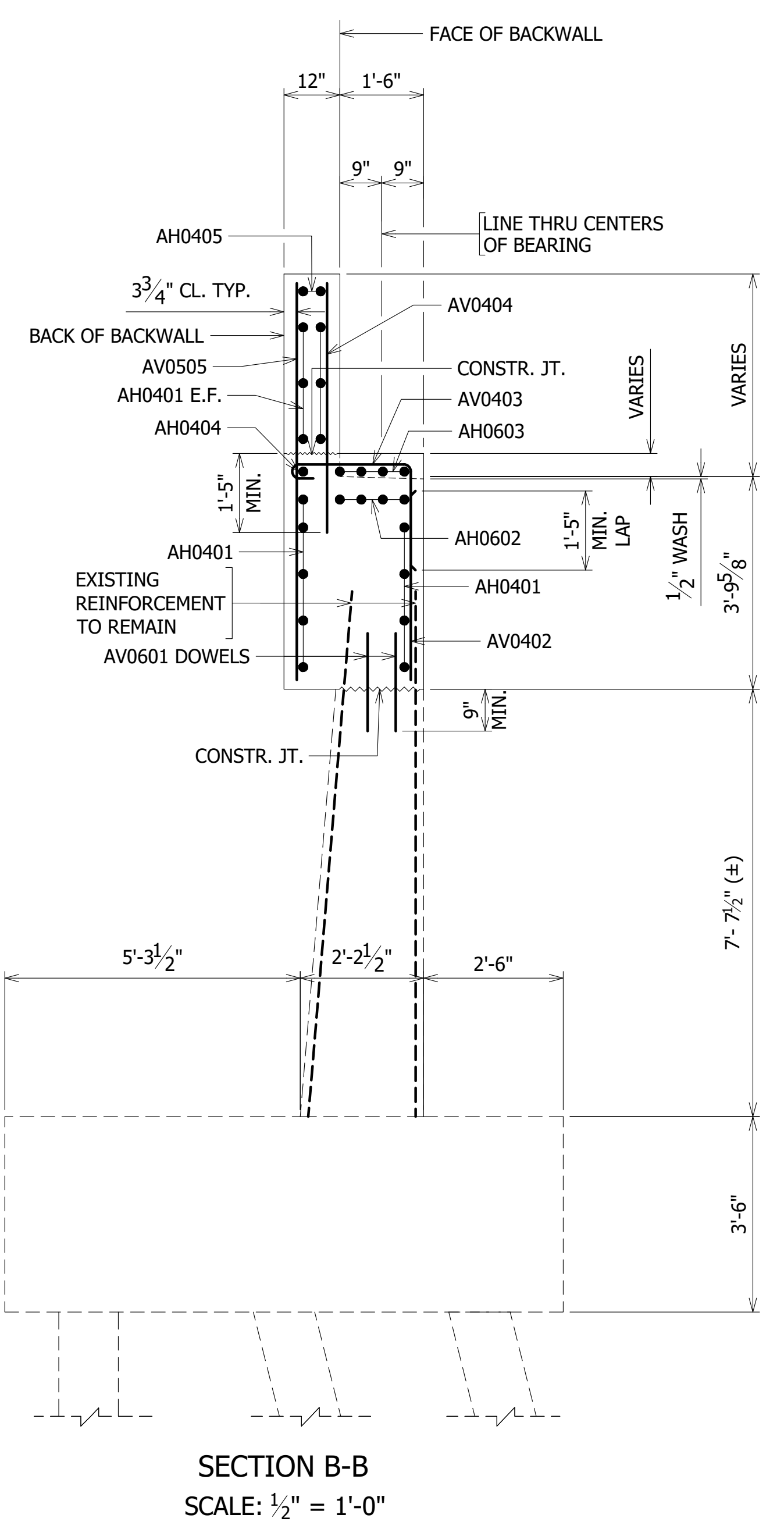
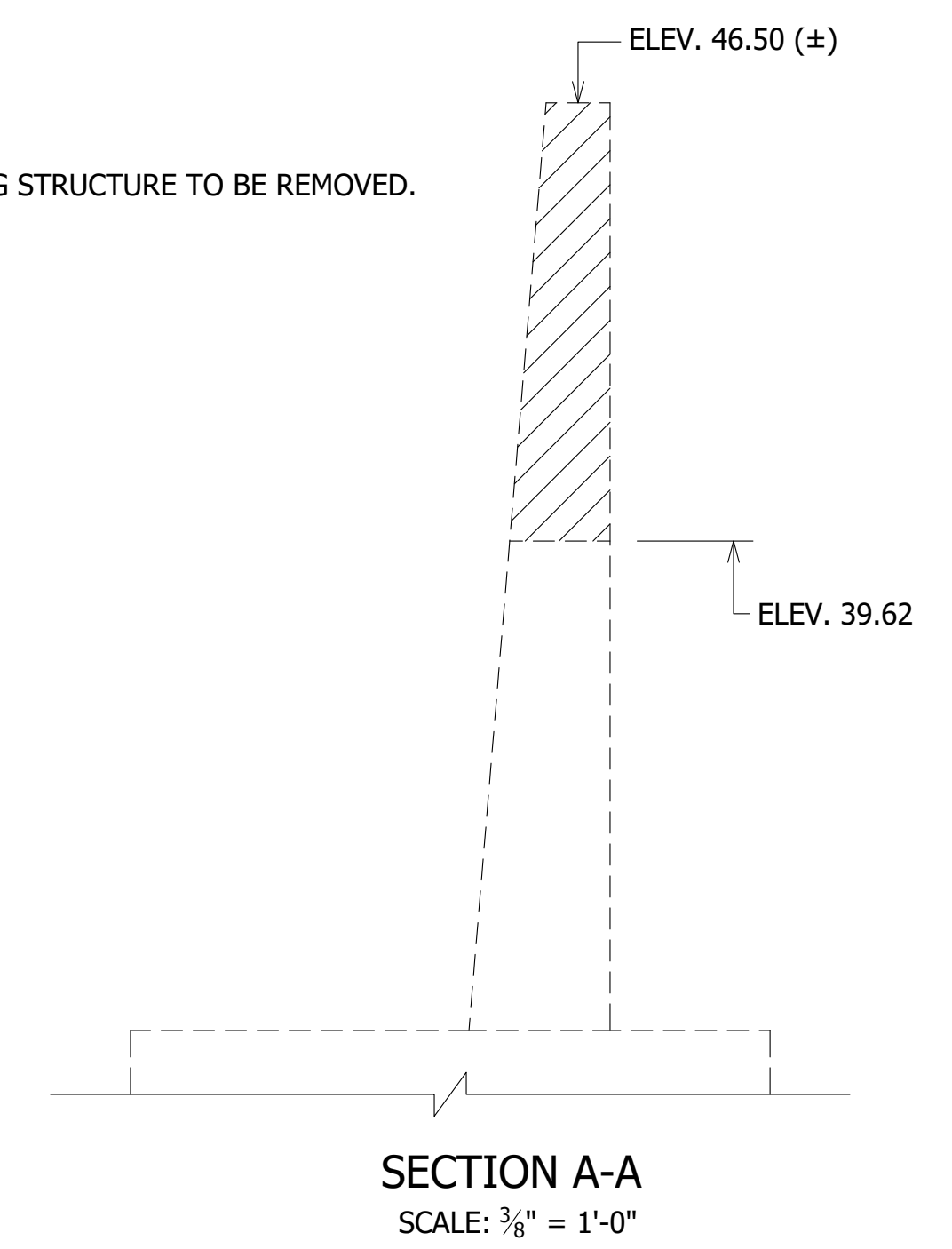
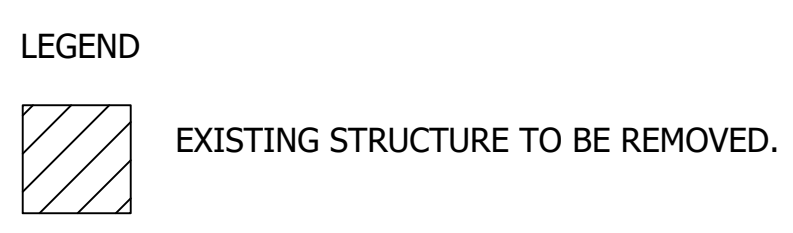
DESIGNED: DJ
DRAWN: DJ
CHECKED: AEE
PLOTTED: JULY 13 2022

SCALE:

AS SHOWN



- 3-AH0401 E.F.
- (A) 2 SPA. @ 12" = 2'-0"
- 4-AH0401 E.F.
- (B) 3 SPA. @ 10" = 2'-6"
- 4-AH0411 F.F. & 4-AH0412 N.F.
- (C) LAPPED WITH AH0401 & AH0405
- 6-AH0411 F.F. & 6-AH0415 N.F.
- (D) LAPPED WITH AH0401, AH0602, AH0603 & AH0404
- 4-AH0413 F.F. & 4-AH0414 N.F.
- (E) LAPPED WITH AH0401 & AH0405
- 5-AH0416
- (F) LAPPED WITH AH0401 & AH0602



NOTES:

REMOVAL OF PORTIONS OF THE EXISTING STRUCTURE SHALL BE IN ACCORDANCE WITH SECTION 413.02(b) OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.

REINFORCING STEEL EXPOSED DURING REMOVAL PROCESS SHALL BE PREPARED AS DIRECTED IN SECTION 412 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS AND SHALL LAP WITH NEW REINFORCING STEEL.

APPLY HEAVY COAT OF ASPHALT TO CONSTRUCTION JOINTS ON THE BACK FACE OF ABUTMENTS IN ACCORDANCE WITH SECTION 404.03(g) OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS. COST SHALL BE CONSIDERED INCIDENTAL TO OTHER ITEMS.

DETAILS, ELEVATIONS, AND DIMENSIONS ON THIS SHEET PERTAINING TO THE PREFABRICATED STEEL SUPERSTRUCTURE ARE APPROXIMATE AND SHALL BE VERIFIED AND/OR MODIFIED IN ACCORDANCE WITH THE APPROVED WORKING DRAWINGS FOR THE PREFABRICATED STEEL SUPERSTRUCTURE. THE CONTRACTOR SHALL SUBMIT ANY MODIFICATIONS TO THE ENGINEER FOR APPROVAL.

DOWELS SHALL BE DRILLED TO AN EMBEDMENT DEPTH OF 9 INCHES AND GROUTED WITH HIGH STRENGTH GROUT CONFORMING TO SECTION 218.03(d) OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS. COST SHALL BE CONSIDERED INCIDENTAL TO OTHER ITEMS.

FOR SECTION C-C, SEE SHEET B001.5.

FOR SECTION D-D, SEE SHEET B001.5.

E.F. = EACH FACE
N.F. = NEAR FACE
F.F. = FAR FACE

Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 813
ARLINGTON, VA 22201
PHONE: 703.228.3629
FAX: 703.228.3606

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SEAL

COMMONWEALTH OF VIRGINIA
BRIAN C. GRAHAM
Lic. No. 057740
05-19-2022
PROFESSIONAL ENGINEER

APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>[Signature]</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>[Signature]</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

SHIRLINGTON ROAD

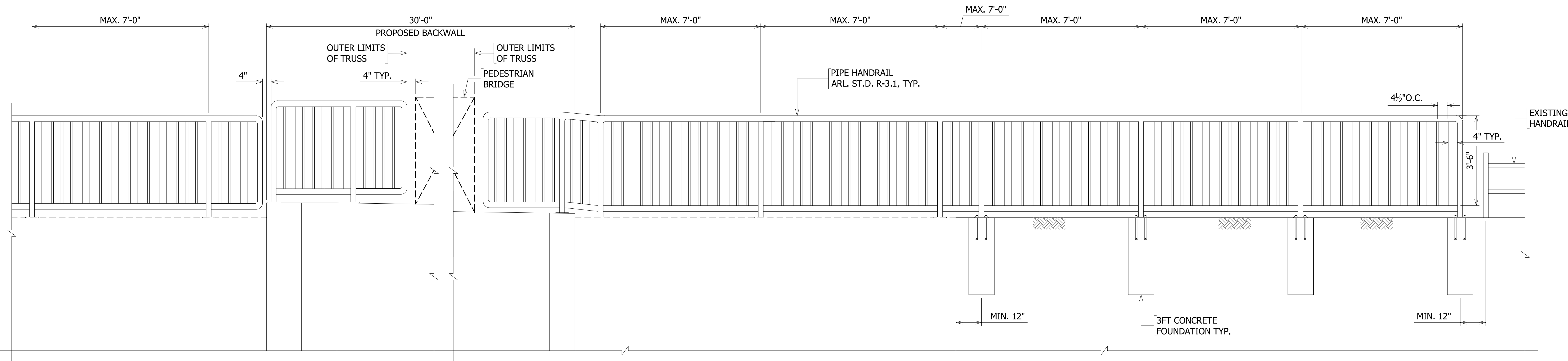
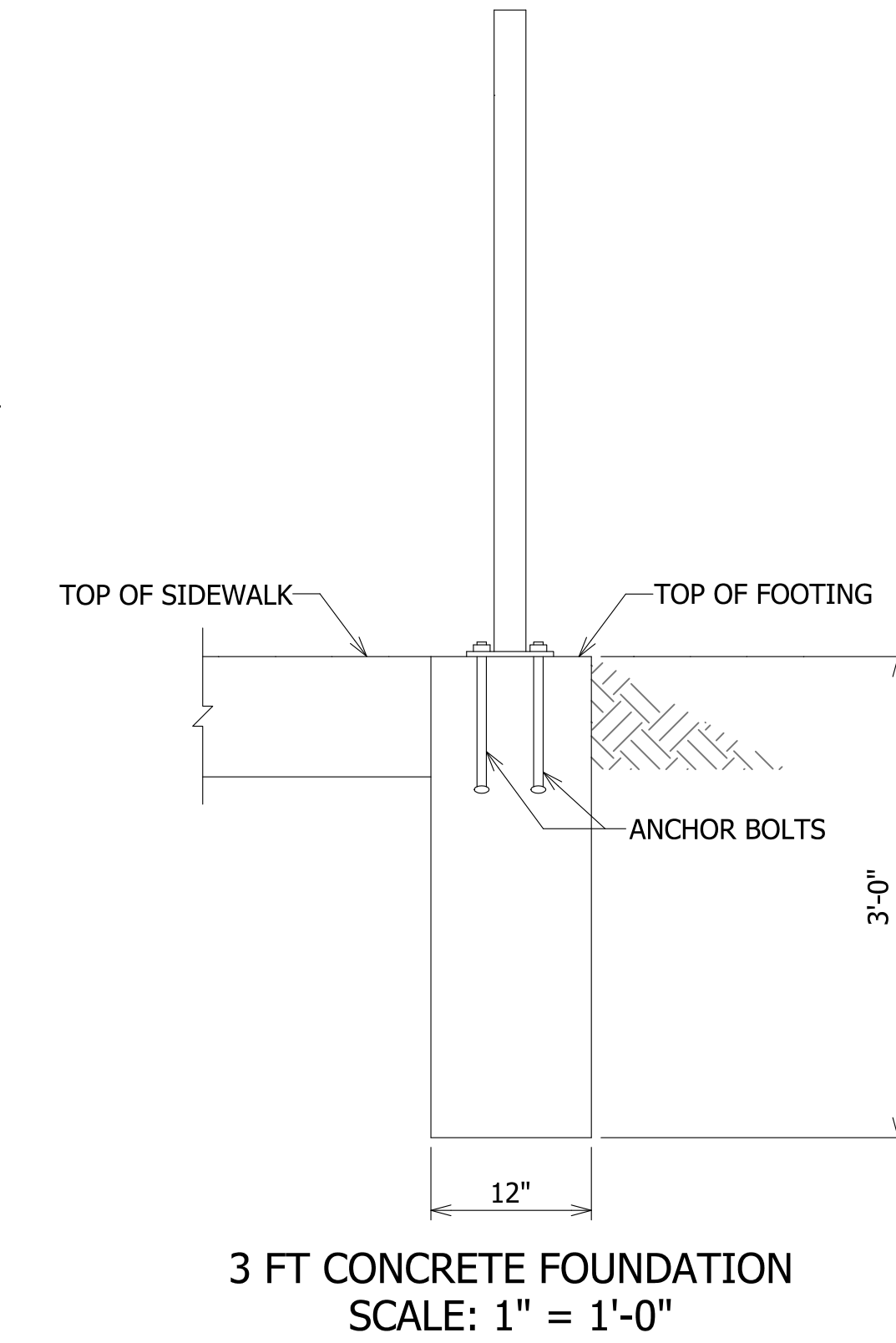
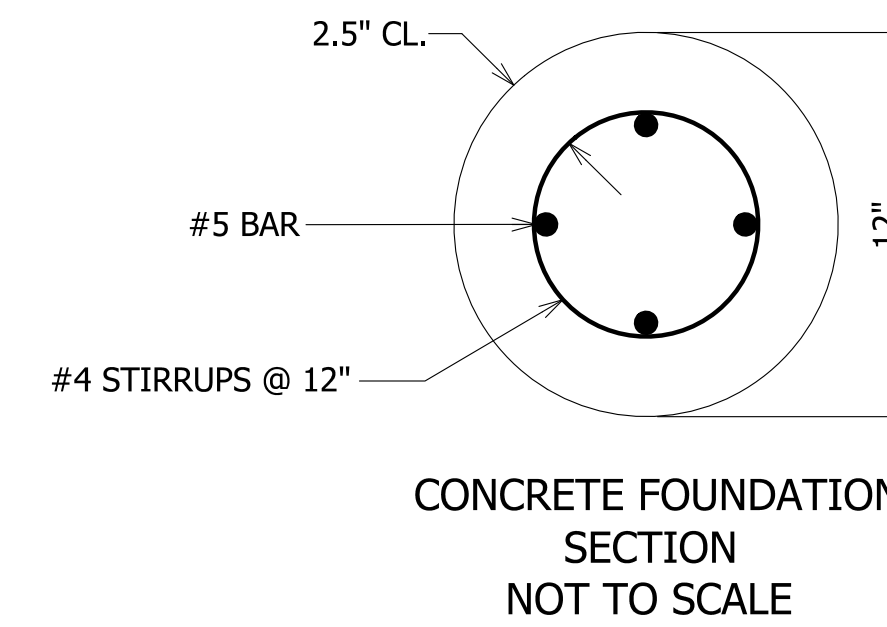
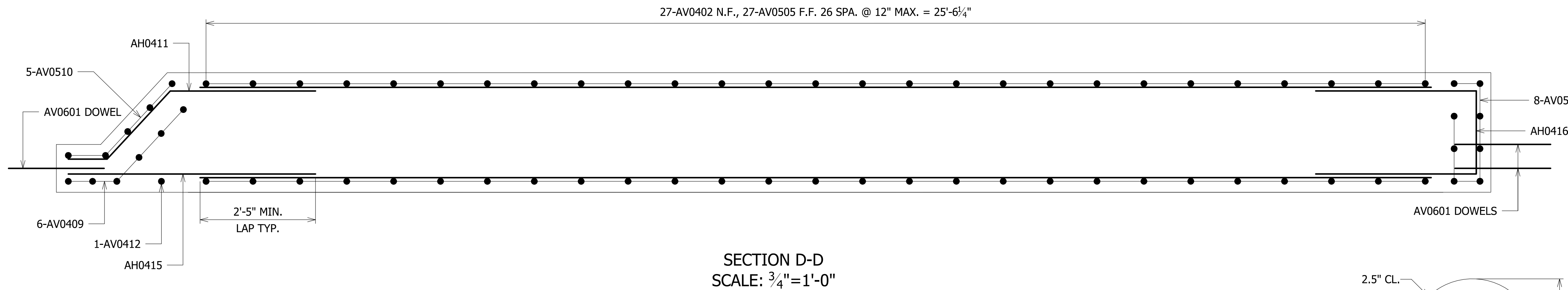
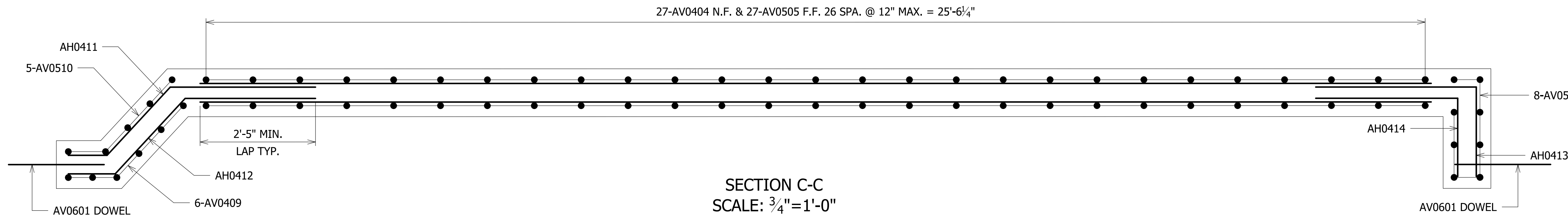
ABUTMENT A

