



CATEGORY 900
MATERIALS

SECTION 920 — LANDSCAPING MATERIALS

748 **DELETE:** Section 920 — Landscaping Materials, in its entirety.

INSERT: The following:

SECTION 920 — LANDSCAPING MATERIALS

920.01 SOILS. Topsoil, Subsoil, and Bioretention Soil Mix shall conform to requirements of this section. Soils shall be sampled and tested by the Soils and Aggregates Technology Division of the Office of Materials Technology (SATD) or by other authorized laboratories, and approved for usage by SATD. Soils shall be amended as specified by the Nutrient Management Plan (NMP).

920.01.01 Existing Topsoil and Salvaged Topsoil.

- (a) **Existing Topsoil.** Existing topsoil is the surface material of existing landscaped areas on SHA property that will be used for seeding or other landscape construction without excavation or significant grading.
- (b) **Salvaged Topsoil.** Salvaged topsoil is the surface material of existing landscaped areas on SHA property that will be used for seeding or other landscape construction after being excavated, stockpiled, and placed in designated areas.
- (c) **Composition.** Existing topsoil and salvaged topsoil shall conform to the following:

COMPOSITION - EXISTING TOPSOIL & SALVAGED TOPSOIL					
TEST PROPERTY	TEST ¹ METHOD	TEST VALUE AND AMENDMENT			
Prohibited Weeds	—	Free of live stems or roots of Shattercane, Johnsongrass, Canada Thistle, Bull Thistle, Plumeless Thistle, Musk Thistle, Common Reed and Japanese Knotweed when inspected before transportation.			
Debris	—	1.0 % or less by weight of cement, concrete, asphalt, crushed gravel or construction debris when inspected.			
Grading Analysis	R-58	Sieve Size		Passing by Weight Minimum %	
		2 in.		100	
		No. 4		90	
Textural Analysis	T-88	No. 10		80	
		Particle		% Passing by Weight	
		Size	mm	Minimum	Maximum
		Sand	2.0 – 0.050	15	77
Clay	less than 0.002	Silt	0.050 – 0.002	Combined Silt and Clay 23	80
					30



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Soil pH	ASTM D 4972	pH of 4.8 to 7.6. Apply limestone to Existing Topsoil and Salvaged Topsoil with pH 4.8 to 6.1 per NMP. Apply sulfur to Existing Topsoil and Salvaged Topsoil with pH 7.1 to 7.6 per NMP.
Organic Matter	T-267	1.0 to 8.0 % OM by weight. Apply compost to Existing Topsoil and Salvaged Topsoil with 1.0 to 3.7% OM per NMP.
Nutrient Content	—	Administration will assess. Apply fertilizer per NMP for nitrogen requirement and optimum fertility index values (FIV) for phosphorus and potassium.
Soluble Salts	EC 1:2 (V:V)	800 ppm (1.25 mmhos/cm) or less. Apply gypsum to Existing Topsoil and Salvaged Topsoil with 500 to 800 ppm (0.78 to 1.25 mhos/cm) per NMP.
Harmful Materials	—	Topsoil shall not contain substances in concentrations that are harmful to human health, water quality, or plant growth. Industrial waste such as ash, slag, raw sludge, dredge spoil, or similar materials shall not be soil components.
Note:		
¹ Materials Standards and Materials Testing 356 (MSMT 356) has been superseded by OMT Landscaping Soils Eligibility List. Test methods not defined herein shall be as per visual inspection or methods defined by the Landscape Operations Division.		

920.01.02 Furnished Topsoil. A natural, friable, surface soil that is uniform in color and texture, and not derived from the project. Producers shall be included in the Qualified Products List maintained by the Administration for Furnished Topsoil.

(a) **Composition.** Furnished topsoil shall conform to the following.

COMPOSITION - FURNISHED TOPSOIL					
TEST PROPERTY	TEST¹ METHOD	TEST VALUE AND AMENDMENT			
Prohibited Weeds	—	Free of live stems and roots of species in 920.01.01 as well as live stems and roots of Bermudagrass, Quackgrass, and Yellow Nutsedge.			
Debris	—	920.01.01			
Grading Analysis	R-58	920.01.01			
Textural Analysis	T-88	Particle		% Passing by Weight	
		Size	mm	Minimum	Maximum
		Sand	2.0 – 0.050	20	75
		Silt	0.050 – 0.002	Combined Silt and Clay 25	75
Clay	less than 0.002	30			
Soil pH	ASTM D 4972	pH 6.1 to pH 7.2			
Organic Matter	T-267	4.0 to 8.0% OM by weight			
Nutrient Content	—	920.01.01			
Soluble Salts	EC 1:2 (V:V)	500 ppm (0.78 mmhos/cm) or less.			
Harmful Materials	—	920.01.01			
Note:					
¹ Materials Standards and Materials Testing 356 (MSMT 356) has been superseded by OMT Landscaping Soils Eligibility List. Test methods not defined herein shall be as per visual inspection or methods defined by the Landscape Operations Division.					



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- (b) **Storage.** Furnished topsoil shall be a homogenous mixture stored at a specific, identifiable site in a stockpile constructed as specified in 308.03.28 and 701.03.02(c).
- (c) **Approval.** Tests shall be completed and approval will be granted before furnished topsoil is delivered. Ensure that Form 27B has been completed and that a source of supply letter for the furnished topsoil soil has been submitted and approved.
- (d) **Delivery.** Certification shall be submitted that the furnished topsoil is delivered from an approved stockpile. A bill of lading or other acceptable documentation that identifies the approved source of supply shall be submitted when furnished topsoil is delivered.

920.01.03 Salvaged Subsoil. Salvaged subsoil is the subsurface material of existing areas that will be used for landscape construction after being excavated, stockpiled, and placed in designated areas.

- (a) **Composition.** Salvaged subsoil shall conform to the following:

COMPOSITION - SALVAGED SUBSOIL					
TEST PROPERTY	TEST ¹ METHOD	TEST VALUE AND AMENDMENT			
Prohibited Weeds	—	920.01.01			
Debris	—	5.0 % or less by weight of any combination of cement, concrete, asphalt, or other construction debris when inspected.			
Grading Analysis	R-58	Sieve Size		Passing by Weight Minimum %	
		2 in.		90	
		No. 4		85	
		No. 10		60	
Textural Analysis	T-88	Particle		% Passing by Weight	
		Size	mm	Minimum	Maximum
		Sand	2.0 – 0.050	10	85
		Silt	0.050 – 0.002	10	85
		Clay	less than 0.002	5	40
Soil pH	ASTM D 4972	pH of 4.5 to 7.8.			
Organic Matter	T-267	0.1 to 5.0 % by weight.			
Soluble Salts	EC 1:2 (V:V)	1000 ppm (1.56 mmhos/cm) or less.			
Harmful Materials	—	920.01.01			

Note:

¹ Materials Standards and Materials Testing 356 (MSMT 356) has been superseded by OMT Landscaping Soils Eligibility List. Test methods not defined herein shall be as per visual inspection or methods defined by the Landscape Operations Division.



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920.01.04 Furnished Subsoil. A natural subsurface soil that is uniform in texture and not derived from the project. Furnished subsoil shall conform to the following:

(a) **Composition.** Furnished subsoil shall conform to the following:

COMPOSITION - FURNISHED SUBSOIL		
TEST PROPERTY	TEST ¹ METHOD	TEST VALUE AND AMENDMENT
Prohibited Weeds	—	920.01.01
Debris	—	920.01.03
Grading Analysis	R-58	920.01.03
Textural Analysis	T-88	920.01.03
Soil pH	ASTM D 4972	920.01.03
Organic Matter	T-267	920.01.03
Soluble Salts	EC 1:2(V:V)	800 ppm (1.25 mmhos/cm) or less
Harmful Materials	—	920.01.01
Note:		
¹ Materials Standards and Materials Testing 356 (MSMT 356) has been superseded by OMT Landscaping Soils Eligibility List. Test methods not defined herein shall be as per visual inspection or methods defined by the Landscape Operations Division.		

(b) **Storage.** Refer to 920.01.02(b).

(c) **Approval.** Refer to 920.01.02(c).

