

CATEGORY 700 LANDSCAPING

SECTION 700 – REGULATIONS

700.01 DESCRIPTION. Compliance with applicable laws and regulations.

700.02 MATERIALS. Not applicable.

700.03 CONSTRUCTION. Soil amendments and landscaping work shall be performed in accordance with applicable Maryland and Federal regulations in effect at the time that the landscape work is being performed. The Contractor shall be responsible for:

1. assigning a coordinator for the landscaping portion of the project who is certified and licensed, as applicable, to perform the assigned landscaping work in Maryland;
2. being knowledgeable concerning applicable regulations and their impact upon the landscaping effort;
3. providing materials and equipment that meet or exceed requirements of applicable laws;
4. providing containment measures, as required, that prevent runoff discharges from carrying topsoil, subsoil or soil amendments into surface waters of Baltimore County.

Applicable regulations include the *Maryland Weed Control Law* as amended in 1998, the *Maryland Pesticide Applicator's Law* as enacted in 1975, the Maryland Nutrient Management Law as enacted in 1998, the *Fertilizer Use Act* of 2011, the Maryland Roadside Tree Law and the Forest Conservation Act..

700.04 MEASUREMENT AND PAYMENT. This work shall not be measured. Payment for this work shall be included as part of the cost of applicable landscaping items.

SECTION 701 – TOPSOIL

701.01 DESCRIPTION. Salvage, furnish, and place topsoil.

701.02 MATERIALS.

Salvaged Topsoil	920.01.01
Furnished Topsoil	920.01.02
Limestone	920.02.01

Sulfur	920.02.02
Gypsum	920.02.04
Compost	920.02.05

701.03 CONSTRUCTION.

701.03.01 General.

- (a) **Schedule.** Perform topsoil operations when soil moisture and weather conditions are suitable. Cease operations when conditions are unsuitable.
- (b) **Nutrient Management Plan (NMP).** The Contractor shall recommend soil sampling locations to the Engineer for approval. Soil testing to determine the need for specific soil amendments will be performed. A NMP will be developed by the Contractor and approved by the Engineer based upon the soil testing results. Apply fertilizer and soil amendments as specified in the NMP.
- (c) **Nutrient Management Reporting.** The Contractor shall record the fertilizer analysis, the square yards covered, and the pounds of fertilizer applied as part of the NMP. A copy of these records shall be submitted to the Engineer within 24 hours of application, using the Nutrient Management Reporting Form. The Engineer will make copies of these records available to interested regulatory agencies upon request. The Division of Construction Contracts Administration shall retain a copy of these records as part of project records.

701.03.02 Salvaging Topsoil.

- (a) **Evaluation of Weeds.** Refer to Section 920.01.01. Topsoil will be inspected and shall be free of prohibited weeds before salvaging operations. Prevent the spread of these weeds as directed.
- (b) **Removal.** Mow or remove vegetation from the areas where soil is to be salvaged. Remove topsoil to the depth as specified or directed. Transport soils separately and keep them apart from other materials.
- (c) **Storage.** Construct storage areas on well-drained land, away from streams, drainage areas, and floodplains as specified in Section 308.

Install and maintain silt fence around the edge of the stockpile areas as specified in Section 308.03.29 before placing stockpiles.

Maintain topsoil in neat stockpiles away from other material. Apply temporary mulch or temporary seed immediately after final shaping as specified in Section 704.

- (d) **Excess.** Topsoil is County property. Do not remove soils without written approval of the Engineer.

701.03.03 Placing Salvaged Topsoil.

- (a) **Reevaluation of Weeds.** Soils that contain prohibited weeds will be reevaluated. Do not remove surface debris or transport soil from stockpiles before the reevaluation is completed.
- (b) **Debris Removal.** Remove grass, weeds, brush, and other objectionable material from the surface of stockpiles before transporting soil.
- (c) **Site Preparation.** Ensure the site is uniformly graded true to line and cross section in preparation for placing topsoil.
- (d) **Reserved.**
- (e) **Placing and Spreading Topsoil.** Place and spread topsoil over the designated areas to the specified depth.

When topsoil can be blended with the substrate, till and mix the topsoil into the substrate.

When topsoil cannot be blended with the substrate, roughen the surface of the substrate to provide a bond for the topsoil layer.

- (f) **Grading Topsoil.** Grade the soil to provide a uniform surface true to depth, line, cross section, and elevation to ensure the completed work is as specified after settlement.

Track slopes 4:1 to 2:1 with cleated track equipment operated perpendicular to the slope.

Remove stones and other debris with a length or width greater than 3 in. from the surface of the topsoil when grading is completed.

- (g) **Amending Topsoil.** Apply soil amendments (limestone, sulfur, gypsum, compost) to salvaged topsoil as specified in the NMP.

701.03.04 Placing Furnished Topsoil. Refer to Section 701.03.03 and the following:

- (a) **Responsibility.** Make arrangements and assume responsibility for consents, agreements, and payments with property owners who provide, prepare, or transport soils.
- (b) **Storage.** Construct storage areas and maintain stockpiles as specified in Section 701.03.02(c).

701.03.05 Inspection and Acceptance. Submit a request for acceptance when operations are completed. Inspection will be conducted to verify that operations were completed as specified. Acceptance will be granted at that time.

701.04 MEASUREMENT AND PAYMENT. Topsoil will be measured and paid for at the Contract unit price for one or more of the specified items. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

701.04.01 Salvaging Topsoil will not be measured but the cost will be incidental to the Contract unit price for Class 1 Excavation.

701.04.02 *Placing Salvaged Topsoil* will be measured and paid for at the Contract unit price per square yard for the specified depth.

701.04.03 *Placing Salvaged Topsoil for Grading Adjustment* will be measured and paid for at the Contract unit price per cubic yard, measured in place.

701.04.04 *Placing Furnished Topsoil* will be measured and paid for at the Contract unit price per square yard for the specified depth.