DESIGNED: DJ
DRAWN: DJ
CHECKED: AEE
PLOTTED: JULY 13 2022

SCALE:
AS SHOWN

REVISED ON 1/24/2022

FILENAME: BR02-BRIDGE PLANS.DWG PATH: T:\1009400 - MASTER-ARLINGTON COUNTY ON-CALL\1009400 - SHIRLINGTON RD PEDESTRIAN BRIDGE\07 DESIGN\DWG PLOTTED BY: BRENDA DUONG



NOTES:

FOR THE LOCATION OF SECTION C-C, SEE SHEET B001.4.

FOR THE LOCATION OF SECTION D-D, SEE SHEET B001.4.

E.F. = EACH FACE

N.F. = NEAR FACE

F.F. = FAR FACE



Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
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ARLINGTON, VA 22201
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APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR	9/28/2022
CONSTRUCTION MANAGEMENT SUPERVISOR	10/13/22
WATER/SEWER, STREETS BUREAU CHIEF	10/5/22
TRANSPORTATION DIRECTOR	10/5/22
PROJECT MANAGER	9/27/2022

REVISIONS DATE

REVISIONS	DATE

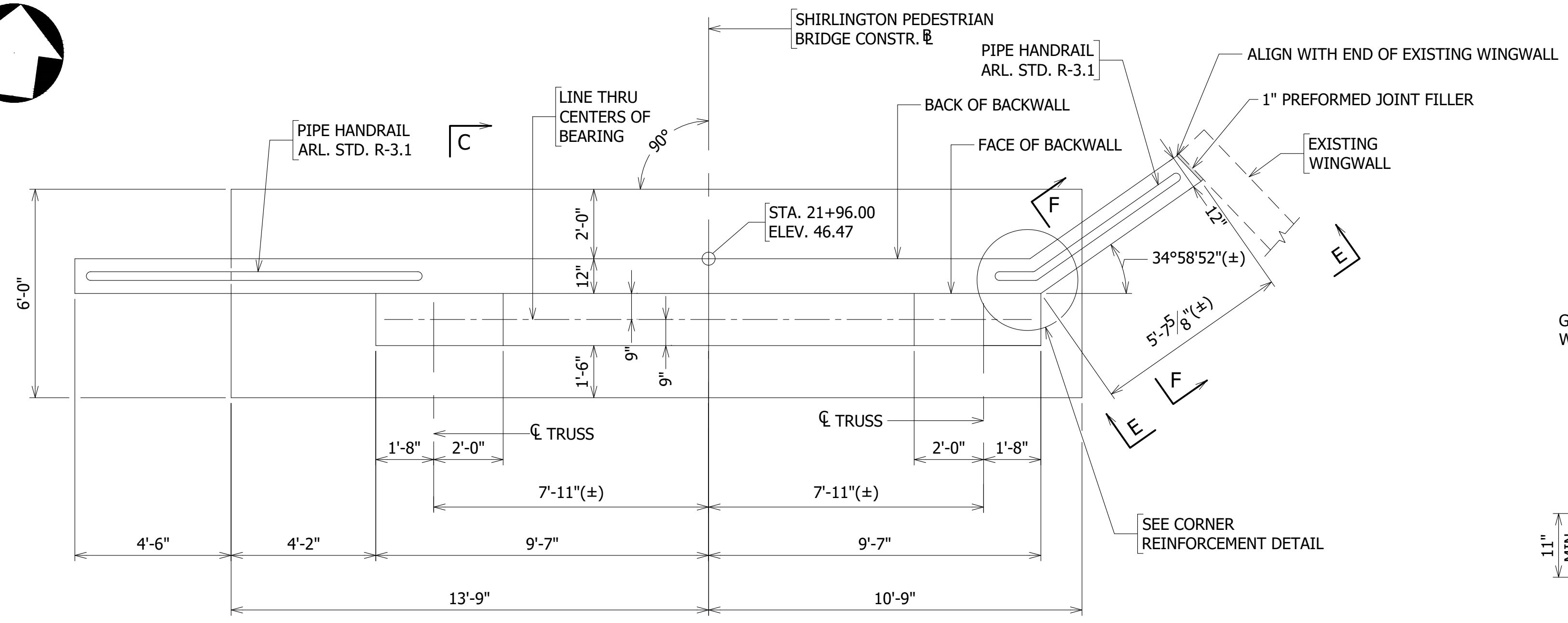
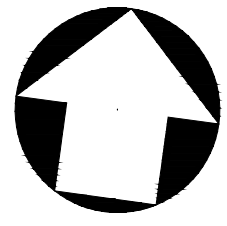
SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD
ABUTMENT A SECTION AND PEDESTRIAN HANDRAIL DETAILS

DESIGNED: DJ
DRAWN: DJ
CHECKED: AEE
PLOTTED: JULY 13 2022

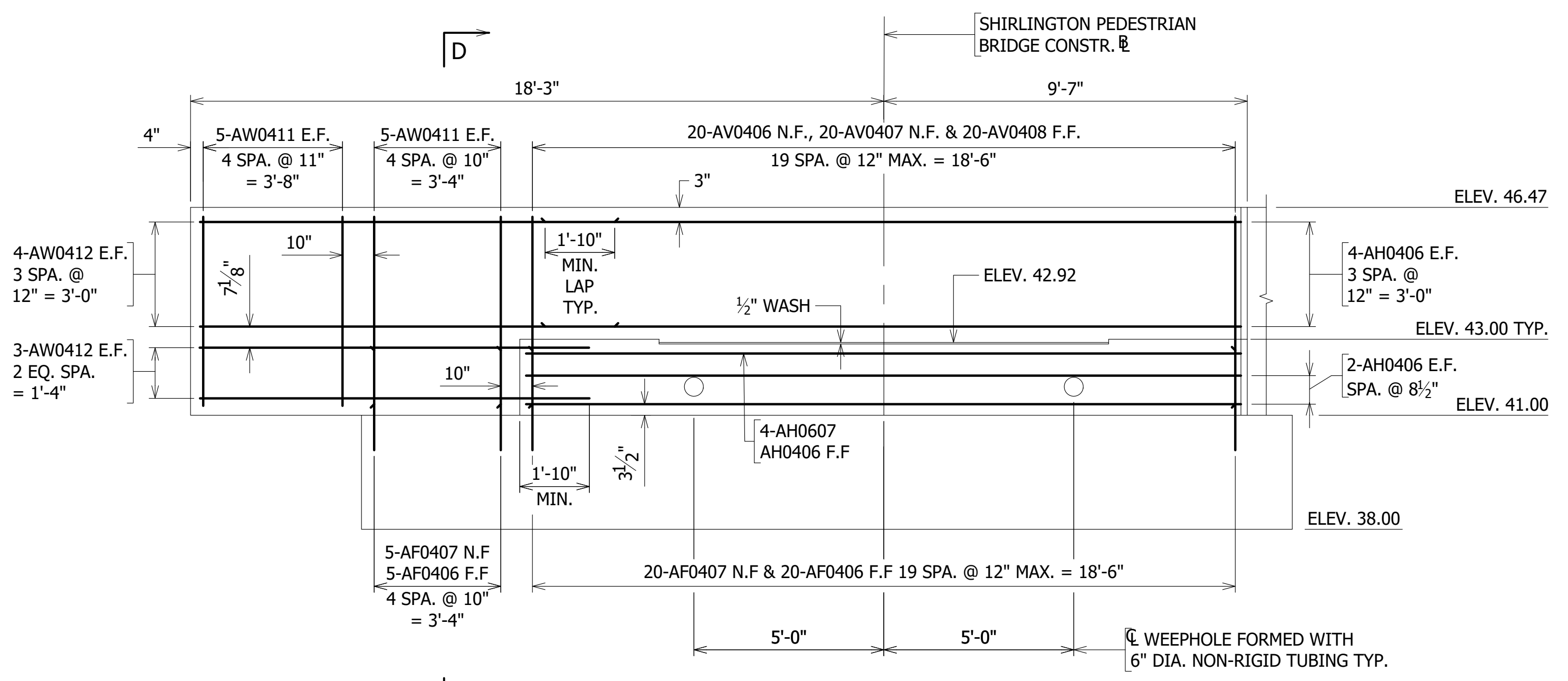
SCALE:
AS SHOWN

REVISED ON 1/24/2022

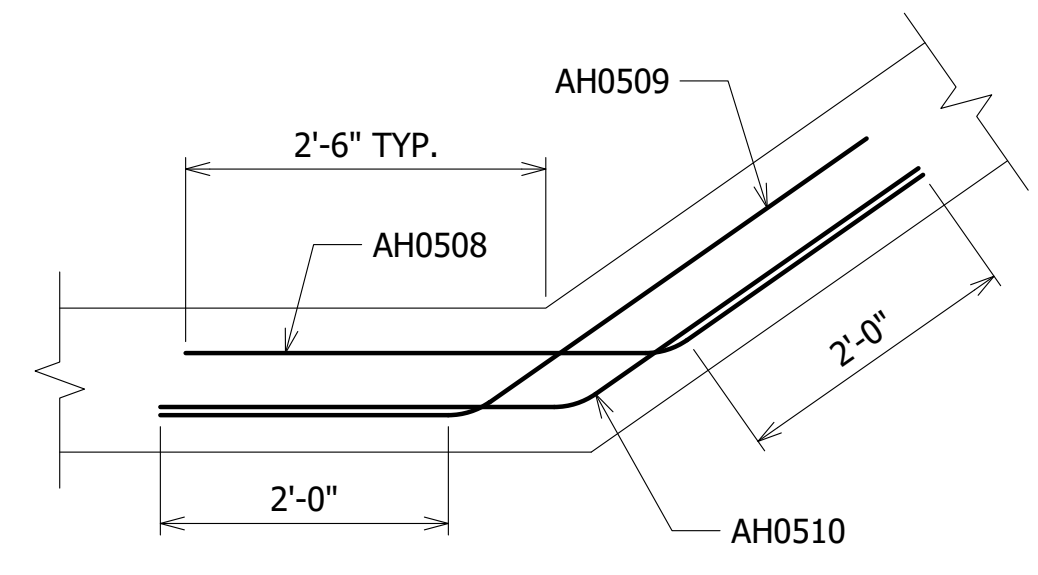
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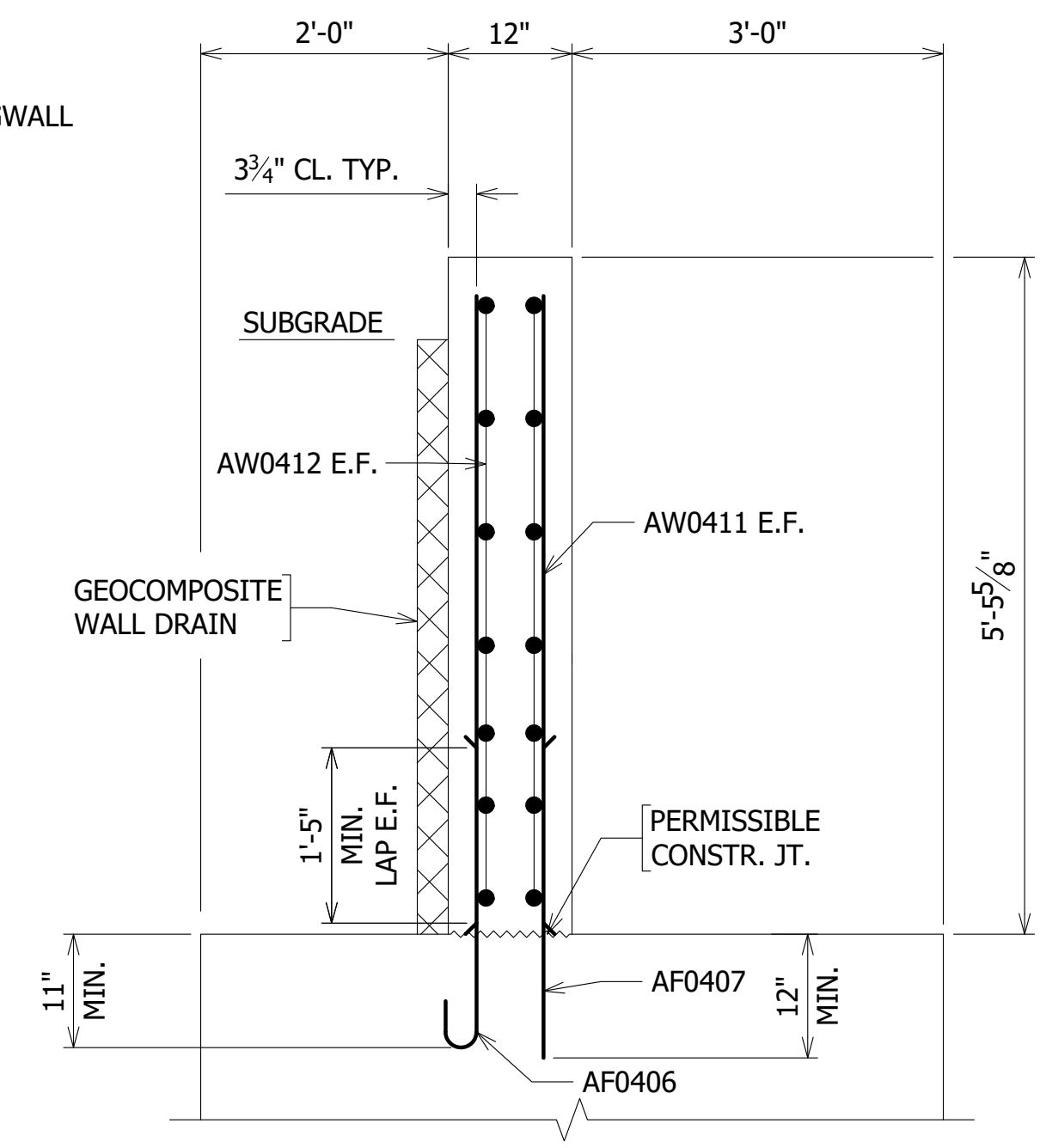
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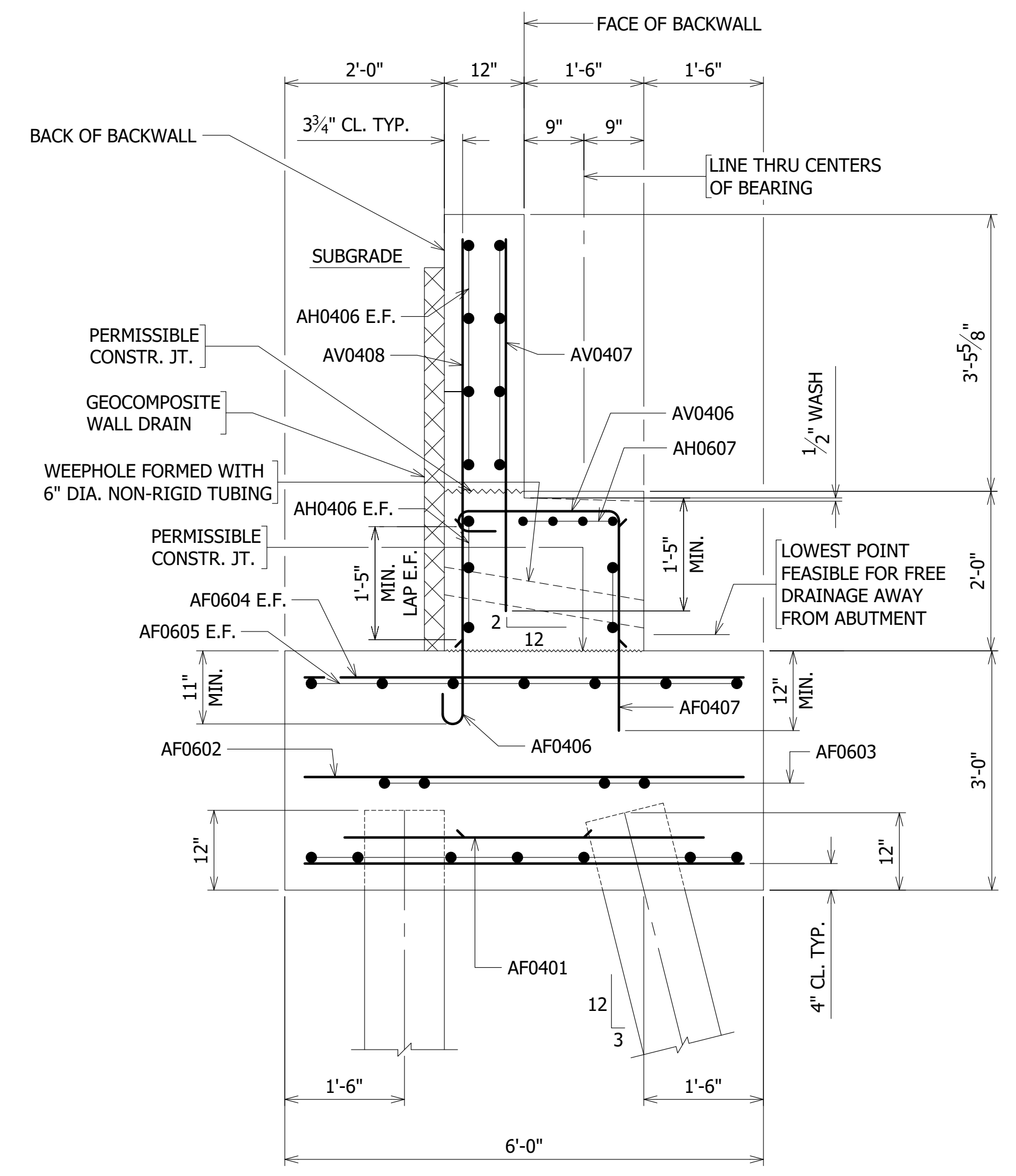
ELEVATION SCALE: 3/8" = 1'-0"