(d) **Certification and Delivery.** Refer to 920.01.02(d).

920.01.05 Bioretention Soil Mix (BSM). BSM shall be a homogenous mixture as follows:

(a) **Components.** BSM shall be composed of Sand, Furnished Topsoil, and Hardwood Mulch. BSM may include approved soil amendments. No other components shall be used.

(1) **Sand.** Sand shall be washed silica sand that conforms to ASTM C-33 or ASTM M-6 with less than 1 percent by weight of any combination of diabase, greystone, calcareous, or dolomitic sand.

(2) **Furnished Topsoil.** Refer to 920.01.02.



(3) **Hardwood Mulch.** Hardwood Mulch shall be the bark and wood of hardwood trees that is milled and screened to a uniform particle size of 2 in. or less. Hardwood Mulch shall be aged for 6 months or longer, with negligible quantity of sawdust and no foreign materials.

(4) **Amendments.** Refer to 920.02. Limestone, Sulfur, and Iron Sulfate may be used to adjust pH of BSM. No other amendments shall be used.

(b) **Composition.** BSM shall conform to the following:

COMPOSITION- BIORETENTION SOIL MIX (BSM)						
TEST PROPERTY	TEST ¹ METHOD	TEST VALUE				
Weeds	—	Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected.				
Debris	—	No observable content of cement, concrete, asphalt, crushed gravel or construction debris.				
Hardwood Mulch	—	20% of the loose volume of BSM when inspected.				
Textural Analysis	T-88	Particle		% Passing by Weight		
		Size	mm	Minimum	Maximum	
		Sand	2.0 – 0.050	79	94	
		Silt	0.050 – 0.002	4	20	
		Clay	less than 0.002	1	10	Combined Silt and Clay 21
Soil pH	ASTM D 4972	pH of 5.7 to 7.4.				
Organic Matter	T-267	Minimum 1.5 % by weight.				
Soluble Salts	EC 1:2 (V:V)	500 ppm (0.78 mmhos/cm) or less.				
Harmful Materials	—	920.01.01(a).				
Note:						
¹ Materials Standards and Materials Testing 356 (MSMT 356) has been superseded by OMT Landscaping Soils Eligibility List. Test methods not defined herein shall be as per visual inspection or methods defined by the Landscape Operations Division.						

(c) **Storage.** Refer to 920.01.02(b).

(d) **Approval.** Refer to 920.01.02(c).

(e) **Certification and Delivery.** Refer to 920.01.02(d).



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920.02.01 Limestone. Limestone shall be an agricultural product manufactured and labeled for sale in Maryland for increasing soil pH. Limestone shall contain at least 85 percent calcium and magnesium carbonates. Dolomitic limestone shall contain at least 10 percent magnesium as magnesium oxide and 85 percent calcium and magnesium carbonates. Limestone shall be supplied as a fine powder, or as pellets produced from fine powder, that conforms to the following:

LIMESTONE GRADING ANALYSIS	
SIEVE Size Number	PASSING BY WEIGHT Minimum %
10	100
20	98
100	50

920.02.02 Sulfur. Sulfur shall be an agricultural product manufactured and labeled for sale in Maryland for reducing soil pH. Sulfur labeled as a fertilizer may also be used to supply sulfur as a plant nutrient. Sulfur shall be supplied as a fine powder or pelletized powder with a minimum purity of 90 percent elemental sulfur.

920.02.03 Iron Sulfate. Iron sulfate shall be an agricultural product manufactured and labeled for sale in Maryland for reducing soil pH. Iron sulfate labeled as a fertilizer may also be used to supply sulfur or iron as a plant nutrient. Iron sulfate shall be supplied as a fine powder or pelletized powder with a minimum purity of 15 percent water soluble iron derived from ferrous sulfate.

920.02.04 Gypsum. Gypsum shall be an agricultural product manufactured and labeled for sale in Maryland as an aid for improving soil structure and removing soil soluble salts, or as a fertilizer to supply calcium and sulfate. Gypsum shall be supplied as a fine powder or pelletized powder with a minimum purity of 68 percent calcium sulfate dihydrate.

920.02.05 Compost. Compost products shall be Type A, Type B, or Type C in conformance with this specification. All compost types shall be biologically mature and no longer able to reheat to thermophilic temperatures per DeWar Self Heating > 5 stable.; shall have a moisture content of 30 to 55 percent; shall have a weight of 1,400 lb per cubic yard or less when delivered.

- (a) **Type A Compost.** Type A Compost shall be composed primarily of biosolids, manure, and similar compost source materials with low Carbon to Nitrogen ratios. Type A Compost shall be used as a soil amendment when specified in a Nutrient Management Plan (NMP).

The typical fertilizer analysis of Type A Compost shall be provided on bagged products offered for sale. The typical fertilizer analysis of bulk Type A Compost products offered for sale by CY or Ton shall be provided to the Administration as a requirement of



prequalification, or the analysis may accompany the delivery of bulk compost products. Type A Compost shall conform to the table below:

COMPOST PHYSICAL PROPERTIES PARTICLE SIZE AND GRADING ANALYSIS Type A and Type B Compost		
Type A and Type B Compost shall have pH of 6.0 to 7.5; shall have soluble salt concentration less than 10.0 mmhos/cm; shall have a moisture content of 30 to 55 percent; and shall be screened as follows.		
SIEVE		PASSING BY VOLUME
SIZE	mm	
0.5 in.	12.5	100 % minimum
No. 4	4.75	90 % maximum
No. 40	0.425	25 % maximum
No. 200	0.075	2.2 % maximum

- (b) Type B Compost.** Type B Compost shall be composed primarily of tree leaves, lawn clippings, and similar compost source materials with high Carbon to Nitrogen ratios. Type B Compost shall be used as a soil amendment when specified in a Nutrient Management Plan (NMP).

The typical fertilizer analysis of Type B Compost shall be provided on bagged products offered for sale. The typical fertilizer analysis of bulk Type B Compost products offered for sale by CY or Ton shall be provided to the Administration as a requirement of prequalification, or the analysis may accompany the delivery of bulk compost products. Type B Compost shall conform to the table in 920.02.05(a) above.

- (c) Type C Compost.** Type C Compost shall be composed primarily of chipped, ground or granulated wood, bark, and similar compost source materials with very high Carbon to Nitrogen ratios. Type C Compost shall be used to construct compost socks, compost logs, compost berms and other manufactured products for sediment and erosion control. Type C Compost shall conform to the table, below:

COMPOST PHYSICAL PROPERTIES PARTICLE SIZE AND GRADING ANALYSIS Type C Compost	
Type C Compost shall have pH of 5.0 to 8.0; shall have soluble salt concentration less than 4.0 mmhos/cm; shall have a moisture content of 30 to 55 percent; and shall be screened as follows.	
SIEVE SIZE	PASSING BY VOLUME
6 in.	100 % minimum
3/4 in.	75 % minimum

920.02.06 Peat Moss. A milled sphagnum peat moss with negligible woody substances.



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920.02.07 Aged Pine Bark Fines. Derived from the bark of pine trees that have been composted and milled to a fineness approved for use by the Landscape Operations Division.

920.02.08 Water Absorbent Gel. A cross linked polyacrylamide agricultural product used to maintain moisture around bare root plants and as a soil conditioner. Formulas used shall conform to the manufacturer's recommendations.

920.03 FERTILIZERS.

920.03.01 Composition. Standard Fertilizers and Special Fertilizers shall be commercial grade products labeled for sale and use as agricultural fertilizer, and shall conform to Federal and Maryland State regulations and the Standards of the Association of Official Analytical Chemists. All analyses are subject to approval by the Landscape Operations Division prior to application.

(a) **Standard Fertilizer.** Standard fertilizers shall be produced of ingredients, analysis, and composition as follows:

(1) **Ingredients.** Standard fertilizers shall include one or more of the following:

FERTILIZER INGREDIENTS			
Abbreviation and Chemical Name of Ingredient			
	ammonium nitrate		polymer coated urea
	ammonium sulfate		potassium chloride
	biosolids		potassium nitrate
	calcium nitrate	SOP	potassium sulfate
DAP	diammonium phosphate	SCU	sulfur coated urea
	isobutylidene diurea		triple super phosphate
	methylene urea		urea
MAP	monoammonium phosphate	UF	ureaform

(2) **Analysis and Composition.** Standard fertilizers shall contain nitrogen (N), phosphorus (P), potassium (K), and sulfate (SO₄) derived from ingredients above.

