

**ARLINGTON COUNTY, VIRGINIA**

**AGREEMENT NO. 20-162-ITB  
AMENDMENT NUMBER 1**

This Amendment Number 1 is made on the date of execution by the County and amends AgreementNumber 20-162-ITB (“Main Agreement”) dated June 2, 2020 between Ardent Company, LLC (“Contractor”) and the County Board of Arlington County, Virginia (“County”).

The County and the Contractor agree to amend the main contract called for under the Main Agreement as follows:

Exhibit D - Supplemental Specifications added (attached)

All other terms and conditions of the Main Agreement remain in effect.

WITNESS these signatures:

THE COUNTY BOARD OF ARLINGTON  
COUNTY, VIRGINIA

AUTHORIZED: DocuSigned by:  
Sy Gezachew  
SIGNATURE: 198F4A6D475...  
NAME: Sy Gezachew  
TITLE: PROCUREMENT OFFICER  
DATE: 7/23/2020

Ardent Company, LLC

AUTHORIZED: DocuSigned by:  
Arash Hooshangi  
SIGNATURE: 12F5717989B046E...  
NAME: Arash Hooshangi  
TITLE: Managing Director  
DATE: 7/23/2020

**EXHIBIT D****III. SUPPLEMENTAL SPECIFICATIONS****TABLE OF CONTENTS*****COUNTY SPECIFICATIONS MODIFIED:***

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***COUNTY SPECIFICATIONS ADDED:***

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**SECTION 01000**

**GENERAL PROVISIONS AND REQUIREMENTS**

**This Section shall conform to the Arlington County Construction Standards and Specifications of Section 01000 except as modified herein.**

**Add the following to Section 01000:**

19. Environmental Protection

The Contractor shall implement measures to prevent releases of pollution to the environment and unauthorized discharges to the County's storm drain system or surface waters. The Contractor shall ensure the pollution prevention measures outlined in Section 01500 Erosion and Sediment Control and Pollution Prevention are implemented throughout the duration of the work.

When the work includes an approved Stormwater Pollution Prevention Plan (SWPPP) required under Chapter 60 of the County Code (land disturbance of at least 2,500 square feet), the Contractor shall strictly abide by this plan which includes: a Pollution Prevention (P2) Plan, an Erosion and Sediment Control (ESC) 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

**SECTION 01300**

**SUBMITTALS**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 01300 except as modified herein.

**Add the following to Section 01300, section 8. Shop Drawings:**

- i. Contractor shall submit 6 (six) copies of all submittals/shop drawings.
- j. The Engineer will review the Shop Drawings within ten (10) Business Days.

**Add the following to Section 01300:**

11. Pavement Restoration Limit

Contractor shall submit the extent of the pavement restoration to the County for approval, prior to any saw cuts and/or milling and paving to the existing pavement.

**SECTION 01500**

**TEMPORARY EROSION AND SEDIMENT CONTROL**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 01500 except as modified herein:

**Delete specification 01500 in its entirety and replace with:**

**PART 1- GENERAL**

1.1 Description of Work

This work shall consist of implementation of erosion and sediment control and pollution prevention measures throughout the duration of the work to prevent unauthorized non-stormwater discharges or pollution releases to the storm drain system or surface waters.

Where work is governed by an approved Stormwater Pollution Prevention Plan (SWPPP), the Erosion and Sediment Control and Pollution Prevention components of the SWPPP shall apply.

Erosion and sediment control measures shall include, but are not limited to, the use of berms, dikes, dams, sediment basins, fiber mats, silt fences, straw bales, washed gravel or crushed stone, mulch, grasses, slope drains, temporary seeding, and other methods. Erosion and sediment control measures shall be applied to erodible material exposed by any activity associated with the construction, and consistent with federal, state and local regulations.

All non-stormwater discharges to the County's storm drain system, which includes the curb and gutter as well as the underground pipe network, or any open watercourse must comply with the conditions of the County's Virginia Stormwater Management Program, Municipal Separate Storm Sewer System (MS4) Permit. Examples of unauthorized non-stormwater discharges include but are not limited to, wash water, slurry runoff from saw cutting, discharges associated with vehicle, equipment, and/or material washing, concrete wash water, process water, waste water, leaks from portable lavatories, equipment, vehicles and/or waste receptacles. Only clear, uncontaminated stormwater discharges and/or permitted non-stormwater discharges (as specified in a Virginia Pollutant Discharge Elimination System (VPDES permit)) are allowed to be discharged to the storm drain system or surface waters. Contaminants, including but not limited to, volatile organic compounds, petroleum products, metals, PCBs/Pesticides shall not be discharged to the County's storm sewer system.

1.2 Related Work Specified Elsewhere

Section 02100- Clearing and Grubbing

Section 02200- Earthwork

1.3 Applicable Regulations

Erosion and Sediment Control (Chapter 57 of the Arlington County Code)

Utilities (Chapter 26 of the Arlington County Code)

Stormwater Management (Chapter 60 of the Arlington County Code)

Chesapeake Bay Preservation Ordinance (Chapter 61 of the Arlington County Code)

Trees and Shrubs (Chapter 67 of the Arlington County Code)

Virginia State Water Control Board Regulations

#### 1.4 Applicable References

Virginia Erosion and Sediment Control Handbook  
Arlington County Stormwater Management Ordinance Guidance Manual  
Arlington County Planning Guide to Erosion and Sediment Control  
Arlington County Pre-Storm Erosion and Sediment Control Checklist  
Arlington County Planning & Field Guide for Pollution Prevention (P2)  
Arlington County Tree Protection and Planting Standards

#### 1.5 Submittals

Prior to the start of any work that does not require a Land Disturbing Activity (LDA) and SWPPP, the Contractor shall prepare and submit a plan for implementing erosion and sediment control and pollution prevention measures. The plan shall include, but is not limited to, the operations of clearing and grubbing, stripping of topsoil, grading, stabilizing cleared areas, dewatering, spill prevention and cleanup, and the construction of structures at watercourses.

Any activity that disturbs greater than or equal to 2500 square feet requires a Stormwater Pollution Prevention Plan per the requirements of Arlington County Code Chapter 60. This plan contains the following elements:

- Erosion and Sediment (E&S) Control Plan
- Pollution Prevention Plan (P2 Plan)
- Stormwater Management Plan (SWMP)
- Virginia Stormwater Management Program (VSMP) Requirements where applicable

Construction work shall not commence until the schedule of work and the methods of operations have been reviewed and approved by the Engineer / Project Officer.

Erosion and sediment controls shall be coordinated with the construction of permanent stormwater management facilities, drainage facilities and other contract work to the extent practicable to assure economical, effective, and continuous erosion and sediment control, and to prevent any damage, clogging, or other negative impacts upon the Work or other property.

Where work is governed by an approved SWPPP, the Contractor shall be responsible for all SWPPP self-inspection and documentation requirements.

Where work is governed by an approved SWPPP, the Contractor shall be responsible for all SWPPP self-inspection and documentation requirements which includes but is not limited to the following:

- A SWPPP box is installed and maintained at project site.
- Permit(s) and applicable documentation are posted near the SWPPP box.
- All sections of the SWPPP are kept complete and up to date throughout the duration of the project. (For example, notation of when erosion and sediment controls (ESC) are installed and information about the types of pollution prevention measures used.)
- Any modifications to controls are documented in the SWPPP, which includes the ESC plan.
- Self-inspections are conducted every four business days or as required.

- Completed and signed inspection reports are kept at the project site.
- Items identified during inspections requiring correction action are properly documented and addressed.
- The ESC Pre-storm checklist provided in the plan / SWPPP is used and followed accordingly.

### 1.6 Permits

The Contractor is responsible for complying with all applicable State, Federal, and Local permits which are required for construction, including, but not limited to:

- Virginia Water Protection Permits issued by the Virginia DEQ
- General Nationwide Permits issued by the US Army Corps of Engineers
- Land Disturbing Activity (LDA) permits (Virginia Stormwater Management Program (VSMP) authority permits) issued by Arlington County
- General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activity issued by Virginia DEQ.

A separate VPDES permit, issued by DEQ may be required for certain non-stormwater discharges such as contaminated groundwater.

Unless otherwise specified as the responsibility of the Contractor in the ITB or contract documents, the County will obtain all applicable permits prior to awarding the contract. Permits will then be transferred to the Contractor.

## **PART 2 - MATERIALS**

Materials shall be at the Contractor's option with the approval of the Engineer/Project Officer in accordance with Arlington County Code, Erosion and Sediment Control Ordinance (Chapter 57).

## **PART 3 - EXECUTION**

### 3.1 Installation and Maintenance of Erosion and Sediment Controls

Where work is governed by an approved SWPPP, the contractor shall follow the plan and Erosion and Sediment Control Pre-Storm Checklist, which includes but is not limited to the conditions below. Where the work is not governed by an approved SWPPP, the contractor shall meet the conditions below as well as those specified in the Erosion and Sediment Control Pre-Storm Checklist.

- A. The Contractor, prior to starting work, shall properly protect storm drains to prevent pollutants, waste materials, sediment, or non-stormwater discharges from entering the storm drain system. The Contractor shall implement and maintain controls as specified in the Virginia Erosion and Sediment Control Handbook and/or approved Stormwater Pollution Prevention Plan. Controls, practices, and/or devices must be monitored and maintained at all times to ensure proper operation condition.
- B. No grading operations will be allowed until erosion and sediment controls have been installed in accordance with the approved plan conforming to the requirements of Virginia Erosion and Sediment Control regulations and Arlington County Erosion and Sediment Control Ordinance.

- C. The Contractor shall keep stockpiled materials covered and perimeter controls shall be employed to minimize exposure to wind, precipitation, and runoff.
- D. The Contractor shall implement and maintain dewatering methods as specified in Arlington County Construction Standards and Specifications, VA Erosion and Sediment Control Handbook, Arlington County Planning & Field Guide to Erosion and Sediment Control, Arlington County Planning & Field Guide for Pollution Prevention (P2) and/or approved Stormwater Pollution Prevention Plan. Controls, practices, and/or devices used for dewatering operations must be monitored and maintained at all times to ensure proper operation.
- E. 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 will comply with applicable regulations must be included as part of the erosion and sediment control plan.
- F. 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, including but not limited to the actions listed in the County's Erosion and Sediment Control Pre-Storm Checklist (perimeter controls, slope stabilization, and covering stockpiles). Erosion and sediment controls shall be modified as needed to ensure clear water is discharged from the site. The County reserves the right to order the implementation of other erosion and sediment controls not specifically described herein to correct an erosion or pollution discharge condition.
- G. Control measures shall be properly maintained in accordance with state and local regulations. Immediately after every rainstorm, all control measures shall be inspected and any deficiencies corrected by the Contractor.
- H. Erosion and sediment controls shall be removed when the area has been stabilized and approval has been granted by the construction inspector.
- I. No further work will be allowed until erosion and sediment controls for the applicable phase have been installed in accordance with the approved plan conforming to the requirements of Virginia Erosion and Sediment Control regulations and Arlington County Erosion and Sediment Control Ordinance.

### 3.2 Pollution Prevention Measures

Where work is governed by an approved SWPPP, the contractor shall follow the plan, which includes but is not limited to the conditions below. Where the work is not governed by an approved SWPPP, the contractor shall meet the conditions below.

- A. The Contractor shall employ good housekeeping at work sites at all times. The Contractor shall collect, remove and legally dispose of all refuse, trash, litter, waste materials, and/or debris generated at the work site as frequently as necessary to prevent pollution releases from the site. Liquid waste must be properly contained prior to being placed into a waste receptacle to prevent leaking. The County, in its sole discretion, may require the Contractor to provide disposal tickets or other information sufficiently demonstrating legal disposal.
- B. The Contractor shall contain, capture, collect and legally dispose of any unauthorized non-stormwater discharge(s), including but not limited to, saw cut slurry from saw cutting operations, concrete / asphalt wash water, waste water, and / or wash water from equipment, material, and/or vehicle washing.
- C. A vacuum system shall be used to collect liquid waste / slurry generated from saw cutting operations to prevent a discharge to a storm drain or surface water. Collected slurry must be disposed of at an approved waste receiving facility (e.g. landfill, soil safe, waste water treatment plant, commercial dump pad).
- D. Methods used for capturing / collecting unauthorized non-stormwater discharges must be on site and operational prior to starting any work that will generate a non-stormwater discharge.
- E. The Contractor shall have designated wash out areas or containers for materials, including but not limited to concrete, asphalt, paint, grout, mortar, stucco, form release oil, curing compounds, and /or sealers.
- F. Construction materials shall be properly stored and secured to ensure no pollutants are released into the environment.
- G. The Contractor shall ensure waste receptacles and portable lavatories are not damaged and/or leaking.
- H. The Contractor shall ensure spill clean-up materials (including but not limited to absorbent materials, spill pads, rags, booms, bags for waste disposal) and tools (including but not limited to shovels, brooms, containers, vacuums) are kept on the work site and accessible at all times. Spills and leaks shall be cleaned up as soon as discovered and wastes properly disposed of at an approved waste receiving facility. Spills shall not be washed into a street, storm drain, or surface waters.
- I. The Contractor shall ensure that the County's procedures for disposing of chlorinated water are followed (DES Construction Standards and Specifications, Section 02550 4.12 Discharge of Chlorinated Water).
- J. The Contractor shall not dump or dispose of anything in a storm drain, street, or stream that is not authorized under the County's VSMP MS4 permit or violates County Code Chapter 26-5 B and/or C.

### 3.3 Extent of Grading Operations

- A. The Contractor shall limit the surface area of earth material exposed by grubbing, stripping of topsoil and excavation to that which is necessary to perform the next operation within a given area.
- B. Unless specifically authorized by the Project Officer, the grubbing of root mat and stumps shall be confined to the area over which excavation is to be actively conducted within 30 days following the grubbing operations.
- C. The stripping of topsoil shall be confined to the area over which excavation is to be actively prosecuted within 15 days following the stripping operations; and excavation and embankment construction shall be confined to the minimum area necessary to accommodate the Contractor's equipment and work force engaged in the earth moving work.
- D. No disturbed area, including stockpiles, shall remain denuded longer than 7 days without temporary seeding or application of other stabilization practices approved by the Project Officer.

### 3.4 Tree Protection

- A. The Contractor shall ensure the specifications in the County's Tree Protection and Planting Standards are followed throughout the duration of the work.
- B. The Contractor shall protect all existing trees within a Tree Protection Zone.

## **PART 4 - MEASUREMENT AND PAYMENT**

### 4.1 Measurement and Payment

- A. Temporary Erosion and Sediment Controls as detailed on the approved plan and as indicated in the bid line item shall be paid in lump sum.
- B. SWPPP administration as detailed under section 1.8 of this specification and as indicated in the bid line item shall be paid in lump sum.
- C. Unless otherwise specified, no separate payment shall be made by the County for maintenance of erosion and sediment controls or implementation of the pollution

prevention measures specified on an approved plan, methods, or sequence of work; this work is considered to be a subsidiary obligation to the Contract.

