



SHA Environmental Guide for Access and District Permit Applicants

Chapter 1 - Overview

1.0 Purpose of the Environmental Guide.

The “SHA Environmental Guide for Access and District Permit Applicants”, also known as the Environmental Guide or EG, was developed by SHA’s Office of Environmental Design. It is intended as a supplement to the Maryland State Highway Access Manual, and to assist those who submit applications and plans for an Access Permit or a District Permit for construction and maintenance in landscape areas of the roadside.

The Environmental Guide reflects current environmental policy and landscape design and construction standards of SHA. However, while OED is responsible for providing design guidelines and recommendations regarding permit submittals, the pertinent District Office is ultimately responsible for approval of all requirements for an Access or District Permit.

Important Notes:

- Landscaping includes all activities that impact soil or plants in SHA rights of way and easement areas, and within areas of SHA property and lands to be conveyed to SHA as part of a permit application.
- A summary of concerns that are reviewed by OED is provided in EG Chapter 8. Applicants are encouraged to review the Environmental Quality Assurance Checklist to reduce the likelihood of errors and omissions in plan submittals.
- While communication between permit applicants and OED staff is welcomed to clarify SHA design standards and help resolve issues of concern, OED staff may only provide general guidance. Refer to EG Chapter 3.3 for a list of staff who can clarify OED expectations for permit submittals.
- No staff of OED are authorized to make assurances or negotiate on behalf of OED, or on behalf of the District Office.

1.1 Requirements for Access Permits and District Permits. SHA issues permits to allow access to a state highway, and for construction within SHA rights of way and easement areas, and within areas of SHA property and lands to be conveyed to SHA as part of a permit application. Access Permits and several different types of permits may be issued by the District Office.

1.1-a Commercial/Industrial/Residential Subdivision Access Permit. Certain commercial, industrial or residential subdivision construction activities require an Access Permit. Prospective applicants should contact the appropriate Regional Access Engineer with any questions regarding the permitting process.

Activities that Require an SHA Access Permit:

- Entrances for commercial or industrial site access, either new or modified.
- Public or private street connections for subdivision access, either new or modified.
- Off-site SHA improvements by developers, where mandated by the local jurisdiction in connection with development approval or required by SHA.
- Local government road improvement projects on state property, when related to conditions of land use or development approval, or a new highway intersection.
- Highway rehabilitation or streetscape improvements that involve work in the travel lanes of the state highway.
- Temporary construction access for the above.

1.1-b District Permit. Except when required in connection with an Access Permit, certain construction and maintenance projects on SHA property require a permit issued by the pertinent District Office. Prospective applicants should coordinate with staff of the District Office for information about the process and requirements for obtaining District permits. All proposed utility work for construction and maintenance must be coordinated with and be permitted through the District Office, independent of the Access Permit.

Refer to EG Chapters 4.0 and 5.8 for information about construction projects permitted through a Utility Construction Permit or a Utility Relocation Permit (SHA projects), and for information about maintenance projects permitted through a Utility Infrastructure Maintenance / Emergency Permit (Blanket Permit) or a Tree Trimming Permit.

Activities that Require a District Level Access Permit:

- Construction or modification of residential driveways.
- Repair or replacement of entrances, curb and gutter, or pavement.

- Construction, repair or replacement of sidewalks, pedestrian facilities and bus shelters.
- Grading, landscaping, utility work or sign placement.
- Construction or modification of drainage connections.
- Highway rehabilitation or streetscape improvements by local government.
- Any other work, including vegetation impacts, on the state highway, or within the state right-of-way, easement areas, land holdings, etc. that are not reviewed and approved in an Access Permit, SHA Agreement or SHA Lease.

1.2 Structure of Environmental Guide. The Environmental Guide is divided into the following Chapters:

- **Chapter 1 - Overview** describes requirements for Access Permits and District Permits, explains the structure and topics of the Environmental Guide, and describes the SHA Landscape Design Philosophy.
- **Chapter 2 - Guidance Documents** describes environmental and landscape design documents used by SHA and permit applicants.
- **Chapter 3 - Office of Environmental Design (OED)** explains the involvement of OED, the roles of OED Divisions, provides contact information for key staff and explains the process that OED follows for permit reviews.
- **Chapter 4 - Permits and Mitigation** provides information about environmental permits and required mitigation for removing trees and other losses caused by construction activities under an Access Permit or a District Permit.
- **Chapter 5 - Special Landscape Concerns** briefly explains SHA requirements that affect landscape design and construction activities as they relate to an Access Permit or a District Permit application.
- **Chapter 6 - Plans for Landscape Construction** explains requirements for the preparation of plans that impact or specify construction within landscaped areas of SHA property, and the elements that must be shown on those plans.
- **Chapter 7 - SHA Landscape Notes** explains the required conditions, and provides the text that shall be reproduced on plans as SHA Landscape Notes.
- **Chapter 8 - Environmental Quality Assurance Checklist** helps to ensure that important concerns are addressed before plans are submitted.

1.3 Chapters and Select Topics of Environmental Guide.

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1.4 SHA Landscape Design Philosophy. Landscape construction under an Access Permit or a District Permit must meet the same standards for design and materials used elsewhere in the highway system. Since landscaping is integral to highways and our environment, the plans submitted for a permit must provide durable roadside landscaping that thrives in difficult situations with little need for maintenance or replacement. Plans for landscape construction must be:

- **Context Sensitive**, to harmonize with the natural, cultural and built features it adjoins and passes through. Context sensitive designs fit the “sense of place” while ensuring the safety of highway users and maintenance staff.

- **Environmentally Appropriate**, to comply with legal requirements and meet stewardship goals of the SHA Business Plan. Environmentally appropriate designs limit impermeable surfaces, promote native species and naturalized elements, and include permits and approvals needed for construction.
- **Cost Effective**, to minimize funding requirements for installation and future maintenance. Cost effective designs fit within budget constraints while maximizing design impact.
- **Sustainable**, to implement design and management strategies. Sustainable designs use an asset-based approach that supports project goals and objectives, while promoting successful roadside vegetation establishment.

The SHA Landscape Design Philosophy is a central focus of the SHA Office of Environmental Design, as expressed in the “SHA Landscape Design Guide” (LDG) and its related documents. It is part of our vision for roadside landscape design, and thus an important part of the permit review process.

Chapter 2 - Guidance Documents

2.0 Environmental Guidance Documents. The following documents are available for download and use by applicants. Copies of these and other documents may also be obtained by email from staff of the Office of Environmental Design.

2.1 “SHA Standard Specifications for Construction and Materials”, also known as the Standard Specifications, defines construction materials and methods that are required for construction within rights of way of the Maryland State Highway Administration (SHA) and within SHA property, easement areas and lands to be conveyed to SHA.

2015 Specifications Update: All Standard Specifications of Category 700 - Landscaping and Section 920 - Landscaping Materials have been replaced by new Special Provisions Inserts (SPIs). Only the latest versions of these specifications may be used for construction on SHA property.

All SHA SPIs are at: <http://www.roads.maryland.gov/Index.aspx?PageId=44>

Landscape-related SPIs: <http://www.roads.maryland.gov/index.aspx?PageId=25>

2017 Specifications Update: The Standard Specifications will be fully revised and replaced in 2017. Once approved, all construction under an Access or District Permit must conform to the 2017 SHA Standard Specifications.

The Standard Specifications includes requirements for soils, seed, fertilizer and plant materials as well as the standards for acceptance of permanent vegetation establishment. For ease of use, sections of the Standard Specifications are referred to by their section number, e.g. Section 705.

All of these standards apply to construction under an Access Permit or a District Permit. Unless other specifications are approved, all landscape materials and methods used for construction are expected to conform to Standard Specifications for Sections 701 through 716 and 920 that are current at the time of construction. To emphasize the importance of using approved materials and construction methods, landscape construction plans developed for an Access Permit or a District Permit shall include certain SHA Landscape Notes that reference the Standard Specifications. These Notes are discussed in EG Chapter 7.

To avoid future conflicts, and because the Standard Specifications are periodically revised and replaced, the text of Standard Specifications should not be reproduced on plan sheets prepared for an Access Permit or District Permit.

2.2 “SHA Landscape Design Guide” (LDG). This document explains the SHA landscape design philosophy and expectations for sustainable roadside landscaping. Topics of the LDG include:

- Information about the Maryland Roadside Tree Law, Maryland Reforestation Law, Chesapeake Bay Critical Area, and Scenic Byways.
- Offset distances to guardrails and to fixed objects such as trees and other vegetation at various highway speeds, and offset distances to trees and shrubs to overhead and underground utilities.
- Guidelines for matching vegetation to soil placement, and for coordinating vegetation, soil stabilization matting and soil placement.
- Guidelines for reforestation design, and appropriate installation sizes of trees and other plant materials.
- Explanation of plant material use groups of the “SHA Preferred Plant List”.

Download at: <http://www.roads.maryland.gov/index.aspx?PagelD=25>

2.3 “SHA Landscape Construction Cost Estimating Manual” also known as the Estimating Manual. This document provides extensive design and cost guidance for landscape materials and operations required by the Standard Specifications, including subsoil, topsoil, temporary stabilization, turfgrass, meadow, types of soil stabilization matting, plant material installation, tree pruning, and related topics.

Download at <http://www.roads.maryland.gov/index.aspx?PagelD=25>

The guidance of the Estimating Manual and the table below is intended to guide development of plans and engineer’s estimate for Access and District Permit submittals. OED reviews the plans and estimate to determine conformance with SHA design standards.

Cost of Trees, Shrubs, Perennials and Other Plant Materials

Table shows typical plant materials specified in plans developed for Access and District Permits. Stock sizes correspond to ANSI Z60.1 Classifications. Cost includes purchase price, installation, 1-year establishment, and any necessary replacement until acceptance in conformance with SHA Specifications.

Plans developed for Access and District Permits shall include a complete planting schedule for all plant materials, and the Engineer's Estimate shall itemize the pertinent quantities and costs per each.

Stock Size	ANSI Z60.1 Classification	Cost
4.0 in. cal. deciduous tree	Types 1, 2, 3, 4 - tree-form	\$ 800
3.5 in. cal. deciduous tree	Types 1, 2, 3, 4 - tree-form	\$ 700
3.0 in. cal. deciduous tree	Types 1, 2, 3, 4 - tree-form	\$ 500
2.5 in. cal. deciduous tree	Types 1, 2, 3, 4 - tree-form	\$ 400
2 in. cal. deciduous tree	Types 1, 2, 3, 4 - tree-form	\$ 350
1.5 in. cal. deciduous tree	Types 1, 2, 3, 4 - tree-form	\$ 225
1 in. cal. deciduous tree	Types 1, 2, 3, 4 - tree-form	\$ 175
8 ft. deciduous tree - multistem	Types 1, 2, 3, 4 – multistem or clump	\$ 300
6 ft. deciduous tree - multistem	Types 1, 2, 3, 4 – multistem or clump	\$ 200
8 ft. evergreen tree - conifer	Types 4, 5, and 6	\$ 500
6 ft. evergreen tree - conifer	Types 4, 5, and 6	\$ 300
5 ft. evergreen tree - broadleaf	Types 5 and 6	\$ 400
Large shrub ≥ 36 in. ht.	Types 2, and 3	\$ 60
Medium shrub ≥ 24 in ht.	Types 2, and 3	\$ 45
Small shrub < 24 in. ht.	Types 1, 2, and 3	\$ 30
Gallon Perennials	#1 Perennial - Gallon	\$ 15
Quart Perennials	#SP4 Perennial - Quart	\$ 10
Annuals and Bulbs	Annuals and Bulbs	\$ 1

2.4 “SHA Book of Standards for Highway & Incidental Structures, Category 7, Landscaping”, also known as Standard Details. Certain Standard Details are required for the installation of trees, shrubs and planting beds as specified in Section 710 of the Standard Specifications.

When applicable, the following Standard Details are required by the SHA Landscape Note of EG Chapter 7.4. Reproduction of Standard Details on landscape plans is recommended but not required.