STANDARD FERTILIZER ANALYSIS AND COMPOSITION	
FERTILIZER	USE
0-0-50 SOP ^a	Source of potassium (K) and sulfate (SO ₄) fertilizer. Used alone or in fertilizer mixtures for turfgrass and other groundcover establishment.
11-52-0 MAP ^a	Source of nitrogen (N) and phosphorus (P) fertilizer. Used alone or in fertilizer mixtures for turfgrass and other groundcover establishment.
20-16-12 (83% UF with MAP & SOP) ^b	Source of slow-release nitrogen (N), phosphorus (P), potassium (K) and sulfate (SO ₄). Fertilizer mixture used for turfgrass and other groundcover establishment.
38-0-0 UF ^a	Source of slow-release nitrogen (N) fertilizer. Used in fertilizer mixtures for turfgrass and other groundcover establishment
37-0-0 SCU	Source of slow-release nitrogen (N) and sulfate (SO ₄). Fertilizer used for Temporary Seed and Refertilizing for groundcover establishment.

Note: ^a Purity shall be at least 98% UF, MAP, or SOP as indicated.

^b Mixture of UF, MAP, and SOP with no more than 2% of any combination of other materials.



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(b) Special Fertilizers. Special fertilizers shall be of ingredients, analysis, and composition as follows:

(1) Ingredients. Special fertilizers shall provide label analysis guaranteeing nitrogen, phosphorus, and potassium from ingredients in 920.03.01(a) and also include plant micronutrients, coatings, or materials to augment their performance.

(2) Analysis and Composition. As follows:

SPECIAL FERTILIZER ANALYSIS AND COMPOSITION	
FERTILIZER ^a	USE
14-14-14 Polymer-coated fertilizer with minor nutrients	Slow-release fertilizer used to install trees, shrubs, perennials and other plant materials.
14-14-14 Granular fertilizer with minor nutrients	Slow-release fertilizer used to install trees, shrubs, perennials and other plant materials.
20-10-5 21 to 23 grams per fertilizer tablet. 13% water insoluble and 7% water soluble N, with minor nutrients	Slow release fertilizer tablet used to install trees, shrubs, perennials and other plant materials.
20-20-20 Water soluble powder fertilizer with minor nutrients	Fertilizer solution used to refertilize trees, shrubs, perennials and other plant materials
<p>Note:</p> <p>^a Shall be a mixture of any ingredients listed in 920.03.01(a)(1) and (b)(1) with no more than 5% by weight of any combination of other materials.</p>	

920.04 MULCHES. Materials used as mulch shall have a uniform texture and be free from foreign materials or concentrations of metals, chemicals, or other substances that are harmful to human health, water quality, or plant growth.

920.04.01 Straw Mulch. Shall consist of thoroughly threshed stems and leaves of barley, oats, rye, and wheat. Straw mulch shall be in an air-dry condition suitable for application with a mulch blower or other equipment. Straw mulch shall be visually inspected to ensure it is free of objectionable quantities of mold, foreign substances, and weed seeds.

920.04.02 Wood Cellulose Fiber Mulch. A uniformly processed wood product that is able to form a homogenous slurry with seed, fertilizer, and other materials under agitation with water.

The fiber shall perform satisfactorily in hydraulic seeding equipment without clogging or damaging the system. The slurry shall contain a green dye to provide easy visual inspection for uniformity of application.

The manufacturer shall furnish certification as specified in TC-1.03 of the Technical Association of Pulp and Paper Industry (TAPPI) in conformance with the following:



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WOOD CELLULOSE FIBER	
TEST PROPERTY	TEST VALUE
Particle Length	Approx. 0.5 in.
Particle Thickness	Approx. 0.063 in.
Net Dry Weight Content	Minimum as stated on bag
pH, TAPPI Standard T 509	4.0 – 8.5
Ash Content, TAPPI Standard T 413	7.0% maximum
Water Holding Capacity	90% minimum

The material shall be delivered in packages of uniform weight, which shall not exceed 75 lb net weight and shall bear the name of the manufacturer, the net weight, and a supplemental statement of the net weight content.

920.04.03 Shredded Hardwood Bark (SHB) Mulch. Shall consist of natural bark derived from hardwood trees that has been milled and screened to a maximum 4 in. particle size. SHB mulch shall contain negligible quantities of sawdust or other non-bark woody materials.

920.04.04 Composted Wood Chip (CWC) Mulch. Shall consist of natural wood mechanically reduced to a maximum size of 2 x 2 x 0.5 in. by a chipping machine before being composted. Grading analysis of CWC mulch shall be as follows:

COMPOSTED WOOD CHIP MULCH	
SIEVE SIZE in.	PASSING BY VOLUME Maximum %
2	100
1	30
0.5	10

920.05 SOIL STABILIZATION MATTING.

920.05.01 Soil Stabilization Matting (SSM). SSM products shall be selected from the Office of Materials Technology’s Qualified Products List (QPL) for Soil Stabilization Matting Manufacturers.

SSM shall consist of machine-produced matting of uniform thickness, weave, or distribution of fibers, supplied in rolls at least 40 in. wide. SSM shall be smolder resistant.

The chemical components shall be nonleaching, nontoxic to vegetation and germinating seed, and noninjurious to the skin.



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- (a) **Type A.** Degradable; excelsior or nonwoven coconut fibers with biodegradable netting on top and bottom; netting shall be cotton, cotton blend or coir. Type A soil stabilization matting products shall be listed in the current AASHTO National Transportation Product Evaluation Program (NTPEP) Report for Erosion Control Products. Large scale results shall be obtained by a Geosynthetic Institute Accredited or other approved laboratory for Criteria marked *.

COMPOSITION - TYPE A SSM		
CRITERIA	METHOD	MEASUREMENT
Thickness	D 6525	At least 0.25 in.
Weight	D 6475	At least 7.9 oz per yd ²
Tensile Strength – MD	D 6818	At least 6.25 lb per in.
Tensile Strength – TD	D 6818	At least 4.7 lb per in.
Light Penetration	D 6567	At least 5%
Slope Erosion – C Factor*	D 6459	No more than 0.2
Shear for 0.5 in Soil Loss*	D 6460	At least 1.75 lb per ft ²
Netting Opening	□	No more than 2.0 x 1.0 in.
Thread	□	Biodegradable
Stitching and Spacing	□	No more than 4.0 in apart

- (b) **Type B.** Permanent; non-woven, nondegradable, UV stabilized, synthetic fibers; with non-degradable, UV stabilized, synthetic netting on top and bottom. Type B soil stabilization matting products shall be listed in the current AASHTO National Transportation Product Evaluation Program (NTPEP) Report for Erosion Control Products. Large scale results shall be obtained by a Geosynthetic Institute Accredited or other approved laboratory for Criteria marked *.

COMPOSITION - TYPE B SSM		
CRITERIA	METHOD	MEASUREMENT
Thickness	D 6525	At least 0.3 in.
Weight	D 6655	At least 10.0 oz per yd ²
Tensile Strength – MD	D 6818	At least 12.5 lb per in.
Tensile Strength – TD	D 6818	At least 12.5 lb per in.
Tensile Strength > 500 hr. exp.	D 4355	At least 80 % of original
Light Penetration	D 6567	At least 10 %
Slope Erosion – C Factor*	D 6459	No more than 0.2
Shear for 0.5 in Soil Loss*	D 6460	At least 2.25 lb per ft ²
Netting Opening	□	No more than 1.0 x 0.75 in.
Thread	□	Nondegradable, UV stabilized, synthetic
Stitching and Spacing	□	No more than 4.0 in. apart



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(c) **Type C.** Permanent; nondegradable, synthetic lattice; and easily filled with soil.