- D. No separate payment shall be made by the County for erosion and sediment controls or pollution prevention measures required to correct conditions created due to the Contractor's negligence, carelessness or failure to install or properly maintain controls in accordance with approved plans.
- E. No separate payment shall be made by the County for changes to the plans which are the result of the Contractor's work schedule or resource allocation, weather delays, or other factors not controlled by the County.
- F. Unless otherwise specified, no separate payment shall be made by the County for implementation of spill clean-up, hauling fees, and/or collection, handling, transport and legal disposal of unauthorized non-stormwater discharges (slurry, waste water, wash water) and/or other waste materials; this work is considered to be a subsidiary obligation to the Contract.
- G. In the event the Contractor repeatedly fails to satisfactorily control sediment and pollution releases, the County reserves the right to employ outside assistance or to use its own forces to provide the corrective measures indicated; the cost of such work, plus engineering costs, will be deducted from payments due to the Contractor for other work.

**SECTION 02100**

**CLEARING AND GRUBBING**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02100 except as modified herein.

**Add the following to Section 02100, PART 2 - MATERIALS:**

This section left intentionally blank.

**Add the following to Section 02100, PART 3 - EXECUTION:**

11. Clearing

The area of clearing (limits of disturbance) shall be maintained within the limits shown on the plans.

The Contractor shall ensure the specifications in the County's Tree Protection and Planting Standards are followed throughout the duration of the work. Trees and other vegetation that will not be removed shall be properly protected to avoid damage and limit adverse impacts. Protection devices around tree protection areas shall be installed and maintained throughout the duration of the work as directed by the Urban Forester (DPR). There shall be no disturbance inside the boundaries of the tree protection area. Equipment and materials may not be stored inside tree protection areas.

**Add the following to Section 02100 PART 4 – Measurement and Payment**

The removal of any designated tree smaller than 6" DBH shall be consider clearing and incidental to the WORK.

**SECTION 02200****EARTHWORK**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02200 except as modified herein.

**Add the following to Section 02200, PART 1 - GENERAL:**

10. Saw Cutting

A vacuum system shall be used to collect liquid waste / slurry generated from saw cutting activities. Collected slurry must be hauled off and disposed of at a proper waste receiving facility (e.g. landfill, soil safe, waste water treatment plant, commercial dump pad).

**Modify the following portions of Section 02200:**

**PART 3 - EXECUTION**

18. Dewatering

At all times during construction the Contractor shall keep all excavations dry and promptly remove all water entering trenches and other excavations until the structures, pipes, and appurtenances to be built therein have been completed and backfilled. Dispose of all water pumped or drained from the work without impact to the Work, traffic, or injury to public or private property, and in compliance with all Local, State, and Federal regulations.

The Contractor shall implement and maintain dewatering methods as specified in Arlington County Construction Standards and Specifications, VA Erosion and Sediment Control Handbook, Arlington County Planning & Field Guide to Erosion and Sediment Control, Arlington Planning & Field Guide for Pollution Prevention (P2) and/or approved Stormwater Pollution Prevention Plan. Controls, practices, and/or devices used for dewatering operations must be monitored and maintained at all times to ensure proper operation condition.

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 will comply with applicable regulations must be included as part of the erosion and sediment control plan.

**PART 4 - MEASUREMENT AND PAYMENT**

25. Excavation

Delete: When explicitly **included** as a pay item, Excavation will be measured by the cubic yard as illustrated on the approved plans, or as approved by the Project Officer. Excavation in excess of that shown on the approved plans will not be compensated, unless specifically approved in advance by the Project Officer. Payment will include all labor, materials, and equipment and will include excavation, handling, storage and disposal of materials, backfilling, compaction, testing, and all other activities necessary to comply with these Specifications.

Add: When explicitly **included** as a pay item on the Bid Form, Excavation will be measured by the cubic yard as illustrated on the approved plans, or as approved by the Project Officer.

Excavation in excess of that shown on the approved plans will not be compensated, unless specifically approved in advance by the Project Officer. Payment will include all labor, materials, and equipment and will include excavation, handling, storage and disposal of materials, backfilling, compaction, testing, and all other activities necessary to comply with these Specifications.

26. Fill

Delete: When explicitly **included** as a pay item, Fill will be measured by the cubic yard in place as illustrated on the approved plans, or as approved by the project Officer, and will include all materials, equipment, and labor to construct the fills or embankments as illustrated on the construction drawings. Unless otherwise specified, Backfilling of excavations will not be compensated as Fill. Payment will include all clearing and grubbing, preparation, acquisition, transporting, storing, and handling of material, placement, shaping, compaction, and other activities necessary to comply with these Specifications.

Add: When explicitly **included** as a pay item on the Bid Form, Fill will be measured by the cubic yard in place as illustrated on the approved plans, or as approved by the project Officer, and will include all materials, equipment, and labor to construct the fills or embankments as illustrated on the construction drawings. Unless otherwise specified, Backfilling of excavations will not be compensated as Fill. Payment will include all clearing and grubbing, preparation, acquisition, transporting, storing, and handling of material, placement, shaping, compaction, and other activities necessary to comply with these Specifications.

27. Testing

Delete: Testing will be considered subsidiary to the Work and no compensation will be approved. If the Project Officer directs testing in excess of that required by the Contract Documents, the Contractor shall be entitled to compensation unless such testing reveals noncompliant work

Add: Materials testing shall be in compliance with County Specification Section 01400, and the Special Conditions of this Contract.

Add:

28. Saw Cutting

The cost for saw cutting shall be incidental to other items in the Contract; therefore, there will be no separate payment for saw cutting.

**SECTION 02500**

**GRAVITY SEWERS AND APPURTENANCES**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02500 except as modified herein.

**Add the following to Section 02500, PART 2 - MATERIALS:**

Polypropylene Pipe (PPP)

1. PPP shall conform to ASTM F2881 and AASHTO M330
2. Joint performance shall meet or exceed ASTM D3212

**Add the following to Section 02500, PART 3 – EXECUTION:**

1. General

5. In the event of a water or sewer emergency, the Contractor shall immediately notify the County's Water Control Center at 703-228-5555 and the Project Officer.

2. Laying Pipe .

- D. PPP sewer shall not be installed with less than 2 feet of cover from the top of the pipe to finished grade
- E. PPP shall not be installed at depths greater than 20' without special design analysis

3. Laying Pipe

- K. Install PPP in accordance with ASTM D2321

**Modify the following portions of Section 02500:**

**PART 4 – MEASUREMENT AND PAYMENT**

4.2 Manholes

Delete in its entirety and replace with the following:

Manholes for the various internal diameters shall be measured **by each** up to 8 vertical feet from the top of the manhole cover thereafter the measurement shall be in vertical feet to the invert of the outlet pipe. Payment shall include excavation, backfill, bedding, foundation, base and components, channels, sleeves, frame and cover, intermediate landings, steps, restoration and all other work necessary for a complete installation.

Add the following after subsection 4.4 Excavation Below Grade and Additional Bedding:

4.5 PVC Pipe with Perforated PVC Pipe

PVC pipe with Perforated PVC 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, valve box with cap, 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, coredrilling, #57 gravel, filter fabric, top soil, sod, and all work incidental to providing a complete PVC pipe with Perforated PVC pipe sewer installation.

#### 4.6 PVC Cleanout

PVC Cleanout for the various materials, classes, and sizes shown on the plans shall be measured as each. Payment shall include the furnishing of all pipe and fittings, valve box with cap, 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, #57 gravel, filter fabric, and all work incidental to providing a complete PVC Cleanout installation.

#### 4.7 Sump Pump Core and Cleanout Connection

**Sump Pump Core and Cleanout Connection for the various materials, classes, and sizes shown on the plans shall be measured as each. Payment shall include the furnishing of all pipe and fittings, valve box with cap, 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, radial core drilling, #57 gravel, filter fabric, top soil, sod, proposed connections to storm structures and storm pipes, and all other work incidental to providing a complete Sump Pump Core and Cleanout Connection installation.**

#### 4.8 Excavation and Demolition

Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

### **SECTION 02510**

### **SANITARY SEWERS AND APPURTENANCES**

**This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02510 except as modified herein.**

#### **Add the following to Section 02510 PART 4 – MEASUREMENT AND PAYMENT :**

#### 4.7 Excavation and Demolition

**Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.**

**SECTION 02515**

**TELEVISED INSPECTION OF SEWERS**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02515 except as modified herein.

**Add the following to Section 02515:**

**PART 3 – EXECUTION**

Add the following at the end of subsection 3.2. Documentation

- E. The Contractor shall report any evidence of illicit discharges or illicit connections to the storm drain system to the Department of Environmental Services.

**SECTION 02550**

**WATER MAINS & APPURTENANCES**

**This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02550 except as modified herein.**

**Modify the following portions of Section 02550**

**PART 3 – EXECUTION**

Delete listed sections and replace with the following:

Subsection 3.4-G Disinfection of Water Mains

1. When each pipe length has been placed and shut off, disinfect each section of the water main. Provide all labor, materials and equipment to perform the disinfection operations in compliance with all state and local regulations. Disinfection shall conform to AWWA C601 and C51 requirements.
  
- 3.a. Preliminary Flushing of Mains: All mains shall be flushed prior to disinfection except when the tablet method of disinfection is used. The mains shall be flushed at a minimum velocity of 3 feet per second and all points in the main shall receive a minimum of five (5) consecutive minutes of flushing at this velocity, until the water runs clear.

Subsection 3.4-J Bacteriologic Test

1. After chlorination, hydrostatic testing and final flushing, and before the water main is placed in service, samples shall be collected from the main and tested for enteric bacterial contamination and shall show the absence of coliform organisms. At least two (2) sets of consecutive satisfactory bacteriological samples shall be obtained from the distribution system before the system can be placed into service.

Samples shall be collected in one of the following manners:

- A. At all accessible locations not exceeding 1,200 feet apart in the line downstream from where the pipe was filled with water. After the initial samples are taken, resample after 16 hours.

-OR-

- B. At all accessible locations not exceeding 1,200 feet apart in the line downstream from where the pipe was filled with water. Allow main sit for 16 hours without water movement, then take first set of samples with a second set of samples after a 15 minute waiting period.

Samples shall be taken through the use of sample tap consisting of a corporation cock and copper tube or through other accessible appurtenances on the main. Samples shall be collected by a representative of the testing laboratory.

**Add the following to Section 02550:**

**PART 1– GENERAL**

Add the following at the end of subsection 1.4. Applicable References

Arlington County Municipal Separate Storm Sewer System Permit  
Arlington County Dechlorination Policy Acknowledgement form  
Arlington County Dechlorination Plan form  
Arlington County Dechlorination and Disposal Procedures  
Virginia Department of Health WaterWorks Regulations (VR 355-18-000)

**PART 3 – EXECUTION**

Add the following at the end of subsection 3.4. Construction Standards

- M. 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 3 working days in advance of the required operation.
- N. In the event of a water or sewer emergency, the Contractor shall immediately notify the County's Water Control Center at 703-228-5555 and the Project Officer.

**SECTION 02600**

**BITUMINOUS ROADWAY PAVEMENTS**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02600 except as modified herein.

**Modify the following portions of Section 02600:**

1.7 Base Course

Delete: The base course shall be bituminous concrete consisting of course and fine aggregate combined with asphalt cement, resulting in a mixture of Type BM-2 in conformance with Section 211 of the VDOT Specifications.

Add: The base course shall be bituminous concrete consisting of course and fine aggregate combined with asphalt cement, resulting in a mixture of Type BM-25.0A in conformance with Section 211 of the VDOT Specifications.

1.8 Surface Course

Delete: The surface course shall be bituminous concrete consisting of crushed stone, crushed slag, or crushed gravel and the fine aggregate, slag or stone screenings, or combination thereof, combined with asphalt, cement, resulting in a mixture of Type SM-2A in conformance with Section 211 of VDOT Specifications.

Add: The surface course shall be bituminous concrete consisting of crushed stone, crushed slag, or crushed gravel and the fine aggregate, slag or stone screenings, or combination thereof, combined with asphalt, cement, resulting in a mixture of Type SM-9.5A in conformance with Section 211 of VDOT Specifications.

1.9 Traffic Marking

Delete: Traffic marking will be provided by the County.

Add: Traffic marking will be provided by the Contractor.

**Add the following to Section 02600 PART 4 – MEASUREMENT AND PAYMENT :**

4.3 Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

**SECTION 02611 CONCRETE WALKS AND CONCRETE DRIVEWAY ENTRANCES**

**This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02611 except as modified herein.**

**Modify the following portions of Section 02611 PART 4 – MEASUREMENT AND PAYMENT:**

Delete in Section 4.4:

Excavation shall be measured in cubic yards in its original condition based on the cut sheets and typical section. Payment shall be in cubic yards as described in Section 02201.

Add in Section 4.4:

Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

**SECTION 02612**

**INTERLOCKING CONCRETE AND BRICK PAVERS**

**This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02612 except as modified herein.**

**Modify the following portions of Section 02612 PART 4 – MEASUREMENT AND PAYMENT:**

Delete in Section 4.2:

Excavation shall be measured in cubic yards in its original condition based on the cut sheets and typical section. Payment shall be in cubic yards as described in Section 02201.

Add in Section 4.2:

Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

**SECTION 02650**

**RESTORATION OF ROADWAY**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02650 except as modified herein.

**Add the following to Section 02650 PART 4 – MEASUREMENT AND PAYMENT:**

4.5 Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

**SECTION 02750**

**CURB AND GUTTERS**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02750 except as modified herein.

**Add the following to Section 02750 PART 4 – MEASUREMENT AND PAYMENT:**

4.3 Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

**SECTION 02800**

**LANSCAPING**

***Delete SECTION 02800 in its entirety.***

**SECTION 02801**

**SEEDING AND SODDING**

***Delete SECTION 02801 in its entirety.***

**SECTION 02951**

**BORING AND JACKING**

This Section shall conform to the Arlington County Construction Standards and Specifications of Section 02951 except as modified herein.

**Add the following to Section 02951 PART 4 – MEASUREMENT AND PAYMENT :**

Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

***COUNTY SPECIFICATIONS ADDED:***

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**SECTION 01550****MOBILIZATION****PART 1 - GENERAL**

This work shall consist of performing preparatory operations, including moving personnel and equipment to the project site; paying bonds and insurance premiums; and establishing field offices and other facilities necessary to allow work to begin on a substantial phase of the Contract.

**PART 4 - MEASUREMENT AND PAYMENT**

Payment for mobilization shall be based on bid form. The payment will be a multiplier (expressed as percentage) to be added to the total amount of the Total Bid Amount. This price shall also include demobilization. There will be no escalation for mobilization percentage multiplier for the initial contract term and the extensions thereafter

Payment for mobilization for each site will be made in two equal installments. The first installment of 50% of the unit price for mobilization will be made on the first progress estimate following partial mobilization and initiation of construction work. The second installment will be made on the next progress estimate following completion of substantial mobilization, including erection of field offices.

No additional payment will be made for demobilization and remobilization because of shutdowns, suspensions of work, or other mobilization activities.

In case of Change Order outside the project area, mobilization shall be included in the price for other appropriate items.

In case of a Change Order within the project area, mobilization shall be considered as incidental and included in the unit bid price for mobilization. There will be no separate measurement and payment made for this work.

**SECTION 01720**

**PROJECT RECORD DOCUMENTS**

**PART 1 - GENERAL**

1.1 Purpose of Section

This section outlines the requirements for keeping record drawings (As-Built Drawings) and other data in accordance with the General Conditions and in accordance with the following specifications.