- MD-710.03-01 STAKING EVERGREEN TREES 5 AND 6 FEET HIGH
- MD-710.03-02 STAKING EVERGREEN TREES 7, 8 AND 9 FEET HIGH
- MD-710.03-03 GUYING EVERGREEN TREES 10 FEET HIGH AND GREATER
- MD-710.03-04 STAKING FLOWERING TREES 6 FEET HIGH TO 2 INCH CALIPER
- MD-710.03-05 GUYING FLOWERING TREES 3 INCH CALIPER AND GREATER
- MD-710.03-06 STAKING SHADE TREES 6 FEET HIGH TO 2 INCH CALIPER
- MD-710.03-07 STAKING SHADE TREES 2 INCH TO 3 INCH CALIPER
- MD-710.03-08 GUYING SHADE TREES 4 INCH CALIPER AND GREATER
- MD-710.03-09 FASTENERS FOR TREE SUPPORT

- MD-710.03-10 PLANTING VINES ADJACENT TO WALLS FLAT AREAS AND SLOPES FLATTER THAN 4:1
- MD-710.03-11 PLANT BED MULCHING AND PLANT LAYOUT ON FLAT AREAS AND SLOPES FLATTER THAN 4:1
- MD-710.03-12 PLANT BED MULCHING AND PLANT LAYOUT ON SLOPES 4:1 AND STEEPER
- MD-710.03-13 PRUNING PATTERNS
- MD-710.03-14 PLANTING TREES ON SLOPES FROM 3:1 TO 2:1
- MD-710.03-15 ROOT COLLAR HEIGHTS FOR VARYING SOIL CONDITIONS

Go to: <http://apps.roads.maryland.gov/BusinessWithSHA/bizStdsSpecs/desManualStdPub/publicationsonline/ohd/bookstd/toccat7.asp>

2.5 “SHA Preferred Plant List” (PPL). This document provides a list of acceptable species and cultivars of trees, shrubs and other plant materials for highway installation.

Although other species and cultivars may be permitted, it is expected that landscape plans developed for an Access Permit or a District Permit rely primarily on the species and cultivars of the PPL which indicates:

- Accepted common and scientific names of plants and their cultivars.
- Plants for reforestation, natural areas and stormwater management areas.
- Expected mature sizes of trees and shrubs (small, medium, large).
- Species and cultivars appropriate for streetscapes and near airports.
- Species not installed in SHA property because of invasiveness, including those in the “Do Not Plant List” of the Maryland Department of Natural Resources.

Go to: <http://www.roads.maryland.gov/index.aspx?PageId=25>

2.6 “Context Sensitive Solutions for Work on Maryland Byways.” This document explains key principles and provides examples of context sensitive design along Scenic Byway corridors and their designated one-mile viewsheds. It also provides information about related sensitive locations such as historic places and districts, as well as recreation, conservation, and preservation areas.

Go to: <http://roads.maryland.gov/oed/css-3.pdf>

2.7 “SHA Pedestrian and Bicycle Design Guidelines”. This manual provides guidelines for preferred accommodations to benefit bicycling and walking as part of roadway projects when feasible.

Go to: http://roads.maryland.gov/ohd2/bike_policy_and_design_guide.pdf

2.8 FHWA Recreational Trails. Several publications for planning and building recreational trails are available at the FHWA Recreational Trails Program website that focus on accessibility, safety, and good environmental practices.

Go to: http://www.fhwa.dot.gov/environment/recreational_trails/guidance

2.9 “SHA Environmental Guidelines for Construction” provides background information and guidelines for a wide range of environmental topics. Many subjects that are briefly discussed in the Environmental Guide are explained in greater detail in the SHA Environmental Guidelines for Construction.

Go to: http://roads.maryland.gov/training/erosion_and_sediment/recertification/documents/sha%20environmental%20guidelines%20for%20construction%20activities.pdf

Chapter 3 - Office of Environmental Design

3.0 Role of Office of Environmental Design (OED). In concert with other SHA Offices, OED participates in the SHA-wide review of materials submitted for an Access Permit or a District Permit. OED typically participates in these reviews when construction is proposed within SHA property or SHA rights of ways when any of the following concerns are involved:

- Construction will disturb at least 5,000 square feet of soil in any combination of roadways, landscaped shoulders or environmental areas.
- Construction will impact, remove, or install trees, shrubs, perennials or similar landscaping in SHA property, or in easements of SHA.
- Construction may impact sensitive environmental areas or SHA mitigation facilities for wetlands, TMDL facilities or stormwater management facilities.
- Construction may impact SHA property in the Chesapeake Bay and Atlantic Coastal Bays Critical Area.
- Construction may impact other sensitive areas or environmental features.

3.1 Divisions of Office of Environmental Design. Four Divisions of OED provide assistance with the evaluation of Access Permit and District Permit applications.

- **Environmental Programs Division (OED-EPD)** reviews permit application materials for impacts to SHA wetland and stream mitigation sites as part of the coordinated response of OED during a permit application review. The Quality Assurance (QA) Team of OED-EPD also may be involved during construction to ensure compliance with Erosion and Sediment Control Plans.

- **Landscape Architecture Division (OED-LAD)** reviews proposed landscape designs to ensure compliance with the LDG and other SHA Landscape Guidance Documents, and for the mitigation of impacts to Critical Areas as part of the coordinated response of OED during a permit application review. Responsibility for Scenic Byways and Recreational Trails has been transferred to the SHA Regional and Intermodal Planning Division (OPPE-RIPD).
- **Landscape Operations Division (OED-LOD)** reviews existing conditions, proposed tree impacts and mitigation to ensure compliance with Maryland tree and forest laws as part of the coordinated response of OED during a permit application review. OED-LOD may also assist with landscape materials inspection during construction to ensure compliance with the Standard Specifications.
- **Water Programs Division (OED-WPD)** reviews proposed impacts to any best management practice (bmp) that was built for impervious surface restoration related to the Municipal Separate Storm Sewer System Discharge Permit (MS4 Permit) 20 percent impervious restoration requirement or local TMDL compliance. OED-WPD also reviews addition, removal or treatment of impervious surfaces owned by SHA related to impervious baseline or restoration accounting to ensure that credit is provided where applicable. Restoration projects often consist of but are not limited to tree plantings, stream restorations, and stormwater management.

3.2 Project Review by Office of Environmental Design (OED). OED assists the District Offices with evaluating construction plans and ensuring compliance with environmental laws and SHA landscape design standards. As noted in EG Chapter 3.0 and 3.1, OED reviews plans and other materials submitted for an Access Permit or a District Permit when construction activities affect responsibilities under the administration of OED.

When OED responds to a request from the District Office for review of a project submitted for an Access Permit or a District Permit, the divisions of OED provide a coordinated response of recommendations in a memo sent directly to the District. However, the ultimate resolution of OED's concerns is the responsibility of the District. The recommendations of OED are not sent directly to the applicant.

Depending upon the type of permit application, different District staff are responsible for formal communication between SHA and the applicant. Therefore, all materials to be evaluated by SHA as part of a permit application must be submitted to the District. OED may not receive submittals which should be directed to the District, and OED may not forward documents on behalf of the applicant.

The applicant shall use the Environmental Guide when developing revised plans and replies to OED comments in the point-by-point response letter submitted to the District. Staff of OED review both the revised plans and point-by-point responses.

3.3 Staff of Office of Environmental Design. Although OED provides formal recommendations only to the District Office at the conclusion of a permit review, OED staff may be contacted directly by permit applicants to address questions or concerns regarding SHA environmental policy and landscape design guidance. Numerous OED staff are involved with the review of permit submittals. While communication between permit applicants and OED staff is welcomed to clarify SHA design standards and help resolve issues of concern, OED staff may only provide general guidance. Refer to EG Chapter 3.3 for a list of staff who can clarify OED expectations for permit submittals. No staff of OED are authorized to make assurances or negotiate on behalf of OED, or on behalf of the District Office.

Contact information for Joseph E. Vervier, Chief of Landscape Operations Division and other key OED staff involved with the review of permit application materials, or during construction under and Access Permit or a District Permit follow below:

<p>Staff of Office of Environmental Design (OED) - Responsibilities & Contacts to Address Questions -</p>
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Landscape Operations Division (OED-LOD)		
Permit Materials Review		
Chief Responsible for OED Comments for Permit Reviews	410-545-8590	Joseph E. Vervier
Project Review Coordinator for Permit Reviews, Statewide	410-545-2891	John Krouse
Forest Mitigation Coordinator, Statewide	410-545-8577	Joel Bush
Landscape Materials Inspection and Assistance During Construction		
Dist. 1,2 Eastern Shore Region Team Leader	410-221-1635	Mark Howard
Dist. 3, 5 Washington Metro, Southern Region Team Leader	410-780-6224	Roberta Cowan
Dist. 4, 6, 7 Baltimore Metro, Western Region Team Leader	410-780-6220	Fran Bateman

Landscape Architecture Division (OED-LAD)		
Permit Materials Review		
Dist. 1, 2 Team Leader and Critical Area Mitigation Coordinator	410-545-2851	Jim Hade
Dist. 3, 5 Team Leader	410-545-8618	Rob Pearce
Dist. 4, 6, 7 Team Leader	410-545-8639	Rich Wilke

Environmental Programs Division (OED-EPD)		
Permit Materials Review		
Dist. 1, 2, 4, 7 Environmental Programs Team Leader	410-545-8632	Mark Smith
Dist. 3 Environmental Programs Team Leader	410-545-8630	Brian Cox
Dist. 5, 6 Environmental Programs Team Leader	410-545-8643	Nora Bucke
Wetlands and Stream Mitigation Team Leader	410-545-8582	Bill Buettner

Environmental Quality Assurance for E&S Controls During Construction		
Assistant Division Chief	410-545-8627	Don Hoey
Team Leader, Statewide	410-365-0164	Tad Daniel

Water Programs Division (OED-WPD)		
Permit Materials Review, related to TMDL compliance		
Division Chief	410-545-8407	Karen Coffman
Team Leader	410-545-8623	Travis Vance

Scenic Byways and Recreational Trails (OPPE- RIPD)		
Permit Materials Review		
Scenic Byways and Recreational Trails Team Leader	410-545-8637	Terry Maxwell

Chapter 4 - Access, District, and Environmental Permits

4.0 Required Permits and Mitigation. The Office of Environmental Design cooperates with state, federal and local agencies to ensure compliance with applicable laws. However, OED is not responsible for the preparation, submittal, or approval of these permits, or for developing mitigation strategies to satisfy legal requirements.

All permits that involve landscape construction or maintenance on SHA property shall conform to Maryland law, SHA landscape design standards, and Standard Specifications.

All coordination necessary to obtain permits required for construction or maintenance under an Access Permit or a District Permit is solely the responsibility of the applicant. The following information is provided for the benefit of the applicant, to explain general requirements for permits and mitigation.

- **Access Permits.** Applicants for an Access Permit shall conform to requirements of the Environmental Guide when submitting materials to the District Office, and shall comply with EG Chapters 4.1 thru 4.4, below.
- **District Permits.** Applicants shall conform to the Environmental Guide as follows:
 1. **Construction.** For individual Utility Construction Permits and Utility Relocation Permits, the applicant shall conform to all requirements of the Environmental Guide when submitting materials to the pertinent District Office for review by the Office of Environmental Design.

The plans for landscape construction under a District Permit shall be developed to the same standards as plans developed for an Access Permit per EG Chapter 6. Applicants for these permits shall comply with EG Chapters 4.1 thru 4.4, below.

2. Maintenance. For Utility Infrastructure Maintenance / Emergency Permits and Tree Trimming Permits, the plans developed for the permit shall sufficiently conform to requirements of the Environmental Guide so that the scope of work will be adequately indicated in the permit issued by the pertinent District Office after review by the Office of Environmental Design.

Permit plans shall conform with EG Chapters 4.1 thru 4.4, or as stipulated in the permit issued by the pertinent District Office for the permitted maintenance activities.

4.1 Roadside Tree Permit / Maryland Forest Conservation Act and Mitigation.

4.1-a Permit Requirements. Tree removals, tree installation and impacts to tree branches or tree roots within SHA rights of way typically require a RTP issued by the Maryland Department of Natural Resources - Forest Service (DNR-FS).

A RTP is required for all such work unless a RTP is waived by DNR when an approved Forest Conservation Plan (FCP, in conformance with the Maryland Forest Conservation Act, FCA) includes work within the SHA right of way. The applicant for the Access or District Permit is responsible for coordination required to obtain any required RTP or FCA approvals prior to construction.

To avoid conflicts and the need for permit addenda, the applicant is advised to apply for the RTP after issuance of the Access or District Permit. LDG Chapter 4.4 and LDG Chapter 4.6 provide additional information about the Maryland Roadside Tree Law and Maryland Forest Conservation Act.