CORNER REINFORCEMENT DETAIL SCALE: 3/4" = 1'-0"



SECTION D-D SCALE: 3/4" = 1'-0"



SECTION C-C SCALE: 3/4" = 1'-0"

NOTES:

DETAILS, ELEVATIONS, AND DIMENSIONS ON THIS SHEET PERTAINING TO THE PREFABRICATED STEEL SUPERSTRUCTURE ARE APPROXIMATE AND SHALL BE VERIFIED AND/OR MODIFIED IN ACCORDANCE WITH THE APPROVED WORKING DRAWINGS FOR THE PREFABRICATED STEEL SUPERSTRUCTURE. THE CONTRACTOR SHALL SUBMIT ANY MODIFICATIONS TO THE ENGINEER FOR APPROVAL.

FOR VIEW E-E, SEE SHEET B001.7.

FOR SECTION F-F, SEE SHEET B001.7.

E.F. = EACH FACE
N.F. = NEAR FACE
F.F. = FAR FACE

Approved: 10/3/2022
Subject to field inspection
LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
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SEAL

COMMONWEALTH OF VIRGINIA

BRIAN C. GRAHAM
Lic. No. 11818
PROFESSIONAL ENGINEER
05-19-2022

APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>Dennis M. Leach</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>Rosa Harris</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02

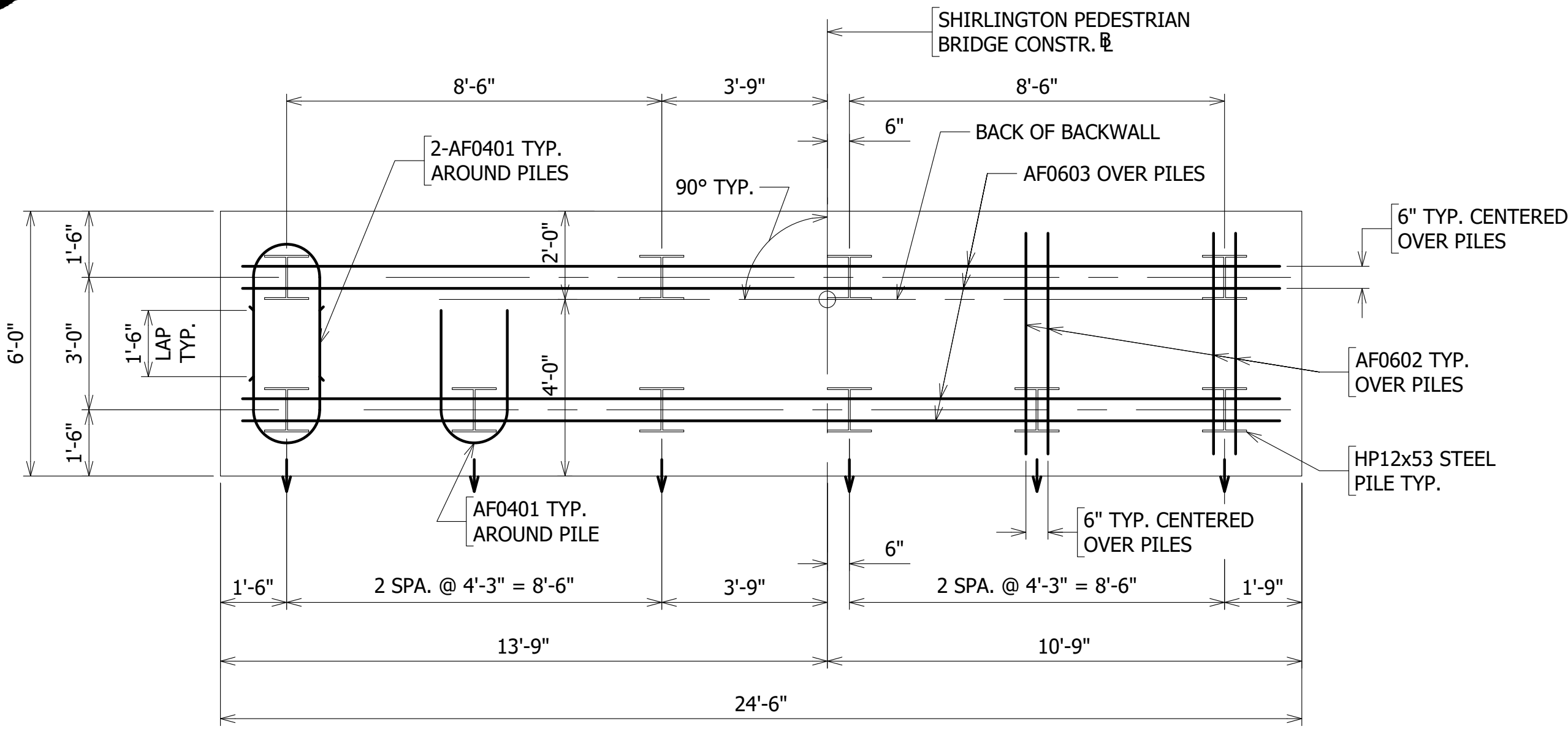
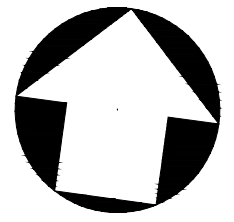
SHIRLINGTON ROAD

ABUTMENT B

DESIGNED: DJ
DRAWN: DJ
CHECKED: AEE
PLOTTED: JULY 13 2022

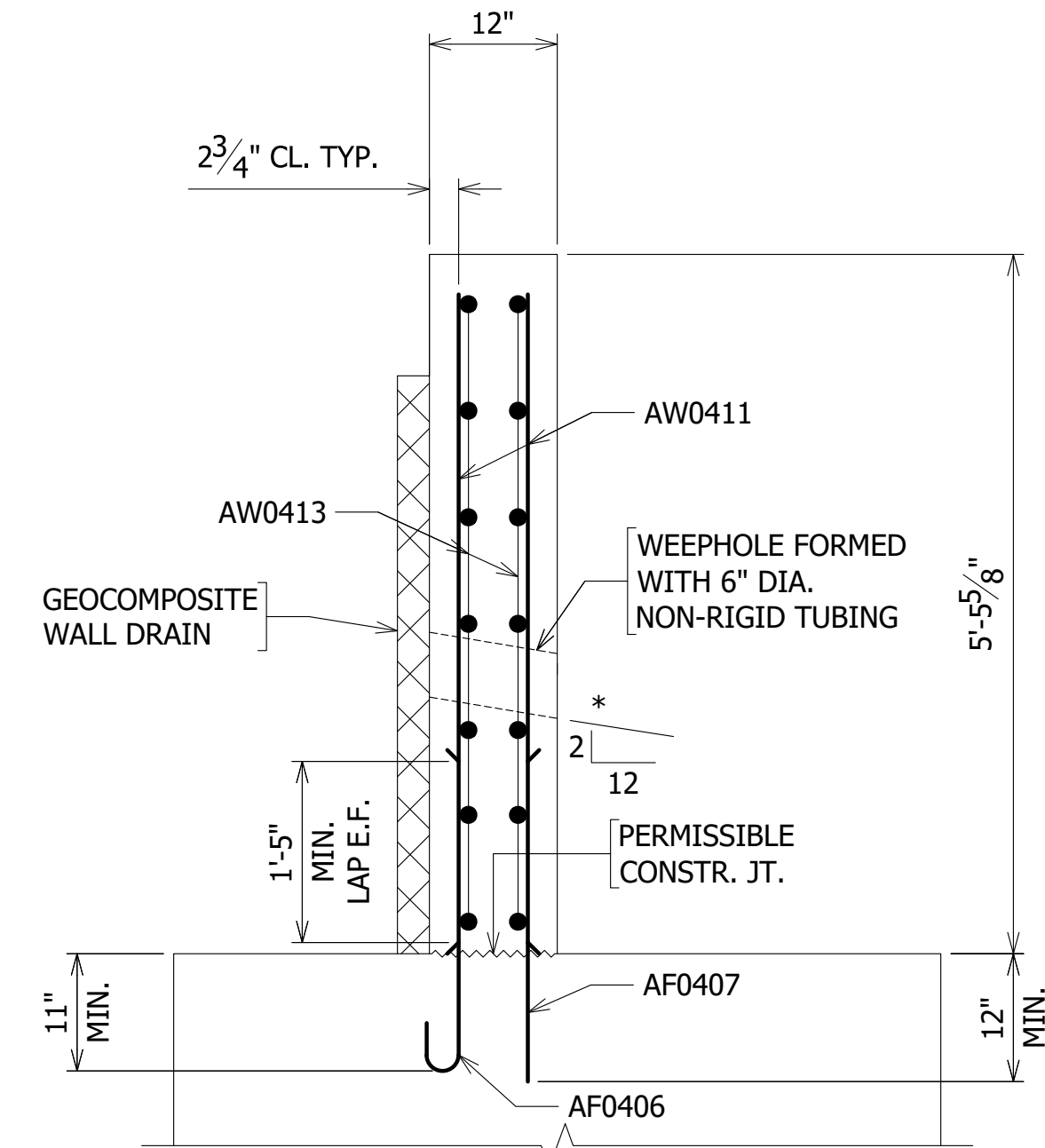
SCALE:
AS SHOWN

B001.6



PILE LAYOUT AND PILE REINFORCEMENT

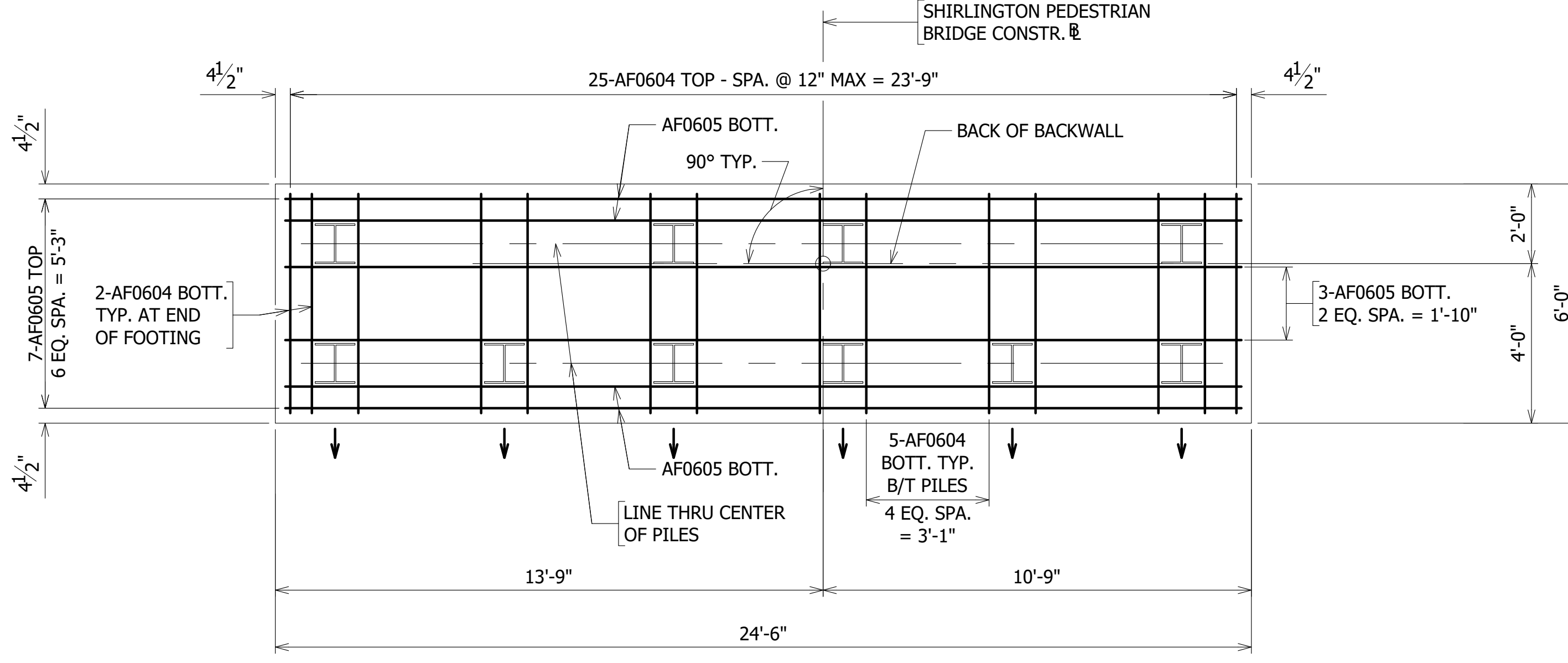
SCALE: 3/8" = 1'-0"



SECTION F-F

SCALE: 3/4" = 1'-0"

* LOWEST POINT FEASIBLE FOR FREE DRAINAGE AWAY FROM ABUTMENT.