701.04.05 *Placing Furnished Topsoil for Grading Adjustment* will be measured and paid for at the Contract unit price per cubic yard, measured in place.

SECTIONS 702 and 703 – RESERVED

SECTION 704 – TEMPORARY SEED AND TEMPORARY MULCH

704.01 DESCRIPTION. Apply temporary seed and temporary mulch.

704.02 MATERIALS.

Fertilizer	920.03
Straw Mulch	920.04.01
Wood Cellulose Fiber Mulch	920.04.02
Seed	920.06
SHA Temporary Seed Mix	920.06.07(c)
Water	920.09.01

704.03 CONSTRUCTION.

704.03.01 General.

- (a) **Schedule.** Apply temporary seed and temporary mulch any time of the year to areas that are not ready for permanent stabilization.
- (b) **Nutrient Management Plan (NMP).** The Contractor shall not apply fertilizer until soil tests approved by the Engineer establish the need for fertilizer. The fertilizer application rate shall be limited to an amount necessary to establish acceptable rates of growth as recommended by the Contractor.
- (c) **Nutrient Management Reporting.** Record the fertilizer analysis, the square yards covered, and the pounds of fertilizer in accordance with Section 701.03.01(c).

704.03.02 Temporary Seed. Prepare the soil and apply seed, fertilizer, mulch, and wood cellulose fiber to areas that will remain undisturbed for 2 to 12 months.

- (a) **Soil Preparation.** Complete grading and shaping operations as directed. Loosen soil surfaces before seeding.
- (b) **Application Equipment.** Refer to Section 705.03.05.
- (c) **Application Rates.** Apply materials according to the following table. Fertilizer shall be applied in accordance with the NMP and shall not be applied again if the area was fertilized within the previous 3 months.

APPLICATION RATES - TEMPORARY SEED		
MATERIAL	LB PER 1000 SQ.FT.	LB PER ACRE
SHA Temporary Seed Mix	2.9	125
Fertilizer	Per approved NMP	
Straw Mulch	91.8	4000
Wood Cellulose Fiber Mulch	17.2	750

(d) Seeding.

- (1) **Hydroseeders.** Apply seed and fertilizer mixtures within two hours of mixing.
- (2) **Mechanical Seeder.** Incorporate seed and fertilizer to a depth of 1/8 to 1/4 in.
- (3) **After Seeding.** Immediately apply straw mulch.

(e) **Mulching.** Mulch shall cover 90 percent of the soil surface when applied as follows:

(1) **Blower.** Apply mulch to a loose depth of 3/4 to 2 in.

(2) **Manually.** Apply mulch to a loose depth of 1-1/2 to 3 in.

(f) **Securing Mulch.** Immediately after applying mulch secure with wood cellulose fiber. Do not displace the mulch.

704.03.03 Temporary Mulch. Apply straw mulch and wood cellulose fiber to areas that will be re-disturbed within 2 months.

(a) **Soil Preparation.** Do not disturb or till soil.

(b) **Application Equipment.** Refer to Section 705.03.05.

(c) **Application Rates.** Apply materials as follows:

APPLICATION RATES - TEMPORARY MULCH		
MATERIAL	LB PER 1000 SQ.FT.	LB PER ACRE
Straw Mulch	91.8	4000
Wood Cellulose Fiber Mulch	17.2	750

(d) **Mulching.** Refer to Section 704.03.02(e).

(e) **Securing Mulch.** Refer to Section 704.03.02(f).

704.03.04 Repairing Defective Areas. Repair Temporary Seed or Temporary Mulch that is defective. Repairs shall be completed before acceptance.

704.03.05 Acceptance. Submit a request for acceptance when operations are completed. Inspection will be conducted to verify completion. Acceptance will be granted when at least 90 percent of the soil surface is covered with secured mulch.

704.03.06 Repairs after acceptance. Repair or replace Temporary Seed or Temporary Mulch, when directed after acceptance, at the Contract unit price as additional work.

704.04 MEASUREMENT AND PAYMENT. Temporary Seed and Temporary Mulch will be measured and paid for at the Contract unit price for one or more of the specified items. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

704.04.01 Temporary Seeding will be measured and paid for at the Contract unit price per pound of seed.

704.04.02 Temporary Straw Mulching and **Temporary Wood Cellulose Mulching** will be measured and paid for at the Contract unit price per square yard.

SECTION 705 – TURFGRASS ESTABLISHMENT

705.01 DESCRIPTION. Prepare soil and establish turfgrass.

705.02 MATERIALS.

Limestone	920.02.01
Sulfur	920.02.02
Gypsum	920.02.04
Compost	920.02.05
Fertilizer	920.03
Straw Mulch	920.04.01
Wood Cellulose Fiber Mulch	920.04.02
Soil Stabilization Matting	920.05.01
Fasteners	920.05.02
Seed	920.06
SHA Turfgrass Seed Mix	920.06.07(a)
SHA Special Purpose Seed Mix	920.06.07(b)
SHA Temporary Seed Mix	920.06.07(c)
Water	920.09.01

705.03 CONSTRUCTION.

705.03.01 General.

- (a) **Regional Areas.** Maryland is divided into Regions by counties. Baltimore County is part of MdSHA's designated Region 2, as is Baltimore City and all surrounding counties except Anne Arundel County, which is part of MdSHA's designated Region 3.
- (b) **Seeding Seasons and Seed Mixes.** Perform turfgrass establishment when the temperature is above 32 F and the soil is not frozen according to the following schedule:

SEEDING SEASONS AND SEED MIXES			
SEEDING SEASON - MONTH/DAY			
Spring	Summer	Fall	Late Fall
SHA Turfgrass Seed Mix			
3/1 to 5/15	5/16 to 7/31	8/1 to 10/20	10/21 to 11/20
-	Plus Additive A or B	-	Plus Additive C
Plus Additive D when seeding: <ul style="list-style-type: none"> • Areas 30 ft and greater from the pavement edge • Slopes 4:1 and steeper 			
When seeding areas within 4 miles of a State airport: <ul style="list-style-type: none"> • Areas flatter than 4:1 - Use no Additives • Slopes 4:1 and steeper - Use SHA Special Purpose Seed Mix in lieu of SHA Turfgrass Seed Mix 			
Additives			
A = Weeping Lovegrass		C = SHA Temporary Seed Mix	
B = Foxtail Bristlegrass		D = Sericea Lespedeza	

(c) **Nutrient Management Plan (NMP).** The Contractor shall perform soil testing and develop a NMP. Replace application rates of Section 705.03.06 as required by the NMP. See Section 704.03.01(b).