1.2 Record Drawings

- A. The Contractor shall maintain one complete set of drawings specifically for the purpose of recording changes during the construction of the project. During the course of construction, the Record Drawings shall be updated daily by the end of each working day.
- B. Record Drawings will be neat, accurate and complete. The Record Drawings will be available for periodic inspection by the Engineer.
- C. Record Drawings shall include the following, as a minimum:
  - 1. Details not shown on original Contract Drawings.
  - 2. Actual locations (horizontal and vertical) of all utilities uncovered during the course of the work.
  - 3. Any changes in grade and location of duct banks and appurtenances.
  - 4. Any changes, additions or deletions made by Change order or Addenda.
  - 5. Final coordinates of all structures built or modified under this Contract.
- D. The Contractor shall certify the Record Drawings as accurate and complete.

1.3 Submission Requirement

The Contractor shall submit the Record Drawings (both in digital format and 2 full size hardcopy sets) to the Project Officer upon substantial completion of the Project. Final payment will not be issued until the Record Drawing has been accepted by the Project Officer. The Contractor shall make any necessary corrections and resubmit until acceptable to the County Project Officer.

**PART 4 - MEASUREMENT AND PAYMENT**

Project Record Documents are considered a subsidiary obligation of the contract, and therefore no payment will be made for this work.



**SECTION 02619****PERMANENT SIGNS****PART 1 – GENERAL****1.1 Description of the Work**

Provide all necessary labor, materials and equipment to provide, fabricate, and install the permanent signs, posts, and connections as shown on plans, details, and these specifications. All work under this section is subject to the Special and General Conditions and Instruction to Bidders which form a part of these specifications and to the current editions of the Arlington County Construction Standards and Specifications Manual and Virginia Department of Transportation Road and Bridge Specifications (VDOT). The Contractor shall be responsible for and governed by all the requirements thereunder.

**PART 2 – MATERIALS**

- 2.1 All traffic control signage shall conform to the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
- 2.2 Sign anchors bases, or sleeve bases shall meet current AASHTO, FHWA, and VDOT requirements for breakaway and yielding and shall be galvanized or stainless steel.
- 2.3 Sign posts set in earth shall be U-type rolled rail post (2 lbs/foot) with full length punching of 3/8-inch diameter holes spaced 1 inch on center starting 1 inch from each end. Posts shall be re-rolled steel or an equivalent steel. Posts shall conform to the mechanical requirements of ASTM A-499-81, Grade 60 (Hot-Rolled Carbon Steel Bars and Shapes Re-Rolled from Rail Steel). All posts are to be hot dipped zinc galvanized.
- 2.4 The use of other than U-type posts at any location requires approval from Arlington County.
- 2.5 Where square posts are permitted the following standards must be met.
- 2.5.1 Steel posts shall conform to ASTM A570, Grade 50 for Hot-Rolled Carbon Sheet Steel.
- 2.5.2 Post cross section shall be square formed from 14 or 12-gauge steel and shall be welded at the corner.
- 2.5.3 Posts shall be straight and have a smooth finish.
- 2.6 Banding used with saddles and buckles to fasten sign panels to streetlight or signal poles shall be stainless steel with a minimum width of ¾ inch.
- 2.7 Saddles shall be stainless steel with stainless steel bolts.
- 2.8 Buckles shall be stainless steel with a minimum width of ¾ inch.\

- 2.9 Fasteners shall be 3/8" O.D. galvanized bolts with nylon washer for the sign front and galvanized hex nut and washer for the sign back.
- 2.10 Sign surface image shall conform to applicable portions of Sections 247 and 701 of the VDOT Road and Bridge Specifications. The sign colors and backgrounds shall conform to the details. Colors and shop drawings of signs shall be approved by the Owner prior to fabrication. Sign shall be drilled for bolts prior to painting
- 2.11 Post footings shall be Class A-3 concrete per Section 03100 of the Arlington County Construction Standards and Specifications Manual

**PART 3 – EXECUTION**

- 3.1. The signs shall be installed in locations as shown on the plans.
- 3.2. Posts located in earth shall be anchored or driven to a minimum depth of 36 inches.
- 3.3. Driving caps shall be used when driving posts following the manufacturer’s instructions.
- 3.4. Posts located in concrete sidewalk or concrete medians A 12-inch minimum diameter cylindrical excavation to depth shown on detail shall be made to install the sign post. The post shall extend 36" (thirty-six inches) minimum below finished grade.
- 3.5. Concrete for footings shall be poured in accordance with the requirements outlined in the Section 03100 of the Arlington County Construction Standards and Specifications Manual.
- 3.6. The sign shall be centered on the post and fastened with the specified bolts. The lower edge of the signs shall be to the dimension above finished grade as shown on the details for each sign type.

**PART 4 – MEASUREMENT AND PAYMENT**

**4.1 New Traffic Sign**

New Traffic Signs as shown on the Drawings and as specified herein shall be measured in units of each, complete-in-place. Payment will be at the contract unit price per each, and shall include the furnishing of all signs, posts, concrete, fastening materials, and other material required to provide a complete sign installation, as well as all other work incidental to providing a complete installed sign.

**4.2 Relocate Traffic Sign**

Relocate Traffic Sign as shown on the Drawings and as specified herein shall be measured in units of each. The Project Officer may allow the Contractor to reuse the sign, post, or related hardware

for re-installation at the new location, subject to approval by the Project Officer. If the Project Officer determines that the sign, post, or hardware is damaged or does not meet this specification; and that the reinstallation of any or all of the materials will not result in a satisfactory traffic sign installation the Contractor shall furnish and install new materials as required to provide a complete-in-place traffic sign.

**SECTION 02740****WHEEL STOPS****PART 1 – GENERAL**1.1 Description of the Work

- A. Section includes specifications for precast concrete wheel stops for vehicular parking stalls in parking structures and parking lots as indicated.

1.2 Submittals

- A. Shop Drawings: Submit shop drawings, including installation details and attachment details to at-grade concrete and asphalt pavement, for approval.
- B. Product Data: Submit manufacturers' product data of precast stops and epoxy adhesive for approval.

1.3 Quality Assurance

- A. Precast wheel stops shall be manufactured for the intended purpose by a company or firm specializing in the manufacture of precast concrete parking appurtenances.

**PART 2 - PRODUCTS**2.1 Materials

- A. Wheel Stops: Precast, 3.5% minimum air-entrained concrete; 4000 psi minimum compressive strength. Each stop shall be reinforced with two No. 4 deformed steel reinforcing bars, minimum. Provide chamfered corners and drainage slots on underside, and provide holes for dowel-anchoring to substrate. Unless indicated otherwise, provide stops of half octogonal configuration and 36-inch length.
- B. Adhesive for Bonding Dowel to Wheel Stop: As proposed by Contractor and approved by the Engineer, suitable for application.
- C. Steel Bars for Installation: Galvanized 5/8" diameter steel dowels or galvanized No. 5 steel reinforcing bars.

**PART 3 - EXECUTION**3.1 Installation

- A. Securely attach wheel stops into at-grade concrete and at-grade asphalt pavement with not less than two galvanized steel dowels embedded in holes cast into wheel stops. Firmly bond each dowel to wheel stop and to pavement.
- B. At concrete pavement, drill holes in pavement for dowels.
- C. At parking structure slabs, epoxy to slab.

**PART 4 – MEASUREMENT AND PAYMENT**

The measurement of WHEEL STOPS shall be for EACH of the wheel stops including all appurtenances as delivered to the site, furnished, installed, maintained and removed at project completion in accordance with the plans and specifications.

The unit price for wheel stops shall include the cost of all labor, materials, equipment and incidental expenses necessary to complete the work.

**END OF SECTION**

**SECTION 02840**

**BOLLARDS**

**PART 1 – GENERAL**

1.1 SECTION INCLUDES

- D. Steel bollards.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Storage and handling requirements and recommendations.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.
- B. Installer Qualifications: Minimum 2 year experience installing similar products.

1.5 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to starting work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Handling: Handle materials to prevent breakage of containers and damage to products.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

**PART 2 – MATERIALS**

2.1 METAL BOLLARDS

- A. Refer to Arlington County Standard specifications section 05500 – Structural Steel & Miscellaneous Materials.
- B. Pipe:

1. Black Steel, ASTM A53, Type E, Grade A, Schedule 80, sized as shown
  2. 1/4 inch steel-plate cap welded all around and weld ground smooth. Cap bollards with dome cap.
  3. Outside diameter as shown, by 6 feet long.
- C. Concrete Fill: Section 03300, Class 3000 minimum.
- D. Finish bollards with safety yellow powder coated factory applied paint finish.

### **PART 3 – EXECUTION**

#### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Project Officer of unsatisfactory preparation before proceeding.

#### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

#### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Installation: Anchor bollards in place with concrete footings. Center and align bollards in holes 6 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

#### 3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

### **PART 4 – MEASUREMENT AND PAYMENT**

The measurement of BOLLARDS shall be for EACH of the bollards including all appurtenances as delivered to the site, furnished, installed, maintained and removed at project completion in accordance with the plans and specifications.

The unit price for Bollards shall include the cost of all labor, materials, equipment and incidental expenses necessary to complete the work.

Bollards removed from the installation shall be considered a subsidiary obligation of the work to which it pertains. Payment for such bollards shall be included in the unit and lump sum prices of the work to which it pertains.

Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

**END OF SECTION**

**SECTION 02900****PAVEMENT MARKINGS****PART 1 – GENERAL****1.1 Description of The Work**

Provide all labor, materials, tools, equipment, transportation, supplies, and incidentals to establish the location of pavement markings, install pavement markings, and reflectorized material on specified pavements in accordance with these specifications, the MUTCD, and as directed by the Engineer.

This work shall also include furnishing and installing colored coating for bicycle lanes.

**PART 2 - MATERIALS****2.1 Pavement Markings**

Pavement Markings shall conform to the requirements of Section 246 of the VDOT Road and Bridge Specifications.

**2.2 Glass Beads**

Glass Beads shall conform to the requirements of section 234 of the VDOT Road and Bridge Specifications.

**2.3 Colored Asphalt Coating**

Colored asphalt coating shall be StreetBond CL by Quest Construction Products or County approved equal. Color shall be Emerald Green. Verify color with County prior to ordering.

**PART 3 – EXECUTION****3.1 Timing of Installation**

The Contractor shall have a certified Pavement Marking Technician present during pavement marking operations.

Pavement markings shall be installed on new roadways prior to opening the roadway to traffic. Pavement marking installation shall be completed within the time limits herein on roadways where the pavement markings have been removed or obscured and the roadway is open to traffic unless otherwise directed by the Engineer. Installation of Type B, Class VI, pavement markings on asphalt roadways are not applicable to these requirements if they are inlaid with

the last pass of the asphalt roller or directly after the asphalt roller using a separate roller. Installation of edge lines on roadways where the existing pavement markings have been removed or obscured are also required within these time limits unless otherwise indicated by the Engineer. Exceptions to the below time limits will be granted only for weather restrictions, and installation of epoxy resin pavement markings on new pavement shall not commence until after 24 hours of final surface placement.

Pavement marking installation on roads having traffic volumes of 10,000 ADT or more shall be completed within 24 hours after the end of the workday where the pavement markings were removed or obscured.

Pavement marking installation on roads having traffic volumes between 3,000 and 10,000 ADT shall be completed within 48 hours after the end of the workday where the pavement markings were removed or obscured.

Pavement marking installation on roads having traffic volumes of less than 3,000 ADT shall be completed within 72 hours after the end of the workday where the pavement markings were removed or obscured.

### 3.2 Provision for Temporary Markings

If the Contractor will not have pavement markings installed within the time limits specified, the Contractor shall install Type D construction pavement markings within the same time limits and maintain such until the final pavement markings can be installed. The cost of installing, maintaining, and removing the Type D construction pavement markings shall be borne by the Contractor at no cost to the County.

When establishing the location of pavement markings, the Contractor may mark the locations on the roadway by installing premarkings.

Premarkings shall be accomplished using Type D (removable, any class) tape, chalk, or lumber crayons except special pavement markings such as stop lines, crosswalks, messages, hatching, etc., shall be made using chalk or lumber crayons. Premarkings shall be of the same general color as the pavement markings being premarked. When tape is used as premarking, premarking shall consist of 4-inch by 4-inch-maximum squares or 4-inch-maximum diameter circles spaced at 100-foot-minimum intervals in tangent sections and 50-foot-minimum intervals in curved sections. At locations where the pavement marking will switch colors, e.g., gore marking, the ends of the markings may be premarked regardless of the spacing. When chalk or lumber crayon is used as premarking, the entire length of the pavement marking may be premarked.

Premarkings shall be installed whereby their installation shall not affect the adhesion of the pavement markings. When Type D tape is used as the premarking and the lateral location of such premarkings to the final pavement markings exceeds 6 inches, the premarkings shall be removed at no cost to the County.

### 3.3 Pavement Markings

Pavement markings shall be white or yellow markings as required by the MUTCD for the specific location or as specified by the Engineer and shall be installed in accordance with the

manufacturer's recommendations and approved by the Engineer. The Contractor shall furnish a copy of the manufacturer's installation recommendations to the Engineer.

### 3.4 Pavement Line Markings

Pavement line markings shall consist of stop lines, crosswalks, and solid or skip lines used for, but not limited to, dividing lanes, marking edges, channelizing, outlining and marking safety zones around objects, and forming islands and parking lot stalls. Crosswalks and stop lines shall be installed using Type B, Class I or IV, markings. Solid lines or skip lines shall be installed using Type A or Type B markings as specified.

### 3.5 Pavement Message Markings

Pavement message markings shall be installed using Type B, Class I, IV, or VI, markings and shall include, but not be limited to, school zone markings, railroad crossing markings, disabled parking symbols, elongated arrows, word messages, etc.

The word SCHOOL shall be formed with characters that are 10 feet in height where permitted by the normal roadway width. School zone markings shall extend transversely across both lanes of two-lane roadways and across two or more approach lanes of roadways of three or more lanes.

Disabled parking symbols shall be 41 inches in height, 36 inches in width, and shall use a 4-inch stroke width for the lines.

### 3.6 Application

The Contractor shall protect the public from damage attributable to pavement marking operations. The Contractor shall be responsible for the complete preparation of the pavement surface, including, but not limited to, removing dust, dirt, loose particles, oily residues, curing compounds, concrete laitance, residues from eradication, and other foreign matter immediately prior to installing pavement markings.

The pavement surface shall be dry at the time of installation. Marking material shall not be applied within 24 hours following rain or other inclement weather.

Liquid markings shall be applied so as to prevent splattering and overspray and shall be protected from traffic until track free by the use of guarding or warning devices as necessary. If a vehicle crosses a marking and tracks it or if splattering or overspray occurs, the affected marking and resultant tracking shall be removed and new markings applied at the Contractor's expense.

Equipment shall also be thoroughly cleaned between changes in colors of materials. Pavement markings shall have clean and well-defined edges without running or deformation; shall be uniform, free of waviness; shall be straight on tangent alignment; and shall be on a true arc on curved alignment.

3.7 Tolerance

The widths of pavement markings shall not deviate more than 1/4 inch on tangent nor more than 1/2 inch on curves from the required width. The length of the gap and the length of the individual stripes that form skip lines shall not deviate more than two inches. The length of the gap and individual skip line shall be of such uniformity throughout the entire length of each that a normal striping machine will be able to repeat the pattern and superimpose additional striping upon the existing marking.