- To ensure compliance with Maryland laws regarding mitigation, the landscape plan per EG Chapter 6 shall indicate the species, sizes, locations and conditions of trees to be removed in SHA rights of way, and shall indicate the species, size and location of trees to be installed as mitigation in SHA rights of way.
- To ensure compliance with Maryland law and to protect trees and shrubs from excessive impacts, the landscape plan shall clarify the nature of any impacts to existing trees in SHA rights of ways, property, easements or lands to be conveyed to SHA by delineating and noting the locations of any necessary Tree Root Pruning, Tree Branch Pruning and Tree Fertilizing.
- To ensure adequate mitigation for impacts to SHA property, the landscape plan shall indicate all tree, shrub and brush removal in all other SHA property, easements and lands to be conveyed to SHA.

4.1-b SHA Mitigation Requirements. In conformance with the Roadside Tree Law for areas within SHA rights of way, the applicant is required by MD-DNR to mitigate the removal of all trees with trunk diameter of 2 in. DBH or greater. However, as the owner of the rights of way or owner of other property or easements, SHA may request mitigation for the loss of trees, brush, shrubs, or other ornamental plantings, and may request other landscaping or extended maintenance to restore and establish native vegetation in natural areas.

SHA-required mitigation is not required by Maryland law, but may be required by SHA as a condition for an Access Permit or District Permit. SHA typically requests 1:1 mitigation for trees and large shrubs, although additional mitigation may be required for the mitigation of significant or specimen trees.

Unless other mitigation is approved, SHA will require that each tree or large shrub to be removed shall be mitigated and replaced with at least one tree or large shrub selected from the SHA Preferred Plant List and installed in conformance with Section 710. Also, unless other locations are approved per EG Chapter 4.1-d, all mitigation plantings shall be installed on SHA rights of ways, property, easements or lands to be conveyed to SHA.

4.1-c Mitigation by Area. An acceptable alternative method for mitigating tree removals in areas with a high density of small trees or brush where 1:1 mitigation would not be appropriate based upon stem counts involves mitigation at a fixed stocking rate per acre or fraction of acre.

At the option of the applicant and when approved by OED, the installation of mitigation trees may be specified in conformance with the tree sizes and stocking densities of Table 4.1-c. Depending upon the proposed impacts and locations of the proposed mitigation, one or more stocking densities in different areas of the project may be appropriate to provide acceptable mitigation.

Table 4.1-c Mitigation Tree Size and Stocking Density for Typical Access & District Permit Plantings					
Tree Size		Rootstock	Minimum Tree Stems per Acre	Approximate Spacing FT on Center	Location on SHA Property
Deciduous	Evergreen				
2 in. cal.	7 ft ht.	B&B or CG	110	20	Streetscapes
1.5 in. cal.	5 ft ht.	B&B or CG	150	17	General Landscape Areas
1 in. cal	4 ft ht.	B&B or CG	200	15	Large Reforestation Areas See LDG 4.6. Some larger trees may also be required

4.1-d Offsite Mitigation Options. The following options should be pursued when mitigation planting locations on SHA rights of way or property cannot be identified for compliance in conformance with EG Chapter 4.1-b.

Refer to Chapter EG 3.3 and contact the Statewide Forest Mitigation Coordinator for assistance regarding requirements for offsite mitigation and easement options.

- 1. Forest Mitigation Banking.** An acceptable alternative method for mitigating tree removals where there is insufficient space to install trees in nearby areas of SHA property involves mitigation provided by the applicant in an approved forest mitigation bank site.
- 2. Easement.** The creation of a perpetual easement on private property may be accepted by SHA as the location of tree mitigation plantings.
- 3. Other Public Property.** SHA may accept mitigation plantings on other public property such as non-SHA rights of way, park lands and similar locations.

4.1-e Table of Tree, Shrub and Vegetation Removals. When plans involve removal of trees, large shrubs, or other ornamental landscape plants, a Table of Tree, Shrub and Vegetation Removals shall be inserted into the landscape plan which indicates the species, sizes, locations and conditions of individual trees, shrubs or other vegetation to be removed. Areas of undifferentiated brush may be reported in square feet.

When SHA requests no mitigation for trees included in the table of removals due to insufficient planting space, conflicts with utilities or other reasons of highway safety or operability, those trees that will not be mitigated shall be identified as 'SHA Mitigation Waived' in the Table of Tree, Shrub and Vegetation Removals, and the following note shall be reproduced at the bottom of the Table.

SHA Mitigation Waived. No mitigation is requested by SHA for the removal of trees noted as 'SHA Mitigation Waived' in the table above.

The Office of Environmental Design will review the Roadside Tree Permit and proposed mitigation as part of the permit review process. Conformance with the Roadside Tree Permit shall be a condition of the Access Permit or District Permit application, and the approved permit or plan notes shall indicate the applicable requirements.

4.2 Wetlands and Waterways Permit and Mitigation. The plans developed for a permit are expected to avoid and minimize construction impacts to wetlands and waterways on SHA property and easements, and to restore affected areas to their preconstruction condition. The principal responsibility of OED during the review of plans submitted for an Access Permit or District Permit is to evaluate potential impacts and proposed mitigation upon SHA property and easements, and to ensure that SHA resources are protected.

Impacts to wetlands and waterways require permits issued by state and federal agencies, not SHA. The applicant for an Access Permit or District Permit is responsible for obtaining all permits and approvals necessary for the proposed construction and associated impacts.

As part of the submittal for an Access Permit or District Permit, the applicant shall provide information about proposed impacts and mitigation activities upon wetlands and waterways. Submitted plans and other documents shall define the proposed impacts to SHA wetlands and waterways, as well as the construction activities and measures to restore these environmental areas. OED will review the submitted plans as part of the permit review process, and before the issuance of any wetlands and waterways permits by state or federal agencies.

Conformance with any approved Wetlands and Waterways Permit shall be a condition of the Access Permit or District Permit, and the approved permit or plan notes shall indicate the applicable requirements.

4.3 Chesapeake and Atlantic Coastal Bays Critical Areas and Mitigation. Impacts to the Chesapeake and Atlantic Coastal Bays Critical Areas require mitigation and approvals of county and state agencies, not SHA. The principal responsibility of OED during the review of plans submitted for an Access Permit or District Permit is to evaluate potential impacts and proposed mitigation upon SHA property and easements in the Critical Area and Critical Area Buffer, and to ensure that SHA resources are protected.

Impacts to SHA Property proposed in submittals for an Access Permit or District Permit within the Critical Area or Critical Area Buffer such as increased impermeable surfaces, etc. are expected to be fully mitigated off-site, i.e. on land that is not owned by SHA.

The LDG provides information about Critical Areas, regulated impacts to areas within the Critical Area and Critical Area Buffer, and mitigation for impacts to soil and vegetation within 1,000 ft. of tidal waters. However, Critical Area mitigation exemptions described in the LDG are only applicable for mitigation performed by SHA as part of highway construction and maintenance, and not as part of construction under an Access Permit or District Permit.

The applicant for an Access Permit or District Permit is responsible for obtaining all approvals for proposed impacts and mitigation within the Critical Area and Critical Area Buffer. As part of the submittal for an Access Permit or District Permit, the applicant shall provide information about proposed impacts and mitigation activities within the Critical Area and Critical Area Buffer.

Conformance with the Critical Area mitigation plan shall be a condition of the Access Permit or District Permit, and the approved permit or plans shall indicate the applicable requirements.

4.4 Impervious Restoration or TMDL Facilities. The effort to improve the overall health of the Chesapeake Bay has resulted in many new plantings of meadow, shrubs and trees in upland areas of the SHA roadway system, as well as the installation of special drainage features to capture, treat and infiltrate stormwater runoff in lowland areas. These best management practices (bmps) are used to treat stormwater that drains from SHA's impervious surfaces. These bmps are most often termed restoration facilities by SHA. Many of these restoration facilities are located in areas of the SHA right of way that may be directly or indirectly damaged by construction activities.

The OED Water Programs Division (OED-WPD) is responsible for the SHA NPDES (National Pollutant Discharge Elimination System) MS4 Discharge Permit and must adhere to the requirements of the permit. Therefore, SHA requires that construction projects proposed by applicants for an Access Permit or District Permit clearly show on the plans that there will be no impacts to restoration facilities built to satisfy the NPDES MS4 permit and indicate any SHA-owned impervious surfaces that are proposed to be treated as part of this project.

Generally, SHA will require credit for impervious restoration or TMDL pollutant load reduction compliance be transferred to SHA for any impervious surfaces SHA owns. When requirements to this effect are identified, OED-WPD will request that Permit documents be revised to reflect SHA requirements. Also, if a project must impact an existing restoration facility the applicant must offset the credit lost by impacts to the facility in full. SHA must receive in return the full amount of impervious acre credit that was lost by the applicant's projects. SHA also reserves the right to take any impervious acre credit that exceeds the applicant's new development or redevelopment treatment credit if the bmp is constructed within SHA right of way.

Although the Highway Hydraulics Division (OHD-HHD) is responsible for reviewing engineering plans for stormwater treatment facilities in conformance with Maryland Law, OED-WPD must also review and document the proposed work and any permanent changes, and the OED Landscape Architecture Division (OED-LAD) must review and document the proposed plantings. Questions regarding existing restoration facilities and replacement strategies should be directed to OED-WPD.

The applicant shall develop plans that document existing conditions, and plans to restore or offset changes to existing restoration facilities impacted by construction. The applicant may also be required to construct new restoration facilities to offset the impacts of new impervious surfaces within SHA ROW.

Chapter 5 - Special Landscape Concerns

5.0 Special Landscape Concerns. Many key landscape concerns are summarized in EG Chapters 5.1 through 5.8, below. For more information about these issues and other topics of concerns, refer to the LDG and other SHA Landscape Guidance Documents described EG Chapters 2.0 through 2.8.

5.1 Scenic Byways and Trails. The Office of Environmental Design no longer provides plan review guidance regarding byways and trails. Refer to EG Chapter 3.3 for SHA staff responsible for the review of byways and trails. The following information is provided for general guidance about byways and trails.

Numerous SHA roadways are designated as scenic byways, and many roadways also support or intersect trails. These byways and trails, as well as their viewsheds, require special attention to preserve their character and value as natural and cultural resources.

Certain types of roadway reconstruction, excavation, pruning, tree removal and other activities that might otherwise be acceptable in the SHA system may not be appropriate along byways and trails because they destroy or impair elements of these resources.

The LDG and “SHA Context Sensitive Solutions for Work on Maryland Byways” provide information about preserving byways and trails. Corridor Management Plans have been developed for many byways that provide descriptions of the intrinsic qualities and key cultural and natural features of the byway. Guidance regarding trails is also available.

Conformance with required provisions for the preservation and enhancement of scenic byways, recreational trails, and segments of the Maryland Trail System shall be required as a condition of the Access Permit or District Permit application, and the permit or plan shall indicate the applicable requirements. Any changes to approved permits and plans will be reviewed by the SHA Regional and Intermodal Planning Division.

5.2 Environmental Area Protection. Plans developed for a permit are expected to provide all reasonable measures to protect environmental resources. The following measures may be required to protect environmental resources as part of permit requirements for construction: Directional Boring, Temporary Orange Construction Fence, Tree Planking, Timber Mats, Compost Logs, other practices to reduce impacts or damage to trees and environmental areas.

Specific measures to protect environmental resources shall be indicated in permits and plans, and the use of such measures shall be required as a condition of the approved permit. Refer to EG Chapter 5.3, below. Any changes to approved permits and plans will require review by the Office of Environmental Design and concurrence of applicable federal or state permitting authorities.

5.3 Tree Preservation Areas and Pruning Standards. Trees and areas of shrubs shall be preserved and protected to the extent feasible. Plans developed for an Access Permit or a District Permit are expected to limit unnecessary removals and undesirable impacts to trees and shrubs to remain within SHA rights of way, or within SHA easement areas, or on existing SHA property, or within property to be conveyed to SHA as a condition of permit issuance.

Refer to the Chapters 712 through 716 of the SHA Estimating Manual for more information about Tree Felling, Brush Removal, Tree Branch Pruning, Tree Root Pruning and Tree Fertilizing in conformance with the Standard Specifications.

The creation of Tree Preservation Areas in conformance with Section 120, and adherence to pruning standards are required as conditions of the Access Permit or District Permit. Any changes to approved permits or plans will require review by the Office of Environmental Design and applicable permitting authorities.