(d) **Nutrient Management Reporting.** See Section 704.03.01(c).

705.03.02 Grade Repair. Ensure that soil meets specified grades. Repair any gullies, washes, or disturbed areas that develop before preparing soil or seedbed.

705.03.03 Preparing Soil. Loosen the soil as follows:

- (a) **Topsoiled Areas 4 in. Thickness and Greater.** Loosen topsoil immediately before seeding by disking, raking, or roto-tilling to a depth of at least 3 in.
- (b) **Topsoiled Areas 2 in. Thickness.** Loosen topsoil as specified in (a) to a depth of 2 in.
- (c) **Non-topsoiled Areas.** Loosen subsoil as specified in (a) to a depth of 1 in.
- (d) **Slopes 4:1 to 2:1.** Refer to Section 701.03.03(f).
- (e) **Serrated Cut Slopes.** Do not loosen soil.

705.03.04 Preparing Seedbed. Till the seedbed so that it conforms to the specified finished grade and provides a uniform and porous surface that is free of weed and plant growth.

(a) Areas Flatter than 4:1. Remove cleat marks and debris from the soil surface as follows:

(1) Within 15 ft of Pavement Edge. Remove clods, stones, and debris with a length or width greater than 1-1/2 in.

(2) Within 15 feet of Commercial or Residential Property. Refer to Section 705.03.04(a)(1).

(3) All Other Areas. Remove stones and debris with a length or width greater than 2-1/2 in.

(b) Slopes 4:1 and Steeper. Remove clods, stones, and debris with a length or width greater than 3.0 in. from the soil surface.

705.03.05 Application Equipment. Use hydroseeders, spreaders, drills, mulch blowers, or other approved machinery. Calibrate equipment before application. Apply materials accurately and uniformly to avoid misses and overlaps.

Hydroseeders shall be equipped with an agitation system able to keep solids in suspension, and have a gauge to show fill levels and tank capacity. Operate hydroseeders and spinner spreaders during non-windy weather. Do not allow materials to blow onto sensitive areas or structures.

Direct hydroseeding mixtures so the droplets produce a uniform spray. Do not allow materials to run off or cause erosion. Mechanical seeders shall be capable of placing seed and other materials at the specified rate.

705.03.06 Application Rates. Refer to Section 705.03.01(b) and include seed additives as specified. Apply materials as follows:

APPLICATION RATES			
MATERIAL	LB PER 1000 SQ.FT.	LB PER ACRE	
LIMESTONE Limestone	0 to 200 ^a	0 to 8700 ^a	
SULFUR All Areas	0 to 30 ^a	0 to 1300 ^a	
GYPNUM All Areas except Serrated Cut Slopes	0 to 92 ^a	0 to 4000 ^a	
COMPOST All Areas except Serrated Cut Slopes	0 to 1.4 cu. yd compost per 24 cu.yd. of topsoil ^a		
SEED MIXES			
SHA Turfgrass Seed Mix Areas less than 30 ft from the pavement edge flatter than 4:1, and at facilities	4.6	200	
SHA Turfgrass Seed Mix & Sericea Lespedeza Areas 30 ft and more from the pavement edge, and slopes 4:1 and steeper	SHA Turfgrass Seed Mix	2.3	100
	Sericea Lespedeza	0.46	20
SHA Special Purpose Seed Mix Slopes 4:1 and steeper within four miles of a State airport	4.6	200	
ADDITIVE SEED			
A = Weeping Lovegrass	0.046	2	
B = Foxtail Bristlegrass	0.23	10	
C = SHA Temporary Seed Mix	0.57	25	
D = Sericea Lespedeza	0.46	20	
FERTILIZER AT SEEDING per approved NMP			
MULCH			
Straw Mulch Secured with Wood Cellulose Fiber	92	4000	
Wood Cellulose Fiber Mulch	34	1500	
MULCH BINDER Wood Cellulose Fiber	17	750	
REFERTILIZING per approved NMP			

Note: ^a The NMP will specify the application rate.

705.03.07 Incorporating Soil Amendments. Incorporate amendments (limestone, sulfur, gypsum, compost) into the soil as follows:

(a) Topsoiled Areas Flatter than 4:1.

(1) Topsoil Depth of 2 to 4 in. Incorporate to a 2 in. depth.

(2) Topsoil Depth 4 in. and Greater. Incorporate to 3 in. depth.

(b) Topsoiled Areas 4:1 and Steeper. Apply limestone, sulfur, and gypsum immediately before or after tracking. Incorporate compost into topsoil in a separate operation before spreading topsoil.

(c) Nontopsoiled Areas and Serrated Cut Slopes. Apply the amendments to the soil surface after completing soil loosing operations.

Fertilizer may be incorporated into the soil with soil amendments.

705.03.08 Fertilizing and Seeding. Apply fertilizer and seed to previously prepared areas. On slopes 4:1 and steeper, including serrated cut slopes, apply seed, fertilizer, and mulch in 15 ft maximum vertical increments.

(a) **Hydraulic Seeding.** Apply fertilizer and seed mixtures within two hours after mixing.