3.8 Glass Beads

Glass beads shall be applied at the rate specified herein and shall be evenly distributed over the entire surface of the marking. Beads shall be applied to the surface of liquid markings by a bead dispenser attached to the applicator that shall dispense beads simultaneously on and in the just-applied marking. The bead dispenser shall be equipped with a cut-off control synchronized with the cut off of the applied marking material so that the beads are applied totally to the completed line.

Beads shall be applied while the liquid marking is still fluid. Approximately 70 percent of beads shall be buried in the marking, and the remaining 30 percent shall be 50 to 60 percent embedded in the surface. Beads installed on crosswalks and stop lines on roadways with curbs only (no gutter) may be hand applied for two feet at the end of each line next to the curb with 100 percent of the beads embedded 50 to 60 percent in the surface.

Markings found to be unacceptable shall be removed, and new markings applied at the Contractor's expense.

3.9 Type A Markings

Paint may be applied to asphalt concrete and hydraulic cement concrete pavements. Paint shall not be applied over existing pavement markings of other materials unless the existing marking is 90 percent removed. Paint may be applied over existing paint markings. Paint shall be applied with a line painting machine that is capable of hot spraying paint directly onto the pavement surface with a uniformity of feed through its nozzles for widths of 4 through 8 inches. The machine shall be capable of applying two pavement stripes, either solid or skip, at the same time when double line markings are required. Paint tanks on the equipment shall be equipped

with a mechanical agitator and paint shall be thoroughly mixed and heated such that it will not track within 60 seconds after its application.

Non-truck mounted equipment shall be self-propelled and regulated to allow for calibration of the amount of material applied. Glass beads shall be applied to the surface of the paint at the rate of 6 pounds per gallon of paint.

### 3.10 Type B Markings

Equipment shall be capable of providing mixing, heating, and agitation of material. Material shall be uniformly heated throughout the system in accordance with the manufacturer's recommendations. Thermoplastic material shall be maintained in the heating kettle and applied to the road surface at a minimum temperature of 400 degrees F. Heating kettles shall be equipped with an automatic thermostatic control device. The Contractor shall furnish a properly calibrated infrared instrument for the purpose of measuring the actual temperature of molten thermoplastic material.

Multi-component material shall be applied using internally injected guns for the mixing of catalyst and hardener.

Non-truck mounted equipment for application of thermoplastic material shall be of the screed extrude type with a screw driver or shall be self-propelled and regulated to allow for calibration of the amount of material applied. Non-truck mounted equipment for application of polyester and epoxy resin material shall be self-propelled and regulated to allow for calibration of the amount of material applied.

### 3.11 Thermoplastic (Class I)

Thermoplastic (Class I) material shall be applied only on asphalt concrete pavements and shall be applied by screed extrude, ribbon gun, or spray equipment. Alkyd thermoplastic may be applied directly after the paving operations; however, hydrocarbon thermoplastic shall not be applied less than 30 days after the paving operations.

Alkyd and hydrocarbon materials shall not be mixed together. Equipment shall be thoroughly cleaned before types of material are changed.

Thermoplastic shall not be applied over existing pavement markings of other materials unless the existing marking is 90 percent removed. Thermoplastic may be applied over existing thermoplastic markings. For concrete bridge decks that occur in asphalt roadways, Type B, Class VI, tape shall be used.

Primer/adhesive shall be applied to asphalt concrete surfaces more than 2 years old and shall be from the same manufacturer as the thermoplastic.

Glass beads shall be applied to the surface of the marking at the rate of 7 pounds per 100 square feet.

3.12 Polyester Resin (Class II)

Polyester resin (Class II) material shall be applied only on hydraulic cement concrete pavements. Polyester resin shall not be applied over existing pavement markings of other materials unless the existing marking is 90 percent removed.

Polyester resin may be applied over existing polyester resin markings.

Glass beads shall be applied to the surface at the rate of 8 pounds per gallon of material.

3.13 Epoxy Resin (Class III)

Epoxy resin (Class III) material shall be applied only to asphalt concrete pavement more than 1 day old and hydraulic cement concrete pavement. Epoxy resin shall not be applied over existing pavement markings unless the existing marking is 90 percent removed.

Glass beads shall be applied by the gravity method to the surface at the rate of 25 pounds per gallon of material.

3.14 Plastic Backed Preformed Tape

Plastic-backed preformed tape shall be installed in accordance with the manufacturer's recommendations and as denoted herein. Tape may be applied to asphalt concrete and hydraulic cement concrete pavements. Tape may be installed immediately following the final rolling of the new asphalt concrete surface. Tape shall not be applied over existing pavement markings of other materials unless the existing marking is 90 percent removed.

Primer/adhesive shall be used for all installations except when tape is applied immediately following the final rolling of the new asphalt concrete surface and shall be from the same manufacturer as the tape.

Tape for pavement line markings shall be applied by an application cart as recommended by the manufacturer. Tape shall be tamped into place with a tamper cart with the weight as

recommended by the manufacturer. The use of a vehicle to ride over the markings for tamping will not be permitted.

3.15 Eradication

Eradication of pavement markings for restriping when required shall be in accordance with the requirements of Section 512 of the VDOT Road and Bridge Specifications except only 90 percent removal of the existing markings is required.

3.16 Colored Asphalt Coating

Installers shall be accredited by the manufacture. Materials shall be installed in accordance with the manufacturer's written instructions. The Contractor shall apply a minimum of two coats.

**PART 4 – MEASUREMENT AND PAYMENT**

4.1 Pavement Line Marking

Measurement of pavement line markings (type, class, width) shall be per linear foot of line furnished and installed.

No additional measurement will be made when more than one line can be installed on a single pass such as center line with no-pass line, double center line, double lane line, reversible lane line, or two-way left turn center line.

Payment for pavement line markings (type, class, width) shall be per linear foot and shall include all labor, materials, tools, equipment, transportation, supplies, and incidentals required to furnish and install the line markings as specified.

No deduction will be made for the unmarked area when the marking includes a broken line such as, skip lane line.

4.2 Colored Asphalt Coating

Measurement of colored asphalt coating shall be per square foot of area completed. Payment for colored asphalt coating shall be per square foot and shall include all labor, materials, tools, equipment, transportation, supplies, and incidentals required to complete the coating.

**SECTION 13180****MAINTENANCE AND CONTROL OF TRAFFIC****PART 1 – GENERAL**

This work shall consist of maintaining and protecting workers, vehicular and pedestrian traffic through areas of construction within the limits of the project and over the approved traffic detours. All work shall be in accordance with the latest Arlington County Construction Standards and Specifications, Virginia Department of Transportation (VDOT) Road and Bridge Specifications, the Manual on Uniform Traffic Control Devices (MUTCD), and the Virginia Work Area Protection Manual (WAPM), the standard drawings, and the Contract, as directed by the Project Officer.

**1.1 Description of Work**

Provide all plant, labor, supervision, materials, and equipment to install, maintain, relocate, and remove all temporary traffic control devices.

**1.2 Related Work Specified Elsewhere****1.3 Applicable Specifications**

- A. Virginia Department of Transportation (VDOT)
- B. VDOT Road and Bridge Specifications
- C. Manual on Uniform Traffic Control Devices (MUTCD)
- D. Virginia Work Area Protection Manual (WAPM)
- E. Occupational Safety and Health Act, State & Federal (OSHA)

**1.4 Quality Assurance****28. Work Zone Traffic Control Certification**

The Contractor shall have at least one (1) employee who is certified by VDOT in Basic Work Zone Traffic Control; and who will be responsible for the placement, maintenance and removal of work zone traffic control devices within the project limits in compliance with the permit requirements and conditions, the approved plan, specifications, the Virginia Work Protection Manual and the Manual of Uniform Traffic Control Devices. An Employee certified by VDOT in the Intermediate Work Zone Traffic control shall be on-site to provide supervision during work zone adjustments or changes to traffic control due to field conditions. This employee shall provide evidence of this certification upon request from Arlington County personnel.

## **PART 2- MATERIALS**

### 2.1 General

Material shall conform to the requirements of the applicable VDOT specification.

### 2.2 Signalization, Barricades, Channelizing Devices, Safety Devices, and Pavement Markings

Signalization, barricades, channelizing devices, safety devices, and pavement markings shall conform to the requirements of Division VII of the latest VDOT specifications and the MUTCD.

### 2.3 Temporary Pavement Markers

Temporary pavement markers shall conform to the requirements of VDOT Section 235, Retroreflectors.

### 2.4 Construction Pavement Markings

Construction pavement markings shall conform to the requirements of VDOT Section 231 (Paint), and Section 246 (Pavement Marking).

### 2.5 Portable Changeable Message Signs

Portable changeable message signs shall meet the requirements of Section 512.03 subsection q of the VDOT Road and Bridge Specifications.

## **PART 3- EXECUTION**

This section shall conform to the VDOT Specification Section 512.03.

## **PART 4- MEASUREMENT AND PAYMENT**

Payment for MOT shall be based on the bid form. The payment will be a multiplier, expressed as a percentage, to be added to the total amount of the project assignment cost (applied only to the amount being invoiced). There will be no escalation for MOT percentage multiplier for the initial contract term and the extensions thereafter

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.

Payment for maintenance of traffic is full compensation for providing the proper pedestrian and vehicular traffic controls during all stages of construction and includes furnishing, preparing, fabricating, installing, maintaining, removing, relocating, repairing, or replacing pedestrian and vehicular traffic control devices and signs as necessary, and all other materials, labor, hardware, equipment, tools, supplies, and incidentals. Contractor shall be responsible for acquiring VDOT permit for any revision during construction and/or as required by the project contract to the approved traffic control plan.

Payment for maintenance of traffic for each site will be made as partial payments. The first installment of 50 per cent of the unit price for maintenance of traffic will be made on the first progress estimate following partial mobilization and initiation of construction work for the particular site. The remaining 50% of the contract lump sum price bid will be paid on each subsequent estimate based on the percent of work completed at the site all the way through Final Acceptance of work. The Project Officer shall have the authority to decide on the appropriate payment for each subsequent estimate.

**SECTION 311300**

**TREE PROTECTION AND ROOT PRUNING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. This Section includes the following:

a. Protection of existing trees to remain:

- i. Pruning of existing trees roots that are affected by execution of the Work, whether temporary or permanent construction.
- ii. Aeration and Root Protection Matting
- iii. Tree Protection Fencing

PRODUCT DATA SHEET 1 - Provide all labor, materials, tool and equipment as required to have tree protection applied on all areas called for on plans.

PRODUCT DATA SHEET 2 - In addition to the specifications contained herein, Work shall be performed in accordance with the Arlington County Department of Parks & Recreation Design Standards for Tree Protection and Trimming as shown on plans and available online at:

<http://parks.arlingtonva.us/design-standards/>

PRODUCT DATA SHEET 3 - Related Sections:

- a. 02200 Earthwork
- b. 02100 Clearing and Grubbing
- c. 01500 Erosion and Sediment Control and Pollution Prevention
- d. 329000 Exterior Plants
- e. 329200 Seeding and Sodding

**1.02 DEFINITIONS**

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Imported Topsoil: Soil obtained off-site that meets the specifications herein for topsoil and is suitable for use in planting soil/backfill soil mixture when existing soil quantities are insufficient. Refer to Section 329100 "Planting Preparation."
- C. Planting Soil/Backfill Soil Mixture: Existing soil modified as specified to be suitable for planting. Refer to Section 329100 "Planting Preparation."

**SECTION 311300**

**TREE PROTECTION AND ROOT PRUNING**

- D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.
- E. ISA: International Society of Arboriculture
- F. CBAY: Chesapeake Bay, typically referring to CBAY watershed.
- G. Urban Forester/County Urban Forester: Refers to the Arlington County Urban Forester
- H. Landscape Architect: Refers to an Arlington County Landscape Architect or their designee.

**1.03 SUBMITTALS**

- A. Product Data: For each type of product indicated in Section 2.0
- B. Certification: From Contractor’s arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- C. Maintenance Requirements: From Contractor’s arborist, for care and protection of trees affected by construction during and after completing the Work.
- D. Contract arborist Qualifications: Contractor shall submit a copy of valid ISA certification to the Project Officer for approval with confirmation by Urban Forester.
- E. List products to be used and firms, including qualifications to perform work.
- F. Provide schedules for performance of work.

**1.04 QUALITY ASSURANCE**

- A. Contractor shall ensure that tree and plant protection methods are implemented by an arborist Certified by the International Society of Arboriculture (ISA) to provide for the care of the trees and plants impacted by construction activities. Provide ISA certification verification to Project Officer per section 1.03 “Submittals” prior to beginning work.
- B. The Contractor shall identify to the Project Officer at least one authorized on-site Point of Contact(POC) who is, by training or experience, familiar with the policies, regulations and standards applicable to the work being performed. The POC and the certified arborist may be the same individual.
- C. Crews shall be directly supervised by an ISA certified arborist.

**SECTION 311300**

**TREE PROTECTION AND ROOT PRUNING**

- D. All workers, through related training and on the job experience, shall be familiar with the technical aspects of arboricultural work and equipment used in such operations.
- E. Trucks and mechanized equipment shall not enter tree protection areas.
- F. Stump grinding shall be with small machines specifically designed for that purposes. No stumps shall be excavated except as described herein. Stumps shall be ground not more than 8" below grade and care must be taken to minimize damage to root of the trees to remain.
- G. No stump grinding within tree protection areas.
- H. All work in or near tree protection areas shall be carefully performed by Contractor in order to avoid damage to tree trunks, branches, root system, and other existing plant materials and soils that are to remain.
- I. Silt shall not be allowed to collect in preservation or reforestation areas. Silt accumulating in preservation areas shall constitute damage and will require remedial activity. All silt shall be removed from preservation areas within 24 hours of siltation. The methods and procedures for silt removal within tree preservation and reforested areas shall be approved by the Project Officer with confirmation by the Urban Forester.
- J. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."
  - a. Pruning shall remove only dead, dying, damaged or broken limbs greater than 1" – 1.5" in diameter.
  - b. Pruning for clearance shall be reviewed and approved by Project Officer with confirmation by the Urban Forester.
- K. Urban Forester Notification: The Contractor shall notify the Project Officer 72 hours prior to the following events, so that the County's Urban Forester can be notified and present at a pre-construction site meeting (refer to Section 3) and to observe work:
  - a. Tree protection fencing installation
  - b. Tree or root-pruning operations.
  - c. Work within tree protection zones.
  - d. Tree planting.

**SECTION 311300**

**TREE PROTECTION AND ROOT PRUNING**

**PART 2 - PRODUCTS**

**2.01.1 MATERIALS**

- A. Temporary Tree Protection Fence: Unless otherwise indicated in approved plans, tree protection fence shall be two-inch wire mesh fabric measuring 72 inches in height mounted on 1.9" O.D. steel pipes driven 24 inches into the ground, placed 120 inches on-center maximum. Refer to Arlington County DPR standard detail on approved plans.
- B. Tree Protection Signs: Shall be of heavy-duty sheet aluminum or weatherproof plastic material measuring 12 inches by 18 inches. Signs shall state "NO ENTRY, TREE PROTECTION AREA, CALL 703-228-6557 TO REPORT VIOLATIONS" in both English and Spanish. Signs shall be mounted on fence every 50 feet maximum.
- C. Topsoil: Refer to Section 329100 – Plant Preparation.
- D. Bark Mulch: Refer to Section 329100 –Plant Preparation
- E. Temporary Root Protection Matting: If required in approved plans, temporary root protection matting shall be a double-sided geocomposite, geonet core, non-wove covering such as Tendrain 770-2, as manufactured by Tenax Corporation, Baltimore, MD or approved equal. Six (6) inches of wood chip mulch shall be applied to area to receive root protection matting prior to installation. Matting shall be installed in a single layer.
- F. Landscape nails: When required, spikes shall be 12" as indicated on the drawings.