- **Tree Preservation Areas.** Section 120 of the Standard Specifications provides standards for Tree Preservation Areas, and defines certain prohibited and restricted activities within Tree Protection Areas surrounded by Temporary Orange Construction Fence (TOCF). Designated Tree Preservation Areas, including natural areas adjacent to approved permit construction sites, must be protected with TOCF conformance with Section 120.
- **Required Operations.** When construction may damage sensitive trees or other landscaping, the plans shall delineate Tree Preservation Areas and TOCF at the dripline of the trees or along the edge of areas to be preserved. To preserve the health of existing trees and other vegetation to remain, the plans shall delineate Tree Root Pruning, Tree Fertilizing, Tree Branch Pruning and any necessary Brush Removal which may be appropriate for individual trees or groups of trees at the edge of Tree Preservation Areas or within their limits.
- **Pruning Standards.** Sections 712 through 716 of the Standard Specifications provide requirements for activities that impact trees and shrubs. Pruning on SHA property shall conform to plans developed for approved permits and to the Standard Specifications which reference “ANSI A-300 Standards for Tree Care Operations” as the standard methods. The goals and limits of pruning shall be clearly specified in the SHA Landscape Notes or indicated on the plans.

5.4 Tree and Brush Clearance for Aesthetic Enhancement or Visibility. Requests from nearby residential or commercial property owners for permission to prune or remove trees on SHA property often involves an interest to improve the appearance of the area, or to improve the visibility of commercial signs, buildings, etc.

However, in accordance with the Maryland Roadside Tree Law, SHA must protect trees growing in the right of way from unnecessary impacts and removals. Any request to remove trees for aesthetic enhancement or to improve visibility will require the applicant to perform a site review and to prepare landscape plans which describe all site impacts and mitigation for removal of trees, etc.

When landscaping may require a higher level of future maintenance, refer to EG Chapter 5.7.

Conformance with the landscape plan shall be required as a condition of the permit application, and the permit documents or plan notes shall indicate the applicable requirements. Any changes to approved permits or plans will require concurrence of the Office of Environmental Design and applicable permitting authorities.

5.5 Offset Distance to Roads and Utilities. The LDG provides extensive guidance regarding safe and sustainable landscape design.

The minimum offset distances from trees to overhead and underground utilities, as well as the minimum offset distances from trees to roadways, guardrails and structures are provided in the LDG.

Unless other offset distances are clearly indicated on the plans and approved by the Administration, the offset distances of the LDG shall be used to ensure adequate offset distances to trees and other fixed objects within the highway clear zone.

5.6 Demolition, Clearing and Grubbing, Excavation and Restoration. Construction activities that disturb soil, plant materials, pavements or structures are generally expected to minimize impacts caused by construction.

Excavation and construction within the limit of disturbance (LOD) must conform with Section 101 - Clearing and Grubbing of the Standard Specifications so that stumps and other debris that may adversely impact the installation, future stability or maintenance of pavements, sidewalks, hardscape, turfgrass, plant materials, etc. are removed as part of plans developed for an Access Permit or District Permit.

Since the expectation of SHA is that all areas within the LOD are subject to demolition and removal, the plans developed for a permit shall indicate any areas, trees or other materials within the LOD that will not be removed.

Therefore:

- Plans shall specify the installation locations of Temporary Orange Construction Fence per Section 120, or propose other methods, and insert any notes that may be required to clearly indicate the areas or objects to be preserved, and the methods for their protection.
- Plans shall delineate and note measures to protect sensitive areas, trees, pavements, structures, etc. within or adjacent to the LOD that must be protected from construction impacts.
- Plans shall restore soils of landscaped areas to promote sustainable growth of vegetation, to mitigate the loss of trees and other vegetation, to restore pavements and structures, and to conform with design requirements of SHA and all legal requirements.

5.6-a Restoration of Soil. Excess excavated materials, debris, drilling mud and other unsuitable materials shall be removed from work areas. Ruts shall be repaired with approved topsoil. The grade of excavated areas shall be restored with approved subsoil before a 4-inch layer of approved topsoil is placed in conformance with Section 701. The plans shall indicate the soil materials, thickness, etc.

5.6-b Restoration of Turfgrass. Refer to Chapters 705, 708 and 709 of the Estimating Manual for information about turfgrass and different types of soil stabilization matting. The plans shall delineate the areas of Turfgrass Sod from the areas of Turfgrass Establishment and from other areas of permanent groundcover, and shall delineate the areas of different types of soil stabilization matting as appropriate.

- **Turfgrass Sod Establishment** is preferred in urban areas, in ‘tree lawns’ between curbs and sidewalks, within 3 feet of sidewalks and paths, adjacent to driveways, and in other areas such as curbed medians, grass-lined swales, and channels where more rapid turfgrass establishment is desirable. Turfgrass sod shall be installed in conformance with Section 708.
- **Turfgrass Establishment** (seed) is appropriate for installation within 10 feet of the pavement edge of most roadside areas, and is appropriate in all areas where turfgrass is generally adapted. Turfgrass Establishment shall be specified as permanent groundcover for soil stabilization except where sod or other permanent vegetation is preferable, as described in the Estimating Manual. Turfgrass shall be installed in conformance with Section 705, either with or without soil stabilization matting per Section 709.

5.6-c Restoration of Meadow and Naturalized Areas. Meadows on roadsides, in stormwater management facilities, and in other naturalized areas shall be restored in conformance with Section 707, 706, or other specifications. Requirements such as the reproduction of Special Provisions for Bioretention Meadow Establishment, etc. may be required in plan sheets.

Meadow vegetation on SHA property is mowed by SHA once per year or less. Installing meadow vegetation in areas more than 10 feet from the pavement edge is generally preferred where its installation is consistent with safe highway operation and the context of adjacent landscaping.

Shrub seeding is installed in areas that are not mowed. The installation of shrub seeding in naturalized areas more than 10 feet from the pavement edge is generally preferred where shrubs are consistent with safe highway operation and context of adjacent areas. The permit or plans shall indicate the specific requirements and areas to be seeded with Meadow Establishment or Shrub Seeding Establishment.

5.6-d Restoration of Trees, Shrubs and Landscape Beds. Trees, shrubs and landscape beds shall be restored as required by SHA in conformance with EG Chapter 4 and Sections 710 and 711 of the Standard Specifications. The permit or plans shall indicate the plant materials, installation sizes and other restoration requirements in conformance with EG Chapter 6.

5.6-e Installing and Restoring Structures, Hardscape, etc. Retaining walls, pavers, steps, railings, trash receptacles, bike racks and other street furniture shall be removed and reset or reconstructed to the same grades and locations, or as approved by SHA. The composition, formliner, surface finish, color and other pertinent specifications for materials to be installed shall be clearly specified. During construction, samples may be required for approval before installation.

5.7 Future Maintenance. SHA is committed to providing a safe, attractive roadside environment. However, to limit the costs of future maintenance provided by SHA, and to allow adjoining property owners the ability to provide a higher level of maintenance, SHA also provides mechanisms for those who wish to provide additional maintenance for landscaped areas of the roadway.

Except for those areas that are planted by SHA at gateways, monuments and other specially landscaped areas, the only routine maintenance that SHA provides is mowing. Meadow areas are typically mowed once per year, and turfgrass areas within 10 feet of the pavement edge are typically mowed three times per year.

SHA will only provide mowing maintenance for turfgrass areas installed by others. Planting beds and other ornamental plantings may be installed by adjoining property owners and others willing to provide the necessary maintenance as part of a right of entry agreement under a District Permit issued by the pertinent SHA District Office. Refer to EG Chapter 7.23 regarding the Future Maintenance Landscape Note.

Landscape plans submitted for an Access Permit or District Permit that involve installing planting beds or plant materials that will require additional maintenance to remain safe and attractive, but which seem unlikely to receive adequate future maintenance by the applicant, may be restricted to species and designs that are sustainable by SHA without significant additional maintenance.

5.8 District Utility Maintenance Permits. These permits include Utility Infrastructure Maintenance / Emergency Permits (Blanket Permits) and Tree Trimming Permits. These maintenance permits are issued by the pertinent District Office, and do not require the submittal of landscape plans or SHA Landscape Notes. However, all work must be performed in conformance with Maryland law, and mitigation may be required for any tree removals.

The Forest Mitigation Coordinator and other staff of the Office of Environmental Design (OED) will review the District permit submittals and any permit issued by the Maryland Department of Natural Resources to ensure that trees and other resources on SHA property are adequately protected and mitigated.

Review by OED prior to the issuance of these permits is recommended to ensure that impacts to SHA stormwater and TMDL facilities, Chesapeake and Atlantic Coastal Bay Critical Areas, and other sensitive environmental areas and cultural resources are adequately reviewed, protected and mitigated. Review by OED will also help to ensure that proposed construction and mitigation will conform to SHA landscape design standards.

Chapter 6 - Plans for Landscape Construction

6.0 Requirements for Plans with Landscape Construction. Although permit submittals for certain maintenance projects issued by SHA District Offices do not require landscape plans, all projects that involve demolition and landscape restoration within landscaped areas of SHA property require plans developed in conformance with EG Chapter 6.

The Office of Environmental Design will review construction plans, landscape plans, roadway plans, E&S plans, stormwater management plans and other relevant plans as part of the Access Permit and District Permit review process.

The following concerns must be addressed when developing any plans that involve landscape impacts, landscape construction or the installation of landscape materials on SHA property. Permit applicants are encouraged to use the Checklist of EG Chapter 8 to reduce errors and conflicts in project submittals.

- a. SHA Specifications.** All projects shall be designed so that they may be constructed in conformance with Cat 700 - Landscaping of the Standard Specifications unless other specifications are approved.
- b. SHA Landscape Guidance.** All projects that involve impacts to soil or vegetation on SHA property shall be designed in conformance with SHA Landscape Guidance Documents, and all sheets of the submittal with such impacts shall be coordinated to ensure no conflicts with plans for landscape construction.
- c. SHA Terminology.** All plan sheets, including roadway plans, erosion and sediment control (E&S) plans, stormwater management plans (SWM), and any other plans that describe work to be performed using Cat. 700 - Landscape Construction or Section 920 -Landscape Materials shall use SHA-approved terms for the pertinent landscape materials and construction.
- d. Plans with Landscaping.** All plan sheets shall be cross-referenced with callouts or other notes, so that landscape materials and construction specified in E&S plans or other sheets use approved terms and are linked to the pertinent SHA Landscape Notes.
- e. Non-SHA Standards.** No plan sheets shall reproduce specifications, details, typicals or standards of counties, municipalities, the Maryland Department of the Environment, or other agencies which do not conform with Standard Specifications unless:
 - Approval of non-SHA specifications, etc. has been explicitly granted during the permit review process, or

- It is clear that such specifications, etc. are not intended for construction on SHA property. When non-SHA landscape standards, specifications, details or typicals are shown in plans submitted for an Access or District Permit, but such standards, etc. are not accepted for construction on SHA property, the following note shall be prominently inserted onto each sheet where such standards, etc. are reproduced:

SHA Specifications for Temporary & Permanent Stabilization. Refer to the Table of SHA Landscape Notes in this plan set for requirements related to soils, seed, fertilizer, plants and other materials. SHA Standard Specifications for Construction and Materials shall supersede all other specifications for landscape construction within property of the Maryland State Highway Administration (SHA), and all landscape construction on SHA property shall conform to the requirements of the SHA Landscape Notes and current SHA Standards and Specifications.

6.1 Professional Seal on Plans for Landscape Construction. Plans for landscape construction, or formal landscape plans, may be sealed by different qualified professional staff depending upon the anticipated impacts and reconstruction:

- **Landscape Architect.** Plans that involve removing or installing trees, shrubs, decorative landscaping or structures on SHA property shall be sealed by a Registered Landscape Architect or Professional Landscape Architect licensed in the State of Maryland.
- **Professional Engineer or Surveyor.** Plans may be developed by a Professional Engineer or Surveyor licensed in the State of Maryland when impacts only involve soil disturbance or installing turfgrass with or without soil stabilization matting for permanent vegetation groundcover.

6.2 Landscape Construction Plan Elements. All plans that involve landscape construction per Cat. 700 - Landscaping or Section 920 - Landscape Materials of the Standard Specifications, shall conform to requirements of the District Office.

Such plans shall also generally conform to the standards of the LDG, which are summarized in EG Chapter 6.2-a through 6.2-g, below.

Supplemental plans may be required by OED to adequately show existing conditions, proposed demolition and details of specialized construction.