COMPOSITION - TYPE C SSM		
CRITERIA	METHOD	MEASUREMENT
Thickness	D 6525	At least 0.4 in.
Weight	D 6655	At least 7.0 oz per yd ²
Tensile Strength – MD	D 6818	At least 12.5 lb per in.
Tensile Strength – TD	D 6818	At least 9.5 lb per in.
Tensile Strength > 500 hr. exp.	D 4355	At least 80 % of original
Porosity or Open Area	□	At least 80 %

(d) **Type D.** Degradable; woven coir.

COMPOSITION - TYPE D SSM		
CRITERIA	METHOD	MEASUREMENT
Thickness	D 6525	At least 0.30 in.
Weight	D 6475	At least 19.0 oz per yd ²
Porosity or Open Area	□	At least 35 %

(e) **Type E.** Degradable; excelsior, straw, or straw/coconut blend fibers; biodegradable netting on top and bottom; netting shall be cotton, cotton blend or coir. Type E soil stabilization matting products shall be listed in the current AASHTO National Transportation Product Evaluation Program (NTPEP) Report for Erosion Control Products. Large scale results shall be obtained by a Geosynthetic Institute Accredited or other approved laboratory for Criteria marked *.

COMPOSITION - TYPE E SSM		
CRITERIA	METHOD	MEASUREMENT
Thickness	D 6525	At least 0.25 in.
Weight	D 6475	Excelsior: 6.0 to 7.9 oz per yd ²
		Straw; Straw & Coconut: At least 6.0 oz per yd ²
Tensile Strength – MD	D 6818	At least 6.25 lb per in.
Tensile Strength – TD	D 6818	At least 2.5 lb per in.
Light Penetration	D 6567	At least 5 %
Slope Erosion – C Factor*	D 6459	No more than 0.2
Shear for 0.5 in Soil Loss*	D 6460	At least 1.5 lb per ft ²
Netting Opening	□	Excelsior: 2.0 x 1.0 in. or less
		Straw; Straw & Coconut: 0.75 x 0.75 in. or less
Thread	□	Biodegradable
Stitching and Spacing	□	Excelsior: 4.0 in. apart or less
		Straw, or Straw & Coconut: 2.0 in apart or less



920.05.02 Fasteners for Soil Stabilization Matting and Turfgrass Sod. Fasteners shall be selected as specified in Section 709.03.06 and conform to the following:

- (a) **Wood Peg.** Wood, biodegradable, untreated; single leg is driven into the soil so that wider top is flush with turfgrass sod and SSM.

6 Inch. Approx. 6 in. long, 3/8 in. thick; top 1 in. wide, tapered to base.

- (b) **T-Head Pin.** Molded plastic; biodegradable. Single leg with barbs is driven into the soil so that molded T-Head top is flush with turfgrass sod and SSM.

6 Inch. Approx. 6 in. long, 3/8 in. thick; head 1 in. wide.

8 Inch. Approx. 8 in. long, 3/8 in. thick; head 1 in. wide.

- (c) **Circle-Top Pin.** Steel wire; single leg is driven into the soil so that coil or loop top is flush with turfgrass sod and SSM.

6 Inch. 11 gauge; leg 6 in long.

8 Inch. 11 gauge; leg 8 in. long.

- (d) **Round-Head Pin.** Molded plastic; biodegradable. Single leg with barbs is driven into the soil so that molded disk top is flush with turfgrass sod and SSM.

6 Inch. Approx. 6 in long; head 1 in. diameter.

8 Inch. Approx. 8 in long; head 1 in. diameter.

- (e) **U-Shape Staple.** Steel wire; two main legs are driven into the soil so that top of staple is flush with turfgrass sod and SSM.

6 Inch. 11 gauge bent into U shape; legs 6 in. long; top 1 to 1-1/2 in. wide.

8 Inch. 8 gauge bent into U shape; legs 8 in. long; top 1 to 1-1/2 in. wide.

12 Inch. 8 gauge bent into U shape; legs 12 in. long; top 1 to 1-1/2 in. wide.

- (f) **Fabric Pin.** Steel nail; single leg is driven into the soil so that steel washer top is flush with SSM.

12 Inch. 11 gauge approx. 12 in. long.

18 Inch. 3/16 in. approx 18 in. long.



920.06 SEED AND TURFGRASS SOD STANDARDS.

920.06.01 Names and Naming. The authority for common and scientific names shall be the USDA NRCS The Plants Database website at <http://plants.usda.gov>. Cultivar names shall be those of the registered cultivar.

Plant and seed identification, tags, and labels shall correspond to the common name and scientific name of the species in The Plants Database. Any conflict in names or naming shall be resolved by the Engineer in consultation with the Landscape Operations Division.

920.06.02 Prohibited Weeds.

(a) **Weeds Prohibited in Turfgrass Sod and SHA Seed Mixtures.** Turfgrass Sod, SHA Turfgrass Seed Mix, SHA Temporary Seed Mix, and Additive Seed shall be free from seed or viable parts of the following species:

WEEDS PROHIBITED IN TURFGRASS SOD & SHA SEED MIXTURES	
COMMON NAME	SCIENTIFIC NAME
Annual Bluegrass	<i>Poa annua</i> L.
Balloonvine	<i>Cardiospermum halicacabum</i> L.
Bermudagrass	<i>Cynodon dactylon</i> (L.) Pers. (approved for Bermudagrass sod)
Canada Thistle	<i>Cirsium arvense</i> (L.) Scop.
Carolina Horsenettle	<i>Solanum carolinense</i> L.
Common Corncockle	<i>Agrostemma githago</i> L.
Common Reed = Phragmites	<i>Phragmites australis</i> (Cav.) Trin. ex Steud.
Crested Anoda = Spurred Anoda	<i>Anoda cristata</i> (L.) Schltld.
Dodder	<i>Cuscuta</i> spp. L.
Field Bindweed	<i>Convolvulus arvensis</i> L.
Japanese Bristlegrass = Giant Foxtail	<i>Setaria faberi</i> Herrm.
Java-Bean = Sicklepod	<i>Senna obtusifolia</i> (L.) Irwin and Barneby
Johnsongrass	<i>Sorghum halepense</i> (L.) Pers. and hybrids
Meadow Garlic = Wild Onion	<i>Allium canadense</i> L.
Plumeless Thistle, Musk Thistle	<i>Carduus</i> L.
Quackgrass	<i>Elymus repens</i> (L.) Gould
Rough Cocklebur	<i>Xanthium strumarium</i> L.
Serrated Tussock	<i>Nassella trichotoma</i> (Nees) Hack.
Wild Garlic	<i>Allium vineale</i> L.
Yellow Nutsedge	<i>Cyperus esculentus</i> L.



(b) Weeds Prohibited in Meadow and Wildflower Seed. Meadow and Wildflower Seed shall be free of species listed in (a) and the following species:

WEEDS PROHIBITED IN MEADOW & WILDFLOWER SEED	
COMMON NAME	SCIENTIFIC NAME
Asiatic Tearthumb = Mile-a-Minute	<i>Polygonum perfoliatum L.</i>
Burdock and related species	<i>Arctium L.</i>
Canarygrass = Reed Canarygrass and related spp.	<i>Phalaris L.</i>
Common Wormwood = Mugwort	<i>Artemisia vulgaris L.</i>
Dogbane and related spp.	<i>Apocynum L.</i>
Eastern Poison Ivy	<i>Toxicodendron radicans (L.) Kuntze</i>
Fig Buttercup = Lesser Celandine	<i>Ranunculus ficaria L. var. bulbifera Marsden-Jones</i>
Garlic Mustard	<i>Alliaria petiolata (M. Bieb.) Cavara and Grande</i>
Giant Hogweed	<i>Heracleum mantegazzianum Sommier and Levier</i>
Japanese Honeysuckle, Tatarian Honeysuckle, related spp.	<i>Lonicera L.</i>
Japanese Knotweed	<i>Polygonum cuspidatum Siebold and Zucc.</i>
Lesser Knapweed = Spotted Knapweed	<i>Centaurea nigra L.</i>
Multiflora Rose	<i>Rosa multiflora Thunb.</i>
Nepalese Browntop = Japanese Stiltgrass	<i>Microstegium vimineum (Trin.) A. Camus</i>
Poison Hemlock	<i>Conium maculatum L.</i>
Purple Loosestrife and related spp.	<i>Lythrum L.</i>
Silvergrass and related spp.	<i>Miscanthus Andersson</i>
Thistle and related spp.	<i>Cirsium Mill., Onopordum L.</i>