Inoculate sericea lespedeza seed with 10 times the amount of inoculant specified on the inoculant package label for dry seeding. Apply seed within one hour of inoculation, or reinoculate and apply seed within one hour of reinoculation.

(b) **Mechanical Seeding.** Incorporate seed and fertilizer to a depth of 1/8 to 1/4 in. below the soil surface.

Dampen sericea lespedeza seed with water, and add the amount of inoculant specified on the package label before mixing with other seed. Apply seed within 24 hours of inoculation, or reinoculate and apply seed within 24 hours of reinoculation.

705.03.09 Mulching. Apply mulch immediately after seeding in all seasons except as allowed in (b) and (c).

(a) **Mulch Cover.** Cover at least 90 percent of the soil surface with mulch as follows:

(1) **Mulch Blower.** Apply mulch to a loose depth of 3/4 to 2 in.

(2) **By Hand.** Apply mulch to a loose depth of 1-1/2 to 3 in.

(b) **Wood Cellulose Fiber Mulch.** Wood Cellulose Fiber Mulch may be approved as a replacement for straw mulch on slopes 1-1/2:1 and steeper where straw application equipment is impractical.

Apply at least 70 percent of the wood cellulose fiber mulch after and separately from the seed and fertilizer during the Summer Seeding Season.

(c) **Summer Seeding Season.** In medians flatter than 4:1 open to traffic, install Type A Soil Stabilization Matting in lieu of straw mulch over seed and fertilizer as specified in Section 709. Keying-in shall not be performed within curbed medians.

705.03.10 Securing Mulch. Secure straw immediately after the completion of mulching operations by applying Wood Cellulose Fiber Mulch uniformly without displacing the mulch.

705.03.11 Seeding Phase Acceptance. Submit a request for Seeding Phase acceptance when operations are completed. Inspection will be conducted to verify completion. Seeding Phase acceptance will be granted following acceptable completion.

705.03.12 Establishment Phase. The Establishment Phase will begin upon Seeding Phase acceptance.

705.03.13 Overseeding and Reseeding. When turfgrass establishment is not acceptable, perform overseeding and reseeding as directed. Do not apply additional fertilizer or soil amendments unless directed.

(a) **Overseeding Thin Turf.** Overseeding consists of seeding and mulching areas where turfgrass coverage is 40 to 94 percent.

(1) **Methods.** Cut the turfgrass to a height of 3 to 4 in. and remove debris that will interfere with seeding. Do not apply herbicide or till soil. Apply seed mixtures, seed additives, mulch, and secure mulch as specified in Sections 705.03.01 and 705.03.05 through .10.

(2) **Coverage.** Ensure at least 90 percent of the soil surface is covered with mulch or turfgrass when overseeding is completed.

(b) **Reseeding Failed Turf.** Reseeding consists of tilling, seeding and mulching areas where turfgrass coverage is less than 40 percent.

Grade, prepare soil and seedbed, seed, mulch, and secure as specified in Sections 705.03.01 through .10.

705.03.14 Final Acceptance. The Engineer and the Contractor shall walk the entire planted area as a prerequisite to preparation of an inspection report of turfgrass height, color, and percent coverage. When it is not possible to perform this inspection, Final Acceptance will be delayed until Inspection is possible. The Contractor shall prepare the inspection report following the field inspection and present the report to the Engineer for approval. A copy of the approved inspection report signed as approved by the Engineer shall be given to the Contractor with the original retained as part of project records.

Final Acceptance will be granted when the turfgrass seedlings have grown at least 4 in., exhibit dark green color, and percent coverage as follows:

TURFGRASS ESTABLISHMENT COVERAGE		
AREAS	SHA TURFGRASS SEED MIX or SHA SPECIAL PURPOSE SEED MIX	OTHER DESIRABLE VEGETATION
	Seedling Coverage	
Areas flatter than 4:1; and slopes 4:1 and steeper not tracked with clefted equipment	at least 95% *	up to 5%
Slopes 4:1 and steeper tracked with clefted equipment	at least 50% *	up to 50%

* Includes coverage of additive seed species when included.

705.03.15 Mowing. Mow as follows:

MOWING HEIGHT				
AREAS	TRACTOR CUTTING		HAND CUTTING	
	Max Height Before Mowing In.	Height of Cut In.	Max Height Before Mowing In.	Height of Cut In.
General Areas	18	4 - 5	10	3 - 4
In Medians or adjacent to Commercial or Residential Areas	12	4 - 5	8	3 - 4

705.03.16 Refertilizing. Refertilizing shall be performed only as directed by the Engineer in accordance with the NMP following soil testing demonstrating a need for refertilization.

REFERTILIZING TURFGRASS AREAS		
AREAS	NUMBER OF APPLICATIONS	TIMING
Topsoiled	1	April or September
Nontopsoiled and Serrated Cut Slopes	1	April or September

705.04 MEASUREMENT AND PAYMENT. Turfgrass Establishment will be measured and paid for at the Contract unit price for one or more of the specified items. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

705.04.01 Turfgrass Establishment. *Turfgrass Establishment* including preparing soil, preparing seed bed, applying fertilizer, seed mixes, seed additives, overseeding, reseeding, mulching, securing mulch, and repairing unacceptable areas will be measured and paid for at the Contract unit price per square yard.

(a) Payment Schedule. Payments will be made according to the following Schedule when construction requirements are met:

PAYMENT SCHEDULE		
CONSTRUCTION REQUIREMENTS	PERCENT OF TOTAL CONTRACT PRICE	PAYMENT FOR COMPLETED WORK
Sections 705.03.01 through .11	80	At Seeding Phase acceptance
Sections 705.03.12 through .14	20	At Final Acceptance
Total Payment	100%	

(b) Forfeiture. Failure to complete operations as required in conformance with the Payment Schedule will result in forfeiture of that percentage of payment.