6.2-a Landscape Construction Plan Labels and Legends. All plan sheets which specify landscape construction or materials within SHA property shall clearly show:

- Plan scale with graphic scale detail, direction of north, Maryland route number, road names with posted speeds of all roads within the project limits, legend for graphics used on the sheet, and any other information such as topography and grading lines that may affect evaluation of the plans.

- When the plan set involves changes to roadway pavements or markings, the landscape plan shall also include the proposed modifications.
- When the plan set includes erosion and sediment control plans, stormwater management plans, or other sheets that require Category 700 - Landscape Materials or Construction, all sheets shall reproduce or clearly reference the pertinent work and any pertinent SHA Landscape Notes.

6.2-b Right of Way Line, SHA Property Lines, Signs and Structures. All plans shall clearly show the existing and any proposed right of way lines, SHA property lines, SHA easement areas and the locations of structures and signs in the right of way and adjacent property. They shall also show the location of all known overhead and underground utility lines, poles and structures in the right of way, as well as the locations of any proposed relocations.

6.2-c Existing Vegetation and Preservation. Impacts to existing vegetation on SHA property, within SHA rights of way, within SHA easement areas, or on property to be conveyed to SHA shall be clearly described. Temporary Orange Construction Fence (TOCF) in conformance with EG Chapter 5.3 or other protective fencing may be required to preserve areas from impacts during construction.

- **Existing Groundcover.** Landscape plans shall clearly indicate existing groundcover vegetation. Areas of turfgrass, meadow, planting beds and brush shall be identified or characterized as appropriate. Areas of ornamental vegetation shall be described in detail if they will be negatively impacted by construction.
- **Existing Trees and Large Shrubs.** Landscape plans shall clearly indicate the locations, species, diameter (DBH) and condition of existing trees, and any notably large or ornamental shrubs to be removed or impacted by construction in SHA rights of ways, SHA easement areas, on SHA property, or on property to be conveyed to SHA. Refer to EG Chapter 4.1. The locations of trees, shrubs and other plantings on private property which may impact highway safety or operability shall also be shown on plans.
- **Temporary Orange Construction Fence (TOCF).** Refer to EG Chapters 5.2 and 5.3. Landscape Plans shall clearly indicate and delineate the proposed locations of TOCF as necessary to protect Tree Preservation Areas and any trees, vegetation or sensitive environmental areas to remain.

6.2-d Proposed Vegetation.

- **Trees, Shrubs, Ornamental Plantings.** Landscape plans shall clearly show the locations, species, cultivars, installation sizes and location of all trees, shrubs, perennials and ornamental grasses, etc. to be installed on SHA property, or on property to be conveyed to SHA, or in areas adjacent to SHA property which may impact highway safety or operability.

- **Groundcover Vegetation and Soil Stabilization Matting.** SHA Landscape Notes provide typical guidance regarding installation locations of sod, soil stabilization matting and seeded vegetation such as turfgrass and meadow. However, to ensure successful erosion protection of channels and slopes, and to avoid confusion during construction, the proposed locations of soil stabilization matting shall be delineated on plans as necessary to ensure clarity, and the locations of sod and seeded vegetation shall also be indicated on the plans. The composition of all these materials shall conform to the requirements of the Standard Specifications.

6.2-e Planting Schedule and Master Plant List. The species, cultivars and installation size of plant materials to be installed on SHA property, or on property to be conveyed to SHA shall be selected from the SHA Preferred Plant List or as approved, and shall be summarized in the Planting Schedule of the landscape plans.

- **Planting Schedule, per sheet.** Each landscape sheet shall include a planting schedule of the plant materials (trees, shrubs, perennials, ornamental grasses, etc.) to be installed per that sheet.
- **Master Plant List.** A master plant list shall be included in the landscape plans when more than one landscape sheet with plant materials is included in the plan set. The master plant list shall include the total quantities of plant materials of the individual planting schedules.

6.2-f Tree Felling and Brush Removal. When trees and brush are included within the limit of disturbance (LOD) of a project, it is expected that they will be removed in their entirety per Section 101 - Clearing and Grubbing of the Standard Specifications unless measures are proposed for their protection. Thus, Tree Felling and Brush Removal operations are typically specified in areas beyond the LOD, and occasionally within Tree Preservation Areas.

Refer to EG Chapter 5.6 and to the Estimating Manual for information about Clearing and Grubbing, Tree Felling and Brush Removal.

The landscape plans shall indicate the trees or brush to be removed and the Operations to be performed in conformance with Section 713 and 714 of the Standard Specifications. Unless other procedures are approved and noted in the plans, the Operations of Tree Felling and Brush Removal shall be performed as described below, and the pertinent SHA Landscape Notes shall be inserted in conformance with EG Chapter 7.

Tree Felling on SHA property shall be performed by a Maryland Licensed Tree Expert in conformance with the Standard Specifications, the Maryland Tree Expert Law, the Maryland Roadside Tree Law, the Maryland Forest Conservation Act and accepted arboricultural practices.

- **Tree Felling in Turfgrass Areas.** Trees within regularly mowed areas of SHA property shall be felled, the stumps shall be ground, and the debris shall be removed in conformance with Operation 1 - Felling and Stump Removal of Section 714.
- **Tree Felling in Meadow Areas.** Trees within meadow areas of SHA property that are not routinely mowed shall be felled, the stumps shall be treated with herbicide, and the debris shall be removed in conformance with Operation 2 - Felling and Stump Treatment of Section 714. Debris may be chipped and distributed over the soil surface to a depth less than 1 inch.
- **Tree Felling in Naturalized Areas.** Trees in forested areas shall be felled in conformance with Operation 4 - Felling and Delimiting of Section 714.
- **Stump Removal.** Existing stumps may be removed as part of Clearing and Grubbing, or in conformance with Operation 5 - Stump Removal of Section 714.

Brush Removal. Brush Removal on SHA property shall be performed by a Maryland Licensed Tree Expert in conformance with the Standard Specifications. Removing brush is not regulated under the Maryland Roadside Tree Law.

Brush shall be removed from SHA property in conformance with Operation 2 – Brush Removal with Stump Treatment of Section 713. Debris caused by Brush Removal shall be removed from the site or chipped and distributed over the soil in naturalized areas (meadow, brush, forest areas) to a depth less than 1 inch.

6.2-g Tree Branch Pruning, Tree Root Pruning, and Tree Fertilizing. These operations are performed on trees to remain on SHA property, either within designated Tree Preservation Areas, or outside the LOD of a project. The need for branch pruning, root pruning and fertilizing is determined during project design, and must be specified on the plans.

During construction, all of these operations must be performed by a Maryland Licensed Tree Expert in conformance with the Standard Specifications, the Maryland Tree Expert Law, the Maryland Roadside Tree Law and accepted arboricultural practices.

Refer to EG Chapters 5.3 and 5.4, and to the Estimating Manual for more information about Tree Branch Pruning, Tree Root Pruning and Tree Fertilizing. The landscape plans shall indicate the trees and areas where the work will be performed in conformance with Section 712, 715, and 716 of the Standard Specifications.

Unless other procedures are approved and noted in the plans, the Operations shall be performed as described below and the pertinent SHA Landscape Notes shall be inserted in conformance with EG Chapter 7.

- **Tree Branch Pruning** is specified and performed to eliminate dead wood or hazards, or to improve clearance for pedestrians, bicycles, and vehicles, or to improve visibility to signs and traffic control devices.
- **Tree Root Pruning** is specified and performed to reduce construction impacts to trees to remain. Tree Root Pruning is required for the preservation of larger trees when construction impacts are expected to reduce the critical root zone. Tree Root Pruning is usually specified at the edge of the LOD or at the dripline of trees to be preserved, and delineated on the plans. Tree Root Pruning is completed before other construction begins.
- **Tree Fertilizing** is specified performed to reduce construction impacts to trees to remain, or to promote regrowth following Tree Branch Pruning or Tree Root Pruning. Tree Fertilizing will be required when Tree Root Pruning or other construction impacts are expected to reduce the critical root zone.

Chapter 7 - SHA Landscape Notes

- 7.0 Required SHA Landscape Notes.** To ensure the use of approved materials and conformance with SHA construction specifications, all plans developed for an Access Permit, or for a Utility Construction Permit or Utility Relocation Permit shall include project-specific SHA Landscape Notes.

District Permits issued for Utility Infrastructure Maintenance / Emergency Permits (Blanket Permits) and Tree Trimming Permits do not require SHA Landscape Notes, but shall conform to the provisions developed for those permits after review by the Office of Environmental Design.

For all Access Permits and District Utility Construction and Relocation Permits:

- SHA Landscape Notes are not shown on plans when no landscaping per Cat. 700 - Landscaping of the Standard Specifications is required for a project.
- The selection of SHA Landscape Notes depends upon the work to be performed. SHA Landscape Notes that do not apply are not shown on plans.
- Refer to EG Chapter 6.0-e regarding the note that must be reproduced on plan sheets which reference or reproduce non-SHA landscape specifications or non-SHA landscape materials for work to be performed on non-SHA property.
- EG Chapters 7.1 through 7.25 describes the conditions and provides the exact text of the SHA Landscape Notes which are included on plans when landscaped areas of SHA property are impacted by construction.
- The Title provided for SHA Landscape Notes in EG Chapter 7.1 and the text of all pertinent Notes shall be reproduced in the italic text provided in Chapter 7.

- When SHA Landscape Notes are necessary, the text of each pertinent Note shall be reproduced under the Title as part of a single list or text box.
- EG Chapter 7.26 includes a table with text of all SHA Landscape Notes.

7.1 Title for SHA Landscape Notes. When SHA Landscape Notes are required, the following Title shall be shown on the plans, and all required Notes shall be included underneath it:

SHA LANDSCAPE NOTES. *Landscape construction within rights of way of the Maryland State Highway Administration (SHA) and within SHA property, easement areas and lands to be conveyed to SHA shall conform to these Notes. For guidance regarding design modifications during construction, refer to SHA Landscape Design Guide, SHA Landscape Estimating Manual, and SHA Environmental Guide for Access and District Permit Applicants at <http://www.roads.maryland.gov/index.aspx?PagelId=25>*

7.2 SHA Standard Specifications. Refer to EG Chapter 2.1. When construction involves soil disturbance, seeding, tree installation or installing any other landscaping or plant materials, the following Note shall be inserted into the SHA Landscape Notes:

SHA Standard Specifications. *Landscape construction shall conform to Sections 701 through 716, and landscape materials shall conform to Section 920 of the most recent revision of SHA Standard Specifications for Construction and Materials, including all revisions and supplements, and as specified in these notes. These requirements shall supersede all other specifications for work on SHA property. All SHA specifications for landscaping and landscape materials published in 2008 have been replaced. Current Specifications are at <http://www.roads.maryland.gov/Index.aspx?PagelId=44>.*

7.3 Erosion and Sediment Control Manager (ESCM). In conformance with requirements of the Maryland Department of the Environment and policies of SHA, all projects that involve soil disturbance on SHA property shall be supervised by a certified ESCM.

The ESCM shall possess both the “MDE Green Card” and the “SHA Yellow Card”, and shall be present at the construction site during soil disturbance or excavation. The ESCM shall supervise the implementation of any required Erosion and Sediment Control Plan (E&S Plan).

The Maryland Dept. of the Environment (MDE) “Responsible Personnel Training for Erosion and Sediment Control” (“MDE Green Card”) is required for the Basic Erosion and Sediment Control Course (“SHA Yellow Card”).

When construction activities require soil disturbance, the following Note shall be inserted into the SHA Landscape Notes:

Erosion and Sediment Control Manager (ESCM). *Soil disturbance such as grading, excavation, soil placement or other activities that involve soil disturbance shall be supervised by an ESCM Manager with a valid “SHA Yellow Card” in conformance with SHA Standard Specifications and any applicable Erosion and Sediment Control Permit.*

7.4 SHA Standard Details for Trees, Shrubs and Planting Beds. Refer to EG Chapter 2.4. When landscaping will involve installing trees, shrubs, planting beds and other landscape construction related to Section 710 of the Standard Specifications, the following Note shall be inserted into the SHA Landscape Notes:

SHA Standard Details for Trees, Shrubs and Planting Beds. *The installation of trees, shrubs, planting beds and other landscape construction related to Section 710 of the SHA Standard Specifications shall conform to the “SHA Book of Standards for Highway & Incidental Structures - Category 7” at <http://apps.roads.maryland.gov/BusinessWithSHA/bizStdsSpecs/desManualStdPub/publicationonline/ohd/bookstd/toccat7.asp>.*

7.5 Temporary Stabilization. Refer to Chapter 704 of the Estimating Manual. When construction will remove pavement, or will involve any other activities such as grading, tilling or other disturbance the leaves the soil of vulnerable to erosion from wind, rainfall or flowing water, the following Note shall be inserted into the SHA Landscape Notes:

Temporary Stabilization shall be installed in conformance with Section 704 to ensure that areas of soil disturbance are protected from wind, rainfall and flowing water until permanent stabilization is installed.