(c) Weeds Prohibited in Shrub Seed. Shrub Seed shall be free of species listed in (a) and (b) and the following species:

WEEDS PROHIBITED IN SHRUB SEED	
COMMON NAME	SCIENTIFIC NAME
Burningbush	<i>Euonymus alatus (Thunb.) Siebold</i>
Common Buckthorn	<i>Rhamnus cathartica L.</i>
Japanese Barberry	<i>Berberis thunbergii DC.</i>
Oriental Bittersweet	<i>Celastrus orbiculatus Thunb.</i>
Oleaster; Russian Olive, Autumn Olive, and related spp.	<i>Elaeagnus L.</i>
Privet, and related species	<i>Ligustrum L.</i>
Tree of Heaven	<i>Ailanthus altissima (Mill.) Swingle</i>

920.06.03 Turfgrass Sod. Turfgrass sod shall be Maryland Certified Tall Fescue Sod unless Bermudagrass Sod or Zoysiagrass Sod is specified.



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Sod shall be field grown in the State of Maryland in compliance with the Maryland Turfgrass Law and Regulations of the State of Maryland. Each load of tall fescue sod shall bear a Maryland State Certified Label.

Sod shall be sufficiently knitted when harvested to resist breakage under normal handling and be in good health at the time of delivery. Sod shall be machine cut in strips at least 14 in. wide. Tall Fescue Sod shall be uniform thickness of 0.75 to 1.25 in., excluding top growth, with thatch thickness less than 3/8 in.

Prior to harvest, Tall Fescue Sod shall be mowed to a height of 2.0 to 3.5 in. Bermudagrass Sod and Zosiagrass Sod shall be mowed to a height of 0.75 to 3.0 in.

920.06.04 Approved Cultivars. Refer to 'University of Maryland Turfgrass Technical Update TT-77 Recommended Turfgrass Cultivars for Certified Sod Production and Seed Mixtures in Maryland'. Only cultivars included in TT-77 may be used. When no cultivar is specified, any common type cultivar of the species may be used.

920.06.05 Seed Testing and Sampling. Seed shall comply with the Maryland Seed Law and Regulations of the State of Maryland. Seed suppliers shall assume charges for seed inspections and testing.

- (a) **Certified Seed.** Component cultivars of SHA Turfgrass Seed Mix, SHA Special Purpose Seed Mix, SHA Temporary Seed Mix, and any seed used as additives for these mixes, shall be certified and carry the tags of their state of origin that show the percent purity, percent germination, percent weed seed, and types and content of noxious weed seed.
- (b) **SHA Seed Mixtures.** Turfgrass Seed Mix, SHA Special Purpose Seed Mix, and SHA Temporary Seed Mix shall be sampled and tested by an inspector of the Maryland Department of Agriculture, Turf and Seed Section (MDA) for percent purity, percent germination, percent weed seed, and types and content of noxious weed seed. These seed mixtures shall conform to MDA Standards for Maryland Certified Seed and carry the certified tag of the State of Maryland.
- (c) **Unmixed Seed.** Seed supplied for use as Meadow Seed, Wildflower Seed, and Shrub Seed shall be supplied in containers of a single species, unmixed. Each species shall be tested by the producer or supplier and carry a tag that shows the percent purity, percent germination, percent weed seed; and types and content of noxious weed seed.

920.06.06 Standards for Seed Species. Seed supplied in lots of individual species or used to produce mixes shall conform to the requirements of this section for minimum percent germination, minimum purity, and maximum percent of weed seed. Meadow seed, wildflower seed, and shrub seed that does not conform to these standards may be used after review and approval by the Engineer in consultation with the Landscape Operations Division. The seed will be subject to use at increased seeding rates or measures to compensate for substandard seed purity, germination, or weed content.



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- (a) **SHA Turfgrass Seed Mix and SHA Special Purpose Seed Mix.** Species included in SHA Turfgrass Seed Mix and SHA Special Purpose Seed Mix shall be MDA Certified Seed of approved cultivars and conform to the following requirements for minimum percent purity, maximum percent weed seed, and minimum percent germination:

TURFGRASS SEED SPECIES			
COMMON NAME, and SCIENTIFIC NAME	PURITY Min %	WEED Max %	GERM Min %
Chewings Fescue <i>Festuca rubra</i> L. ssp. <i>fallax</i> (Thuill.) Nyman	98	0.5	85
Red Fescue <i>Festuca rubra</i> L. ssp. <i>rubra</i>	98	0.5	85
Hard Fescue <i>Festuca brevipila</i> Tracey	98	0.5	85
Kentucky Bluegrass <i>Poa pratensis</i> L. ssp. <i>pratensis</i>	95	0.4	80
Sheep Fescue <i>Festuca ovina</i> L.	98	0.5	85
Tall Fescue <i>Schedonorus arundinaceus</i> (Schreb.) Dumort., nom. cons.	98	0.5	85

- (b) **Temporary and Grass Additive Seed.** Species included in SHA Temporary Seed Mix, or used as Additive Seed with SHA Turfgrass Seed Mix or SHA Special Purpose Seed Mix shall conform to the following requirements for minimum percent purity, maximum percent weed seed, and minimum percent germination:

TEMPORARY AND GRASS ADDITIVE SEED SPECIES			
COMMON NAME, and SCIENTIFIC NAME	PURITY Min %	WEED Max %	GERM Min %
Cereal Rye <i>Secale cereale</i> L.	98	0.1	85
Common Barley, winter type <i>Hordeum vulgare</i> L.	98	0.3	85
Common Oat, winter type <i>Avena sativa</i> L.	98	0.5	85
Common Wheat, winter type <i>Triticum aestivum</i> L.	98	0.1	85
Foxtail Millet <i>Setaria italica</i> (L.) P. Beauv.	99	0.1	80
Perennial Ryegrass <i>Lolium perenne</i> L. ssp. <i>perenne</i>	97	0.5	85
Weeping Alkaligrass <i>Puccinellia distans</i> (Jacq.) Parl.	97	0.5	85



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(c) **Meadow Forb Seed.** Seed shall be supplied in lots of individual species, unmixed, labeled with common name and scientific name in conformance with the following:

(1) **Purity.** Weed and/or other crop seed content shall be 2.5 percent or less by weight. Seed that does not conform to this specification may be used after approval by the Engineer in consultation with the Landscape Operations Division at increased seeding rates, or with measures to compensate for increased weed or crop seed content.

(2) **Origin.** Except as noted with asterisk*, Seed shall either be collected from native sources in USDA Hardiness Zone 5b, 6a, 6b and 7a in the States of Maryland, Pennsylvania, New York, New Jersey, Delaware, Virginia, West Virginia, or North Carolina, or shall be grown and produced from seed certified to have been collected from sites in the USDA Hardiness Zones of those States.

Seed that does not conform to origin requirements may be used after review and approval by the Engineer in consultation with the Landscape Operations Division.