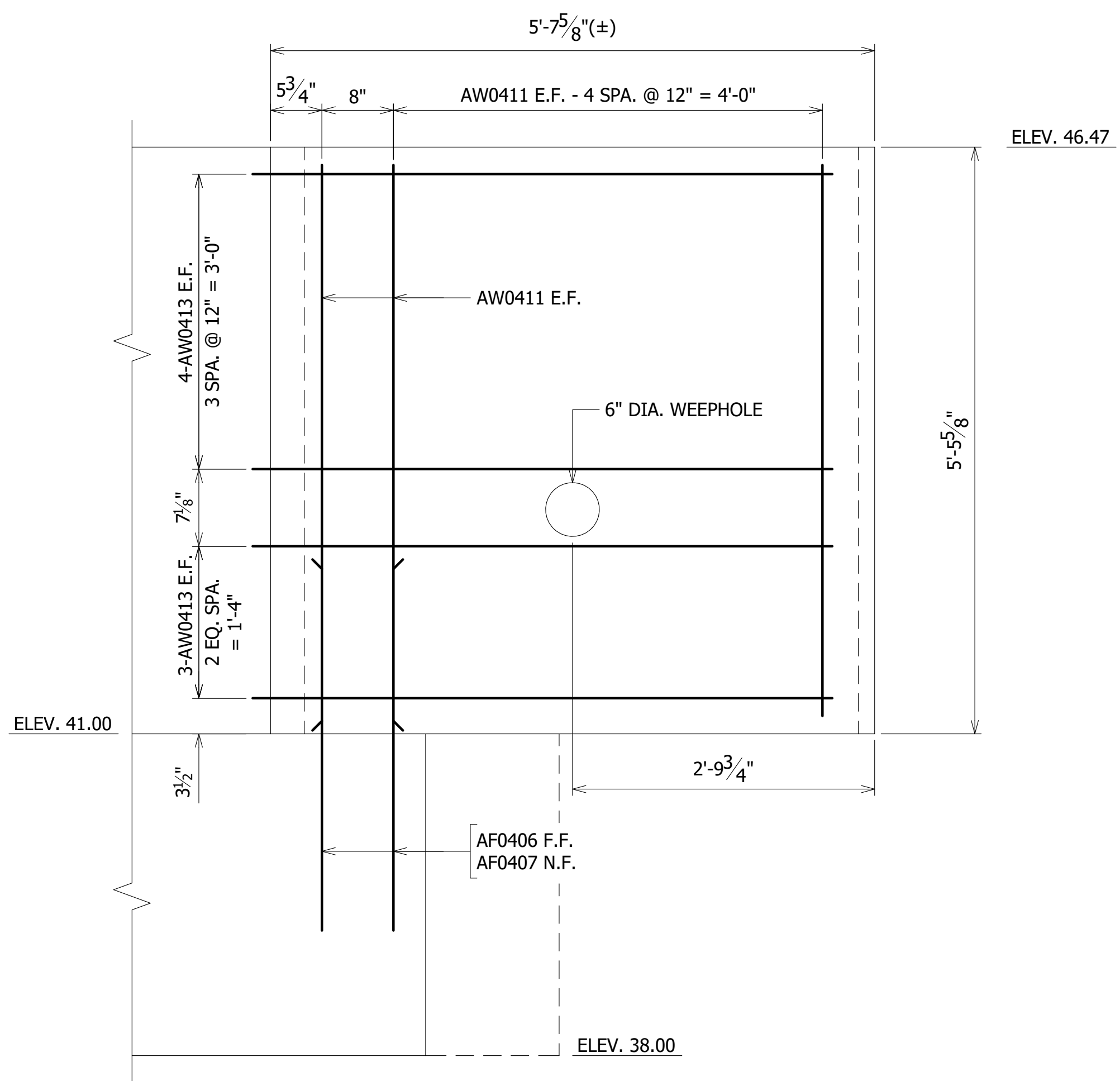
FOOTING REINFORCEMENT

SCALE: 3/8" = 1'-0"

↓ INDICATES DIRECTION OF 3:12 BATTER

PILE DATA TABLE			
SUBSTRUCTURE UNIT	NOMINAL AXIAL RESISTANCE MEASURED DURING DRIVING (TONS/PILE)	FACTORED AXIAL RESISTANCE (TONS/PILE)	ESTIMATED TIP ELEVATION
ABUTMENT B	62	39	12.0

THE STRENGTH LIMIT STATE CONTROLS THE PILE DESIGN. ONE DYNAMIC PILE TEST IS REQUIRED AND SHALL BE IN ACCORDANCE WITH SECTION 404 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS. THE TEST MAY BE PERFORMED ON A PRODUCTION PILE.



VIEW E-E

SCALE: 1" = 1'-0"

NOTES:
 FOR THE LOCATION OF VIEW E-E, SEE SHEET B001.6.
 FOR THE LOCATION OF SECTION F-F, SEE SHEET B001.6.
 E.F. = EACH FACE
 N.F. = NEAR FACE
 F.F. = FAR FACE

Approved: 10/3/2022
 Subject to field inspection
 LD22115

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
 2100 CLARENDON BOULEVARD, SUITE 813
 ARLINGTON, VA 22201
 PHONE: 703.228.3629
 FAX: 703.228.3606

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SEAL

COMMONWEALTH OF VIRGINIA

BRIAN C. GRAHAM
 Lic. No. 611148
 05-19-2022
 PROFESSIONAL ENGINEER

APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>[Signature]</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>[Signature]</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

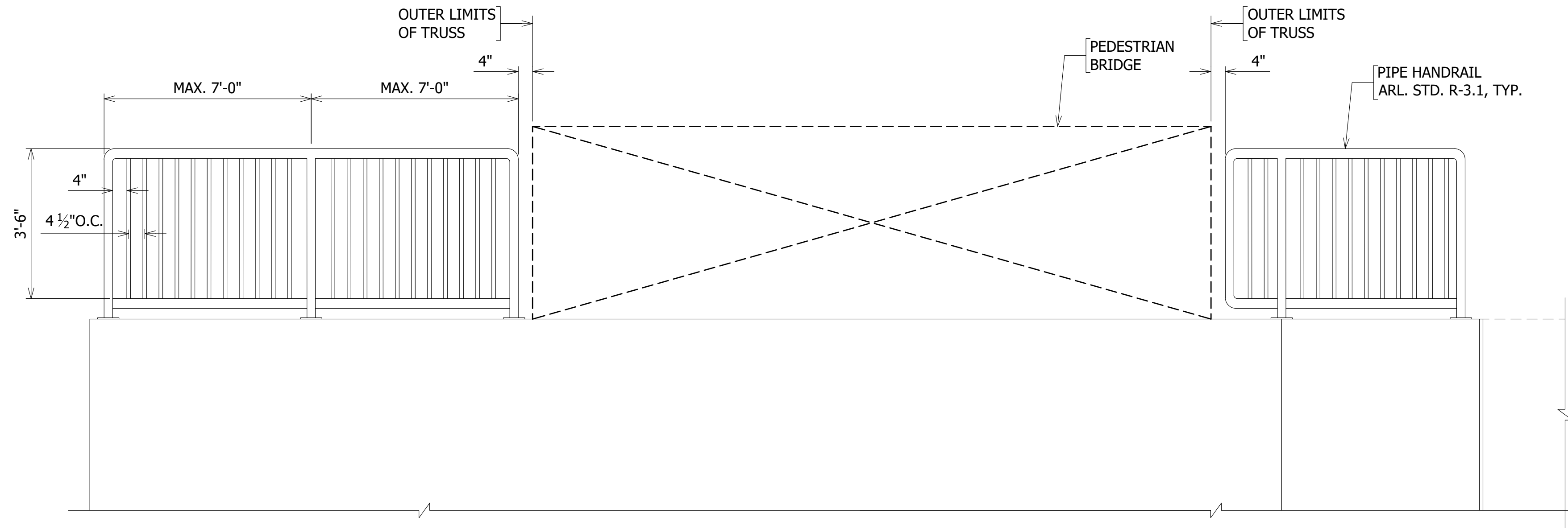
SHIRLINGTON ROAD PEDESTRIAN BRIDGE
 BR02

SHIRLINGTON ROAD

ABUTMENT B FOOTING AND WINGWALL

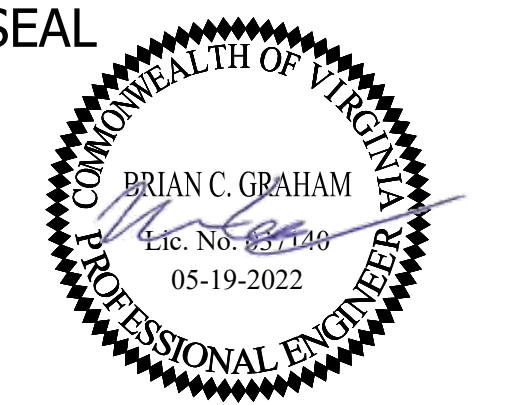
DESIGNED: DJ
 DRAWN: DJ
 CHECKED: AEE
 PLOTTED: JULY 13 2022

SCALE:
 AS SHOWN



DEVELOPED ELEVATION OF
PEDESTRIAN HANDRAIL
SCALE: 1/2" = 1'-0"

NOTE:
THE NUMBER AND SPACING OF POSTS SHOWN IS FOR INFORMATIONAL PURPOSES ONLY.
THE CONTRACTOR SHALL DETERMINE POST SPACING AND ALL DIMENSIONS AND DETAILS
NECESSARY FOR INSTALLATION.



APPROVALS	DATE
<i>[Signature]</i>	9/28/2022
DESIGN TEAM ENGINEER SUPERVISOR	
<i>[Signature]</i>	10/13/22
CONSTRUCTION MANAGEMENT SUPERVISOR	
<i>[Signature]</i>	10/5/22
WATER/SEWER, STREETS BUREAU CHIEF	
<i>Dennis M. Leach</i>	10/5/22
TRANSPORTATION DIRECTOR	
<i>Rosa Harris</i>	9/27/2022
PROJECT MANAGER	

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
BR02
SHIRLINGTON ROAD

ABUTMENT B PEDESTRIAN HANDRAIL
DETAILS

DESIGNED: DJ
DRAWN: DJ
CHECKED: AEE

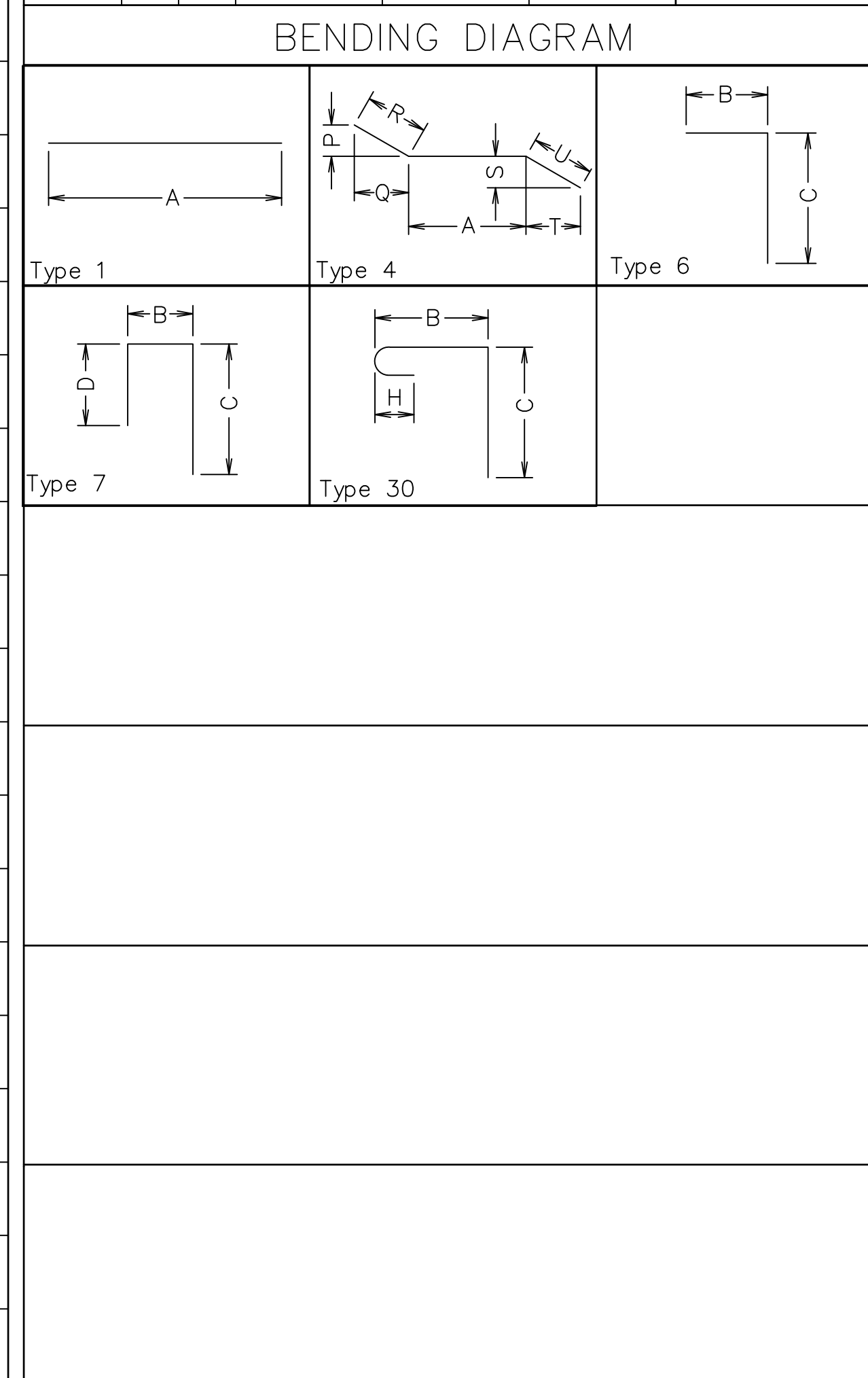
PLOTTED: JULY 13 2022

SCALE:

AS SHOWN

REINFORCING STEEL SCHEDULE						DIMENSION TABLE																
MARK	NO.	BAR SIZE	PIN DIA. FT-IN	LENGTH FT-IN		WEIGHT (LBS.)	LOCATION	TYPE	A	B	C	D	E	F	G	H	I	J	K	L	V	N
				FT-IN	FT-IN				FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN
Abutment A																						
AH0401	15	4		25-09		258	Stem	1	25-09													
AH0602	4	6		25-09		155	Stem	1	25-09													
AH0603	4	6		6-03		38	Stem	1	6-03													
AH0404	1	4		5-10		4	Stem	1	5-10													
AH0405	2	4		25-09		34	Stem	1	25-09					7 3/8	6 1/2	9 5/8		2-02 1/4	2-00	2-11 3/8		
AH0411	10	4	3	5-10		38	Stem	4	2-00 3/4													
AH0412	4	4	3	5-10		15	Stem	4	2-00 3/4													
AH0413	4	4	3	5-02		14	Stem	6	3-04 3/8	1-10				8 1/4	7 1/4	10 3/4		2-01 3/8	1-11 1/4	2-10 1/8		
AH0414	4	4	3	4-07		12	Stem	6	3-01	1-07												
AH0415	6	4	3	5-03		21	Stem	7	5-02 1/8	1-09 1/4	3-04 3/8	3-04 3/8										
AH0416	5	4	3	8-04		28	Stem	1														
AV0601	34	6		1-06		77	Stem	1	1-06													
AV0402	27	4		3-04		60	Stem	1	3-03 3/4						4 1/2							
AV0403	27	4	2	4-03		77	Stem	30		1-10 1/2	2-00											
AV0404	27	4		4-10		87	Stem	1	4-10													
AV0505	27	4		6-10	1/4 TO 6-05 1/8	187	Stem	1	VARY													
AV0409	6	4		6-10		27	Stem	1	6-10													
AV0510	5	5		6-10		36	Stem	1	6-10													
AV0511	8	5		6-05		54	Stem	1	6-05													
AV0412	1	4		3-07		2	Stem	1	3-07													
TOTAL WEIGHT IN PRECEDING GROUP OF BARS						1223																

MARK	NO.	EA.	DIMEN-	FROM	TO	VARY BY
		LEN.	SION	FT-IN	FT-IN	FT-IN
AV0505	1	A		6-10 1/4	6-05 1/8	0 1/4



NOTES:
 Dimensions in Bending Diagram are out-to-out of bars.
 Weights in schedule are based on density of 490 lb/ft.
 In the Dimension Variation Table, the individual increment noted in the VARY BY column is rounded to the nearest 1/8". The fabricator shall adjust the increment ± 1/8" as needed to obtain the correct FROM and TO dimensions for each bar.