1. *Temporary Mulch, either as temporary straw mulch or temporary matting mulch, shall be installed at the end of each working day to provide “same day stabilization” unless other approved stabilization is installed.*
2. *Temporary straw mulch shall be installed on areas and slopes flatter than 4:1; temporary matting mulch shall be applied on slopes 4:1 and steeper, and to areas within channels.*
3. *Temporary Seed shall be installed in lieu of Temporary Mulch when soil redisturbance is expected more than 30 days after soil disturbance. The required application rate shall be 100 lbs per acre of 37-0-0 (SCU) fertilizer.*

7.6 Roadway Pavement Removal. Refer to EG Chapter 5.6-a and Chapter 701 of the Estimating Manual. When landscaping involves removing roadway pavements in preparation for restoring landscaped areas for permanent vegetation, the following Note shall be inserted into the SHA Landscape Notes:

Roadway Pavement Removal. *Areas of roadway pavement removal shall be excavated to remove pavements, aggregate base, and compacted soil to a minimum depth of 10 inches below the pavement surface, or as necessary to remove all materials unsuitable for landscaping. The excavated areas shall be restored with subsoil and topsoil as part of Soil Restoration.*

7.7 Excavation and Debris Removal. Refer to EG Chapters 5.6 and 5.6-a. When landscaping involves removing sidewalks, paved or gravel driveways, curbs, trees, stumps, fencing, abandoned pipes and similar construction debris in preparation for restoring landscaped areas for permanent vegetation, the following Note shall be inserted into the SHA Landscape Notes:

Excavation and Debris Removal. Debris related to the demolition of sidewalks, driveways, curbs, trees, stumps, roots, fencing, pipes, and other materials that may interfere with landscape installation or future maintenance shall be excavated as necessary for their complete removal and disposal.

7.8 Soil Restoration. Refer to EG Chapter 5.6-a and Chapter 701 of the Estimating Manual. Soil restoration may involve excavation followed by restoration with subsoil and topsoil, or restoration with bioretention soil mix (BSM) and related materials in stormwater management facilities. The requirements are determined by the Office of Environmental Design and Highway Hydraulics Division.

When landscaping involves excavating pavement, utility trenching, drilling or any similar work in preparation for restoring landscaped areas for permanent vegetation, the following Note shall be inserted into the SHA Landscape Notes:

Soil Restoration. Areas of pavement removal, excavation or drilling in landscaped areas shall remove excavated debris and restore the subgrade with approved subsoil and topsoil placed in conformance with Section 701 of the SHA Standard Specifications.

1. A layer of approved topsoil of at least a 4-inch depth shall be placed on all disturbed areas flatter than 2:1 and in all channels prior to seeding, sodding or other landscaping, unless otherwise specified.
2. A layer of approved topsoil of at least a 2-inch depth shall be placed on all disturbed areas 2:1 and steeper prior to seeding, sodding or other landscaping, unless otherwise specified.

When stormwater infiltration facilities are proposed, the following Note shall be added to the foregoing:

3. Bioretention Soil Mix (BSM) and other materials installed in conjunction with SPI 316 - Stormwater Filtration Facilities and SHA stormwater details shall be installed in conformance with SHA Landscape Notes and landscape plans. Plant materials and mulch shall be installed in BSM in conformance with stormwater details, Section 710 or other SHA Specifications.

7.9 Turfgrass Sod Establishment. Refer to EG Chapters 5.6-b and 6.2-d, and to Chapter 708 of the Estimating Manual. When landscaping involves restoring turfgrass sod in urban or suburban areas, or areas that are adjacent to commercial or residential properties where pedestrians may be expected, or where stormwater is conveyed in grass-lined channels, the groundcover vegetation of areas impacted by construction shall be restored with turfgrass sod, and the following Note shall be inserted into the SHA Landscape Notes:

Turfgrass Sod Establishment shall be performed in all disturbed areas, or within the areas indicated in the plans, in conformance with Section 708 of the SHA Standard Specifications. The required application rate of 20-16-12 fertilizer shall be 200 lbs per acre, and no fertilizer shall be applied from November 15 to March 1.

7.10 Turfgrass Establishment. Refer to EG Chapters 5.6-b and 6.2-d, and to Chapter 705 of the Estimating Manual. When landscaping involves restoring turfgrass in rural areas, the groundcover vegetation of areas impacted by construction shall be restored with Turfgrass Establishment (seeding) and the following Note shall be inserted into the SHA Landscape Notes:

***Turfgrass Establishment** shall be performed in all disturbed areas, or within the areas indicated in the plans, in conformance with Section 705 of the SHA Standard Specifications. The required application rate of 20-16-12 fertilizer shall be 200 lbs per acre, and no fertilizer shall be applied from November 15 to March 1.*

7.11 Soil Stabilization Matting. Refer to EG Chapters 5.6-b and 6.2-d, and to Chapters 705 and 709 of the Estimating Manual. The types of soil stabilization matting and their specific uses are described in the Estimating Manual. When landscaping involves Turfgrass Establishment or Meadow Establishment, the following Note, with numbers 1-3, shall be inserted into the SHA Landscape Notes:

***Soil Stabilization Matting** shall be installed in conformance with Section 709 of the SHA Standard Specifications, in conjunction with Turfgrass Establishment per Section 705 or Meadow Establishment per Section 707 as follows:*

- 1. Areas Flatter than 6:1. Type A or Type E matting may be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment.*
- 2. Areas Steeper than 6:1 and Flatter than 4:1. Type A or Type E matting shall be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment, unless delineated and noted otherwise.*
- 3. Channels, Stormwater Management Facilities, and Slopes 4:1 and Steeper Type A Soil Stabilization Matting shall be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment, unless delineated and noted otherwise.*

When stormwater management facilities (SWM), stream restoration areas, channels, or other delineated areas are specified for installing Meadow Establishment and Type D Soil Stabilization Matting such as the surface of infiltration facilities, the following Note shall be added to the foregoing:

- 4. In areas of Meadow Establishment with Type D Soil Stabilization Matting, the matting shall be installed in lieu of straw mulch and hydromulch binder within the delineated areas.*

When channels meet flow velocity or shear stress requirements for Type B Soil Stabilization Matting as defined in the Estimating Manual the area of Type B SSM shall be delineated and the following Note shall be added to the foregoing:

- 5. In high velocity channels with Turfgrass Establishment, Type B Soil Stabilization Matting shall be installed in lieu of straw mulch and hydromulch binder within the delineated areas.*

7.12 Meadow Establishment or Shrub Seeding Establishment. Refer to EG Chapters 5.6-c and 6.2-d, and to Chapters 706 and 707 of the Estimating Manual. When landscaping involves restoring meadow in areas that are mowed one time or less per year, or involves Shrub Seeding Establishment in natural areas that are not mowed, the groundcover vegetation of areas impacted by construction shall be restored with Meadow Establishment or Shrub Seeding Establishment as described in the plans, and the following Note shall be inserted into the SHA Landscape Notes.

Meadow Establishment or Shrub Seeding Establishment shall be performed in areas as indicated in the plans, in conformance with Sections 706 and 707 of the SHA Standard Specifications. The required application rate of 20-16-12 fertilizer shall be 200 lbs per acre.

7.13 Tree Preservation Areas. Refer to EG Chapters 5.3-b and 6.2-c, and to Section 120 - Tree Preservation Areas of the Standard Specifications. When trees or other vegetation to remain is included with the Limits of Disturbance, or areas that require protection are adjacent to the Limits of Disturbance, the trees or other vegetation to be protected shall be indicated in the plans.

Areas surrounded by Temporary Orange Construction Fence (TOCF) are considered Tree Preservation Areas per Section 120, and are protected from certain prohibited and restricted activities in conformance with those specifications. Such areas must be protected with TOCF during construction, and the plans shall clearly delineate the Tree Preservation Area using that term, or any of the following abbreviations: TPA, TOCF, or TPF (tree protection fence).

The following Note shall be inserted into the SHA Landscape Notes:

Tree Preservation Areas. Temporary Orange Construction Fence (TOCF) shall be installed in locations delineated on the plans as Tree Preservation Areas (TPA) in conformance with Section 120 of the SHA Standard Specification to protect existing trees and other vegetation during construction. Areas within TOCF shall be protected from all prohibited and restricted activities, per Section 120.

7.14 Roadside Tree Permit (RTP). Refer to EG Chapter 4.1. A Roadside Tree Permit issued by the Maryland Department of Natural Resources – Forest Service is required when trees or other woody vegetation is removed, pruned or installed. The applicant is responsible for all coordination required to obtain this permit.

No tree or woody plant removals, pruning or installation may be performed within SHA rights of way unless a Roadside Tree Permit has been issued, and a copy of the permit has been submitted to the Office of Environmental Design.

No tree, shrub or brush removal, pruning or installation may be performed in any SHA rights of way, SHA easement areas, or property of SHA without an approved Access or District Permit. The RTP is a separate permit requirement of the Maryland Department of Natural Resources for certain regulated activities in public right of ways within the state of Maryland.

When landscaping requires a Roadside Tree Permit, or requires compliance with the Maryland Forest Conservation Act, the following Note shall be inserted into the SHA Landscape Notes:

Roadside Tree Permit. *Tree removal, tree installation, tree root and branch pruning, and other regulated impacts to trees in the SHA right of way shall conform to the requirements of the Roadside Tree Permit (RTP) issued by the Maryland Department of Natural Resources, or the approved Forest Conservation Plan (FCP) of the local authority.*

1. *A copy of the RTP or FCP shall be submitted to the SHA Office of Environmental Design before work is performed, and a copy of the RTP or FCP shall be reproduced in the plans or be in possession of the applicant at the project site when the permitted work is performed.*
2. *A Maryland Licensed Tree Expert shall perform the specified tree operations in conformance with the SHA Standard Specifications and ANSI A300 Standards for Tree Care Operations.*

7.15 Installation of Trees, Shrubs, other Landscape Plantings. Refer to EG Chapters 4.1-b, c, d; to EG Chapter 5.6-d; and to Chapter 710 of the Estimating Manual. When landscaping involves installing trees, shrubs, perennials, landscape beds, annuals, bulbs, shredded hardwood bark mulch or other landscape plants or materials, the following Note shall be inserted into the SHA Landscape Notes:

Trees and Other Plant Material Installation. *Trees, shrubs, perennials, annuals, bulbs, landscape beds, bark mulch and similar materials shall be installed in conformance with Section 710 and 711 of the SHA Standard Specifications. Tree and shrubs shall be pruned at the time of installation to ensure sidewalk clearance for pedestrians is maintained to a height of 8 feet. No tree or shrub shall be installed within 3 feet of curbs, sidewalks, or pavement edges.*

7.16 Brush Removal. Refer to EG Chapters 5.6, 5.7, and 6.2-c; and to Chapter 713 of the Estimating Manual. When landscaping involves Brush Removal that is not within the limit of disturbance or within areas of Clearing and Grubbing, the areas of Brush Removal shall be identified in the landscape plans and the following Note shall be inserted into the SHA Landscape Notes:

Brush Removal *shall be performed in conformance with Operation 2 - Brush Removal with Stump Treatment of Section 713. Debris shall be removed, or chipped and distributed on SHA property to a maximum depth of 1 inch within brush removal areas, or in meadow or forest areas.*

7.17 Tree Felling in Turfgrass Areas. Refer to EG Chapters 5.6 and 6.2-c; and to Chapter 714 of the Estimating Manual. When landscaping involves Tree Felling in turfgrass areas that are routinely mowed, but not within the limit of disturbance or areas of Clearing and Grubbing, the trees to be felled shall be identified in the plans and the following Note shall be inserted into the SHA Landscape Notes:

Tree Felling in Turfgrass Areas shall be performed in conformance with Operation 1 - Felling and Stump Removal of Section 714. All debris shall be removed from SHA property.