(3) **Species.** Seed shall conform to the following species, subspecies and varieties:

MEADOW FORB SEED SPECIES	
COMMON NAME	SCIENTIFIC NAME
Allegheny Monkeyflower = Square Stem Monkeyflower	<i>Mimulus ringens</i> L. var. <i>ringens</i>
Birds-Foot Trefoil *	<i>Lotus corniculatus</i> L.
Bearded Beggarticks = Showy Tickseed	<i>Bidens aristosa</i> (Michx.) Britton
Blackeyed Susan	<i>Rudbeckia hirta</i> L. var. <i>hirta</i> <i>Rudbeckia hirta</i> L. var. <i>pulcherrima</i> Farw.
Blanketflower	<i>Gaillardia aristata</i> Pursh
Browneyed Susan	<i>Rudbeckia triloba</i> L. var. <i>triloba</i> <i>Rudbeckia triloba</i> L. var. <i>pinnatiloba</i> Torr. and A. Gray
Common Boneset	<i>Eupatorium perfoliatum</i> L. var. <i>perfoliatum</i>
Common Evening Primrose	<i>Oenothera biennis</i> L.
Common Yarrow *	<i>Achillea millefolium</i> L.
Crimsoneyed Rose Mallow	<i>Hibiscus moscheutos</i> L.
Eastern Purple Coneflower	<i>Echinacea purpurea</i> (L.) Moench
Flat-top Goldentop = Grass-Leaved Goldenrod	<i>Euthamia graminifolia</i> (L.) Nutt. <i>Euthamia graminifolia</i> (L.) Nutt. var. <i>graminifolia</i> <i>Euthamia graminifolia</i> (L.) Nutt. var. <i>hirtipes</i> (Fernald) C.E.S. Taylor and R.J. Taylor
Gray Goldenrod	<i>Solidago nemoralis</i> Aiton var. <i>nemoralis</i>
King of the Meadow = Tall Meadow Rue	<i>Thalictrum pubescens</i> Pursh
Lanceleaf Tickseed = Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i> L.
Maryland Senna	<i>Senna marilandica</i> (L.) Link
Maximilian Sunflower	<i>Helianthus maximiliani</i> Schrad.
New England Aster	<i>Symphotrichum novae-angliae</i> (L.) G.L. Nesom



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New York Aster	<i>Symphytotrichum novi-belgii</i> (L.) G.L. Nesom var. <i>elodes</i> (Torr. and A. Gray) G.L. Nesom <i>Symphytotrichum novi-belgii</i> (L.) G.L. Nesom var. <i>novi-belgii</i> <i>Symphytotrichum novi-belgii</i> (L.) G.L. Nesom var. <i>villicaule</i> (A. Gray) J. Labrecque and L. Brouillet
New York Ironweed	<i>Vernonia noveboracensis</i> (L.) Michx.
Partridge Pea	<i>Chamaecrista fasciculata</i> (Michx.) Greene <i>Chamaecrista fasciculata</i> (Michx.) Greene var. <i>fasciculata</i> <i>Chamaecrista fasciculata</i> (Michx.) Greene var. <i>macrosperma</i> (Fernald) C.F. Reed
Red Clover	<i>Trifolium pratense</i> L.
Seedbox	<i>Ludwigia alternifolia</i> L.
Smooth Blue Aster	<i>Symphytotrichum laeve</i> (L.) A. Löve and D. Löve var. <i>laeve</i> <i>Symphytotrichum laeve</i> (L.) A. Löve and D. Löve var. <i>concinnum</i> (Willd.) G.L. Nesom
Smooth Oxeye = Ox-eye Sunflower	<i>Heliopsis helianthoides</i> (L.) Sweet var. <i>helianthoides</i> <i>Heliopsis helianthoides</i> (L.) Sweet var. <i>scabra</i> (Dunal) Fernald
Spotted Trumpetweed = Spotted Joe Pye Weed	<i>Eupatoriadelphus maculatus</i> (L.) King and H. Rob. var. <i>maculatus</i>
Stiff Goldenrod	<i>Oligoneuron rigidum</i> (L.) Small var. <i>rigidum</i>
Sundial Lupine = Wild Blue Lupine	<i>Lupinus perennis</i> L. ssp. <i>perennis</i> <i>Lupinus perennis</i> L. ssp. <i>perennis</i> var. <i>perennis</i> <i>Lupinus perennis</i> L. ssp. <i>perennis</i> var. <i>occidentalis</i> S. Watson
Swamp Milkweed	<i>Asclepias incarnata</i> L. <i>Asclepias incarnata</i> L. ssp. <i>incarnata</i> <i>Asclepias incarnata</i> L. ssp. <i>pulchra</i> (Ehrh. ex Willd.) Woodson
Swamp Sunflower = Narrow-Leaved Sunflower	<i>Helianthus angustifolius</i> L.
Swamp Verbena = Blue Vervain	<i>Verbena hastata</i> L. var. <i>hastata</i>
Talus Slope Penstemon = Tall White Beardtongue	<i>Penstemon digitalis</i> Nutt. ex Sims
Joe Pye Weed = Trumpetweed	<i>Eutrochium maculatum</i> (L.) E.E. Lamont var. <i>maculatum</i>
White Clover *	<i>Trifolium repens</i> L.
Wild Bergamot	<i>Monarda fistulosa</i> L. ssp. <i>fistulosa</i> <i>Monarda fistulosa</i> L. ssp. <i>fistulosa</i> var. <i>mollis</i> (L.) Benth. <i>Monarda fistulosa</i> L. ssp. <i>fistulosa</i> var. <i>rubra</i> A. Gray <i>Monarda fistulosa</i> L. ssp. <i>brevis</i> (Fosberg and Artz) Scora, ined.

(d) Meadow Grass, Sedge, and Rush Seed. Seed shall be supplied in lots of individual species, unmixed, labeled with common name, scientific name, and cultivar in conformance with the following:

(1) Purity. Refer to 920.06.06(c)(1). Grasses with awns shall be debarbed or deawned.



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- (2) **Origin.** Refer to 920.06.06(c)(2). Cultivars may be produced in any state east of the Mississippi River.
- (3) **Species.** Seed shall conform to the following species, subspecies, varieties, and cultivars:

MEADOW GRASS, SEDGE AND RUSH SEED SPECIES	
COMMON NAME and CULTIVARS	SCIENTIFIC NAME
Big Bluestem cv. Niagara	<i>Andropogon gerardii</i> Vitman
Broomsedge Bluestem = Broomsedge	<i>Andropogon virginicus</i> L. <i>Andropogon virginicus</i> L. var. <i>virginicus</i> <i>Andropogon virginicus</i> L. var. <i>decepiens</i> C.S. Campbell
Common Rush = Soft Rush = Lamp Rush	<i>Juncus effusus</i> L. var. <i>conglomeratus</i> (L.) Engelm. <i>Juncus effusus</i> L. var. <i>decepiens</i> Buchenau <i>Juncus effusus</i> L. var. <i>pylaei</i> (Laharpe) Fernald and Wiegand <i>Juncus effusus</i> L. var. <i>solutus</i> Fernald and Wiegand
Deertongue cv. 'Tioga'	<i>Dichanthelium clandestinum</i> (L.) Gould
Fowl Bluegrass	<i>Poa palustris</i> L.
Fox Sedge	<i>Carex vulpinoidea</i> Michx. var. <i>vulpinoidea</i>
Gamagrass cv. 'Meadowcrest', 'Pete'	<i>Tripsacum dactyloides</i> (L.) L.
Indiangrass cv. 'Rumsey'	<i>Sorghastrum nutans</i> (L.) Nash
Little Bluestem cv. 'Aldous'	<i>Schizachyrium scoparium</i> (Michx.) Nash var. <i>scoparium</i> <i>Schizachyrium scoparium</i> (Michx.) Nash var. <i>divergens</i> (Hack.) Gould
Longhair Sedge = Bristly Sedge	<i>Carex comosa</i> Boott
Rattlesnake Mannagrass	<i>Glyceria canadensis</i> (Michx.) Trin.
Shallow Sedge = Lurid Sedge	<i>Carex lurida</i> Wahlenb.
Switchgrass cv. 'Blackwell', 'Shelter'	<i>Panicum virgatum</i> L. var. <i>virgatum</i> <i>Panicum virgatum</i> L. var. <i>spissum</i> Linder
Virginia Wildrye	<i>Elymus virginicus</i> L., <i>Elymus virginicus</i> L. var. <i>halophilus</i> (E.P. Bicknell) Wiegand
Woolgrass	<i>Scirpus cyperinus</i> (L.) Kunth

- (e) **Wildflower Seed.** Seed shall be supplied in lots of individual species, unmixed, labeled with common name, scientific name, and cultivar in conformance with the following:

- (1) **Purity.** Species shall be 98 percent purity or greater, with 75 percent germination or greater, and with weed and/or other crop seed content of 2.5 percent or less by weight. Seed that does not conform to purity requirements may be used after approval by the Engineer in consultation with the Landscape Operation Division at increased seeding rates, or with measures to compensate for increased weed or crop seed content.
- (2) **Origin.** Any State of the United States.
- (3) **Species.** Seed shall conform to the following species, subspecies, varieties, and cultivars:



WILDFLOWER SEED SPECIES	
COMMON NAME and CULTIVARS	SCIENTIFIC NAME
Blackeyed Susan	<i>Rudbeckia hirta</i> L. var. <i>hirta</i> <i>Rudbeckia hirta</i> L. var. <i>pulcherrima</i> Farw.
Calendula	<i>Calendula officinalis</i> L.
Common Sunflower cv. 'Autumn Beauty'	<i>Helianthus annuus</i> L.
Corn Poppy, cv. 'Shirley Mix'	<i>Papaver rhoeas</i> L.
Doubtful Knight's-spur = Rocket Larkspur	<i>Consolida ajacis</i> (L.) Schur
Firewheel = Annual Gaillardia	<i>Gaillardia pulchella</i> Foug. <i>Gaillardia pulchella</i> Foug. var. <i>pulchella</i>
Garden Cornflower = Bachelors Button	<i>Centaurea cyanus</i> L.
Garden Cosmos = Pink Cosmos, cv. 'Sensation'	<i>Cosmos bipinnatus</i> Cav.
Golden Tickseed	<i>Coreopsis tinctoria</i> Nutt.
Lemon Beebalm	<i>Monarda citriodora</i> Cerv. ex Lag.
Moroccan Toadflax = Spurred Snapdragon	<i>Linaria maroccana</i> Hook. f.
Siberian Wallflower	<i>Erysimum ×marshallii</i> (Henfr.) Bois
Sulphur Cosmos = Yellow Cosmos, cv. 'Bright Lights'	<i>Cosmos sulphureus</i> Cav.

(f) **Shrub Seed.** Seed shall be supplied in lots of individual species, unmixed, labeled with common name and scientific name in conformance with the following:

- (1) **Purity.** Weed and/or other crop seed content shall be 0.5 percent or less by weight. Minimum purity and minimum germination shall conform to the requirements of (3), below.
- (2) **Origin.** Refer to 920.06.06(c)(2).
- (3) **Species.** Seed shall conform to the following species, subspecies, and varieties:

SHRUB SEED SPECIES		
SPECIES Including Subspecies and Variety	PURITY Min %	GERM Min %
American Black Elderberry <i>Sambucus nigra</i> L. ssp. <i>canadensis</i> (L.) R. Bolli	98	60
American Cranberrybush <i>Viburnum opulus</i> L. var. <i>americanum</i> Aiton	99	70
Black Chokeberry <i>Photinia melanocarpa</i> (Michx.) K.R. Robertson and Phipps	99	70
Bristly Locust <i>Robinia hispida</i> L. var. <i>fertilis</i> (Ashe) R.T. Clausen <i>Robinia hispida</i> L. var. <i>hispida</i>	99	90
Chokecherry <i>Prunus virginiana</i> L. var. <i>virginiana</i>	99	70
Common Buttonbush <i>Cephalanthus occidentalis</i>	98	60
Common Ninebark <i>Physocarpus opulifolius</i> (L.) Maxim., orth. cons.	99	75



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Common Winterberry <i>Ilex verticillata</i> (L.) A. Gray	99	60
Desert False Indigo <i>Amorpha fruticosa</i> L.	98	70
Fragrant Sumac <i>Rhus aromatica</i> var. <i>aromatica</i>	99	85
Gray Dogwood <i>Cornus racemosa</i> Lam.	99	70
Inkberry <i>Ilex glabra</i> (L.) A. Gray	98	60
Mapleleaf Viburnum <i>Viburnum acerifolium</i> L.	99	70
Maryland Senna <i>Senna marilandica</i> (L.) Link	99	70
Nannyberry <i>Viburnum lentago</i> L.	99	75
Red Chokeberry <i>Photinia pyrifolia</i> (Lam.) K.R. Robertson and Phipps	85	60
Red Elderberry <i>Sambucus racemosa</i> L. var. <i>racemosa</i>	95	70
Redosier Dogwood <i>Cornus sericea</i> L. ssp. <i>sericea</i>	99	70
Silky Dogwood <i>Cornus amomum</i> Mill.	98	70
Smooth Sumac <i>Rhus glabra</i> L.	99	80
Southern Arrowwood <i>Viburnum dentatum</i> L. var. <i>dentatum</i> <i>Viburnum dentatum</i> L. var. <i>venosum</i> (Britton) Gleason <i>Viburnum recognitum</i> Fernald	99	70
Spicebush <i>Lindera benzoin</i> (L.) Blume var. <i>benzoin</i>	95	60
Staghorn Sumac <i>Rhus typhina</i> L.	99	85
Steeplebush <i>Spiraea tomentosa</i> L.	85	70
Swamp Rose <i>Rosa palustris</i> Marsh.	99	65
Witch Hazel <i>Hamamelis virginiana</i> L.	99	70

920.06.07 Seed Mixes. Refer to 920.06.01 thru .06 and the document ‘Specifications for Seed and Seed Mixes’ maintained by the Landscape Operations Division, which includes lists of approved cultivars.

(a) SHA Turfgrass Seed Mix.

SHA TURFGRASS SEED MIX		
MIX %	SPECIES	
	Common Name	Scientific Name
95	Tall Fescue	<i>Schedonorus arundinaceus</i> (Schreb.) Dumort., nom. cons.
5	Kentucky Bluegrass	<i>Poa pratensis</i> L. ssp. <i>pratensis</i>



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(b) SHA Special Purpose Seed Mix.

SHA SPECIAL PURPOSE SEED MIX		
MIX %	SPECIES	
	Common Name	Scientific Name
75	Hard Fescue	<i>Festuca brevipila</i> Tracey
25	Chewing's Fescue	<i>Festuca rubra</i> L. ssp. <i>fallax</i> (Thuill.) Nyman

Note: When pre-mixed SHA Special Purpose Seed Mix is not available, a small quantity exception will allow the mix to be performed at the seeding location using Certified seed of the required species.

(c) SHA Temporary Seed Mix.

SHA TEMPORARY SEED MIX		
MIX %	SPECIES	
	Common Name	Scientific Name
95	One or more of the following:	
	Common Wheat, winter type	<i>Triticum aestivum</i> L.
	Common Barley, winter type	<i>Hordeum vulgare</i> L.
	Common Oat, winter type	<i>Avena sativa</i> L.
	Cereal Rye, winter type	<i>Secale cereale</i> L.
5	Foxtail Millet	<i>Setaria italica</i> (L.) P. Beauv.

920.07 PLANT MATERIALS.

920.07.01 Certificate and Licenses. Sellers, distributors, installers or producers of nursery stock shall possess the Plant Dealer License, Plant Broker License, or Nursery Inspection Certificate of the Maryland Department of Agriculture, or substitute a similar certificate or licenses from another State where they do business.

920.07.02 Plant Material Inspection. Refer to 920.06.01 regarding common and scientific names of plants. Plant material will be inspected for conformance with 920.07.03 thru .05, and tagged with Administration Plant Material Inspection Seals (Seals) as follows:

- (a) Inspection.** The Plant Material Inspection will be conducted in Maryland at the nursery where the plant material is grown, or at the brokerage where the plant material is sold. When plant material is produced by a nursery outside Maryland, the Inspection will be conducted at the Contractor's holding area, or at the project site before planting, unless otherwise specified in the Contract Documents.

The Contractor shall ensure that the plant material is present for inspection on the scheduled date, and that it meets the requirements of 920.07. The condition and identity of plant material will be subject to re-inspection for the duration of the Contract.



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- (b) **Scheduling.** The Inspection will be scheduled by the Engineer in consultation with the Landscape Operations Division. At least 14 days notice to schedule an Inspection within Maryland, and at least 45 days notice to schedule an Inspection outside Maryland.
- (c) **Seals.** The Administration will determine which plants, if any, will be tagged with Seals. When Seals are placed upon representative plants within a block of plant material, the plant material delivered for installation shall be similar in size, shape and character to the plant material that received Seals. Plant material that is delivered with broken or missing Seals, or that is not similar to the plant material within the block that was tagged with Seals will be rejected.
- (d) **Rejected Plants.** Plant materials which do not meet these requirements will be rejected. Plant material rejected at the nursery or holding area shall not be delivered to the project; if delivered, it shall immediately be removed. Plants shall not be installed until the Plant Material Inspection has been completed and satisfactory identification has been provided.