Approved: 10/3/2022
 Subject to field inspection
 LD22115

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DEPARTMENT OF ENVIRONMENTAL SERVICES
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
 2100 CLARENDON BOULEVARD, SUITE 813
 ARLINGTON, VA 22201
 PHONE: 703.228.3629
 FAX: 703.228.3606

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APPROVALS	DATE
<i>[Signature]</i> DESIGN TEAM ENGINEER SUPERVISOR	9/28/2022
<i>[Signature]</i> CONSTRUCTION MANAGEMENT SUPERVISOR	10/13/22
<i>[Signature]</i> WATER/SEWER, STREETS BUREAU CHIEF	10/5/22
<i>[Signature]</i> TRANSPORTATION DIRECTOR	10/5/22
<i>[Signature]</i> PROJECT MANAGER	9/27/2022

REVISIONS	DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
 BR02

SHIRLINGTON ROAD

REINFORCING STEEL SCHEDULE
 ABUTMENT A

DESIGNED: DJ
 DRAWN: DJ
 CHECKED: AEE
 PLOTTED: JULY 13 2022

SCALE:
 N/A

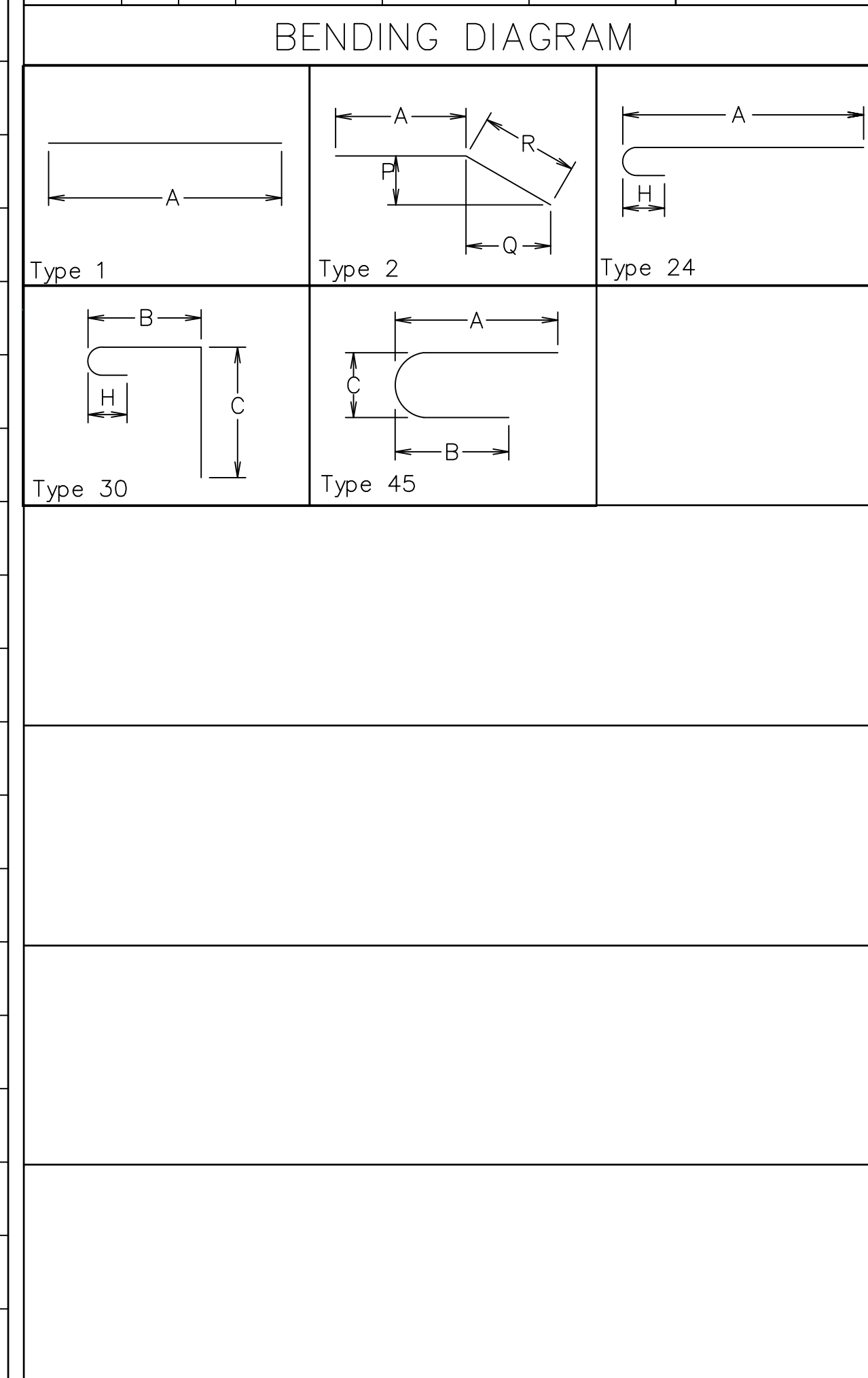
B001.9

REVISED ON 1/24/2022

FILENAME: BR02 BRIDGE PLANS.DWG PATH: T:\1009400 - MASTER-ARLINGTON COUNTY ON-CALL\1009450 - SHIRLINGTON RD PEDESTRIAN BRIDGE\07 DESIGN\DWG PLOTTED BY: BRENDA DUONG

REINFORCING STEEL SCHEDULE							DIMENSION TABLE																
MARK	NO.	BAR SIZE	PIN DIA. FT-IN	LENGTH FT-IN		WEIGHT (LBS.)	LOCATION	TYPE	A	B	C	D	E	F	G	H	I	J	K	L	V	N	
				FT-IN	FT-IN				FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN
				Abutment B																			
AF0401	10	4	1-05	7-04	49	FTG	45	3-03	3-03	1-06													
AF0602	12	6		5-06	99	FTG	1	5-06															
AF0603	4	6		24-00	144	FTG	1	24-00															
AF0604	29	6		5-06	240	FTG	1	5-06															
AF0605	14	6	3	24-00	505	FTG	1	24-00															
AF0406	27	4		2-10	51	FTG	24	2-04															
AF0407	27	4		2-06	44	FTG	1	2-05								4 1/2							
TOTAL					1131																		
AH0406	13	4		18-09	162	STEM	1	18-08															
AH0407	4	4		18-09	50	STEM	1	18-08															
AH0508	7	5	3 3/4	5-06	40	STEM/WING	2	3-04 1/4				1-03											
AH0509	7	5	3 3/4	5-06	40	STEM/WING	2	2-02				1-11	1-09 1/4	2-01 3/4									
AH0510	7	5	3 3/4	4-07	33	STEM/WING	2	1-08				1-08	2-04 1/2	2-10 5/8									
AV0406	20	4		4-01	54	STEM	30	4-08	2-00	1-07 3/4													
AV0407	20	4		4-08	62	STEM	1																
AV0408	20	4		5-03	70	STEM	1	5-03															
AW0411	32	4		5-00	107	WING	1	5-00															
AW0412	14	4		10-03	96	WING	1	10-03															
AW0413	14	4		5-08	53	WING	1	5-08															
TOTAL					767																		

MARK	NO.	EA. LEN.	DIMENSION	FROM FT-IN	TO FT-IN	VARY BY FT-IN



NOTES:
 Dimensions in Bending Diagram are out-to-out of bars.
 Weights in schedule are based on density of 490 lb/ft.

Approved: 10/3/2022
 Subject to field inspection
ARLINGTON VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
 2100 CLARENDON BOULEVARD, SUITE 813
 ARLINGTON, VA 22201
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 FAX: 703.228.3606
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APPROVALS DATE
 DESIGN TEAM ENGINEER SUPERVISOR: 9/28/2022
 CONSTRUCTION MANAGEMENT SUPERVISOR: 10/13/22
 WATER/SEWER, STREETS BUREAU CHIEF: 10/5/22
 TRANSPORTATION DIRECTOR: 10/5/22
 PROJECT MANAGER: 9/27/2022

REVISIONS DATE

SHIRLINGTON ROAD PEDESTRIAN BRIDGE
 BR02
 SHIRLINGTON ROAD
REINFORCING STEEL SCHEDULE
ABUTMENT B

DESIGNED: DJ
 DRAWN: DJ
 CHECKED: AEE
 PLOTTED: JULY 13 2022
 SCALE:
 N/A

Complete Streets

The street is where every element of transportation must be addressed and accommodated: pedestrians, transit, bicycles, passenger vehicles, trucks, and parking. It is also where many other aspects of public life take place including displaying civic pride, setting the tone for public activity and commerce, providing space for landscaping and accommodating storm water management and other public utilities.

The Streets Modal Element of the MTP provides guidance for achieving a greater balance among modes through the introduction of a new street typology depicted on this map and other policies that promote and enable Complete Streets. Complete Streets provide appropriate facilities to accommodate all expected transportation users and also take into account the scale and character of the streets' settings. Complete Streets do not necessarily entail dedicated facilities for each mode (e.g., transit track, bike lane, sidewalk), particularly on lower-volume streets. However, Complete Streets do ensure that travel by all modes is accommodated in a manner appropriate to the context of the street.

Complete Streets have three areas of activity: context, pedestrian space, and the travelway. The context of a street includes the buildings and sites adjacent to the street, or right-of-way. Land use, physical form and intensity shape the context zone. The pedestrian space is that which extends between the building face, or front of the private property, and the travelway. The travelway encompasses that portion of the public right-of-way between the curbs that is dedicated partially or exclusively to travel.

EXHIBIT H

Street Typology

This map designates specific types of arterial streets. The proposed typology has been developed to shape decision-making about a given street section in terms of its planned land-use context and multi-modal function. This overlay is the principal guide for the rebalancing, redesigning and rebuilding of arterial streets to become Complete Streets that provide for all modes of travel as well as serve the adjacent land uses. More specific guidelines for improving the various designs of existing streets within each general type are set forth in the Streets Modal Element. Non-arterial (local) streets should also have designed features to complement their land-use context and function as illustrated in the table below. Arlington will also continue to use its Functional Classification of streets to guide operational and maintenance priorities. Typical elements and dimensions for each street type are illustrated in the table below. Factors such as existing and planned land-use types and intensities, right-of-way availability, travel demand, transit operations, neighborhood character, historic designations, presence of mature trees, topography, and community concerns should be considered in the development of the final dimensions and design of any street.

Street Type	Travel Lanes*	Median	Target Speed	Transit Service	Bike Accommodations	Restrict/Limit Driveway Access	On-Street Parking Priority	Prohibition Way
Arterials								
Type A: Primary Retail/Shared-Use Arterial	2 to 4 Lanes	None	20-25	Frequent	Bike Lane / Shared Lane	Yes	High	10' to 15' Sidewalk 15' to 20' Future Zone of Travel
Type B: Primary Urban Mixed-Use	2 to 4 Lanes	None	20-30	Frequent	Bike Lane / Shared Lane	Yes	High	10' to 15' Sidewalk 15' to 20' Future Zone of Travel
Type C: Primary Commercial	4 Lanes	None	20-30	Frequent	Bike Lane	No	Low	6' to 8' Sidewalk 8' to 10' Green Strip or Shaded
Type D: Primary Garden Apartments & Townhouse Neighborhoods	2 to 4 Lanes	High	20-30	Moderate	Bike Lane	No	High	6' to 8' Sidewalk 8' to 10' Green Strip or Shaded
Type E: Primary Single-Family Residential Neighborhoods	2 to 4 Lanes	None / Medium	20-30	Limited	Bike Lane / Shared Lane	No	Medium	6' to 8' Sidewalk 8' to 10' Green Strip or Shaded
Type F: Primary Low-Density Residential Arterial	4 to 6 Lanes	High	20-45	Limited	Dedicated Shared Use Path	Yes	None	6' to 8' Sidewalk or 10' Shared Use Path 10' to 15' Green Strip
Non-Arterial								
Urban Center Local (medium to high density)	2	Low	25	Limited/None	Bike Lane / Shared Lane	No	High	6' to 8' Sidewalk 8' to 10' Green Strip
Neighborhood (low density)	1 to 2 Lanes	Low / None	20-25	Limited/None	Shared Lane	No	High	4' to 6' Sidewalk 6' to 8' Green Strip
Alley/Service	1 to 1 1/2 Lanes	None	10	None	Shared Lane	No	Low	None / 5' Sidewalk 5' to 6' Green Strip
Transitway	2	Low / None	Varies	Frequent	Shared-Use Path	Yes	None	Plants on each side 10' to 15' Green Strip

Note: The nomenclature of the typologies, found in the legend and table above, is designed to help users understand the typology assignments by indicating where such street types are most commonly found. Land uses in the GLUP, other land-use plans or existing zoning designations are not meant to be affected, changed or interpreted based upon the name of an abutting street type.

Arlington County, Virginia

MASTER TRANSPORTATION PLAN

Adopted December 18, 2007

Updated December 2017

High-Occupancy-Incentive Corridors

Selected limited access highways and Potomac River bridges are envisioned to have facilities, restrictions, fees and other measures that encourage high-occupancy travel. These measures can include High-Occupancy-Vehicle (HOV) lanes, High-Occupancy-Toll (HOT) lanes, ramp metering and congestion fees. The Streets Modal Element provides additional details.

Enhancing the Street Network

Arlington seeks to enhance the street network by discouraging the closure of existing streets, and encouraging the creation of alleyways and new local street sections, particularly where large blocks can be broken up, and where pedestrians can be provided with better access or fewer vehicular conflicts.

Certain areas are identified on this map as locations where the construction of new streets to improve the connectivity of the existing street network is expected as part of planned development. New connecting streets are also routinely sought through public investment or private development on an ongoing basis where they are appropriate. In either case specific alignment and street design is determined through more detailed planning processes. The Streets Modal Element provides additional details.



About Arlington

Last January 2016

Land
Land Area: 25.8 Square Miles (66.82 Square Kilometers)
Highest Elevation: 469 Feet (144.3 meters) above Sea Level

Population and Employment
Total Population, 2010 U.S. Census: 189,453
Total Population, 2010 U.S. Census: 207,627
Estimated Population, January 2016: 223,800
Estimated Average Household Size, 2010 Census: 2.97 persons
Estimated At-Place Employment, Jan. 2016*: 211,000 Jobs (100%)**

Industry
Construction: 3,900 (1.9%)
Retail Trade: 10,000 (4.8%)
Transportation and Warehousing: 9,500 (4.5%)
Information: 5,600 (2.7%)
Finance and Insurance: 6,800 (3.2%)
Real Estate and Rental/Leasing: 7,800 (3.7%)
Professional and Technical Services: 45,900 (21.8%)
Hospitality and Food Services: 16,200 (7.7%)
Other Services: 49,200 (23.3%)
Government: 58,500 (27.9%)
All Other: 8,400 (4.0%)
Estimated Daytime Population, 2016: 288,000

Development
Total Dwelling Units, 2010 U.S. Census*: 90,426
Total Dwelling Units, 2010 U.S. Census*: 104,804
Estimated Dwelling Units, January 2016*: 112,900
Rentable Building Area in Square Feet, January 2016***: 4,082,259
Total Hotel Rooms, 2016 estimate****: 10,827

Other Planning Documents
Arlington County Profile (June 2016)
Annual and Quarterly Development Tracking Reports (2015)

Legend

Arterial-Street Typologies
Type A
Type B
Type C
Type D
Type E
Type F

Neighborhood Streets
Urban Center Local
Residential or Commercial Local Street
Shared Street
Pedestrian Priority Street

Limited-Access Routes

High-Occupancy-Incentive Corridors
I-495
VA Rte. 110, VA Rte. 27

Public Transportation Facilities
Metro Blue Line
Metro Orange Line
Metro Yellow Line
Metro Silver Line
Railroad

Public Parks

Federal-Owned Lands

Bicycle/Pedestrian Trails
Existing Major Trail Projects
Planned Major Trail Projects

Transit Facilities
Existing/Completed Transit Projects
Planned Transit Projects

Intersection/Bridge Roadways
Existing/Completed Projects
Planned Roadway Projects

Key Facilities and Improvements

Bicycle/Pedestrian Facilities
1 W & OD Trail
2 Mt. Vernon Trail
3 Custis Trail
4 Arlington Blvd. Trail
5 Four Mile Run Trail
6 Bluemont Junction Trail
7 Four Mile Run Trail Crossing of I-395
8 Boundary Channel Bridge Underpass
9 North Tract/Mt. Vernon Trail Connection
10 Washington Blvd. West Side Trail
11 Arlington Blvd. South Side Trail
12 Route 110 South Trail
13 Columbia Pike Bike Boulevards
14 Two Jima Memorial Connection to Roosevelt Bridge
15 Four Mile Run Bridge
16 Rosslyn Circle Tunnel
17 Potomac Yard to Four Mile Run Trail Connector
18 Ballston Bike Station
19 Bluemont Park to Upton Hill Park Trail
20 Bike Share Stations (see MTP Bicycle Element Appendix F for additional detail)