7.18 Tree Felling in Meadow Areas. Refer to EG Chapters 5.6 and 6.2-c; and to Chapter 714 of the Estimating Manual. When landscaping involves Tree Felling in meadow areas that are not routinely mowed, but not within the limit of disturbance or areas of Clearing and Grubbing, the trees to be felled shall be identified in the landscape plans and the following Note shall be inserted into the SHA Landscape Notes:

Tree Felling in Meadow Areas shall be performed in conformance with Operation 2 - Felling and Stump Treatment of Section 714. All debris shall be removed, or chipped and distributed within meadow areas of SHA property, to a maximum depth of 1 inch.

7.19 Tree Felling in Natural Areas. Refer to EG Chapters 5.6 and 6.2-c; and to Chapter 714 of the Estimating Manual. When landscaping involves Tree Felling in naturalized areas, but not within the limit of disturbance or areas of Clearing and Grubbing, the trees to be felled shall be identified in the landscape plans, and the following Note shall be inserted into the SHA Landscape Notes:

Tree Felling in Natural Areas shall be performed in conformance with Operation 4 - Felling and Delimiting of Section 714.

7.20 Stump Removal. Refer to EG Chapter 5.6 and Chapter 714 of the Estimating Manual. When landscaping involves removing existing dead tree stumps in turfgrass or meadow areas, but not within the limit of disturbance or areas of Clearing and Grubbing, the stumps to be removed shall be identified in the landscape plans, and the following Note shall be inserted into the SHA Landscape Notes:

Stump Removal in turfgrass or meadow areas shall be performed in conformance with Operation 5 - Stump Removal of Section 714.

7.21 Tree Branch Pruning. Refer to EG Chapters 5.3 and 5.4, and to Chapter 712 of the Estimating Manual. When landscaping involves removing branches from existing trees, the trees to be pruned shall be identified in the landscape plans. Either of the following Notes may be inserted.

Option 1. When minor branch pruning is anticipated, the following Note may be inserted into the SHA Landscape Notes:

Tree Branch Pruning shall be performed or directly supervised by a Maryland Licensed Tree Expert in conformance with ANSI A300 standards per Section 712 as necessary for any of the following: To install Temporary Orange Construction Fence (TOCF) along delineations on plans; to perform Tree Root Pruning along delineations on plans; to provide 8-foot clearance above sidewalk pavements and 16-foot clearance above roadway pavements; to repair tree wounds; and to perform other recommended cleaning, thinning, reducing, and pruning necessary to accommodate utilities. All debris shall be removed from SHA property.

Option 1. When major branch pruning is anticipated, the following Note shall be inserted along with, or instead of, the foregoing into the SHA Landscape Notes. The underlined text shall be removed and replaced with text to specify the pruning:

***Tree Branch Pruning** shall be performed in conformance with Section 712 as follows: Applicant to explain goals and locations of pruning. All debris shall be removed from SHA property.*

7.22 Tree Root Pruning. Refer to EG Chapter 5.3 and Chapter 715 of the Estimating Manual. When landscaping involves tree root pruning, the trees to be pruned shall be identified in the landscape plans, and the following Note with instructions for the pruning shall be inserted into the SHA Landscape Notes:

***Tree Root Pruning** shall be performed along the line shown on the plans in conformance with Section 715. Tree Root Pruning shall be completed before beginning excavation or construction adjacent to trees to be preserved.*

7.23 Tree Fertilizing. Refer to EG Chapter 5.3 and Chapter 716 of the Estimating Manual. When landscaping involves tree fertilizing, the trees to be fertilized shall be identified in the landscape plans. The following shall be inserted into the SHA Landscape Notes for Tree Fertilizing, or modified as appropriate to specify the fertilizer materials and methods:

***Tree Fertilizing** shall be performed in conformance with Operation 3 - Broadcast Fertilizing per Section 716. 20-16-12 fertilizer shall be applied to the soil surface under the dripline of trees at the rate of 200 lbs. per acre.*

7.24 Finished Materials. Refer to EG Chapter 5.6-e. When landscaping involves installing retaining walls, stone mulch, unit pavers, decorative light poles, trash receptacles, bike racks and other materials with specially colored or decorative finishes, the materials shall be specified and their locations indicated in the landscape plans.

Such finished materials shall match the color and quality of existing nearby materials, or shall be determined to be acceptable alternatives. The following shall be inserted into the SHA Landscape Notes, except the underlined text shall be removed and replaced with text to specify the finished materials or plan sheet where such specifications are reproduced:

***Finished Materials.** The suitability, color and texture of applicant to insert name of materials with references to pages of the plans which specify these materials to be installed shall be approved before installation. The contractor shall furnish samples or make arrangements for inspection and approval at the project site.*

7.25 Future Maintenance. Refer to EG Chapter 5.7. An Access Permit does not confer any future right to maintain materials installed within SHA rights of way, or within SHA property or easement areas. For that purpose, a District Permit is required, which is issued separately.

When landscaping involves installing hardscape, street furniture, trees, shrubs, perennials, annuals, planting beds or any other landscape materials for which additional maintenance is appropriate or desirable under a future District Permit, the following Note shall be inserted into the SHA Landscape Notes:

Future Maintenance. *Additional maintenance that may be required after hardscape, street furniture or plant materials are installed and accepted by SHA such as replacement, watering, weeding, mulching or pest control may be provided by the applicant when a permit for the proposed work is issued by the SHA District Office.*

7.26 Quick Guide to SHA Landscape Notes. The following table summarizes the required SHA Landscape Notes described in EG Chapters 7.0 through 7.25. Numbers refer to Sections of the Environmental Guide.

Refer to EG Chapter 6.0-e regarding the note which must be inserted onto sheets with non-SHA landscape construction or non-SHA landscape materials.

When SHA Landscape Notes are required for a project, the Title and text of all pertinent Notes shall be reproduced in the landscape plans, or in another appropriate location within the plan set, as a single list or in a single text box.

The Title “SHA Landscape Notes” shall be placed as a prominent heading, and the text of each required Note shall be shown under the title in the numerical order indicated in EG Chapter 7.

SHA Landscape Notes specify required construction activities. Notes that do not apply to a project shall not be included in the SHA Landscape Notes.

Title and Text of SHA Landscape Notes	
Environmental Guide Chapter Number and Subject	The applicant shall insert the Title, along with the Chapter Number, Subject, and Text of each pertinent Note, in the order shown below. Some Notes require customized text. Refer to EG Chapter 6.0-e regarding the note required when non-SHA standards are reproduced, and refer to the note of EG Chapter 4.1-e when SHA mitigation is waived.
7.1 Title	SHA LANDSCAPE NOTES. <i>Landscape construction within rights of way of the Maryland State Highway Administration (SHA) and within SHA property, easement areas and lands to be conveyed to SHA shall conform to these Notes. For guidance regarding design modifications during construction, refer to SHA Landscape Design Guide, SHA Landscape Estimating Manual, and SHA Environmental Guide for Access and District Permit Applicants at http://www.roads.maryland.gov/index.aspx?PagelD=25</i>
7.2 Specifications	SHA Standard Specifications. <i>Landscape construction shall conform to Sections 701 through 716, and landscape materials shall conform to Section 920 of the most recent revision of SHA Standard Specifications for Construction and Materials, including all revisions and supplements, and as specified in these notes. These requirements shall supersede all other specifications for work on SHA property. All SHA specifications for landscaping and landscape materials published in 2008 have been replaced. Current Specifications are at http://www.roads.maryland.gov/Index.aspx?PagelD=44</i>

7.3	E&S Manager ESCM	Erosion and Sediment Control Manager (ESCM). Soil disturbance such as grading, excavation, soil placement or other activities that involve soil disturbance shall be supervised by an ESCM Manager with a valid "SHA Yellow Card" in conformance with SHA Standard Specifications and any applicable Erosion and Sediment Control Permit.
7.4	Standard Details	SHA Standard Details for Trees, Shrubs and Planting Beds. The installation of trees, shrubs, planting beds and other landscape construction related to Section 710 of the SHA Standard Specifications shall conform to the "SHA Book of Standards for Highway & Incidental Structures - Category 7" at http://apps.roads.maryland.gov/BusinessWithSHA/bizStdsSpecs/desManual/StdPub/publicationsonline/ohd/bookstd/toccat7.asp
7.5	Temporary Stabilization	<p>Temporary Stabilization shall be installed in conformance with Section 704 to ensure that areas of soil disturbance are protected from wind, rainfall and flowing water until permanent stabilization is installed.</p> <ol style="list-style-type: none"> 1. Temporary Mulch, either as temporary straw mulch or temporary matting mulch, shall be installed at the end of each working day to provide "same day stabilization" unless other approved stabilization is installed. 2. Temporary straw mulch shall be installed on areas and slopes flatter than 4:1; temporary matting mulch shall be applied on slopes 4:1 and steeper, and to areas within channels. 3. Temporary Seed shall be installed in lieu of Temporary Mulch when soil redisturbance is expected more than 30 days after soil disturbance. The required application rate shall be 100 lbs per acre of 37-0-0 (SCU) fertilizer.
7.6	Roadway Pavement Removal	Roadway Pavement Removal. Areas of roadway pavement removal shall be excavated to remove pavements, aggregate base, and compacted soil to a minimum depth of 10 inches below the pavement surface, or as necessary to remove all materials unsuitable for landscaping. The excavated areas shall be restored with subsoil and topsoil as part of Soil Restoration.
7.7	Excavation and Debris Removal	Excavation and Debris Removal. Debris related to the demolition of sidewalks, driveways, curbs, trees, stumps, roots, fencing, pipes and other materials that may interfere with landscape installation or future maintenance shall be excavated as necessary for their complete removal and disposal.
7.8	Soil Restoration	<p>Soil Restoration. Areas of pavement removal, excavation or drilling in landscaped areas shall remove excavated debris and restore the subgrade with approved subsoil and topsoil placed in conformance with Section 701 of the SHA Standard Specifications.</p> <ol style="list-style-type: none"> 1. A layer of approved topsoil at least 4-inch depth shall be placed on all disturbed areas flatter than 2:1 and in all channels prior to seeding, sodding or other landscaping, unless otherwise specified. 2. A layer of approved topsoil at least 2-inch depth shall be placed on all disturbed areas 2:1 and steeper prior to seeding, sodding or other landscaping, unless otherwise specified.
	Add When Necessary	3. Bioretention Soil Mix (BSM) and other materials installed in conjunction with SPI 316 - Stormwater Filtration Facilities and SHA stormwater details shall be installed in conformance with SHA Landscape Notes and landscape plans. Plant materials and mulch shall be installed in BSM in conformance with stormwater details, Section 710 or other SHA Specifications.
7.9	Turfgrass Sod Establishment	Turfgrass Sod Establishment shall be performed in all disturbed areas, or within the areas indicated in the plans, in conformance with Section 708 of the SHA Standard Specifications. The required application rate of 20-16-12 fertilizer shall be 200 lbs per acre, and no fertilizer shall be applied from November 15 to March 1.
7.10	Turfgrass Establishment	Turfgrass Establishment shall be performed in all disturbed areas, or within the areas indicated in the plans, in conformance with Section 705 of the SHA Standard Specifications. The required application rate of 20-16-12 fertilizer shall be 200 lbs per acre, and no fertilizer shall be applied from November 15 to March 1.