920.07.03 Plant Material Standards. Plant material shall be grown, identified, graded, and delivered in good condition as specified in this section.

- (a) **Hardiness Zones and Origin.** Trees, shrubs, perennials and ornamental grasses shall be nursery grown within plant hardiness zones 5, 6, or 7 according to the 'USDA Plant Hardiness Zone Map' in the following states, unless specified otherwise: Maryland, Ohio, Pennsylvania, New York, New Jersey, Delaware, Virginia, West Virginia, North Carolina, Tennessee, Kentucky, Georgia. Annuals and bulbs shall be nursery grown.
- (b) **Names and Identification.** Refer to 920.06.01. Plant material shall be clearly and correctly identified by the grower or distributor. Plant materials that are misidentified, or not satisfactorily tagged or labeled, or do not conform to the accepted characteristics of the species or cultivar, will be rejected.
- (c) **ANSI Standards.** Plant material shall conform to 'American Standard for Nursery Stock (ANSI Z60.1) of the American Nursery and Landscape Association. Plant grades shall be those established in ANSI Z60.1, and shall include plants from that size up to but not including the next larger grade size. When specimen plants are specified by the Contract documents, the specimen requirement shall also be met. Plant material which does not meet the standards of this section shall be rejected.
- (d) **Health and Sanitation.** Plant material shall be dug and transported in conformance ANSI Z60.1. Bare root deciduous plants shall be delivered in a dormant condition. Roots shall be adequately protected and kept moist.

Plant material shall be in good health and be declared and certified free from disease and insects as required by law for transportation, and shall be free from pest-related stress and pest damage.



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Plants shall be healthy, free from physical defects and stresses, and have well-developed branches and a vigorous root system. Plants shall not exhibit wilt, shriveling, insufficient root mass, broken or loose root balls, or inadequate protection.

Container grown plants shall be well rooted, vigorous and established in the size pot specified, shall have well balanced tops for their pot size, and shall not be root bound. Plants grown in fields or containers which include Ailanthus, Canada Thistle, Johnsongrass, or Yellow Nutsedge will be rejected.

- (e) **Shade and Flowering Trees.** Shade and flowering trees shall be symmetrically balanced. Major branch unions shall not have ‘V’ shaped crotches, bark inclusion or unions derived from water sprouts (epicormic growth) capable of causing structural weakness. Trees shall be free of unhealed branch removal wounds greater than 1 in. diameter, or wounds or scars caused by staking, wire or ties, or any other defect which could cause structural failure or disfigurement.

Shade trees and central leader flowering trees shall have a single main trunk. Trunk height to the lowest branch shall conform to the following:

HEIGHT TO LOWEST BRANCH	
CALIPER in.	HEIGHT ft
1-1/2 and 1-3/4	4
2 to 2-1/2	5
3	6

- (f) **Unacceptable Plants.** Plant material that becomes unacceptable after installation shall be rejected as specified in 710.03.18.

920.07.04 American Holly (*Ilex opaca* Aiton). Unless other cultivars or ratios are specified in the Contract document, each lot of plants shall include 90 percent female plants and 10 percent male plants of cultivars selected from the following list, unless specified otherwise.

AMERICAN HOLLY CULTIVARS		
FEMALE		MALE
Angelica	Miss Helen	David
Arlene Leach	Old Heavy Berry	Jersey Knight
B and O	Patterson	Leather Leaf
Dan Fenton	Satyr Hill	Nelson West
Jersey Princess	Wyetta	North Wind

920.07.05 Plant Storage and Handling. Adequate facilities shall be provided for plant storage. Plants shall be handled with care to avoid damage.

- (a) **Bulbs.** Bulbs shall be stored under appropriate climate control.



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- (b) **Perennials, Ornamental Grasses, Plug Plants and Annuals.** Perennials, ornamental grasses, plug plants and annuals shall be kept moist.
- (c) **Bare Root Plants and Live Stakes.** Bare root plants and live stakes shall be kept moist and heeled into moist soil or other suitable material until installed. During transport, the roots shall be covered with canvas, burlap or straw.
- (d) **Balled and Burlapped and Container Grown Plants.** Balled and burlapped plants and container grown plants shall be kept moist and installed within seven days of delivery, or the root balls or containers shall be covered with mulch or straw until removed for installation.

920.08 MARKING AND STAKING MATERIALS.

920.08.01 Outline Stakes. Outline stakes shall be full cut 1.75 x 1.75 in. sound hardwood, 48 in. long, as approved.

920.08.02 Stakes. Stakes for supporting trees shall be rough sawn, straight grain hardwood reasonably free from bark, knot holes, excessive warping, or other imperfections. Stakes shall be full cut 2.0 x 2.0 in. thickness.

920.08.03 Wire. Wire shall be No. 12 and 14 gauge new annealed galvanized wire.

920.08.04 Wire Rope. Wire rope shall be 0.25 in. zinc coated steel wire seven strand as commonly used for guying large trees.

920.08.05 Cable Clamps. Cable clamps shall be zinc galvanized steel.

920.08.06 Hose. Hose shall be 5/8 in. inside diameter corded synthetic rubber hose.

920.08.07 Turnbuckles. Turnbuckles shall be zinc galvanized with 4.5 in. openings and 5/16 in. threaded ends with screw eyes.

920.08.08 Anchors. Tree anchors shall be earth anchors of a type commonly used for anchoring large trees.

920.09 WATER, PESTICIDES, AND ADJUVANTS.

920.09.01 Water. Water used for the installation and establishment of vegetation shall not contain concentrations of substances that are harmful to plant growth. Water derived from public and municipal water systems in Maryland shall be acceptable for irrigation, fertilization, or mixing with pesticides. Water derived from wells or other sources may be used when it has soluble salts concentration less than 500 ppm, sodium less than 50 percent of total salts, and pH 5.0 to pH 7.8.



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920.09.02 Seed Carrier. Seed carrier shall be one or more inert, horticultural-grade materials used to improve seed mixing and distribution through a spreader or drill. Seed carriers shall be free flowing, easily mixable with seed, and nontoxic to seed, plants, humans, and wildlife. Seed carrier shall include one or more of the following:

- (a) **Calcined Clay.** Calcined clay shall be a furnace-baked clay product.
- (b) **Cocoa Shell.** Cocoa shell shall be processed cocoa seeds.
- (c) **Oyster Shell.** Oyster shell shall be crushed shells of oyster or other mollusk.
- (d) **Vermiculite.** Vermiculite shall be heat-expanded mineral mica.
- (e) **Perlite.** Perlite shall be heat-expanded mineral perlite.

920.09.03 Pesticides. Pesticides shall be EPA-approved and registered for use in Maryland to control plants, fungi, insects or other pests. Pesticides shall be approved for use, and acceptable application rates established by the Landscape Operations Division as follows:

- (a) **Herbicide.** Herbicide shall control or prevent regrowth of plants or vegetation.
- (b) **Insecticide.** Insecticide shall control or protect against insect or other arthropod pests.
- (c) **Fungicide.** Fungicide shall control or protect against fungal or bacterial pests.
- (d) **Other Pesticides.** Other pesticides shall control or protect against other pests such as deer, beaver, etc.

920.09.04 Marking Dye. Marking dyes shall be used to color spray solutions, be nonphytotoxic, oil or water soluble, and compatible with the pesticide products they are applied with. Marking dye products and application rates shall be approved by the Landscape Operations Division.

920.09.05 Spray Adjuvant and Wetting Agent. Spray adjuvant and wetting agents shall be compatible with the pesticides or other products they are applied with.

920.09.06 Antidesiccant. Antidesiccant and antitranspirant products shall be materials that provide a film over plant surfaces to limit water loss. These products and application rates shall be approved by the Landscape Operations Division.