705.04.02 *Applying Limestone to Salvaged Topsoil and Nontopsoiled Areas* per ton.

705.04.03 *Applying Sulfur to Salvaged Topsoil and Nontopsoiled Areas* per ton.

705.04.04 *Applying Gypsum to Salvaged Topsoil and Nontopsoiled Areas* per ton.

705.04.05 *Applying Compost to Salvaged Topsoil and Nontopsoiled Areas* per cubic yard.

705.04.06 *Applying Ureaform Fertilizer to Nontopsoiled Areas* per pound.

705.04.07 *Refertilizing* per pound.

705.04.08 *Tractor and Hand Mowing* per hour.

705.04.09 *Overseeding* per SY.

705.04.10 Amending furnished topsoil will not be measured but the cost will be incidental to the Contract unit price for Placing Furnished Topsoil.

SECTION 706 – RESERVED

SECTION 707 – MEADOW ESTABLISHMENT AND WILDFLOWER SEEDING

707.01 DESCRIPTION. Perform meadow establishment and wildflower seeding.

707.02 MATERIALS.

Limestone	920.02.01
Sulfur	920.02.02
Compost	920.02.05
Fertilizer	920.03
Straw Mulch	920.04.01
Wood Cellulose Fiber Mulch	920.04.02
Meadow Forb Seed	920.06 and 920.06.06(d)
Meadow Grass, Sedge and Rush Seed	920.06 and 920.06.06(e)
Wildflower Seed	920.06 and 920.06.06(f)
SHA Special Purpose Seed Mix	920.06 and 920.06.07(b)
Water	920.09.01
Seed Carrier	920.09.02
Pesticides	920.09.03

707.03 CONSTRUCTION. For meadow establishment, complete the requirements of Sections 707.03.01 through .15. For wildflower seeding, complete the requirements of Sections 707.03.16 through .29.

707.03.01 Meadow Establishment - General.

- (a) Regional Areas.** Refer to Section 705.03.01.
- (b) Seeding Seasons.** Perform seeding when the temperature is above 32 F and the soil is not frozen from February 15 to April 15 and from September 1 to October 15.
- (c) Pesticide Application.** Refer to Section 710.03.01(c).
- (d) Pesticide Application Reporting.** Refer to Section 710.03.01(d).
- (e) Nutrient Management Plan (NMP).** See Section 701.03.01(b).
- (f) Nutrient Management Reporting.** See Section 701.03.01(c).

707.03.02 Submittals. Submit the following items:

- (a) **Seeding Schedule.** Develop a Schedule that provides dates for completing major operations of the Contract, including nonselective herbicide application, mowing, tilling, and seeding. Submit the written Schedule at least 14 days before beginning operations. The Schedule will be reviewed by the Engineer for completeness and feasibility, and will be approved or returned for correction.
- (b) **IPM Program and Establishment Schedule.** Develop an IPM Program that includes methods of pest monitoring for weed control, pesticide selection, application rates, and scheduling. The Establishment Schedule shall include dates for meadow maintenance operations such as mowing.

Submit the IPM Program and Establishment Schedule when seeding operations are completed. The Program and Schedule will be forwarded to the Engineer for review and comment before approval is granted.

707.03.03 Marking. Mark areas to be seeded, and obtain approval before applying herbicide, mowing, or beginning seeding operations.

707.03.04 Non-Selective Herbicide Application. Apply non-selective herbicide to eliminate undesirable vegetation when directed. Apply herbicide in water with wetting agent and dye in conformance with the IPM Program at least 10 days before seeding as follows:

NONSELECTIVE HERBICIDE APPLICATION	
MATERIAL	RATE PER ACRE
Glyphosate Herbicide	5 lb of active ingredient
Marking Dye	6 to 15 oz
Water	40 to 50 gal

707.03.05 Mowing. Mow vegetation to a height less than 4 in. before seeding when directed by the Engineer. Do not perform mowing within 10 days of non-selective herbicide application. Disperse or dispose of excessive clippings prior to seeding.

707.03.06 Preparing Soil Before Seeding.

- (a) **Broadcast Seeding.** Roto-till the soil to a depth of 1 in. and remove stones and other debris with a length or width greater than 2-1/2 in. from the soil surface.
- (b) **Drill Seeding.** When using a drill seeder, no soil preparation is required.

707.03.07 Seed Delivery, Weighing, and Mixing.

- (a) **Delivery.** Seed shall be delivered unmixed.

(b) Weighing and Mixing. Test seed as specified in Section 920.06.05 before weighing and mixing.

Use a scale with 0.01 oz accuracy to verify application rates and quantities of seed. Mix and apply seed separately or with other specified seed.

707.03.08 Application Rates. Apply materials as follows:

TABLE 1 - MEADOW ESTABLISHMENT APPLICATION RATES		
MATERIAL	LB PER 1000 SQ.FT.	LB PER ACRE
LIMESTONE	0 to 50 ^a	0 to 2,000 ^a
SULFUR	0 to 13 ^a	0 to 550 ^a
COMPOST	1.4 cu.yd. Compost per 24 cu.yd. of Topsoil ^a	
UPLAND MEADOW SEED	Refer to Table 2 Upland Meadow Seed	Refer to Table 2 Upland Meadow Seed
LOWLAND MEADOW SEED	Refer to Table 3 Lowland Meadow Seed	Refer to Table 3 Lowland Meadow Seed
WET MEADOW SEED	Refer to Table 4 Wet Meadow Seed	Refer to Table 4 Wet Meadow Seed
SHA SPECIAL PURPOSE SEED MIX Include with Upland & Lowland Meadow Seed	0.50	25
SEED CARRIER	2 to 6	85 to 260
FERTILIZER^a	Per approved NMP	
MULCH		
Straw Mulch	66	3000
Wood Cellulose Fiber Mulch Binder	23	1000

Note: ^a The NMP will specify the application rate.