Transit Facilities
1 WMATA Bus Garage
2 Crystal City/Potomac Yard Transitway
3 Shirlington Bus Station
4 Ballston-MU Metro Rail Station West Entrance & Multimodal Improvements
5 Rosslyn Metro Rail Station Improvements
6 Courthouse Metro Rail Station Second Elevator
7 Pentagon City Metro Station Second Elevator
8 East Falls Church Metro Station Access Improvements
9 ART Light Maintenance Facility
10 Clarendon Metro Rail Station Plaza & Bicycle Parking Improvements
11 Crystal City Metro Rail Station Improvements & East Entrance
12 Pentagon City Multimodal Improvements
13 Pentagon City Pedestrian Tunnel
14 Pentagon City Multimodal Improvements
15 Transitway Expansion to Pentagon City

Areas Planned for New Streets
1 Pentagon City/Metropolitan Park Area
2 Clarendon-Commercial Area
3 Rosslyn-Courthouse Area
4 Columbia Pike West End

Intersection + Bridge Roadway Improvements

1 Shirlington Bus Station Expansion
2 Courthouse Metro Rail Station Canopy and Escalator Entrance
3 Transit Stations
4 Clarendon Circle/Washington Blvd.
5 Lee Hwy./N. Harrison St. (left-turn lanes)
6 Glebe Rd. (left-turn lanes) at Lee Hwy.
7 Columbia Pike/Four Mile Run Dr.
8 Columbia Pike/Washington Blvd.
9 Arlington Blvd./Washington Blvd.
10 Arlington Blvd./Courthouse Rd./10th St.
11 Glebe Rd./Arlington Blvd.
12 S. Glebe Rd./Interstate 395
13 S. Glebe Rd./Arlington Ridge Rd. (left-turn lanes)
14 Marshall Dr./Route 110 (merge lane)
15 N. Glebe Rd./Fairfax Dr./Wilson Blvd./Carlin Springs Rd.
16 N. Meade St./Arlington Blvd. (Route 50) bridge rebuild
17 Long Bridge Drive/Interstate 395 interchange rebuild
18 N. Carlin Springs Rd./N. George Mason Dr. bridge replacement
19 Shirlington Rd./S. Four Mile Run Dr. bridge replacement
20 Washington Blvd. (Route 27)/Jefferson Davis Hwy. (Route 110) bridge rebuild
21 Columbia Pike Multimodal

Block Numbers on Numbered Streets			
200 Ball	2000 Telf	3700 Nelson	5400 Harrison
300 Clark	2100 Linn	3800 Oakland	5500 Brown
400 Dale	2200 Welch	3900 Putnam	5600 Jefferson
500 Eads	2300 Wayne	4000 Quincy	5700 Kensington
600 Fern	2400 Adams	4100 Randolph	5800 Lexington
700 Grant	2500 Barton	4200 Stafford	5900 Madison
800 Hayes	2600 Cleveland	4300 Taylor	6000 Springfield
900 Hill	2700 Carville	4400 Utah	6100 Ohio
1000 Joyce	2800 East	4500 Vermont	6200 Rockwell
1100 Kent	2900 Filmore	4600 Wakefield	6300 Quantico
1200 Lynn	3000 Garfield	4700 Arlington	6400 Roosevelt
1300 Meade	3100 Highland	4800 Burhan	6500 Syracuse
1400 Nash	3200 Irving	4900 Cambridge	6600 Lakeside
1500 Oak	3300 Jackson	5000 Danville	6700 Underwood
1600 Pence	3400 Kearney	5100 Cambridge	6800 Van Buren
1700 Queen	3500 Lincoln	5200 Frederick	6900 Westoverland
1800 Rohr	3600 Monroe	5300 Greenleaf	7000 Winona
1900 Scott			

South and West Sides are Even Address Numbers

Map prepared by GIS Mapping Center
2100 Clarendon Blvd., Suite 813
Arlington, VA 22201
Email: gismc@arlingtonva.us

Spatial reference: Virginia State Plane North, NAD 1983.
Base map updated from April 2015 digital aerial photography.
Potomac River from USGS 1:24,000 DLG files.
Cadastral and political data layers are maintained on an on-going basis.
Master Transportation Plan data effective through December 2017.

Map © 2017 Arlington County, VA
Printed: December 2017

SCALE IN FEET
0 1,200 2,400 3,600

SCALE IN MILES
0 0.25 0.5 0.75 1

Master Transportation Plan

Introduction

This Arlington Master Transportation Plan (MTP) promotes effective travel and accessibility for the County's residents, workers, and visitors through the year 2030. It provides a framework to guide the development of projects and programs, advance the County's goals and objectives, and help direct investment. Its policies affect how people travel, however they travel. As Arlington continues to grow, the MTP plays an important part in determining how the County will accommodate that growth. The MTP is comprised of three major components: this map, a Goals and Policies document, and six detailed mode-specific documents.

About this Map

The focus of this map is to provide visual guidance on the planned Arlington street system and to geographically locate the major transportation facility investments identified in the plan including streets, transit and bicycle facilities. Greater detail about the background of the transportation system and plan goals, policies and objectives, is found in the other components of the MTP.

Specific maps for the Transit and Bikeways networks are included to illustrate how existing and proposed facilities will integrate to create enhanced networks. Additional details on facilities can be found in the Transit and Bicycle Modal Elements.

Facilities for pedestrians, parking, and transportation demand and systems management are not included on this map as they are difficult to illustrate on a map of this scale. The respective modal elements of the MTP provide additional details, policies and design standards.



Arlington County Transit Network

Legend

- | | |
|---|--|
| Limited-Access Routes | Transit Networks |
| High-Occupancy-Incentive Corridors | ● Transit Stations - Existing and Proposed |
| Neighborhood Streets | — Premium Transit Network |
| Other Streets | — Express Bus Corridor |
| Pedestrian Priority Streets | — Primary Transit Network |
| Flexible Transit Zones | — Secondary Transit Network |
| Planned | Public Transportation Facilities |
| Public Parks | Existing |
| Federal-Owned Lands | Planned |
| Potomac River | Virginia Railway Express |
| | Metro Station |
| | Metro Blue Line |
| | Metro Orange Line |
| | Metro Silver Line |
| | Metro Yellow Line |

Transit

A key aspect of the Master Transportation Plan is the implementation of a Premium Transit Network (PrTN) in Crystal City and along Columbia Pike. The PrTN is designed to add capacity and encourage investment in areas of the County where significant growth and development is planned. The PrTN features high frequency (every 10-12 minutes), branded, and easy-to-understand bus routes with passenger amenities such as real-time transit information and high quality transit stations.

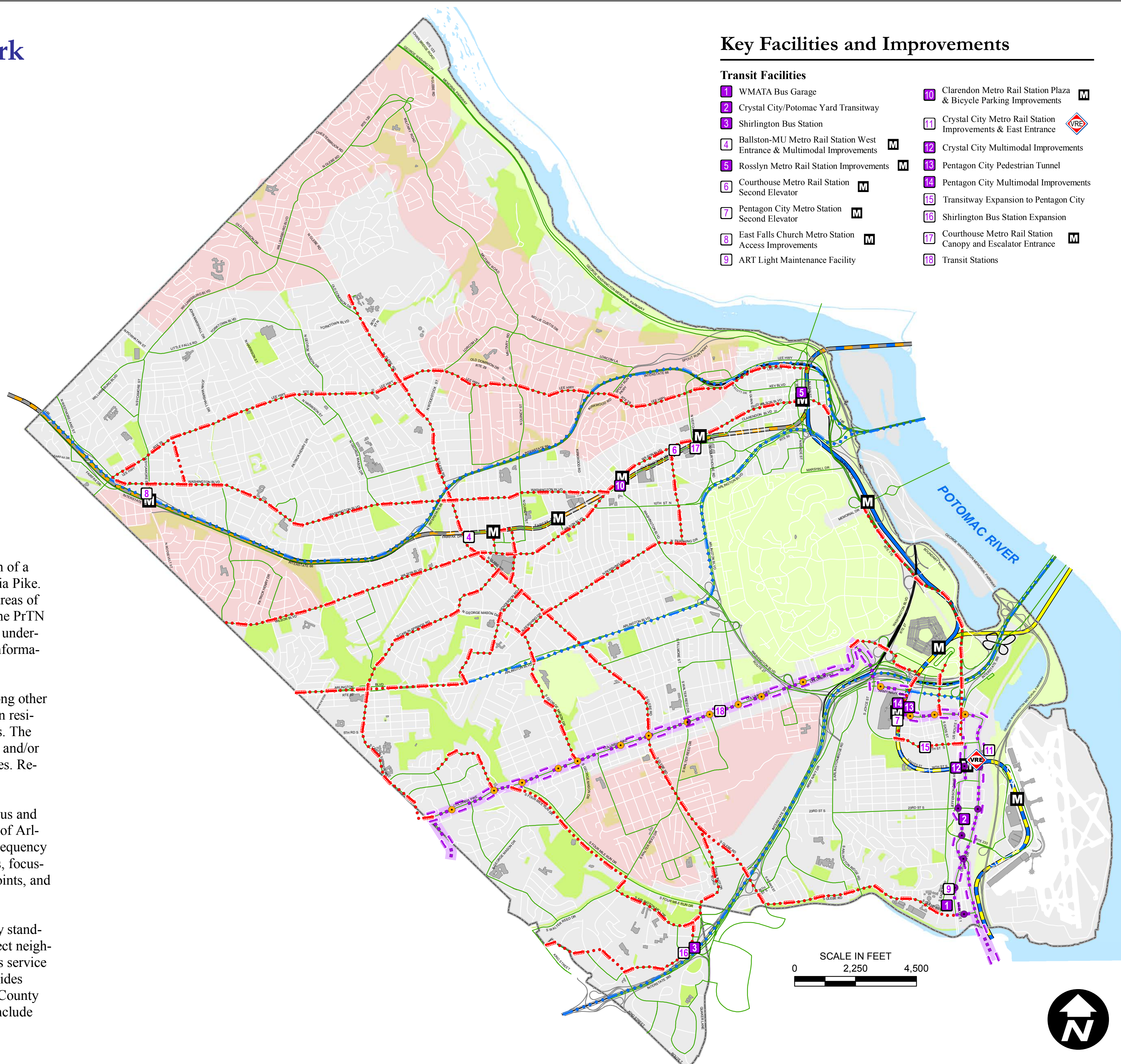
In addition, the expansion of the Primary Transit Network (PTN) along other primary development corridors will provide the majority of Arlington residents with all-day east-west and north-south access every 15 minutes. The PTN may be expanded further in future updates if parts of Arlington and/or adjacent communities are redeveloped at substantially higher densities. Regional express bus routes also complement PTN service.

The Secondary Transit Network (STN) offers more localized Metrobus and ART service. The STN serves the low- to moderate-density portions of Arlington and adjacent communities. The STN routes do not have the frequency or capacity of the PTN, but penetrate deeper into lower-density areas, focusing on bringing people to Metrorail stations, other service transfer points, and serving important neighborhood destinations.

In areas of the County where STN service does not meet productivity standards, the County will institute a flexible, on-demand service to connect neighborhoods with transit stations or key neighborhood destinations. This service will use smaller vehicles and could include a separate fare system. Rides would be grouped and provided on a demand-responsive basis. The County will pilot this service during off-peak periods but may expand it to include service during peak periods as well.

Key Facilities and Improvements

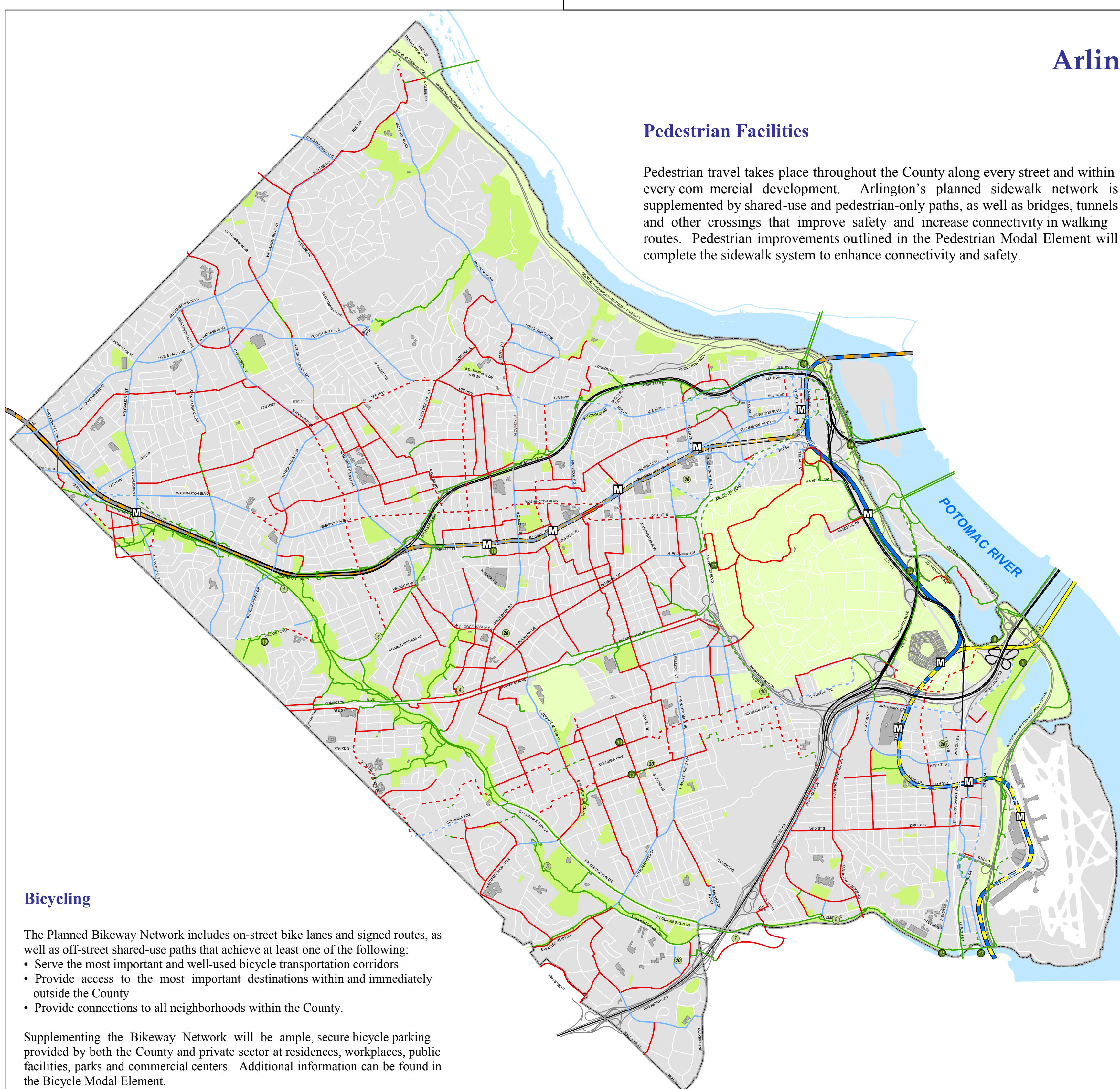
- | | |
|--|--|
| Transit Facilities | |
| 1 WMATA Bus Garage | 10 Clarendon Metro Rail Station Plaza & Bicycle Parking Improvements |
| 2 Crystal City/Potomac Yard Transitway | 11 Crystal City Metro Rail Station Improvements & East Entrance |
| 3 Shirlington Bus Station | 12 Crystal City Multimodal Improvements |
| 4 Ballston-MU Metro Rail Station West Entrance & Multimodal Improvements | 13 Pentagon City Pedestrian Tunnel |
| 5 Rosslyn Metro Rail Station Improvements | 14 Pentagon City Multimodal Improvements |
| 6 Courthouse Metro Rail Station Second Elevator | 15 Transitway Expansion to Pentagon City |
| 7 Pentagon City Metro Station Second Elevator | 16 Shirlington Bus Station Expansion |
| 8 East Falls Church Metro Station Access Improvements | 17 Courthouse Metro Rail Station Canopy and Escalator Entrance |
| 9 ART Light Maintenance Facility | 18 Transit Stations |



Arlington County Bike and Trail Network

Pedestrian Facilities

Pedestrian travel takes place throughout the County along every street and within every commercial development. Arlington's planned sidewalk network is supplemented by shared-use and pedestrian-only paths, as well as bridges, tunnels and other crossings that improve safety and increase connectivity in walking routes. Pedestrian improvements outlined in the Pedestrian Modal Element will complete the sidewalk system to enhance connectivity and safety.



Bicycling

The Planned Bikeway Network includes on-street bike lanes and signed routes, as well as off-street shared-use paths that achieve at least one of the following:

- Serve the most important and well-used bicycle transportation corridors
- Provide access to the most important destinations within and immediately outside the County
- Provide connections to all neighborhoods within the County.

Supplementing the Bikeway Network will be ample, secure bicycle parking provided by both the County and private sector at residences, workplaces, public facilities, parks and commercial centers. Additional information can be found in the Bicycle Modal Element.