**PART 3 - EXECUTION**

**3.01 PREPARATION**

- A. Prior to the construction activities, the Contractor shall meet on-site with the Project Officer and Urban Forester to review trees to remain and protective measures required.
- B. Temporary Tree Protection Fencing: Install temporary tree protection fencing and signs around tree protection zones to protect remaining trees and vegetation from construction damage. Maintain temporary fence and remove when construction is complete after approval by Project Officer with confirmation by the County Urban Forester.
- C. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

- D. No personnel, vehicles, equipment, construction materials, or construction debris shall be allowed inside the tree protection areas at any time during construction without the written

**SECTION 311300**

**TREE PROTECTION AND ROOT PRUNING**

- E. consent of the Project Officer with confirmation by the Urban Forester. If a violation is observed, the Contractor will be notified by the Project Officer and shall immediately rectify the situation. Continued and subsequent violations will result in a fine of \$500 per day of violation.
- F. Special Demolition Procedures:
  - a. Demolition of walks and hardscape within tree protection areas shall be directly supervised by an ISA certified arborist.
  - b. Mechanized equipment shall not enter tree protection areas (TPAs) or reforestation areas.
  - c. Backfill of voids created by demolition within the TPAs and reforestation areas shall be loosely placed topsoil. Only the amount of topsoil necessary to fill the void without spreading over existing grades shall be allowed.

**3.02 EXCAVATION**

- A. Install shoring or other protective support systems to minimize sloping or benching of excavations if indicated in the approved plans.
- B. Do not excavate within tree protection zones, unless otherwise indicated.
- C. Where utility trenches are required within tree protection zones, Contractor shall perform root pruning prior to trenching.
- D. Where excavation is proposed within the critical root zone of trees to remain, Contractor shall perform root pruning as indicated in approved plans prior to excavation.
- E. Where new finish grade is indicated below existing grade around trees, Contractor shall slope grade outside of tree protection zones. Maintain existing grades within tree protection zones.

**3.3 ROOT PRUNING:**

- A. When required, root pruning locations will be indicated on the approved plans. Exact location and depth shall be determined on site with Project Officer and Urban Forester during the pre-construction meeting.
- B. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with clean, sharp pruning instruments; do not break or chop. All root pruning shall be performed by an ISA certified arborist. Refer to Arlington County Department of Parks & Recreation Design Standards "Tree Protection and Trimming" as shown on plans and available online at:

<http://parks.arlingtonva.us/design-standards/>



**SECTION 311300**

**TREE PROTECTION AND ROOT PRUNING**

**3.4 TREE REPAIR AND REPLACEMENT**

- A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to Arlington County Urban Forester or contract arborist's written instructions.
- B. The Contractor shall be responsible for any damage to trees within the Tree Protection Area caused by the Contractor's personnel, vehicles, or equipment at the site. Any damage to a tree to remain shall result in a payment by the Contractor to the Project Officer for the amount of damage based on the latest edition of the Council of Tree and Landscape Appraisers Guide for Plant Appraisal published by the International Society of Arboriculture (ISA). All trees are to be valued as landscape trees.

**3.5 DISPOSAL OF WASTE MATERIALS**

- A. Burning is not permitted.
- B. Disposal: Remove excess excavated material and displaced trees from Owner's property and legally dispose.

**PART 4 – MEASUREMENT AND PAYMENT**

- 4.1 The measurement of TREE PROTECTION FENCE shall be for LINEAR FOOT of fence including all appurtenances as delivered to the site, furnished, installed, maintained and removed at project completion in accordance with the plans and specifications.
- 4.2 The unit price for Tree Protection Fence shall include the cost of all labor, materials, equipment and incidental expenses necessary to complete the work.
- 4.3 The measurement of ROOT PRUNING shall be for LINEAR FOOT of pruning root pruning performed on the project in accordance with the plans and specifications.
- 4.4 The unit price for ROOT PRUNING shall include the cost of all labor, materials, equipment and incidental expenses necessary to complete the work.
- 4.5 The measurement of ROOT PROTECTION MATTING shall be for SQUARE FOOT of matting as delivered to the site, furnished, installed, maintained and removed at project completion in accordance with the plans and specifications.
- 4.6 The unit price for ROOT PROTECTION MATTING shall include the cost of all labor, materials, equipment and incidental expenses necessary to complete the work including anchor/landscaping nails, in accordance with the approved plans and specifications. Unless otherwise specified on the approved plan, excavation for ROOT Protection Matting installation is considered incidental to the work and shall not be paid separately.

**SECTION 329100**

**PLANTING PREPARATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes erosion control materials, soil amendments, mulching and topsoil.
- B. Provide all labor, materials, tools and equipment as required to have topsoil, planting soil mix, soil stabilization, amendments, and mulch applied per the specifications on all areas disturbed by construction to receive plant materials as indicated in the approved plans.
- C. Related Sections:
  - a. Section 02200 Earthwork
  - b. Section 02100 Clearing and Grubbing
  - c. Section 311300 Tree Protection and Root Pruning
  - d. Section 01500 Erosion and Sediment Control and Pollution Prevention
  - e. Section 329200 Seeding and Sodding
  - f. Section 329300 Exterior Plants
- D. In addition to the specifications contained herein, Work shall be performed in accordance with the:
  - a. Drawings and general provisions of the contract, including general and supplementary conditions
  - b. Arlington County Department of Parks & Recreation Design Standards as shown on the plans and available online at:  
<http://parks.arlingtonva.us/design-standards/>

**1.02 DEFINITIONS**

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Imported Topsoil: Soil obtained off-site that meets the specifications herein for topsoil and is suitable for use in planting soil/backfill soil mixture when existing soil quantities are insufficient.

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**PLANTING PREPARATION**

- C. Planting Soil/Backfill Soil Mixture: Existing soil modified as specified to be suitable for planting.
- E. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.
- F. ISA: International Society of Arboriculture
- G. CBAY: Chesapeake Bay, typically referring to CBAY watershed.
- H. Urban Forester/County Urban Forester: Refers to the Arlington County Urban Forester
- I. Landscape Architect: Refers to an Arlington County Landscape Architect or their designee.

**1.03 SUBMITTALS**

- A. Samples of all materials specified shall be submitted to the Project Officer for approval with coordination of the Landscape Architect. All approvals shall be in writing.
- B. Samples:
  - a. Existing Topsoil: Provide 1-pound sample of existing topsoil with the following soil test reports.
    - i. Fertility: pH, nitrate nitrogen, ammonia nitrogen, phosphate phosphorous, potassium, calcium, magnesium, zinc, iron, manganese.
    - ii. Suitability: total salinity, boron, sodium, potassium, calcium, magnesium, chloride, sulfate.
    - iii. Physical properties including organic content and particle size distribution.
  - b. Imported Topsoil: If imported topsoil is required, Contractor shall provide a 1-pound sample of the imported topsoil with the soil test reports as noted above for "Existing Topsoil."
  - c. Imported Topsoil for Bioretention Areas: If bioretention areas are indicated in the approved plans, the Contractor shall submit soil sample per specifications.
  - d. Mulches and Organic Matter/Compost: Sample of mulch and organic

matter/compost may be requested in lieu of inspection.

**SECTION 329100**

**PLANTING PREPARATION**

- e. Product certificates: Contractor shall submit for each type of manufactured product, to be approved by the Project Officer in coordination with Landscape Architect or Urban Forester and complying with the following:
  - a. Manufacturer's certified analysis for standard products.
- f. Geotextile/Soil Stabilization/Erosion Control Fabric: Sample

**1.04 QUALITY ASSURANCE**

- A. Contractor shall have all existing and furnished topsoil to be used for seeding and sodding, and for planting areas tested by a state laboratory or recognized commercial soil-testing laboratory in order to determine recommendations for the types and quantities of soil amendments. The results of this test will determine the rates and types of fertilizers, lime, soil conditioners, and other amendments, if necessary.
  - a. Soil tests shall use a representative sample of on-site soils. If existing soil has been undisturbed and is suitable as determined by the soil test, no additional amendments are required.
  - b. Adjustments should be made based on soil test results.

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- A. All materials shall conform to those stipulated below, unless otherwise approved in writing by the Project Officer with confirmation by the Landscape Architect or County Urban Forester.
- B. Specified materials to be applied in amounts and methods herein stipulated.
- C. Delivery tickets indicating date, weight, analysis and vendor's name, to be submitted to Project Officer.

**2.02 SOIL AMENDMENTS**

- A. Lime: Application rates for liming materials and lime material type chosen shall be determined by required soil tests and approved by the Project Officer in coordination with the Landscape Architect or Urban Forester.

**SECTION 329100**

**PLANTING PREPARATION**

- a. When required and unless test results indicate otherwise, lime material shall be dry and free flowing pulverized limestone, hydrate lime or burnt lime that contains at least 50% total oxides (calcium oxide plus magnesium oxide). Ground limestone shall be ground to such fineness that at a minimum of 50% will pass through a 100 mesh sieve and 98% - 100% will pass through a 20 mesh sieve. Lime material shall meet the Virginia Agricultural Liming Materials Act, Code of Virginia Section 3.1-126.1.
- B. Fertilizer: Fertilizer type and application rate shall be determined by results of required soil tests and approved by the Project Officer in coordination with the Landscape Architect or Urban Forester:
  - a. When required and unless test results indicate otherwise, commercial-grade complete fertilizer will be of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
    - i. Composition: 10 percent nitrogen, 20 percent phosphorous, and 10 percent potassium, by weight.
  - b. All fertilizers shall be uniform in composition, free flowing, and suitable for application with approved equipment.
  - c. Fertilizers shall be delivered to the site fully labeled according to applicable state fertilizer laws and shall bear the name, trade name, or trademark and warranty of the product.
- C. Delay mixing fertilizer with planting soil if planting will not proceed within 2 days.
- D. Spread fertilizer and lime with approved equipment.

**2.03 EXISTING TOPSOIL**

- A. Existing, native surface topsoil formed under natural conditions with the duff layer retained during excavation period and stockpiled.
  - a. Contractor shall verify suitability of stockpiled soil to produce or to be amended

to produce viable planting soil for lawns and planting beds as described herein.

- B. Existing topsoil is to be used to extent possible for lawn areas and is to be amended per the specifications to become the Planting Soil/Backfill Soil Mixture for use in planting pits and bed areas.

**SECTION 329100****PLANTING PREPARATION**

- C. Prior to use for lawn areas or in planting soil mix, Contractor shall remove all stones, roots, plants, sod, clods, and clay lumps larger than 1/2 –inch in any direction, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris and other extraneous materials that are harmful to plant growth.
- D. After removal of debris and extraneous materials noted above, the Contractor shall obtain soil tests for the existing soil per the requirements in section 1.04 “Quality Assurance.”
- E. Contractor shall submit soil test results to the Project Officer for approval with confirmation by the Landscape Architect or Urban Forester.
- F. Contractor shall supplement the existing soil as recommended in soil test results to achieve a viable planting soil for lawns and/or planting beds. Contractor shall supplement with imported topsoil per the specifications from off-site sources when quantities of approved, existing topsoil are insufficient for lawns and planting beds.
- G. Contractor shall submit a sample of the topsoil that has been amended based on soil test results for approval by the Project Officer with confirmation by Landscape Architect or Urban Forester prior to use in lawn areas or planting beds or pits.
- H. Topsoil installed on grade shall attempt to match existing soil texture, except for situations where clay subsoil exists. In the event that clay subsoil exists, use loam or silt loam topsoil.
- I. Imported topsoil rather than existing topsoil is to be used for planting in bioretention areas, unless otherwise indicated on the approved plans.

**2.04 PLANTING SOIL MIX/BACKFILL SOIL MIXTURE**

- A. The planting soil mix (also known as backfill soil mixture) shall consist of existing topsoil that has been approved for planting per the specifications above and approved organic matter.
- B. The planting soil mix/backfill soil mixture shall be composed of  $\frac{3}{4}$  approved existing topsoil and  $\frac{1}{4}$  approved organic matter as described in the Arlington County DPR Standard planting details, unless otherwise indicated by the Project Officer with confirmation by the Landscape Architect or Urban Forester.

**2.05 IMPORTED TOPSOIL**

- A. Contractor shall add imported topsoil when required on the drawings, when quantity of existing topsoil is insufficient or when determined to be necessary due to soil testing results.

**SECTION 329100****PLANTING PREPARATION**

- B. Topsoil shall be the natural, original surface soil, a sandy loam uniform in composition and shall be in a friable condition and shall contain less than 3 percent subsoil, hardpan material, stones and clods larger than 1/2 inch in diameter in any direction. It shall also be free of sticks, tree or shrub roots, debris and other material undesirable for plant growth. The area and the topsoil shall be free of undesirable plant such as, but not limited to, Bermuda grass, nut sedge, mugwort or noxious weeds as set forth in the Federal Seed Act.
- C. The topsoil shall contain at least 5 percent organic matter. It shall be a sandy loam consisting of at least 5 but not more than 20% clay, at least 10 but not more than 80% sand. It shall have a pH between 5.5 to 6.5. Soluble salts (salinity) shall not exceed 500 ppm. Soil fertility shall be "High" in natural nutrients based on the coordinated ratings in pounds per acre as established by the National Soil and Fertilizer Research Committee.
- D. Topsoil which has been manufactured by blending materials which individually do not meet the requirements of this specification will not be accepted even though the resulting blend meets the organic matter, mechanical analysis, pH and soluble salts requirements. Agricultural limestone at not more than 5 pounds per cubic yard of topsoil may be used to adjust the pH provided it is well mixed in a manner which does not destroy the structure of the soil.

**2.06 IMPORTED TOPSOIL FOR BIO-RETENTION AREAS**

- A. If bioretention is specified in the approved plans, soil for bioretention areas shall comply with the Filter Media and Surface Cover section of the Virginia Department of Environmental Quality's (DEQ) Design Specification No. 9 for Bioretention, Version 2.0, January 1, 2013.

**2.07 MULCHES AND ORGANIC MATTER**

- A. Straw Mulch for Seeded Areas: Provide air-dry, clean, mildew and seed-free, salt hay or threshed straw of wheat, rye, oats or barley.
- B. Wood Chip Bark Mulch for Planted Areas: Wood Chip Bark Mulch shall be double-shredded hardwood bark mulch, uniform in size and free of stones, clods, non-organic debris or other foreign material and aged for at least 6 months from an approved source. Insufficiently or improperly aged mulch containing high bacterial counts or high levels of bark or other materials resistant to decomposition shall not be used. Mulch shall not contain the trunk of trees.