TABLE 2 - UPLAND MEADOW SEED					
FORBS	PURE LIVE SEED *		GRASSES	PURE LIVE SEED *	
	Oz per 1000 Sq.Ft.	Lb per Acre		Oz per 1000 Sq.Ft.	Lb per Acre
Select 8			Include All		
blackeyed Susan	0.18	0.5	Broomsedge	0.36	1.0
browneyed Susan	0.18	0.5	Deertongue	0.73	2.0
eastern purple coneflower	0.44	1.2	Little Bluestem	0.73	2.0
gray goldenrod	0.07	0.2	Purpletop	0.73	1.0
lanceleaf tickseed	0.51	1.4	Note: Seed Upland Meadow Seed with SHA Special Purpose Seed Mix * Seeding rates shall be calculated on the basis of Pure Live Seed per 1000 sq.ft. or acre.		
Maryland senna	0.11	0.3			
partridge pea	0.44	1.2			
smooth blue aster	0.07	0.2			
sundial lupine	0.51	1.4			
talus slope penstemon	0.07	0.2			
wild bergamot	0.07	0.2			

TABLE 3 - LOWLAND MEADOW SEED					
FORBS	PURE LIVE SEED *		GRASSES	PURE LIVE SEED *	
	Oz per 1000 Sq.Ft.	Lb per Acre		Oz per 1000 Sq.Ft.	Lb per Acre
Select 8			Include All		
common boneset	0.04	0.1	big bluestem	2.0	0.73
eastern purple coneflower	0.44	1.2	gamagrass	2.0	0.73
evening primrose	0.07	0.2	Indiangrass	2.0	0.73
lanceleaf tickseed	0.55	1.5	switchgrass	1.0	0.36
Maximilian sunflower	0.18	0.5	Note: Seed Lowland Meadow Seed with SHA Special Purpose Seed Mix * Seeding rates shall be calculated on the basis of Pure Live Seed per 1000 sq.ft. or acre.		
New England aster	0.07	0.2			
New York ironweed	0.07	0.2			
showy tickseed	0.04	0.1			
stiff goldenrod	0.11	0.3			
swamp verbena	0.26	0.7			
trumpetweed or spotted trumpetweed	0.07	0.2			

TABLE 4 - WET MEADOW SEED					
FORBS	PURE LIVE SEED *		GRASSES, SEDGES and RUSHES	PURE LIVE SEED *	
	Oz per 1000 Sq.Ft.	Lb per Acre		Oz per 1000 Sq.Ft.	Lb per Acre
Select 8			Include All		
Allegheny monkeyflower	0.07	0.2	common rush	0.29	0.8
crimsoneyed rose mallow	0.07	0.2	fox sedge	0.18	0.5
flat-top goldenrod	0.07	0.2	longhair sedge	0.11	0.3
king of the meadow	0.07	0.2	rattlesnake mannagrass	0.18	0.5
New York Aster	0.07	0.2	shallow sedge	0.11	0.3
New York Ironweed	0.07	0.2	woolgrass	0.11	0.3
seedbox	0.07	0.2	* Seeding rates shall be calculated on the basis of Pure Live Seed per 1000 sq.ft. or acre.		
swamp milkweed	0.04	0.1			
swamp sunflower	0.11	0.3			
swamp verbena	0.26	0.7			
trumpetweed or spotted trumpetweed	0.07	0.2			

707.03.09 Seeding Equipment. Use approved drill seeders equipped with 3 seed boxes, or broadcast seeders.

707.03.10 Seeding Methods. Operate seeders as follows:

- (a) **Drill Seeding.** Mix and place seed in the seed boxes A (small seed), B (medium seed), or C (fluffy seed) as recommended by the seeder manufacturer, or as specified or directed. Seed carrier may be mixed with seed.

Drill seed into the soil to a 1/4 in. depth. When soil is disturbed to a greater depth or is not in a firm condition at the time of seeding, firm the soil with a roller. Rollers shall weigh approximately 40 lb per ft of width.

- (b) **Broadcast Seeding.** Uniformly mix seed with seed carrier. Spread seed and carrier in two directions at right angles, and then lightly rake or drag seed into the soil to a 1/4 in. depth before firming the soil with a roller as described above.

707.03.11 Mulching. Immediately after seeding, apply mulch over bare soil to cover at least 90 percent of the surface. Do not apply mulch after operating a drill seeder through dead vegetation. Apply mulch as follows:

- (a) **Mulch Blower.** Apply mulch to a loose depth of 1/2 to 1-1/2 in.
- (b) **By Hand.** Apply mulch to a loose depth of 1 to 2 in.

707.03.12 Securing Mulch. Secure mulch immediately after application by applying wood cellulose fiber uniformly without displacing the mulch.

707.03.13 Seeding Phase Acceptance. Submit a request for Seeding Phase acceptance when operations are completed, and provide the IPM Program and Establishment Phase Schedule as specified in Section 707.03.02(a). Inspection will be conducted to verify completion. Seeding Phase acceptance will be granted at that time.

707.03.14 Establishment Phase. The Establishment Phase begins upon Seeding Phase acceptance as follows:

- (a) **Period of Maintenance.** Maintain meadows for 12 months after seeding.
- (b) **Weed Control.** Monitor and promptly implement the IPM Program to control weeds in conformance with the IPM Program, or when notified of problems in consultation with the Engineer. Remove dead weeds over 18 in. tall.
- (c) **Inspection.** The Engineer will inspect meadow establishment on or about the 15th of January, March, May, July, September, and November.

707.03.15 Final Acceptance. The Engineer and the Contractor shall walk the entire planted area as a prerequisite to preparation of an inspection report of seedling height, color, and percent coverage. When it is not possible to perform this inspection, Final Acceptance will be delayed until Inspection is possible. The Contractor shall prepare the inspection report following the field inspection and present the report to the Engineer for approval. A copy of the approved inspection report signed as approved by the Engineer shall be given to the Contractor with the original retained as part of project records.