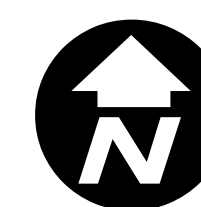
Legend

- | | |
|---|----------------------------------|
| Limited-Access Routes | On Street Bike Lanes |
| High-Occupancy-Incentive Corridors | Existing Bike Lanes |
| Neighborhood Streets | Planned Bike Lanes |
| Other Streets | On Street Bike Facilities |
| Pedestrian Priority Streets | Existing Bikeway |
| Public Transportation Facilities | Planned Bikeway |
| Metro Station | Off Street Trail Network |
| Metro Blue Line | Existing Trails |
| Metro Orange Line | Planned Trail Projects |
| Metro Silver Line | Public Parks |
| Metro Yellow Line | Federal-Owned Lands |
| Potomac River | |

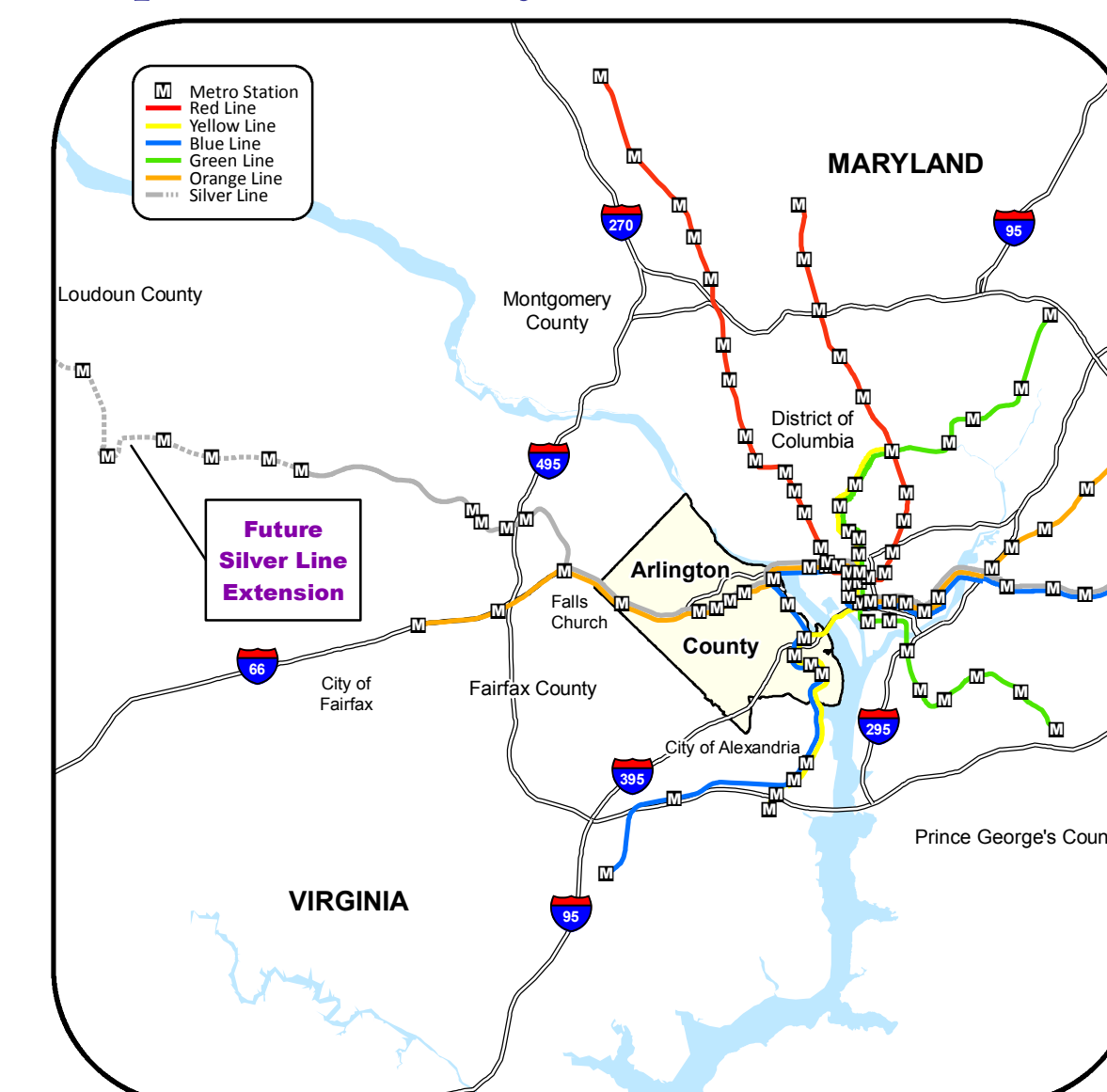
Key Facilities and Improvements

- | | |
|--|---|
| Bicycle/Pedestrian Facilities | |
| Note: Trails shown on Columbia Island (D.C.) are for displaying connectivity | |
| 1 W & OD Trail | 10 Washington Blvd. West Side Trail |
| 2 Mt. Vernon Trail | 11 Arlington Blvd. South Side Trail |
| 3 Custis Trail | 12 Route 110 South Trail |
| 4 Arlington Blvd. Trail | 13 Columbia Pike Bike Boulevards |
| 5 Four Mile Run Trail | 14 Joo Jima Memorial Connection to Roosevelt Bridge |
| 6 Blacmont Junction Trail | 15 Four Mile Run Bridge |
| 7 Four Mile Run Trail Crossing of I-395 | 16 Rosslyn Circle Tunnel |
| 8 Boundary Channel Bridge Underpass | 17 Potomac Yard to Four Mile Run Trail Connector |
| 9 North Tract/Mt. Vernon Trail Connection | 18 Ballston Bike Station |
| | 19 Blacmont Park to Upton Hill Park Trail |
| | 20 Bike Share Stations (see MTP Bicycle Element Appendix F for additional detail) |

SCALE IN FEET
0 2,250 4,500



Map of Metrorail System



Map prepared by GIS Mapping Center
2100 Clarendon Blvd., Suite 813
Arlington, VA 22201
Email: gismc@arlingtonva.us

Spatial reference: Virginia State Plane North, NAD 1983.
Base map updated from April 2015 digital aerial photography.
Potomac River from USGS 1:24,000 DLG files.
Cadastral and political data layers are maintained on an on-going basis.
Master Transportation Plan data effective through December 2017.

Map © 2017 Arlington County, VA
Printed: December 2017

BACK

EXHIBIT I

Arlington County, VA Materials Testing Specification Reference (September 2020)

MATERIAL AND TEST (REF. - VDOT TEST METHODS MANUAL)	VDOT ROAD AND BRIDGE SPECIFICATION 2002 (Or Latest Version)	MINIMUM RATE OF SAMPLING (REF. - VDOT MANUAL OF INSTRUCTIONS)	LOCATION OF SAMPLING	REMARKS
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SOILS AND AGGREGATES				
1. Embankments				
(a) Density, Any Method	303.04(h)	One (1) test per 2500 yd ³ or less plus: (a) for fills less than 500 ft. length one (1) test on every other 6-in. layer bottom to top of fill starting with the second lift; (b) for fills from 500-2000 ft. length, two (2) tests per 6-in. layer within top five (5) ft. of fill; (c) for fills greater than 2000 ft length, break into equal segments not to exceed 2000 ft. and use same frequency for each section as for fills 500 to 2000 ft. in length.	Roadway	When tests are not run due to gravel, muck, rock, etc. give station and depth on report in lieu of test, with reason. For nuclear test, use Direct Transmission Method, VTM-10. See Notes 1 and 2.
2. Finished Sub-grade (Both Cut and Fill Sections)				
(a) Density, Any Method	305.03	One (1) test per 2000 continuous linear ft. of roadway and one test minimum per intersection per construction location	Roadway (24 ft.)	For nuclear test, use Direct Transmission Method, VTM-10. See Notes 1 and 2.

Arlington County, VA Materials Testing Specification Reference (September 2020)

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(b) Density, Any Method	305.03	One (1) test per continuous section/block/or intersection	Curb, Comb. Curb and Gutter	For nuclear test, use Direct Transmission Method, VTM-10. See Notes 1 and 2.
(c) Density, Any Method	305.03	One (1) test per continuous section/block/or intersection	Sidewalk	For nuclear test, use Direct Transmission Method, VTM-10. See Notes 1 and 2.
3. Central Mix Aggregate (Treated or Untreated) Base, Subbase, and Select Material				
(a) Density, Any Method	305.03, 308.03, & 309.05,	One (1) test per 1/2 mile or less per continuous lane application width per layer. If testing by nuclear method, each test shall consist of average of five (5) readings.	Roadway. Location of five (5) nuclear readings at randomly selected sites.	For nuclear tests, use Backscatter, Control Strip Method, VTM-10. With nuclear method, set up roller pattern and control strip for each layer or lift placed. See Notes 1 and 2.
(b) Density, Any Method	305.03, 308.03, & 309.05,	One (1) test per continuous section/block/or intersection	Curb, Comb. Curb and Gutter	For nuclear test, use Direct Transmission Method, VTM-10. See Notes 1 and 2.
(c) Density, Any Method	305.03, 308.03, & 309.05,	One (1) test per continuous section/block/or intersection	Sidewalk	For nuclear test, use Direct Transmission Method, VTM-10. See Notes 1 and 2.

Arlington County, VA Materials Testing Specification Reference (September 2020)

MATERIAL AND TEST (REF. - VDOT TEST METHODS MANUAL)	VDOT ROAD AND BRIDGE SPECIFICATION 2002 (Or Latest Version)	MINIMUM RATE OF SAMPLING (REF. - VDOT MANUAL OF INSTRUCTIONS)	LOCATION OF SAMPLING	REMARKS
4. Backfill for Pipes and Box Culverts	302.03, 303.04(g), 401.03(i)	Minimum one test per lift on alternating sides of pipe for each 300 feet of pipe or portion thereof. Test pattern is to begin after first 4" compacted layer above the structures bedding and continue to 1' above top of pipe or box culvert structure. For rate of testing greater than 1' above top of pipe refer to contract documents and Rate of Sampling for embankments.	Alternating sides of structure	For nuclear test, use Direct Transmission Methods, VTM-10. See Notes 1 and 2. Backfill lifts shall be compacted in horizontal layers not more than 6 inches in thickness, loose measurement. (Or as Specified by the Contract Documents)
5. Backfill for Drop Inlets	302.03, 303.04(g)	Minimum one test every other lift around the perimeter beginning after the first 4" compacted layer above the bedding and continue to top of the structure. Stagger tests to ensure consistent compaction effort has been achieved.	Perimeter of structure	To include drop inlets, junction boxes, etc. For nuclear test, use Direct Transmission Methods, VTM-10. See Notes 1 and 2. Backfill lifts shall be compacted in horizontal layers not more than 6 inches in thickness, loose measurement. (Or as Specified by the Contract Documents)
6. Backfill for Manholes	302.03, 303.04(g)		Perimeter of structure	For nuclear test, use Direct Transmission Methods, VTM-10. See Notes 1 and 2. Backfill lifts shall be compacted in horizontal layers not more than 6 inches in thickness, loose measurement. (Or as Specified by the Contract Documents)

Arlington County, VA Materials Testing Specification Reference (September 2020)

MATERIAL AND TEST (REF. - VDOT TEST METHODS MANUAL)	VDOT ROAD AND BRIDGE SPECIFICATION 2002 (Or Latest Version)	MINIMUM RATE OF SAMPLING (REF. - VDOT MANUAL OF INSTRUCTIONS)	LOCATION OF SAMPLING	REMARKS
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HYDRAULIC CEMENT CONCRETE				
1. Sidewalk, Curb, Comb. Curb and Gutter				
(a) Temperature Measurements	217	One test per batch (truck), and when making compressive specimens.	At job site, and prior to placing concrete in forms.	If test on any batch fails, recheck batch immediately before rejecting. Enter results of tests in project records.
(b) Air Content	217	One test per batch (truck), and when making compressive specimens	At job site, and prior to placing concrete in forms	Any of 3 approved methods may be used for this test. However, with any test method used, with readings indicating concrete to be outside of specification must be confirmed first with test by Pressure Method before rejection of concrete. Enter results in project records.
(c) Consistency (Slump Test).	217	One test per batch (truck), and when making compressive specimens.	At job site, and prior to placing concrete in forms.	If test on any batch fails, recheck batch immediately before rejecting. Enter results in project records.

Arlington County, VA Materials Testing Specification Reference (September 2020)

MATERIAL AND TEST (REF. - VDOT TEST METHODS MANUAL)	VDOT ROAD AND BRIDGE SPECIFICATION 2002 (Or Latest Version)	MINIMUM RATE OF SAMPLING (REF. - VDOT MANUAL OF INSTRUCTIONS)	LOCATION OF SAMPLING	REMARKS
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(d) Compressive Strength...	217	<p>For <u>miscellaneous concrete</u>, one set of 3 cylinders shall be made for each 250 cubic yards, with a minimum of one set of 3 per day. Any one set to be made from same batch.</p> <p>For <u>structural concrete</u>, one set of 3 cylinders shall be made for each 100 cubic yards of concrete placed, with a minimum of 2 sets of 3 cylinders each per structure per class of concrete. Any one set to be made from same batch.</p>	At job site.	<p><u>Molding and Curing</u> Molds shall be placed on a rigid horizontal surface free from vibration and other disturbances during the first 24 hours, all test specimens shall be stored under conditions that maintain the temperature immediately adjacent to the specimens in the range of 60°F to 80°F, and prevent loss of moisture.</p> <p><u>Testing</u> Except when high-early strength concrete is specified, compressive strength testing will be performed at 28 days.</p>
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Arlington County, VA Materials Testing Specification Reference (September 2020)

MATERIAL AND TEST (REF. - VDOT TEST METHODS MANUAL)	VDOT ROAD AND BRIDGE SPECIFICATION 2002 (Or Latest Version)	MINIMUM RATE OF SAMPLING (REF. - VDOT MANUAL OF INSTRUCTIONS)	LOCATION OF SAMPLING	REMARKS
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ASPHALT PAVEMENT				
(a) In-Place Pavement Density by Nuclear Method (Roller Pattern)/ (Control Strip) (Asphalt Pavement)	Roads and Bridges Section 315.05 VTM-76 AASHTO T-166	Establish Roller pattern and Control Strip according to VTM-76. Ten (10) stratified random sample to establish target density. Verify minimum density achieved with cores per VTM-76. QC technician shall be certified and pass State proficiency	Field	Contractor/Asphalt Producer shall provide Certified Asphalt Paving Technician for density testing
(b) In-place Pavement Density by Nuclear Method and/or VDOT cores Test Section) (Asphalt Pavement)	Roads and Bridges Section 315.05 VTM-76 AASHTO T-166	Test Section- Lot Size: 5000 ft. per Lane width. Ten (10) stratified random samples per lot for nuclear gauge and/or five(5) stratified random plug/cores per lot QC technician shall be certified and pass State proficiency	Field	Contractor/Asphalt Producer shall provide Certified Asphalt Paving Technician for density testing
(c) Temperature Measurements	Roads and Bridges 211.08	One temperature measurement initially on first and fifth loads, each type mix each production day, and thereafter minimum of one per hour of production time for each mix type, by Producer's Certified Asphalt	QC - Processing or mixing plant from back of truck QA – Field	The Contractor should take and record temperature measurements of the asphalt concrete at the beginning of paving operations and thereafter at a rate of not less than one measurement every hour. The

Arlington County, VA Materials Testing Specification Reference (September 2020)

MATERIAL AND TEST <i>(REF. - VDOT TEST METHODS MANUAL)</i>	VDOT ROAD AND BRIDGE SPECIFICATION <i>2002 (Or Latest Version)</i>	MINIMUM RATE OF SAMPLING <i>(REF. - VDOT MANUAL OF INSTRUCTIONS)</i>	LOCATION OF SAMPLING	REMARKS
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		Concrete Technician. If any test outside of tolerance, minimum of 3 additional tests made in different points of the load, and 4 tests averaged and average used as temperature of load or batch.		Project Officer may increase the frequency of temperature measurements at any time. The temperature should be checked using an appropriate heat-sensing device (i.e. probe thermometer, infrared thermometer, etc.).
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Note 1. Density tests are reported on Forms TL-53, TL-54, TL-55, TL-124, TL-125 (Sand Cone Method), and TL-125A (One-Point Proctor Method).

Note 2. If there is a breakdown in the nuclear testing equipment, then density testing shall continue using other approved methods.

EXHIBIT J



COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION

4975 Alliance Drive
Fairfax, VA 22030

CHARLES A. KILPATRICK, P.E.
COMMISSIONER

September 29, 2016

MEMORANDUM

TO: NOVA District Staff

FROM: Hari Sripathi, P.E.
Regional Operations Director

A handwritten signature in black ink, appearing to read "H. Sripathi", written over the printed name in the "FROM" field.

SUBJECT: Lane Closures in Nova District

As a follow up to the Lane Closures in Nova District memorandum dated April 27, 2012, enclosed are the updated guidelines for lane closures.

These updated guidelines will be effective immediately. All existing and previously approved projects are encouraged to review their respective contract documents and make adjustments if possible.

Lane Closure Guidelines

-For Northern Virginia-



**Virginia Department of Transportation
Northern Region Operations**

September 21, 2016

Instruction

The purpose of this memorandum is to present guidelines for lane closure hours for construction, maintenance, permits, and special events in Northern Virginia.