- C. Organic Matter/Compost Mulch: Well-composted, trash-free, stable, and weed-free organic matter such as composted bark, leaf mold or other plant debris material that has been composted to a point of decay and is mature.
  - a. pH ranges of 5.5 to 8; moisture content 35 to 55 percent by weight
  - b. 100 percent passing through 1-inch sieve
  - c. Peat moss shall not be used.
  - d. Organic amendments shall be commercially prepared and shall comply with the U.S. Compost Council Seal of Testing Assurance Program's Test Methods for the Examination of Composting and Compost (STA/TMECC) criteria, or as modified in approved plan documents.

## **2.08 SOIL STABILIZATION/EROSION CONTROL FABRIC**

- A. ECS-2B Double New Straw Biodegradable Rolled Erosion Control Product, or an approved equal shall be used in all planting beds/reforestation areas.
  - a. Shall meet Type 2.D specifications for ECTC and HFWA FP-03 Section 713.17
  - b. Shall have two (2) layers of organic jute netting sewn together with biodegradable thread.
  - c. Overlap sections 12" and secure with manufacturer's recommended steel wire staples, 6 inches long.
- B. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.
- C. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches.
- D. Erosion-Control Mats: Cellular, non-biodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped grades, of 3 inch nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.
  - a. Products: Subject to compliance with requirements and plan documents, the products below, or an approved equivalent, be used:
    - i. Invisible Structures, Inc.; Slopetame 2
    - ii. Tenax Corporation – USA; Tenweb.

**A. PART 3 - EXECUTION**

**3.01 PREPARATION**

**SECTION 329100**

**PLANTING PREPARATION**

- A. All identified areas within the project limits shall have approved topsoil mix spread on them and be prepared for seeding and sodding by bringing ground surfaces to grades shown on the drawings. Planting pits and bed areas identified on the approved plans shall be prepared in accordance with the applicable DPR Landscape Standard details.
- a. No seeding shall be done on frozen ground or when the temperature is 32F or lower. Refer to specification 329200, "Seeding and Sodding." Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties, sidewalks and areas.
  - b. Rototilling shall not be performed within the critical root zone of trees to be preserved.
  - c. The soil shall not be tilled or amended when the soil's moisture capacity is above field capacity or when the soil is frozen.
  - d. Contractor shall identify utilities, existing irrigation and underground utilities. All areas on either side of the utility marking shall be amended by hand.
  - e. Contractor shall verify that no foreign or deleterious material or liquid has been deposited in soil within a planting area.
  - f. Contractor shall proceed with installation only after both unsatisfactory conditions have been corrected and rough grading has been completed and approved by the Project Officer in coordination with the Landscape Architect or Urban Forester.
  - g. Contractor shall protect structures, utilities, sidewalks, pavements and other facilities, trees, shrubs and plantings from damage caused by planting operations.
    - a. Protect adjacent and adjoining areas from hydro-seeding and hydro-mulching overspray.
    - b. Protect grade stakes set by others until directed to move them.
  - h. Surfaces shall conform to finish grade, free of water retaining depressions, soil friable, free of clay and of uniformly firm texture.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than 1/2 inch in any direction and sticks, roots, rubbish, and other extraneous matter including grass vegetation and turf and legally dispose of them off of Arlington County property. Do not mix into surface soil.



**SECTION 329100****PLANTING PREPARATION**

- a. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix. Delay mixing amendments with soil if planting will not proceed within 2 days.
  - b. Loosen surface soil to a depth of at least of 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.
  - c. Spread planting soil mix to a depth of 4 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
- C. Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare surface soil as follows:
- a. Remove stones larger than 1/2 inch in any dimension and sticks, roots, trash, and other extraneous matter. Legally dispose them off of Arlington County property. Do not mix into surface soil
  - b. Loosen surface soil to a depth of at least 6 inches, apply soil amendments and fertilizers according to the planting soil mix proportion and mix thoroughly into the top 4 inches of soil.
- D. Finish Grading: Grade landscape areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Adjust for the thickness of sod, where applicable. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.
- E. If bioretention areas are specified in the approved plans, the Contractor shall construct these areas in accordance with the Virginia DEQ Stormwater Design Specification No. 9, Version 2.0, January 1, 2013.
- F. Contractor shall avoid unnecessary compaction of the soil during grading.
- G. Contractor shall ensure appropriate slopes of the swales, berms and final grades.
- H. Immediately following each day's work, contractor shall clean all dirt, excess soil, debris and trash from the site. Contractor shall protect and store additional soils in stockpiles protected from saturation, erosion, weed growth and contamination with plastic sheeting or tarps.

**SECTION 329100**

**PLANTING PREPARATION**

- I. Amendments for seeding and sodding areas shall be applied after determining by soils test as follows:
  - a. Lime as specified shall be spread uniformly over designated area. Rate depends on soil tests. Soil tests shall be made before lime application at 8 to 10 plugs per acre taken by the method prescribed the United States Department of Agriculture.
  - b. Fertilizer shall be spread after the lime has been applied. Rate shall be as recommended per the soil tests.
  - c. Fertilizer shall be spread with approved equipment and at an even rate over the area to be seeded or sodded.
  - d. Work lime and fertilizer into top 4 inches of topsoil and grade to smooth surface ready for seeding.
  
- J. Restore areas if eroded or otherwise disturbed after finish grading and before planting.
  
- K. Prepared lawns and planting areas shall be inspected and approved by Project Officer in coordination with Landscape Architect prior to seeding, sodding or planting.
  
- L. If the graded areas develop volunteer weed growth, the growth shall be eliminated at the expense of the Contractor.

**3.02 SOIL STABILIZATION MATERIALS**

- A. Prepare planting area as specified.
  
- B. Moisten prepared planting area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
  
- C. Install Soil Stabilization from top of slope, overlapping joints by 12 inches, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
  
- D. Plant shrubs, trees and perennials through Soil Stabilization fabric by carefully separating fabric layers to allow space for planting.
  
- E. Remove non-biodegradable stabilization materials after plant establishment.

**SECTION 329100**

**PLANTING PREPARATION**

**B. PART 4 - MEASUREMENT AND PAYMENT**

- 4.01** The measurement of PLANTING MIX to be paid for shall be per CUBIC YARD of planting mix in accordance with the plans, specifications and to the satisfaction of the Project Officer.
- 4.02** The unit price for PLANTING MIX shall include the cost of furnishing all labor, materials, equipment and incidental expenses, including but not limited to soil amendments, organic matter, and soil stabilization materials, necessary to complete the work, all in accordance with the plans, specifications and approval of the Project Officer.
- 4.03** The measurement of BIORETENTION SOIL MEDIA to be paid for shall be per CUBIC YARD of planting mix in accordance with the plans, specifications and to the satisfaction of the Project Officer.
- 4.04** If bioretention is explicitly called for in the approved plans, the unit price for BIORETENTION SOIL MEDIA shall include the cost of furnishing all labor, materials, equipment and incidental expenses, including but not limited to soil amendments, organic matter, and soil stabilization materials, necessary to complete the work, all in accordance with the plans, specifications and approval of the Project Officer.
- 4.05** The measurement of WOOD MULCH to be paid for shall be per CUBIC YARD of Mulch in accordance with the plans, specifications and to the satisfaction of the Project Officer.
- 4.06** The unit price for WOOD MULCH shall include the cost of furnishing all labor, materials, equipment and incidental expenses necessary to complete the work, all in accordance with the plans, specifications and approval of the Project Officer. Does not include excavation.
- 4.07** Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

**SECTION 329200**

**SEEDING AND SODDING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. The work includes, but is not limited to the provision of all material, services, labor, and equipment necessary to perform the following as required per the plans for the establishment of turf, meadow grasses and/or wildflowers:
  - a. Seeding
  - b. Sodding
  - c. Hydro-seeding
  - d. Plugging
  
- B. Related Sections:
  - a. Section 02200 – Earthwork
  - b. Section 329100 – Planting Preparation
  - c. Section 311300 – Tree Protection and Root Pruning
  - d. Section 329300 – Exterior Plants
  - e. Section 01500 – Erosion and Sediment Control and Pollution Prevention
  
- C. In addition to the specifications contained herein, Work shall be performed in accordance with the:
  - a. Drawings and general provisions of the contract, including general and supplementary conditions.
  - b. Arlington County Department of Parks & Recreation (DPR) Design Standards as shown on the plans and available online at:

<http://parks.arlingtonva.us/design-standards/>

**1.02 DEFINITIONS**

- A. Finish Grade: Elevation of finished surface of planting soil.
  
- B. Imported Topsoil: Soil obtained off-site that meets the specifications herein for topsoil and is suitable for use in planting soil/backfill soil mixture when existing soil quantities are insufficient. Refer to Section 329100 “Planting Preparation.”
  
- C. Planting Soil/Backfill Soil Mixture: Existing soil modified as specified to be suitable for planting. Refer to Section 329100 “Planting Preparation.”

- D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

**SECTION 329200**

**SEEDING AND SODDING**

- E. ISA: International Society of Arboriculture
- F. CBAY: Chesapeake Bay, typically referring to CBAY watershed.
- G. Urban Forester/County Urban Forester: Refers to the Arlington County Urban Forester
- H. Landscape Architect: Refers to an Arlington County Landscape Architect or their designee.

**1.03 SUBMITTALS**

- B. Samples of all materials shall be submitted to the Project Officer for approval with confirmation by the County Landscape Architect prior to delivery to site.
- C. Contractor shall submit qualifications per section 1.04 "Quality Assurance" to Project Officer for approval.
- C. Samples:
  - a. Seed Mix: Certification of grass seed including the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and the date of packaging.
  - b. Sod: Sod grower's name, together with substantiating information as to field location from which sod is to be cut and species, percent purity and mixture of grass sod to be applied. Samples or photos of sod mix may be requested in lieu of inspection.
  - c. Special Seed Mixes: Contractor shall submit product data per section 2.03.

**1.04 QUALITY ASSURANCE**

- A. Contractor qualifications:
  - a. Evidence of completion of at least three (3) projects of similar nature and scope to this project completed within the last five (5) years that have resulted in successful turf and meadow establishment
  - b. Contractor shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
  - c. Experience: Three to Five years' experience in turf installation.

**SECTION 329200****SEEDING AND SODDING**

- B. Contractor shall maintain an experienced full-time supervisor on Project site when work is in progress.

**PART 2 - PRODUCTS****2.01 MATERIALS**

- A. All materials shall conform to those stipulated below, unless otherwise approved in writing by the Project Officer with confirmation by the Landscape Architect.
- B. Specified materials to be applied in amounts and methods herein stipulated.
- C. Delivery tickets indicating date, weight, product data including all analyses for purity and other information as required herein, and vendor's name, to be submitted to Project Officer for approval.

**2.02 SEED**

- A. Grass seed shall be fresh, clean, dry new crop seed complying with purity and germination requirements stipulated herein. All cultivars must be on the current "Virginia Turfgrass Variety Recommendations" or in the top 25 for transitional zone sites-overall of the latest National Turfgrass Evaluation Program (NTEP) as approved by Project Officer with confirmation by the Landscape Architect. The Turf-type Tall Fescue component shall be comprised of a minimum of two cultivars with each cultivar comprising neither less than 30 percent nor more than 70 percent of the blend. The use of K-31 Tall Fescue or Common Kentucky Bluegrass in the mix is prohibited. The mix shall have 2.5 percent maximum inert matter, 0.5 percent maximum crop seed, and 0.1 percent maximum weed seed and 0.0 percent noxious weed. The mix shall comply with the current Virginia Seed Law and Virginia Seed Regulations and approximate the following:

<u>Kind of Seed</u>	<u>% by Weight</u>	<u>% Purity</u>	<u>% Germination</u>
Turf-type Tall Fescue	80	97	85
Bluegrass	10	97	80
Perennial Ryegrass	10	97	90

- B. Substitution of seed type or percent only on approval of Project Officer in coordination with Landscape Architect. Seed to be free of noxious weed seed.

**2.03 SOD**

**SECTION 329200****SEEDING AND SODDING**

Cultivated Grass Sod shall be certified and obtained from State Certified nurseries and have been grown on natural native mineral soils comparable to those afforded at the job site. Sod containing netting is not acceptable. Sod grower's information and sod information to be submitted for approval by Project Officer per section 1.03 "Submittals." Failure to obtain advance approval will constitute grounds for rejection of all sod delivered to the site. Invoices for all sod to clearly state point of origin and have attached to them a facsimile of the Grower's Nursery Certificate issued by the U.S. Department of Agriculture or Certified Delivery Ticket per truckload. All grass sod shall meet the following basic requirements.

- a. Sod shall be free of disease and soil borne insects.
- b. Sod shall be free of clover, broadleaf weeds and noxious weeds. Sod considered free of such weeds if less than 2 such plants are found per 100 square feet of area.
- c. Sod shall be of uniform color and density and contain:

Kind of Seed	% by Weight
Turf Type Tall Fescue	90
Kentucky Bluegrass	10

- d. All cultivars must be on the current approved list of the Virginia Turfgrass Variety Recommendations and the sod shall be certified by the Virginia Sod Certification Program. Provide appropriate certifications at the time of installation.
- e. Sod sample shall be submitted to and approved by Project Officer in coordination with the Landscape Architect before cutting. Sod placed on the job shall conform to the approved sample or shall be removed and replaced at the Contractor's expense.
- f. Sod shall have been mowed prior to stripping and shall have been maintained for a minimum of three months.
- g. Sod shall be relatively free of thatch. Thatch build up that significantly detracts from the appearance of the sod may be sufficient cause for rejection.

**SECTION 329200****SEEDING AND SODDING**

- h. Sod shall be machine stripped at a uniform soil thickness of approximately ¾-inch. Measurement for thickness to exclude tip growth and thatch.
- i. Individual pieces of sod shall be cut to supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be 5%. Broken pads, torn or uneven ends shall not be permitted.
- j. Root development shall be such that standard size pieces will support their own weight and retain their size and shape when suspended vertically from a firm grasp on uppermost 10% of the area.
- k. Under moderate moisture conditions, weight shall not exceed 7 pounds per square foot. Minimum weight shall not be less than 4 lbs. per square foot.

**2.04 SPECIALTY SEED (WILFLOWERS, BIORETENTION, and/or REFORESTATION)**

- A. When specialty seed is explicitly specified in approved plans, and unless otherwise indicated, the specialty seed mix shall be as follows:
  - a. Virginia Northern Piedmont Riparian Mix variation. Fresh, clean and dry new seed, of mixed species as follows:
    - i. 22% River Oats, PA/VA Ecotype (*Chasmanthium latifolium*)
    - ii. 15% Indiangrass, PA Ecotype (*Sorghastrum nutans*)
    - iii. 15% Virginia Wildrye, PA Ecotype (*Elymus virginicus*)
    - iv. 10% Beaked Panicgrass, VA Ecotype (*Panicum anceps*)
    - v. 10% Big Bluestem, 'Niagara' (*Andropogon gerardii*)
    - vi. 10% Switchgrass (*Panicum virgatum* 'Shelter')
    - vii. 10% Autumn Bentgrass, PA ecotype (*Agrostis perennans*)
    - viii. 8% Mistflower, VA Ecotype (*Eupatorium coelestinum*)
  - b. Seed carrier: Inert material, sharp clean sand mixed with seed at a ratio of not less than two parts seed carrier to one part seed.