7.11	Soil Stabilization Matting	<p>Soil Stabilization Matting shall be installed in conformance with Section 709 of the SHA Standard Specifications, in conjunction with Turfgrass Establishment per Section 705 or Meadow Establishment as follows:</p> <ol style="list-style-type: none"> 1. Areas Flatter than 6:1. Type A or Type E matting may be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment. 2. Areas Steeper than 6:1 and Flatter than 4:1. Type A or Type E matting shall be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment, unless delineated and noted otherwise. 3. Channels, Stormwater Management Facilities, and Slopes 4:1 and Steeper. Type A Soil Stabilization Matting shall be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment, unless delineated and noted otherwise.
	Add When Necessary	<ol style="list-style-type: none"> 4. In areas of Meadow Establishment with Type D Soil Stabilization Matting, the matting shall be installed in lieu of straw mulch and hydromulch binder within the delineated areas.
	Add When Necessary	<ol style="list-style-type: none"> 5. In high velocity channels with Turfgrass Establishment, Type B Soil Stabilization Matting shall be installed in lieu of straw mulch and hydromulch binder within the delineated areas.
7.12	Meadow, Shrub Establishment	<p>Meadow Establishment or Shrub Seeding Establishment shall be performed in areas as indicated in the plans, in conformance with Sections 706 and 707 of the SHA Standard Specifications. The required application rate of 20-16-12 fertilizer shall be 200 lbs per acre.</p>
7.13	Tree Preservation Areas	<p>Tree Preservation Areas. Temporary Orange Construction Fence (TOCF) shall be installed in locations delineated on the plans in conformance with Section 120 of the SHA Standard Specification to protect existing trees and other vegetation during construction. Areas within TOCF shall be protected from all prohibited and restricted activities, as specified in Section 120.</p>
7.14	Roadside Tree Permit	<p>Roadside Tree Permit. Tree removal, tree installation, tree root and branch pruning and other regulated impacts to trees in the SHA right of way shall conform to the requirements of the Roadside Tree Permit (RTP) issued by the Maryland Department of Natural Resources, or the approved Forest Conservation Plan (FCP) of the local authority.</p> <ol style="list-style-type: none"> 1. A copy of the RTP or FCP shall be submitted to the SHA Office of Environmental Design before work is performed, and a copy of the RTP or FCP shall be reproduced in the plans or be in possession of the applicant at the project site when the permitted work is performed. 2. A Maryland Licensed Tree Expert shall perform the specified tree operations in conformance with the SHA Standard Specifications and ANSI A300 Standards for Tree Care Operations.
7.15	Trees, Plant Materials Installation	<p>Trees and Other Plant Material Installation. Trees, shrubs, perennials, annuals, bulbs, landscape beds, bark mulch and similar materials shall be installed in conformance with Section 710 and 711 of the SHA Standard Specifications. Tree and shrubs shall be pruned at the time of installation to ensure sidewalk clearance for pedestrians is maintained to a height of 8 feet. No tree or shrub shall be installed within 3 feet of curbs, sidewalks or pavement edges.</p>
7.16	Brush Removal	<p>Brush Removal shall be performed in conformance with Operation 2 - Brush Removal with Stump Treatment of Section 713. Debris shall be removed, or chipped and distributed to a maximum depth of 1 inch within brush removal areas, or in meadow or forest areas.</p>
7.17	Tree Felling Turfgrass Areas	<p>Tree Felling in Turfgrass Areas shall be performed in conformance with Operation 1 - Felling and Stump Removal of Section 714. All debris shall be removed from SHA property.</p>
7.18	Tree Felling Meadow Areas	<p>Tree Felling in Meadow Areas shall be performed in conformance with Operation 2 - Felling and Stump Treatment of Section 714. All debris shall be removed, or chipped and distributed within meadow areas of SHA property, to a maximum depth of 1 inch.</p>
7.19	Tree Felling Natural Areas	<p>Tree Felling in Natural Areas shall be performed in conformance with Operation 4 - Felling and Delimiting of Section 714.</p>

7.20	Stump Removal	Stump Removal in turfgrass or meadow areas shall be performed in conformance with Operation 5 - Stump Removal of Section 714.
		Option 1 - Insert the following Note for projects that involve minor pruning: Tree Branch Pruning shall be performed or directly supervised by a Maryland Licensed Tree Expert in conformance with ANSI A300 standards per Section 712 as necessary for any of the following: To install Temporary Orange Construction Fence (TOCF) along delineations on plans; to perform Tree Root Pruning along delineations on plans; to provide 8-foot clearance above sidewalk pavements and 16-foot clearance above roadway pavements; to repair tree wounds; and to perform other recommended cleaning, thinning, reducing and pruning necessary to accommodate utilities. All debris shall be removed from SHA property.
7.21	Tree Branch Pruning	Option 2 - Insert the following Note with specific instructions for major pruning: Tree Branch Pruning shall be performed in conformance with Section 712 as follows: <u>Applicant to explain goals and locations of pruning.</u> All debris shall be removed from SHA property.
7.22	Tree Root Pruning	Tree Root Pruning shall be performed along the line shown on the plans in conformance with Section 715. Tree Root Pruning shall be completed before beginning excavation or other construction adjacent to trees to be preserved.
7.23	Tree Fertilizing	Tree Fertilizing shall be performed in conformance with Operation 3 - Broadcast Fertilizing per Section 716. 20-16-12 fertilizer shall be applied to the soil surface under the dripline of trees at the rate of 200 lbs. per acre.
7.24	Finished Materials	Finished Materials. The suitability, color and texture of <u>applicant to insert name of materials with references to pages of the plans which specify these materials</u> to be installed shall be approved before installation. The contractor shall furnish samples or make arrangements for inspection and approval at the project site.
7.25	Future Maintenance	Future Maintenance. Additional maintenance that may be required after hardscape, street furniture or plant materials are installed and accepted by SHA such as replacement, watering, weeding, mulching or pest control may be provided by the applicant when a permit for the proposed work is issued by the SHA District Office.

Chapter 8 - Environmental Quality Assurance Checklist.

8.0 Environmental Quality Assurance Checklist. Applicants who develop plans for construction or maintenance for an Access Permit or a District Permit are encouraged to perform an informal self-assessment before plans are submitted or resubmitted to the District Office.

Use of this Checklist is recommended to reduce delays and the need to respond to comments of the Office of Environmental Design (OED) regarding conformance with SHA landscape guidance documents.

Staff of the Office of Environmental Design use a similar checklist to determine the accuracy and sufficiency of submitted plans and permit documents as part of the coordinated response of OED for an Access Permit or District Permit.

Refer to EG Chapter 3.3 for a list of staff who can clarify OED expectations for permit submittals. The applicant is not required to submit this Checklist.

Environmental Quality Assurance Checklist		
Chapter of Environmental Guide	Items to Confirm by Applicant	Submittal is Acceptable
Re-Submitted Plans		Check Box
3.0-3.2	Point-by-point responses to all previous OED comments have been provided by the applicant in the response letter to be submitted to the District Access Engineer or Utility Engineer.	<input type="checkbox"/>
3.0-3.2	Revised plans and Engineer's Estimate have been checked for conformance with OED comments, and will be submitted with the point-by-point response to ensure no conflicts, errors or omissions.	<input type="checkbox"/>
3.3	Questions or concerns of the applicant about OED comments have been directed to the Chief of the Landscape Operations Division for review and resolution.	<input type="checkbox"/>
General & Guidance Documents		
1.4	Project conforms to SHA Landscape Design Philosophy.	<input type="checkbox"/>
2.1	Project conforms to most recent versions of SHA Standard Specifications.	<input type="checkbox"/>
2.2	Project conforms to principles of the SHA Landscape Design Guide (LDG).	<input type="checkbox"/>
2.3	Project conforms to principles of the Environmental Guide and Estimating Manual.	<input type="checkbox"/>
2.3	Engineer's Estimate includes all items needed landscape and bioretention facilities	<input type="checkbox"/>
2.4	Project conforms to SHA Book of Standards - Category 700, Landscaping.	<input type="checkbox"/>
2.5	Project conforms to SHA Preferred Plant List, does not include prohibited plants.	<input type="checkbox"/>
2.6	Project conforms to guidelines for Scenic Byways and Recreational Trails.	<input type="checkbox"/>
2.7-2.8	Project conforms to guidelines for pedestrians, bicycles, trails.	<input type="checkbox"/>
Office of Environmental Design (OED)		
3.0-3.3	Questions regarding plan requirements were submitted to OED for assistance.	<input type="checkbox"/>
Access, District and Environmental Permits		
4.0	Project submittal identifies the appropriate SHA Permit.	<input type="checkbox"/>
4.1	Project requires Roadside Tree Permit (RTP) or FCA Approval.	<input type="checkbox"/>
4.1	Project mitigates impacts to roadside trees and other vegetation.	<input type="checkbox"/>
4.2	Project mitigates impacts to streams and wetlands.	<input type="checkbox"/>
4.3	Project mitigates impacts to Chesapeake and Atlantic Coastal Bays Critical Areas.	<input type="checkbox"/>
4.4	Project mitigates impacts or provides new TMDL facilities.	<input type="checkbox"/>
Special Landscape Concerns		
5.1	Project mitigates impacts to byways and trails.	<input type="checkbox"/>
5.2	Project provides acceptable environmental area protection.	<input type="checkbox"/>
5.3-5.4	Project meets requirements for Tree Preservation Areas and pruning standards	<input type="checkbox"/>
5.5	Project meets requirements for offset distance for roadways, utilities, etc.	<input type="checkbox"/>
5.6	Project meets requirements for demolition, excavation, and site restoration.	<input type="checkbox"/>
5.7	Project will require additional maintenance by applicant, not SHA.	<input type="checkbox"/>
5.8	Utility Permit application includes clear guidance for maintenance and mitigation	<input type="checkbox"/>
Roadway, E&S, Stormwater Management Plans, etc.		
6.0	Plans are developed in conformance with SHA standards	<input type="checkbox"/>
6.0	Plan sheets of all plan sets do not conflict with landscape plans	<input type="checkbox"/>
6.0-e	Plans include required note, or all non-SHA landscape standards are removed.	<input type="checkbox"/>

Plans for Landscape Construction		
6.0	Project meets standards for preparation of plans for landscape construction.	<input type="checkbox"/>
6.0-e	for required note for any non-SHA landscape specifications and materials.	<input type="checkbox"/>
6.1	for professional seal, accuracy and clarity of presentation.	<input type="checkbox"/>
6.2-a,b	for right-of-way line, route number and name, posted speed, graphic scale, etc.	<input type="checkbox"/>
6.2-a,b	for delineation of overhead and underground utilities, signs, etc.	<input type="checkbox"/>
6.2-c	for delineation of existing trees, shrubs, brush, groundcover, etc.	<input type="checkbox"/>
6.2-d	for delineation of proposed trees, shrubs, ornamental plantings, etc.	<input type="checkbox"/>
6.2-d	for delineation of TOCF, turfgrass, sod, meadow, soil stabilization matting, etc.	<input type="checkbox"/>
6.2-e	for planting schedule, plant keys and labels, master plant list.	<input type="checkbox"/>
6.2-f	for delineating or noting locations of TOCF, Tree Felling, Brush Removal.	<input type="checkbox"/>
6.2-g	for specifying and indicating locations of Tree Branch Pruning	<input type="checkbox"/>
6.2-g	for delineating Tree Root Pruning and locations of Tree Fertilizing	<input type="checkbox"/>
SHA Landscape Notes		
7.0 - 7.1	Project includes Title and current text of all pertinent SHA Landscape Notes.	<input type="checkbox"/>
7.2	for SHA Cat 700. Landscaping Specifications.	<input type="checkbox"/>
7.3	for Erosion and Sediment Control Manager (ESCM).	<input type="checkbox"/>
7.4	for Standard Details for installing trees, shrubs, planting beds, etc.	<input type="checkbox"/>
7.5	for Temporary Stabilization, for same day stabilization in all disturbed areas.	<input type="checkbox"/>
7.6 - 7.7	for Roadway Pavement Removal, including excavation and debris removal.	<input type="checkbox"/>
7.8	for Soil Restoration, Bioretention Soil Mix (BSM), SWM filtration facilities.	<input type="checkbox"/>
7.9	for Turfgrass Sod Establishment in urban, pedestrian, and other areas.	<input type="checkbox"/>
7.10 - 7.11	for Turfgrass Establishment (seeding) and Soil Stabilization Matting.	<input type="checkbox"/>
7.12	for Bioretention or other Meadow Establishment, Shrub Seeding Establishment.	<input type="checkbox"/>
7.13	for Tree Preservation Areas, Temporary Orange Construction Fence (TOCF).	<input type="checkbox"/>
7.14	for Roadside Tree Permit (RTP) or Forest Conservation Act Approval (FCA).	<input type="checkbox"/>
7.15	for Installation of Trees, Shrubs, Perennials and other plant materials.	<input type="checkbox"/>
7.16	for Brush Removal outside areas of Clearing and Grubbing.	<input type="checkbox"/>
7.17-7.19	for Tree Felling Operations outside areas of Clearing and Grubbing.	<input type="checkbox"/>
7.20	for Stump Removal of existing dead stumps.	<input type="checkbox"/>
7.21	for minor Tree Branch Pruning, using the standard Note	<input type="checkbox"/>
	for major Tree Branch Pruning, using a Note modified by the applicant	<input type="checkbox"/>
7.22	for Tree Root Pruning at limit of disturbance, along Tree Preservation Area.	<input type="checkbox"/>
7.23	for Tree Fertilizing to reduce construction impacts on trees to remain.	<input type="checkbox"/>
7.24	for Finished Materials, such as decorative pavers, stone walls, benches, etc.	<input type="checkbox"/>
7.25	for Future Maintenance, where likely needed and performed by applicant.	<input type="checkbox"/>