Final Acceptance will be granted when the seedlings have grown at least 4 in., exhibit dark green color, and percent coverage as follows:

MEADOW ESTABLISHMENT COVERAGE		
AREAS	SHA SPECIAL PURPOSE SEED MIX, SHA TEMPORARY SEED MIX, and MEADOW SEED	TOTAL VEGETATION COVER
	Seedling Coverage	
Areas flatter than 4:1; and slopes 4:1 and steeper not tracked with bulldozer	at least 70%	at least 95%
Slopes 4:1 and steeper tracked with bulldozer	at least 45%	at least 95%

707.03.16 Wildflower Seeding.

- (a) **Regional Areas.** Refer to Section 705.03.01(a).
- (b) **Seeding Seasons.** Refer to Section 707.03.01(b).
- (c) **Pesticide Application.** Refer to Section 710.03.01(c).
- (d) **Pesticide Application Reporting.** Refer to Section 710.03.01(d).
- (e) **Nutrient Management Plan (NMP).** Refer to Section 701.03.01(b).
- (f) **Nutrient Management Reporting.** Refer to Section 701.03.01(c).

707.03.17 Seeding Schedule. Develop a Schedule that provides dates for completing major operations of the Contract, including non-selective herbicide application and seeding.

Submit the proposed Schedule at least 14 days before beginning operations. The Schedule will be reviewed by the Engineer for completeness and feasibility, and will be approved or returned for correction.

707.03.18 Marking. Mark areas to be seeded, and obtain approval before applying herbicide, mowing, or beginning seeding operations.

707.03.19 Non-Selective Herbicide Application. Refer to Section 707.03.04.

707.03.20 Mowing. Refer to Section 707.03.05.

707.03.21 Seed Delivery, Weighing, and Mixing.

- (a) **Delivery.** Wildflower seed shall be delivered unmixed.
- (b) **Weighing and Mixing.** Refer to Section 707.03.22, Table 6. Test seed as specified in Section 920.06.05 before weighing and mixing.

Weigh wildflower seed before uniformly pre-mixing and placing it into the seed boxes of the seeder. Use a scale with 0.01 oz accuracy to verify application rates and quantities of seed.

Mix and apply seed separately or with other specified seed.

707.03.22 Application Rates. Apply materials as follows:

TABLE 5 - WILDFLOWER SEEDING APPLICATION RATES		
MATERIAL	LB PER 1000 SQ.FT.	LB PER ACRE
LIMESTONE	0 to 50 ^a	0 to 2,000 ^a
SULFUR	0 to 13 ^a	0 to 550 ^a
COMPOST	0 to 1.4 cu.yd. Compost per 24 cu.yd. of Topsoil ^a	
WILDFLOWER SEED	Refer to Table 6 Wildflower Seed	Refer to Table 6 Wildflower Seed
SEED CARRIER	2 to 6	85 to 260
FERTILIZER	Per approved NMP	
MULCH		
Wood Cellulose Fiber Mulch Binder	23	1000

Note ^a The NMP will specify the application rate.

TABLE 6 - WILDFLOWER SEED						
SPECIES	SMALL SEED		MEDIUM SEED		FLUFFY SEED	
Include All (11)						
	Oz per 1000 Sq.Ft.	Lb per Acre	Oz per 1000 Sq.Ft.	Lb per Acre	Oz per 1000 Sq.Ft.	Lb per Acre
blackeyed Susan	0.18	0.5				
corn poppy	0.37	1.0				
golden tickseed	0.37	1.0				
lemon beebalm	0.18	0.5				
Moroccan toadflax	0.18	0.5				
Siberian wallflower	0.55	1.5				
doubtful knight's-spur			0.18	0.5		
garden cornflower			0.37	1.0		
garden cosmos 'Sensation'			0.11	0.3		
sulphur cosmos 'Bright Lights'			0.11	0.3		
firewheel					0.18	0.50

707.03.23 Seeding Equipment. Use approved drill seeders equipped with 3 seed boxes.

707.03.24 Seeding Methods. Refer to Section 707.03.10(a).

707.03.25 Mulching and Securing Mulch. Refer to Sections 707.03.11 and .12.

707.03.26 Seeding Phase Acceptance. Submit a request for Seeding Phase acceptance when operations are completed. Inspection will be conducted to verify completion. Seeding Phase acceptance will be granted at that time.

707.03.27 Establishment Phase. The Establishment Phase will begin upon Seeding Phase acceptance.

707.03.28 Final Acceptance. The Engineer and the Contractor shall walk the entire planted area as a prerequisite to preparation of an inspection report of seedling height, color, and percent coverage. When it is not possible to perform this inspection, Final Acceptance will be delayed until Inspection is possible. The Contractor shall prepare the inspection report following the field inspection and present the report to the Engineer for approval. A copy of the approved inspection report signed as approved by the Engineer shall be given to the Contractor with the original retained as part of project records.

Final Acceptance will be granted when the seedlings exhibit dark green color and percent coverage as follows:

WILDFLOWER SEEDING COVERAGE		
AREAS	WILDFLOWER SPECIES	TOTAL VEGETATION COVER
	Seedling Coverage	
Areas flatter than 4:1; and slopes 4:1 and steeper not tracked with bulldozer	at least 70%	at least 95%
Slopes 4:1 and steeper tracked with bulldozer	at least 45%	at least 95%

707.03.29 Mowing. Mow meadow or wildflower foliage to a height of 6 to 8 in. when directed by the Engineer.

707.04 MEASUREMENT AND PAYMENT. Meadow Establishment and Wildflower Seeding will be measured and paid for at the Contract unit price for one or more of the specified items. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

707.04.01 Upland Meadow Establishment. *Upland Meadow Establishment*, including preparing soil, applying fertilizer, meadow seed, SHA Special Purpose Seed Mix, mulch, and securing mulch will be measured and paid for at the Contract unit price per square yard.