**SECTION 329200**

**SEEDING AND SODDING**

- B. Contractor shall supply the germination test results and the percent purity of the seeds upon delivery to the site to the Project Officer. All seed shall be cleaned, processed, analyzed for purity, stored, and germination tested before being used. Every seed variety contains different germination rates and requirements.
- C. Execution:
  - a. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
  - b. Brush seed into top 1/8 inch of soil, roll lightly and water with light spray.
  - c. Protect seeded areas by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch and roll surface smooth.
  - d. Water newly planted areas and keep moist until established.

**2.05 SOILS & SOIL AMENDMENTS**

- A. Refer to Section 329100 "Plant Preparation" soils and soil amendment specifications.

**2.06 MULCHES/ ORGANIC MATTER**

- A. Refer to Section 329100 "Plant Preparation" for mulch specifications.

**2.07 SOIL STABILIZATION/EROSION CONTROL FABRIC**

- A. Refer to Section 329100 "Plant Preparation" for specifications.

**PART 3 - EXECUTION**

**3.01 PREPARATION**

- A. Refer to Section 329100 "Plant Preparation" for specifications.

**3.02 SEEDING - GRASS**

**SECTION 329200****SEEDING AND SODDING**

- A. All areas within the project limits that are not shown for paving, sodding, or special treatment shall be seeded with the specified seed mix.
- B. Seeding shall take place between August 15th and October 15th or between March 15th to May 15th. Approval from Project Officer/Landscape Architect will be required before seeding is to begin.
- C. Use 4" of prepared topsoil as base for areas to be seeded.
- D. No seeding shall be done during windy weather (winds over 5 mph) or when ground is wet or otherwise non-tillable. No seed shall be done on frozen ground or when the temperature is 32 or lower.
- E. Seed shall be uniformly distributed by hydro-seeding methods as specified:
  - a. Slurry
    - i. Seed as specified at a rate of 350 lbs./acre.
    - ii. Mulch: virgin wood fiber type applied at a rate of 1200 lbs./acre.
    - iii. Tackifier: Guar type or approved equal applied at a rate of 40 lbs./acre.
    - iv. Fertilizer: 19-19-19 granular applied at a rate of 500 lbs./acre.
    - v. Lime: Flowable liquid lime at a rate of 5 gallons per acre.
    - vi. Dye: Slurry must be green with dye added if not included with the mulch.
    - vii. Application rate: 3000 gallons per acre. Agitation must be maintained throughout mixing and application.
    - viii. Slurry shall be applied within 8 hours of the start of mixing.
  - ix. In lieu of hydro-seeding, seed may be drilled or an alternate method may be used. If an alternate method is used, seeding will have to be run in two directions. The second direction being at right angles to the first direction. Requests for using alternate methods shall be approved by the Project Officer prior to application of seed.
  - x. Sow seed at the rate of 5 to 8 lb/1000 sq. ft.
  - xi. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.
  - xii. Protect seeded areas with slopes not exceeding 6:1 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.



**SECTION 329200****SEEDING AND SODDING**

- xiii. Areas indicated on plan or exceeding 6:1 slope shall be protected with erosion control fabric, jute mat, or similar slope protection, installed according to manufacturer's written instruction, and/or as approved by the Project Officer.

**3.03 SODDING**

- A. All sod shall be transplanted within 24 hours from the time it is harvested unless stacked at its destination in a manner satisfactory to the Project Officer. Do not lay down if dormant or if the ground is frozen or muddy.
- B. All sod in stacks shall be kept moist and protected from exposure to air and sun and from freezing. Any sod permitted to dry out may be rejected whenever, in judgment of Project Officer, its survival after placing is doubtful. No payment shall be made for rejected sod. In any event, no more than forty-eight hours shall lapse between cutting and planting of sod is permitted.
- C. Before placing or depositing sod upon any surfaces, all shaping and redressing of such surfaces as described under Seeding Soil Preparation shall be completed. The bed area for sod shall be dug out so that when the sod is installed the adjacent soil will be flush with the top of the sod root mat. Areas shall be watered lightly before the placing of sod; sod shall not be placed on dry surfaces. Completed areas to be sodded shall be a smooth, uniform, well-tilled surface true to line and cross section. Any raking required shall be done immediately prior to placement of the sod at no additional cost to Owner.
- D. No sod shall be placed at any time temperature is below 32 degrees Fahrenheit. No frozen sod shall be used and no sod shall be placed upon frozen, powder dry or excessively wet soil.
- E. Use 4" of prepared topsoil as base for areas to be sodded.
- F. Sod shall be lifted from trucks or storage piles by hand and placed with closed joints and no overlapping. All cracks, seams and voids shall be closed with small pieces of sod. After laying sod shall be sprinkled thoroughly and then tamped. "Tamping" consists of firmly closing seams between strips by use of hand tampers or approved rollers. All sod shall be thoroughly rolled after closing all seams. Correct any slipping of sod.

**SECTION 329200****SEEDING AND SODDING**

- G. Adequate water and watering equipment must be on hand before sodding begins and sod shall be kept moist until root system adheres to original seed bed and becomes established and accepted by Project Officer.
- H. Sod shall be laid with long edges parallel to contours, except in swales or ditches where it shall be placed perpendicular to the flow line. Only sod placed in swales or ditches shall be staked using 2 stakes per roll of sod. Stakes shall be wood wedges ½" x 1" x 12". Successive strips to be neatly matched and all joints staggered. Sod will be laid in all areas indicated on landscape plans.

**3.04 REFORESTATION**

- A. Prepare planting area per the specifications.
- B. Reforestation process:
  - a. Reforestation seed mix shall be applied prior to installation of Erosion Control Fabric. Rake seed lightly into the top 1/8 inch of soil, roll lightly and water with fine spray.
    - i. Do not use wet seed or seed that is moldy or otherwise damaged.
    - ii. Do not seed against existing trees or vegetation to remain within reforested area limits.
    - iii. Top dress seed by applying composted mulch within 24 hours after seeding operation. Soak areas, scatter mulch uniformly to a thickness of 1/2 inch and roll surface smooth.
  - b. Install erosion control fabric from top of slope, overlapping joints by 12 inches, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
  - c. Moisten prepared planting area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
  - d. Plant shrubs, trees and perennials through erosion control fabric by carefully separating fabric layers to allow space for planting.
- C. Remove non-degradable erosion-control measures after grass establishment period.

**SECTION 329200**

**SEEDING AND SODDING**

**3.05 PROTECTION**

- A. Install post and rope barriers around seeded areas. Tie cloth or ribbon to rope at 10' intervals.
- B. Install "KEEP OFF LAWN" signs at appropriate locations.
- C. Remove non-biodegradable erosion control measures after plant establishment period.

**3.06 MAINTENANCE**

- A. Maintain surfaces and supply additional topsoil where necessary, including areas affected by erosion.
- B. Water to ensure uniform seed germination and to keep surface of soil damp:
  - a. Each watering shall consist of 1 gallon per 3 sq. yd. of seed or sod
  - b. Apply water slowly so that surface of soil will not puddle and crust
- C. Cut lawn areas when grass reached height of 3". Maintain minimum height of 2". Do not cut more than 1/3 of blade at any one mowing.
- D. After first mowing of lawn, water grass sufficiently to moisten soil from 3" to 5" deep.
- E. Reseed damaged grass areas showing root growth failure, deterioration, bare or thin spots and erosion.

**3.07 GUARANTEE**

- A. The Contractor shall be responsible for maintaining all sodded and seeded areas in a healthy, vigorous condition in accordance with Section 3.05 "Maintenance" at his/her own expense until all contracted work is completed and accepted by Project Officer with confirmation by the Landscape Architect or Urban Forester.
- B. The Contractor shall, at his own expense, replace any seed or sod which has died or been damaged during the establishment period.

- C.** Cost of seed and sod will be withheld from final payment until final approval is given by Project Officer.

**SECTION 329200**

**SEEDING AND SODDING**

**3.08 ACCEPTANCE**

- A. Seeded areas will be accepted when an even, healthy, close and uniform stand of turf, 3” tall, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10sq. ft. and bare spots not exceeding 4 by 4 inches is properly established. Bare spots in excess of 4” shall be re-seeded at a rate per section 3.02 of this specification.
- B. Sodded areas shall be accepted provided all requirements, including maintenance, have been complied with and sod is well established in a healthy, vigorous growing condition. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.
- C. Upon completion, all debris and waste material resulting from seeding/sodding/mulching activities shall be removed from the project area and legally disposed of. Any damaged areas shall be restored to their original condition.
- D. Upon acceptance by Project Officer at Final Completion, Arlington County shall assume all lawn maintenance responsibilities.

**PART 4 - MEASUREMENT AND PAYMENT**

- 4.01** The measurement of SEEDING to be paid for shall be per SQUARE YARD of seeded grass in accordance with the approved plans and specifications.
- 4.02** The unit price for SEEDING shall include the cost of furnishing all labor, materials, equipment and incidental expenses necessary to complete the work, including but not limited to erosion control, topsoil, mulch, protection and maintenance, all in accordance with the approved plans and specifications.
- 4.03** The measurement of SPECIALTY SEEDING to be paid for shall be per SQUARE YARD of reforestation seed mix in accordance with the approved plans and specifications.
- 4.04** The unit price for SPECIALTY SEEDING shall include the cost of furnishing all labor, materials, equipment and incidental expenses necessary to complete the work, including but not limited to erosion control, topsoil, mulch, protection and maintenance, all in accordance with the approved plans and specifications.

**4.05** The measurement of SOD to be paid for shall be per SQUARE YARD of sod installed in accordance with the approved plans and specifications.

**SECTION 329200**

**SEEDING AND SODDING**

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**4.06** The unit price for SOD shall include the cost of furnishing all labor, materials, equipment and incidental expenses necessary to complete the work, including but not limited to erosion control, protection and maintenance, all in accordance with the approved plans and specifications.

**4.07** Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.

**SECTION 329300**

**EXTERIOR PLANTS GENERAL**

**PART 1 - GENERAL**

**1.01 SUMMARY**

PRODUCT DATA SHEET 4 - This Section includes trees, shrubs, groundcover, bulbs, and perennial plants.

PRODUCT DATA SHEET 5 - Provide all labor, materials, tools and equipment as required to have plants, topsoil, amendments, mulch and seed and/or sod applied on all areas called for on the approved plans.

PRODUCT DATA SHEET 6 - Related Sections:

- a. 02200 Earthwork
- b. 329100 Planting Preparation
- c. 311300 Tree Protection and Root Pruning
- d. 01500 Erosion and Sediment Control and Pollution Prevention
- e. 329200 Seeding and Sodding

PRODUCT DATA SHEET 7 - In addition to the specifications contained herein, Work shall be performed in accordance with the:

- a. Drawings and general provisions of the contract, including general and supplementary conditions
- b. Arlington County Department of Parks & Recreation Design Standards as shown on the plans and available online at:

<http://parks.arlingtonva.us/design-standards/>

**1.02 DEFINITIONS**

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Imported Topsoil: Soil obtained off-site that meets the specifications herein for topsoil and is suitable for use in planting soil/backfill soil mixture when existing soil quantities are insufficient. Refer to Section 329100 "Planting Preparation."
- C. Planting Soil/Backfill Soil Mixture: Existing soil modified as specified to be suitable for planting. Refer to Section 329100 "Planting Preparation."

- D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

**SECTION 329300**

**EXTERIOR PLANTS GENERAL**

- E. ISA: International Society of Arboriculture
- F. CBAY: Chesapeake Bay, typically referring to CBAY watershed.
- G. Urban Forester/County Urban Forester: Refers to the Arlington County Urban Forester
- H. Landscape Architect: Refers to an Arlington County Landscape Architect or their designee.

**1.03 SUBMITTALS**

- A. All submittals specified in Section 329100 "Planting Preparation" shall be provided to Project Officer for approval with confirmation by Landscape Architect or Urban Forester. All approvals shall be in writing.
- B. Product Certificates: Contractor shall submit for each type of manufactured product, to be approved by the Project Officer and complying with the following:
  - a. Manufacturer's certified analysis for standard products.
- C. Refer to Section 329100, "Planting Preparation" for soil test requirements.
- D. Contractor shall submit State Nursery inspection certificates to the Project Officer.
- E. Contractor shall submit to Project Officer the verification of Landscape Industry Certified Technician and Landscape Industry Certified Officer certificates for those responsible for plant installation.
- F. Planting Schedule: Contractor shall submit the planting schedule to the Project Officer for approval with confirmation by the Landscape Architect or Urban Forester. The plant schedule will indicate anticipated planting dates for exterior plants. Contractor shall be responsible for furnishing and installing all plant material shown on the drawings and plant list, as submitted with the contract. Contractor shall have investigated the sources of supply and satisfied himself/herself that he/she can supply all of the plants specified on the drawings in the size, variety, quantity and quality noted before submitting the bid. Failure to take this precaution will not relieve the successful bidder from the responsibility of furnishing and installing all of the plant material in strict accordance with the contract documents.
- G. Substitutions:

**SECTION 329300****EXTERIOR PLANTS GENERAL**

- a. The Contractor shall submit a written request for a substitute plant a minimum of forty-five (45) calendar days prior to planting date if specific plants will not be available in time for the scheduled planting. Contractor shall submit the request to the Project Officer for approval with confirmation by the Landscape Architect or Urban Forester.
  - b. Contractor shall be responsible for documenting any plant suitability or availability problems.
  - c. If a substitute plant is offered to the County, it shall be of the same size, value and quality as the plant originally specified on the plan, as determined by the Project Officer in coordination with the Landscape Architect or Urban Forester. If the County does not accept the substitute plant, the Contractor shall provide the type and size of plant material specified on the plans, or a substitute requested by the Project Officer in coordination with the Landscape Architect or Urban Forester.
- H. Maintenance Instructions: Contractor shall submit to the Project Officer recommended procedures for maintenance of exterior plants during a calendar year. Submit before end of required maintenance periods.

**1.04 QUALITY ASSURANCE**

- A. Installer Qualifications:
- a. Contractor shall designate a project crew leader who possesses one or more of the following certifications:
    - i. Certified by the Professional Landcare Network (PLANET) as a "Landscape Industry Certified Technician"
    - ii. Certified by the Professional Landcare Network (PLANET) as a "Landscape Industry Certified Officer"
  - b. The Contractor shall identify to the Project Officer at least one full-time on-site supervisor who is the Contractor's competent, qualified, and authorized person on the worksite and who is, by training or experience, familiar with the policies, regulations and standards applicable to the work being performed, and capable of sufficiently communicating with the Project Officer.
  - c. Crew leader and supervisor may be the same individual.
- B. Installer Qualifications for Reforestation Projects (required only if approved plans specify reforestation, afforestation or streambank restoration):



**SECTION 329300****EXTERIOR PLANTS GENERAL**

- a. ISA Certified Arborist shall be on the worksite during planting of reforested areas.
- b. Demonstrate experience in Reforestation/Afforestation and Stream-Bank Stabilization projects through:
  - i. Project portfolio detailing a minimum of three (3) successfully completed reforestation/afforestation/streambank restoration projects in the CBAY watershed area over the past three years.
- c. The County will, throughout the contract term, have the right of reasonable rejection and approval of staff or subcontractors assigned to the project by the Contractor. If the County reasonably rejects staff or subcontractors, the Contractor shall 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 any employees of any of its subcontractors, shall be solely the responsibility of the Contractor.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory. Comply with requirements in Section 329100, "Planting Preparation."
- D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in the most current version of ANSI Z60.1, "American Standard for Nursery Stock." Plants shall be nursery grown stock and conform to the requirements described in the most current issue of the American Standard for Nursery Stock (ANSI) published by the American Nursery and Landscape Association. The Project Officer with confirmation by the Landscape Architect or Urban Forester may reject any non-conforming stock and has the option to field-select plant materials prior to purchasing.
- E. Collected material may be used only when approved by Project Officer with confirmation by Arlington County Urban Forester and/or DPR PNR Natural Resource Manager
- F. Nomenclature shall be in accordance with *Hortus III*, by L.H. Bailey. All trees and shrubs shall be labeled with a securely attached, waterproof tag bearing legible designation of botanical and common name. Perennials and groundcovers shall be clearly identified with a waterproof tag bearing legible designation of botanical and common name within the container.
- G. Pre-installation Conference: Conduct conference at Project site with Project Officer, Arlington County Urban Forester and/or Department of Parks and Recreation (DPR) representative or County Landscape Architect.