The first version of the lane closure guidelines was issued in April 2012. In the past four years, there have been completed and on-going roadway construction projects in the NoVA District, such as I-495 and I-95 express lanes and the I-66 spot improvements. As these guidelines are applied and implemented, modifications and updates to these guidelines have become necessary. Same as the previous version, the modifications were made based on traffic volume; roadway characteristics; comments from staff; and considering the public tolerance for the lane closure during certain time periods of the day.

It should be noted that these guidelines must be used as a starting point for discussion at the project level. On large scale projects with robust community outreach and a Traffic Management Plan, these hours could be extended. If project staff would like to modify these hours for interstate or major arterials, they must work with NRO Traffic Operations staff for recommendations and obtain final approval from their functional Assistant District Administrator (ADA).

Please review the existing contracts and discuss the deviations from these hours with your functional ADA.

Restriction of Operations:

In addition to the allowable lane closure hours specified in the tables, the restrictions listed below shall be followed.

1. Peak Hours Lane Closures

Any lane reductions (temporary or permanent) during the peak periods (Monday to Friday, 6:00AM to 9:00AM and 3:30PM to 6:30PM) on roads with an AADT above or equal to 10,000 vehicles requires consultation with the Regional Operations Director (ROD) and Public Affairs Manager.

2. Complete Roadway Closures

If there are complete road closures on any road for construction or maintenance work, the ROD and Public Affairs Manager must be consulted.

Complete Roadway Closures shall be limited to 20 to 30 minutes intermittent stoppage for some specific work activities.

If the closure duration is above 30 minutes, it shall be approved separately with full Maintenance of Traffic and Traffic Management Plans.

3. Construction in Residential Subdivisions

Road work within residential subdivisions and/or cul-de-sac streets should be conducted during daytime hours to avoid night time noise issues.

4. Express Lanes (I-95 & I-495)

All I-95 and I-495 Express Lane closures shall be coordinated with the Express Lanes Operations Center at least 5 business days in advance using their Authorization to Work form (available from the Express Lanes Operations Center at (571) 419-6046. Complete road closures on the I-95 Express Lanes and I-495 Express Lanes will be limited to 30 minutes or less

5. Holiday

In addition to the Sunday or Holiday work limitations, mobile, short duration, short-term stationary or intermediate-term stationary temporary traffic control zone lane closures on mainline lanes, shoulders or ramps shall not be performed during the following Holiday time periods without the written permission of the Engineer. Additionally, long-term stationary temporary traffic control zones shall not be initially put in place, adjusted, or removed during the following Holiday time periods without the written permission of the Engineer (VDOT 2016 Standard Specifications, updated 7/2016):

- **January 1:** From Noon on the preceding day until Noon on the following day, except as indicated below.
- **Martin Luther King, Jr. Day and Lee Jackson Day*:** From Noon on the preceding Thursday to Noon on the following Tuesday.
- **Presidents Day*:** As indicated below.
- **Easter*:** As indicated below.
- **Memorial Day:** As indicated below.
- **July 4:** From Noon on the preceding day until Noon on the following day, except as indicated below.
- **Labor Day:** As indicated below.
- **Columbus Day*:** As indicated below.
- **Veterans Day*:** From Noon on the preceding day until Noon on the following day, except as indicated below.
- **Thanksgiving Day:** From Noon on the Wednesday preceding Thanksgiving Day until Noon on the Monday following Thanksgiving Day.
- **Christmas Day:** From Noon on the preceding day until Noon on the following day, except as indicated below.

If the Holiday occurs on a Friday or Saturday: From Noon on the preceding Thursday to Noon on the following Monday.

If the Holiday occurs on a Sunday or Monday: From Noon on the preceding Friday to Noon on the following Tuesday.

***Note:**

For low volume roadways (minor arterial), lane closures will not be allowed during the holidays; however, there will be no restriction to the preceding day and the following day.

INTERSTATE 395 & INTERSTATE 95					
WEEKDAY		Northbound			
		Single-Lane Closures or Shoulder	Two-Lane Closures	Multiple-Lane Closures	Complete Road Closure
Segment 1	14th St. Bridge to Springfield Interchange	10:00AM to 3:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:00PM to 5:00AM			
Segment 2	Springfield Interchange to Rt.123	9:30AM to 3:30PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:00PM to 5:00AM			
Segment 3	Rt.123 to Prince William / Stafford County line	9:30AM to 3:30PM	10:00PM to 4:30AM	11:00PM to 4:00AM	12:00AM to 4:00AM
		9:00PM to 5:00AM			
Segment 4	Prince William / Stafford County line to Rt.3 Exit 130	9:30AM to 3:30PM	10:00PM to 4:30AM	n/a	12:00AM to 4:00AM
		9:00PM to 4:30AM			
Segment 5	Rt.3 Exit 130 to Caroline / Hanover County line	9:00AM to 3:30PM	10:00PM to 4:30AM	n/a	12:00AM to 4:00AM
		9:00PM to 5:30AM			
All lanes open at 12:00 noon on Friday					
WEEKDAY		Southbound			
		Single-Lane Closures or Shoulder	Two-Lane Closures	Multiple-Lane Closures	Complete Road Closure
Segment 1	14th St. Bridge to Springfield Interchange	10:00AM to 2:30PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:30PM to 5:00AM			
Segment 2	Springfield Interchange to Rt.123	9:00AM to 2:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:30PM to 5:00AM			
Segment 3	Rt.123 to Prince William / Stafford County line	9:00AM to 2:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 4:00AM
		9:30PM to 6:00AM			
Segment 4	Prince William / Stafford County line to Rt.3 Exit 130	9:00AM to 2:00PM	10:00PM to 5:30AM	n/a	12:00AM to 4:00AM
		9:30PM to 6:00AM			
Segment 5	Rt.3 Exit 130 to Caroline / Hanover County line	9:00AM to 3:00PM	10:00PM to 5:30AM	n/a	12:00AM to 4:00AM
		9:30PM to 6:00AM			
All lanes open at 11:00am on Friday					

INTERSTATE 395 & INTERSTATE 95			
WEEKEND	Northbound/Southbound*		
	Single-Lane Closures or Shoulder	Multiple-Lane Closures	Complete Road Closure
Friday to Saturday	10:00PM to 7:00AM	11:00PM to 6:00AM	12:00AM to 5:00AM
Saturday to Sunday	10:00PM to 7:00AM	11:00PM to 6:00AM	12:00AM to 5:00AM
Sunday to Monday	10:00PM to 5:00AM	11:00PM to 4:00AM	12:00AM to 4:00AM

* For special operations, depending on time of year, additional hours may be allowed with proper ADA/ROD approval.

	REVERSIBLE LANES (HOV & EXPRESS LANES)*	
	Single-Lane Closures or Shoulder	Complete Road Closure**
WEEKDAY	9:30PM (Sunday to Thursday) to 4:00AM (Monday to Friday)	11:00PM to 4:00AM
WEEKEND	11:00PM (Friday to Saturday) to 9:00AM (Saturday to Sunday)	11:00PM to 4:00AM

* Direction of traffic control for all lane closures in reversible lanes will need to be adjusted as necessary to face direction of traffic.
 ** Complete Road Closure on Express Lanes limited to 30 minutes or less.

INTERSTATE 495 (BELTWAY)					
WEEKDAY		Inner Loop			
		Single-Lane Closures or Shoulder	Two-Lane Closures	Multiple-Lane Closures	Complete Road Closure
Segment 1	A. L. Bridge to Springfield Interchange	10:00AM to 3:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 5:00AM
		9:30PM to 5:00AM			
Segment 2	Springfield Interchange to W.W. Bridge	10:00AM to 3:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 5:00AM
		9:30PM to 5:00AM			
All lanes open at 12:00 noon on Friday					
WEEKDAY		Outer Loop			
		Single-Lane Closures or Shoulder	Two-Lane Closures	Multiple-Lane Closures	Complete Road Closure
Segment 1	A. L. Bridge to Springfield Interchange	9:30AM to 2:30PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 5:00AM
		9:30PM to 5:00AM			
Segment 2	Springfield Interchange to W.W. Bridge	10:00AM to 3:00PM	10:00PM to 5:00AM	11:00PM to 5:00AM	12:00AM to 5:00AM
		9:30PM to 5:00AM			
All lanes open at 12:00 noon on Friday					
WEEKEND		Inner/Outer Loop			Complete Road Closure
		Single-Lane Closures or Shoulder	Multiple-Lane Closures		
Friday to Saturday		10:00PM to 8:00AM	11:00PM to 7:00AM		12:00AM to 5:00AM
Saturday to Sunday		10:00PM to 9:00AM	11:00PM to 8:00AM		12:00AM to 5:00AM
Sunday to Monday		9:30PM to 5:00AM	11:00PM to 5:00AM		12:00AM to 5:00AM
EXPRESS LANES					
		Single-Lane Closures or Shoulder	Complete Road Closure**		
WEEKDAY	9:30PM (Sunday to Thursday) to 4:00AM (Monday to Friday)		11:00PM to 4:00AM		
WEEKEND	11:00PM (Friday to Saturday) to 9:00AM (Saturday to Sunday)		11:00PM to 4:00AM		
** Complete Road Closure on Express Lanes limited to 30 minutes or less.					

INTERSTATE 66					
WEEKDAY		Eastbound			
		Single-Lane Closures or Shoulder	Two-Lane Closures	Multiple-Lane Closures	Complete Road Closure
Segment 1	Prince William County line to Route 286	10:00AM to 3:30PM	9:00PM to 5:00AM	10:00PM to 5:00AM	12:00AM to 4:00AM
		8:00PM to 5:00AM			
Segment 2	Route 286 to Beltway	11:00AM to 3:30PM	10:00PM to 5:00AM**	11:00PM to 5:00AM**	12:00AM to 4:00AM
		9:00PM to 5:00AM			
Segment 3	Beltway to TR Bridge (Inside Beltway)	9:30PM to 5:00AM	n/a	n/a	12:00AM to 4:00AM
All lanes open at 12:00 noon on Friday					
WEEKDAY		Westbound			
		Single-Lane Closures or Shoulder	Two-Lane Closures	Multiple-Lane Closures	Complete Road Closure
Segment 1	Prince William County line to Route 286	9:00AM to 2:30PM	9:30PM to 6:00AM	10:30PM to 5:00AM	12:00AM to 4:00AM
		9:00PM to 6:00AM			
Segment 2	Route 286 to Beltway	9:00AM to 2:00PM*	10:00PM to 5:00AM**	11:00PM to 5:00AM**	12:00AM to 4:00AM
		9:30PM to 5:00AM			
Segment 3	Beltway to TR Bridge (Inside Beltway)	9:30AM to 2:00PM*	10:00PM to 5:00AM**	n/a	12:00AM to 4:00AM
		10:00PM to 5:00AM			
All lanes open at 12:00 noon on Friday					
* Only be considered for three lane segment.					
** Consider opening shoulder lane, where Applicable.					

WEEKEND		Eastbound/Westbound		
Outside Beltway		Single-Lane Closures or Shoulder	Multiple-Lane Closures	Complete Road Closure
Friday to Saturday		9:00PM to 9:00AM	10:00PM to 6:00AM	12:00AM to 5:00AM
Saturday to Sunday		9:00PM to 9:00AM	10:00PM to 6:00AM	12:00AM to 5:00AM
Sunday to Monday		8:00PM to 5:00AM	9:00PM to 5:00AM	12:00AM to 4:00AM
Inside Beltway		Single-Lane Closures or Shoulder	Multiple-Lane Closures	Complete Road Closure
Friday to Saturday		10:00PM to 6:00AM	n/a	12:00AM to 5:00AM
Saturday to Sunday		10:00PM to 6:00AM	n/a	12:00AM to 5:00AM
Sunday to Monday		9:30PM to 5:00AM	n/a	12:00AM to 4:00AM

ROUTE 267 CONNECTOR				
WEEKDAY	Eastbound		Westbound	
	Single-Lane Closures or Shoulder	Complete Road Closure	Single-Lane Closures or Shoulder	Complete Road Closure
Monday to Friday	11:00AM to 3:00PM	12:00AM to 4:00AM	9:30AM to 3:00PM	12:00AM to 4:00AM
	9:30PM to 5:00AM		9:00PM to 5:00AM	
All lanes open at 12:00 noon on Friday				

WEEKEND	Eastbound/Westbound	
	Single-Lane Closures or Shoulder	Complete Road Closure
Friday to Saturday	10:00PM to 8:00AM	12:00AM to 5:00AM
Saturday to Sunday	11:00PM to 8:00AM	12:00AM to 5:00AM
Sunday to Monday	9:00PM to 5:00AM	12:00AM to 4:00AM

Single-Lane Closures* or Shoulder					
ARTERIAL	WEEKDAY		WEEKEND		
	Monday to Thursday	Friday	Friday to Saturday	Saturday to Sunday	Sunday to Monday
Major Arterials**	9:30AM to 3:00PM	9:30AM to 2:00 PM	10:00PM to 9:00AM	10:00PM to 8:00AM	10:00PM to 5:00AM
	10:00PM to 5:00AM				
All Other Roadways	9:00AM to 3:30PM	9:00AM to 2:00 PM	10:00PM to 9:00AM	9:00PM to 9:00AM	10:00PM to 5:00AM
	9:00PM to 5:00AM				

Multiple-Lane Closures					
ARTERIAL	WEEKDAY		WEEKEND		
	Monday to Thursday	Friday	Friday to Saturday	Saturday to Sunday	Sunday to Monday
Major Arterials**	10:00PM to 5:00AM	Not allowed until 11:00PM	11:00PM to 5:00AM	11:00PM to 6:00AM	11:00PM to 5:00AM
All Other Roadways	9:00PM to 5:00AM	Not allowed until 10:00PM	10:00PM to 6:00AM	10:00PM to 6:00AM	10:00PM to 5:00AM

*Single-lane closures only permitted for multiple-lane roadways.

**Major Arterials defined as Primary Roads, high volume Secondary Roads, and all other routes that connect directly to Interstates.

EXHIBIT K

State & Federal Roads in Arlington County, VA

State Routes

- Interstate 66: Custis Memorial Parkway
- Interstate 395: Henry G. Shirley Memorial Highway
- U.S. Route 1: Jefferson Davis Highway
- State Route 27: Washington Boulevard (Memorial Bridge to U.S. Route 50)
- U.S. Route 29: Lee Highway
- U.S. Route 50: Arlington Boulevard
- State Route 110: Jefferson Davis Highway (Rosslyn to Crystal City)
- State Route 120: Glebe Road
- State Route 123: Chain Bridge Road
- State Route 124: Spout Run Parkway (Lee Highway to Lorcom Lane)
- State Route 233: Airport Viaduct
- State Route 237: Washington Boulevard (North Glebe Road to Lee Highway)
- State Route 237: Fairfax Drive (Kirkwood Road to North Glebe Road)
- State Route 237: 10th Street North (U.S. Route 50 to Kirkwood Road)
- State Route 309: Old Dominion Drive

Federal Routes

- Arlington Hall Street
- Boundary Channel Drive
- George Washington Memorial Parkway
- Fort Myer streets, including Arlington National Cemetery
- Marshall Drive (North Meade Street to U.S. Route 110)
- Memorial Avenue
- Pentagon Street
- Spout Run Parkway (Lorcom Lane to George Washington Memorial Parkway)

EXHIBIT L
ARLINGTON COUNTY, VA
REQUEST FOR INFORMATION FORM

PROJECT: _____

RFI NUMBER: _____
PROJECT NO.: _____

FOR CONTRACTOR ROUTING:

Contractor: _____

Transmittal No.: _____

Work Category: _____

Date: _____

TO (County Project Officer) Action Faxed to _____ Emailed Mailed Pages ____
 (Consultant) Action Faxed to _____ Emailed Mailed Pages ____
 (Other) Action Faxed to _____ Emailed Pages ____

REGARDING: _____

SPEC. SECTION: _____ **DWG. NO.:** _____

EXPLANATION OF ISSUE: (Provide complete description of request with sketches or photos if necessary, and present status of work)

RECOMMENDATION / SUGGESTED SOLUTION:

RESPONSE PRIORITY: EARLIEST CONVENIENCE RUSH (WORK IN PROGRESS)
REASON FOR REQUEST: Existing Condition Non-conformance Clarification / Interpretation Agency Generated Other

CONTRACTOR

: _____
BY: _____ **DATE:** _____ **Dist:** _____

ARCHITECT'S/ENGINEER'S ROUTING: (for A/E use only)

To: _____ Date: _____ Return to: _____ Date: _____

TO: (contractor) _____ Faxed to _____ Emailed Mailed Hand delivered

RESPONSE:

- The above is considered a change. The following document will be used for processing: _____
- The above is consistent with the intent of and reasonably inferable from Contract Documents, or makes minor changes in the Work without change in Contract Sum or Contract Time. If Contractor does not agree, submit written notice within twenty (20) days substantiating claim in accordance with Contract Documents for approval.
- This RFI is returned without response for the following reason: Incomplete or lack of detailed information. Related to "means & methods".
 Lack of adequate Coordination Drawings. Is a "Substitution Request".
 Response required by others.

FROM: _____

BY: _____ **DATE:** _____ **Dist:** _____ File