**SECTION 329300****EXTERIOR PLANTS GENERAL**

- H. Urban Forester Notification: Notify the Project Officer at least 72 hours prior to commencement of tree planting operations, so that the County's Urban Forester can be present on-site to observe the work.
- I. The Contractor shall provide a minimum of seven (7) business days' notice to the Project Officer prior to installing the plant material (this is not the same as inspection notification).
- J. At the request of the Project Officer in coordination with the Urban Forester or Landscape Architect, the Contractor shall supply information specifying the provenance of the plant material. Provenance is the geographical origin of the seed or cutting used in propagation and can have a direct effect on plant vigor and survivability.
- K. Inspections:
  - a. Urban Forester may perform periodic inspections to check on tree plantings.
  - b. Contractor shall arrange a meeting on site with the Project Officer in coordination with the Urban Forester and/or Landscape Architect to perform final inspection of plantings. Refer to section 1.07 "Final Inspection."

**1.05 WORKMANSHIP**

- B. **Any tree pruning shall conform to the most current version of ANSI A-300 Standard Practices for Trees, Shrubs, and Other Woody Plant Maintenance. Do not prune trees and shrubs before delivery.**
- C. Protect bark, branches, and root systems from sun-scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be handled from the bottom of the root ball only.
- D. All plants in transit shall be tarped or covered and shall be kept from drying out. Desiccation damage shall be cause for rejection. Plants damaged in handling or transportation may be rejected by the Project Officer with confirmation by the Urban Forester/Landscape Architect. Any tree or shrub found to have wounds over 12.5% of the circumference of any limb or trunk, or over 1 inch in any direction, whichever is smaller, shall be rejected.

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- E. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist. Plants shall not remain unplanted for longer than a three-day period after delivery. Any plants not installed during this time period shall be rejected, unless Project Officer and contractor provide otherwise by written agreement. All plants kept on site for any period of time shall be watered and cared for using ANSI A300 standards.
- F. Plants shall be installed immediately following excavation of the hole. No holes shall remain open overnight. The Contractor shall cover and barricade any open holes to effectively prevent any danger of injury to pedestrians.
- G. During delivery and installation, the landscape contractor shall perform in a professional manner, coordinating his/her activities so as not to interfere with the work of other trades, and leaving his/her work area(s) clean of litter and debris at the close of each workday.
- H. During planting, all areas shall be kept neat and clean, and precautions shall be taken to avoid damage to existing plants, trees, turf and structures. Where existing trees are to be preserved, additional precautions shall be taken to avoid unnecessary accumulation of excavated materials, soil compaction, or root damage. The Contractor shall cover sidewalks or pavers with plywood, and cover turf with plywood, burlap or tarp during excavation.
- I. Any damaged areas caused by the Contractor shall be restored to their original condition at no cost to the County. All debris and waste material, including small stones and clumps of clay or dirt exceeding 1" by 1" in any direction, resulting from planting operations shall be removed from the project, **legally disposed**, and the area cleaned up by the Contractor.
- J. Plants with soil covering the root flare, if not removed by Contractor, shall be rejected by Project Officer with confirmation by Landscape Architect or Urban Forester.
- K. Contractor shall take full responsibility for any cost incurred due to damage of utilities by their operations.
- L. The Contractor will not be held responsible for uncommon concealed conditions such as concrete/asphalt/stone spoils encountered in excavation work which are not apparent at the time of bidding. Rocks, tree roots and hard clay are common elements of "urban" soils and will frequently be encountered in the execution of the contract.

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- M. No plants shall be planted in locations where drainage may, in the opinion of the Contractor, be unacceptable. Such situations shall be brought to the attention of the Project Officer before work continues and, if deemed necessary by the Project Officer with confirmation by the Landscape Architect/Urban Forester, the plants shall be relocated or the contract shall be modified to allow for drainage correction at a negotiated cost. Any such modification shall be in writing and signed by both parties.
- N. The Contractor shall layout plants according to the project's landscape plan. The Project Officer shall approve the layout with confirmation by the Landscape Architect prior to plant installation. Plants installed without layout approval from the Project Officer with confirmation by Landscape Architect are subject to removal and replanting by the Contractor at no additional cost to Arlington County.

**1.06 WATER REQUIREMENTS**

- A. Initial Waterings: The Contractor shall supply water for all plantings and shall water all plants at time of installation and 48 hours after installation, even if it is raining. Contractor shall then water plantings at least twice per week at amounts specified below until final acceptance of work.
- B. Each watering shall consist of:
  - a. 20 gallons per individual tree
  - b. 4 gallons per individual shrub
  - c. 1 gallon per 1 sq. yd. of shrub or perennial bed
  - d. 1 gallon per 3 sq. yd. of seed or sod
- C. Once final acceptance is completed, Contractor shall have no obligation to water all plantings and the one (1) year planting warranty

**1.07 FINAL INSPECTION**

- A. Contractor shall schedule the final inspection with the Project Officer in coordination with the Urban Forester and/or Landscape Architect.
  - a. Contractor shall notify Project Officer at least one week in advance to arrange final inspection meeting with the Urban Forester and/or Landscape Architect.

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- b. Contractor shall conduct the final inspection of the landscape materials no less than three months after the installation of the plants or substantial completion of construction work, whichever comes last, and in the presence of the Project Officer, the Urban Forester and/or Landscape Architect.
- c. The landscaping inspection will review all landscape work under the contract.
- d. All plants shall be alive and in good health at the time of final inspection.
- e. Any plant material that is 25% dead or more shall be considered dead and shall be replaced at no charge to the County. A tree shall be considered dead when the main leader has died back, or 25% of the crown is dead.
- f. It shall be the Contractor's responsibility to provide in writing the results of this inspection.
- g. The Contractor shall make replacements during the next planting period unless the County specifies an earlier date.
- h. The replacement plants will be reviewed for final acceptance no less than three months after installation. Contractor is responsible for maintenance and watering of replacement material per Section 1.06 and Section 1.08 after planting and until the replacement plantings are finally accepted by Project Officer.
- i. A replacement plant shall be of the same size as the original plant with no additional soil additives to be used.
- j. The Contractor will not be responsible for plants that have been damaged by vandalism, fire, removal or other activities beyond the control of the Contractor.

**1.08 MAINTENANCE**

- A. Trees, Shrubs, Perennials, Bulbs & Groundcovers: Contractor shall maintain plantings at his/her own expense until final acceptance of the plantings as specified herein section 1.07.
- B. Maintenance shall include pruning, mulching, cultivating, watering, weeding, fertilizing, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings.

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- C. Pruning: Remove all sucker growth, dead or broken branches at initial planting and as needed during the warranty period. Pruning will conform to ANSI-300 Tree Pruning Standards.
- D. Fertilizing: No plants shall be fertilized without prior approval of Project Officer with confirmation by the Urban Forester or Landscape Architect.
- E. Mulching: Contractor shall re-mulch areas to a depth of two to three inches prior to final acceptance if the time between planting and final acceptance extends beyond six months. Mulch will be of the same quality as mulch provided at the time of planting. Keep mulch six-inches away from trunks of trees and shrubs.
- F. Weeding: Contractor shall perform weeding until final acceptance to keep the planting area as free of weeds as possible. A minimum of one weeding per month from April through October is required if time between planting and final acceptance extends through any months of the growing season.
- G. Stakes and Guy Supports: If installed, Contractor shall monitor and adjust all stakes and guy supports until final acceptance.

**PART 2 - PRODUCTS****2.01 EXTERIOR PLANTS**

PRODUCT DATA SHEET 0 - Contractor shall select plants only from nurseries that have been inspected by state or federal agencies and shall have been grown in USDA Plant Hardiness Zones 4, 5, 6, or 7, and in one of the following states: Maryland, Virginia, Delaware, New Jersey, North Carolina or Pennsylvania.

PRODUCT DATA SHEET 1 - Tree and Shrub Material: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, and disfigurement.

- a. Provide balled and burlapped, bare root or container-grown trees and shrubs, as indicated on the Drawings.
- b. Balled and Burlapped (B&B) plants shall be dug with firm root balls of earth and free of noxious weeds. There shall be no extra soil on top of the root ball or around the trunk. Balled and burlapped trees shall be securely held in place by untreated burlap and stout rope. Nylon rope is NOT acceptable. Loose, broken or manufactured balls are unacceptable.



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- c. Ball sizes shall be in accordance with current ANSI standards.
- d. In size-grading B&B single stem trees, caliper shall take precedence over height. For multiple-trunk trees, height measurement shall take precedence over caliper.
- e. Trees over 1" in caliper shall have a strong central leader (free and clear of branches or splits in the trunk) from the top of the root ball to a height of at least 6'-6". Only minimal bends in the trunk will be acceptable. Co-dominant stems and V-crotches shall be cause for rejection.
- f. The root system of container-grown plants shall be well developed and well distributed throughout the container.
- g. All container-grown trees and shrubs that have circling and matted roots shall be rejected.

PRODUCT DATA SHEET 2 - Perennials: Provide healthy, container-grown plants with well-developed, fibrous root systems from a commercial nursery, of species and variety shown in the Drawings. All container grown plants shall be healthy, vigorous, well rooted and established in the container in which they are growing. A container grown plant shall have a well-established root system reaching the sides of the container to maintain a firm root ball, but shall not have excessive root growth outside the container.

PRODUCT DATA SHEET 3 - Bulbs: Provide top size bulbs as indicated on plan in accordance with most current version of ANSI A60 specification.

PRODUCT DATA SHEET 4 - Field grown trees and shrubs shall be grown in soils of the Piedmont region, or west of that region in the above approved states and zones.

- F. All plant materials shall be labeled by grower to identify genus, species, and cultivar, if applicable, in accordance with Section 1.04 "Quality Assurance," above.
- G. Bare root plant materials: Bare root plants will be dug with adequate fibrous roots. Do not root prune. Roots shall be protected during handling and planting to guard against drying out and damage.
- H. Plant Materials for ecologically sensitive areas: Plant materials identified on planting plan as being located within an Arlington County Natural Resource Conservation Area (NCRA) shall be native species of local provenance.
  - a. Plant stock shall originate from a location within 150 miles of Arlington County.

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**2.02 OTHER MATERIALS**

- A. Refer to Section 329200 "Seeding and Sodding" for specifications for seeding, specialty seeding, sodding, and soil stabilization/erosion control fabric.
- B. Refer to Section 329100 "Planting Preparation" for specifications for soils, mulch, soil amendments and other items related to planting preparation.

**PART 3 - EXECUTION**

**3.01 EXTERIOR PLANTING**

- A. Contractor shall install plant materials in accordance with the current Arlington County Standard Planting Details as published on the Arlington County website and as specified below.
- B. Refer to Section 329100 "Planting Preparation" for specifications on soil amendments.
  - a. Remove existing sod, turf, weeds or other plant material.
  - b. Rototill subgrade of planting beds to a minimum depth of 8 inches with the addition of 3 inches organic material. Edge and rake the entire planting bed.
  - c. Remove stones, clods, debris, sticks, roots and other foreign or extraneous matter larger than 1/2 inch in any dimension. Contractor shall legally dispose of them off Arlington County property.
  - d. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
  - e. Spread planting soil mix to a depth of 8 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
  - f. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

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- g. Planting operations shall be performed during periods within the planting season when weather and soil conditions are suitable and in accordance with accepted local practice. Plants shall not be installed in top soil that is in muddy or frozen condition. **Lawns, trees and shrubs shall be installed between 03/15 and 06/15 or between 09/15 and 12/01.** If a project completion is outside of this planting period, contact the Arlington County Urban Forester to obtain a deferral or approval for planting out of season.
    - h.
- C. Plant Layout
  - a. The Contractor shall layout and space plants according to the project landscape plan.
  - b. When the layout is complete, the Contractor shall notify the Project Officer for approval with confirmation by the Landscape Architect prior to installation of the plants.
- D. Landscape Plantings (Trees, Shrubs, Ground Covers and Perennials)
  - a. Contractor shall install plantings in accordance with Arlington County DPR standard details available online at: <http://parks.arlingtonva.us/design-standards/>. Refer to plans for appropriate planting details.
  - b. Handling: Prepare pit and/or planting bed per standards. Place plant in pit by carrying by the root ball (not by branches or trunk) and plant per the DPR Standards. Make sure the plant remains plumb during the backfilling procedure.
- E. Tree and Shrub Pruning: **Contractor shall conform to the most current version of ANSI A-300 Tree Pruning Standards. Do not cut tree leaders; remove only injured or dead branches from trees and shrubs, or those that pose a hazard to pedestrians.** Make all cuts back to a lateral branch or bud. Cuts should be perpendicular above branch collar. Final pruning shall be done after the tree is in place. Do not prune into old wood on evergreens.
- F. Plant Protection: Contractor shall protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting. Injured roots shall be pruned to clean ends before planting with clean, sharp tools per most current ANSI 300 specifications.
  - a. Protect shrubs, groundcovers and perennials from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

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- G. Contractor shall remove all tags, labels, strings and wire from the plants, unless otherwise directed.
- H. Contractor shall remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off of Arlington County property.
- I. Refer to Section 1.06 'Water Requirements.'

**3.02 STAKING & GUYING TREES**

- A. Contractor shall stake and guy trees only if required by Urban Forester.
- B. If staking and guying is required, the Contractor shall provide and install stakes and guying in accordance with DPR standard staking details for deciduous and evergreen trees.

**PART 4 – MEASUREMENT AND PAYMENT**

- 4.01** The measurement of PLANT to be paid for under this item shall be the number of EACH type of furnished and installed plant in accordance with the approved plans and specifications.
- 4.02** The unit price for each PLANT shall include the cost of all labor, materials, and other expenses necessary to complete the work, including but not limited to required waterings (at time of planting and second watering for each plant 48 hours after installation), and maintenance and watering necessary to keep plants healthy until final acceptance as described herein, in accordance with the approved plans and specifications.
- 4.03** When explicitly specified in plans, the measurement of STAKING AND GUYING to be paid for under this item shall be the number of EACH to furnished and installed at individual trees in accordance with the approved plans and specifications.
- 4.04** The unit price for STAKING AND GUYING shall include the cost of all labor, materials, and other expenses necessary to complete the work in accordance with the approved plans and specifications.
- 4.05** Excavation and demolition shall be considered incidental to the work and therefore no separate payment will be made for excavation and demolition.