(a) Payment Schedule. Payments will be made according to the following Schedule when construction requirements are met:

MEADOW ESTABLISHMENT PAYMENT SCHEDULE			
CONSTRUCTION REQUIREMENTS		PERCENT OF TOTAL CONTRACT PRICE	PAYMENT FOR COMPLETED WORK
Sections 707.03.01 through 707.03.13	Seeding Phase and Seeding Acceptance	80	At Seeding Phase Acceptance
Sections 707.03.14 and .15	Establishment Phase Weed Control and Final Acceptance	20	Pro-Rated at Each Bi-Monthly Inspection and Final Acceptance
Total Payment		100%	

(b) Forfeiture. Failure to complete operations as required in conformance with the Payment Schedule will result in forfeiture of that percentage of payment.

707.04.02 Lowland Meadow Establishment. *Lowland Meadow Establishment*, including preparing soil, applying fertilizer, meadow seed, SHA Special Purpose Seed Mix, mulch, and securing mulch will be measured and paid for at the Contract unit price per square yard.

Payment Schedule. Refer to Section 707.04.01(a).

Forfeiture. Refer to Section 707.04.01(b).

707.04.03 Wet Meadow Establishment. *Wet Meadow Establishment*, including preparing soil, applying fertilizer, meadow seed, mulch, and securing mulch will be measured and paid for at the Contract unit price per square yard.

Payment Schedule. Refer to Section 707.04.01(a).

Forfeiture. Refer to Section 707.04.01(b).

707.04.04 Wildflower Seeding. *Wildflower Seeding*, including applying fertilizer, wildflower seed, and mulch will be measured and paid for at the Contract unit price per square yard. Payment will be made according to the Payment Schedule when construction requirements are met.

Payment Schedule. Payments will be made according to the following schedule when construction requirements are met:

WILDFLOWER SEEDING PAYMENT SCHEDULE			
CONSTRUCTION REQUIREMENTS		PERCENT OF TOTAL CONTRACT PRICE	PAYMENT FOR COMPLETED WORK
Sections 707.03.16 through 707.03.26	Seeding Phase and Seeding Acceptance	80	At Seeding Phase Acceptance
Sections 707.03.27 and .28	Establishment Phase and Final Acceptance	20	At Final Acceptance
Total Payment		100%	

Forfeiture. Refer to Section 707.04.01(b).

707.04.05 *Non Selective Herbicide Application* per square yard.

707.04.06 *Tractor and Hand Mowing* per hour.

707.04.07 *Selective Grass Herbicide Application* per square yard.

707.04.08 *Selective Broadleaf Herbicide Application* per square yard.

707.04.09 *Applying Limestone to Salvaged Topsoil and Nontopsoiled Areas* per ton.

707.04.10 *Applying Sulfur to Salvaged Topsoil and Nontopsoiled Areas* per ton.

707.04.11 *Applying Compost to Salvaged Topsoil and Nontopsoiled Areas* per cubic yard.

707.04.12 Amending furnished topsoil will not be measured but the cost will be incidental to the Contract unit price for ***Placing Furnished Topsoil.***

SECTION 708 – TURFGRASS SOD ESTABLISHMENT

708.01 DESCRIPTION. Prepare soil and establish turfgrass sod.

708.02 MATERIALS.

Limestone	920.02.01
Sulfur	920.02.02
Gypsum	920.02.04

Compost	920.02.05
Fertilizer	920.03
Turfgrass Sod	920.06.03
Fasteners	920.05.02
Water	920.09.01

708.03 CONSTRUCTION.

708.03.01 General.

(a) **Regional Areas.** Refer to Section 705.03.01(a).

(b) **Installing Season and Sod Species.** Install sod from August 15 to May 31 when the sod is not frozen.

Install tall fescue sod.

(c) **Nutrient Management Plan (NMP).** See Section 701.03.01(b).

(d) **Nutrient Management Reporting.** See Section 701.03.01(c).

708.03.02 Grade Repair. Ensure that soil meets specified grades. Repair any gullies, washes, or disturbed areas that develop before preparing soil, incorporating soil amendments, or placing turfgrass sod.

708.03.03 Preparing Soil. Immediately before installing turfgrass sod, loosen the soil with roto-tillers, disks, rakes or other approved equipment to a depth of 3 in. Amendments may be incorporated into the soil during this operation.

When soil preparation is completed, remove clods, stones, and debris with a length or width greater than 1-1/2 in. and ensure the soil provides a uniform and porous surface, conforms to the specified grade, and is free of weed and plant growth.

708.03.04 Application Equipment. Use spreaders or other approved machinery that is calibrated before application. Apply materials accurately and uniformly to avoid misses and overlaps.

Operate spinner spreaders during non-windy weather. Do not allow materials to blow onto sensitive areas or structures.

708.03.05 Application Rates.

APPLICATION RATES		
MATERIAL	LB PER 1000 SQ.FT.	LB PER ACRE
LIMESTONE	0 to 200 ^a	0 to 8700 ^a
SULFUR	0 to 30 ^a	0 to 1300 ^a
GYPSUM	0 to 92 ^a	0 to 4,000 ^a
COMPOST	0 to 1.4 cu.yd. Compost per 24 cu.yd. of Topsoil ^a	
FERTILIZER ^a	Per approved NMP	

Note: ^a The NMP will specify the application rate.

708.03.06 Incorporating Soil Amendments. Mix soil amendments into the upper 3 in. of soil after application.

708.03.07 Transporting and Handling. Transport and install turfgrass sod within 48 hours after harvest. Handle sod without excessive breaking, tearing, or loss of soil.

708.03.08 Placing. Place turfgrass sod with closed joints. Do not overlap or leave gaps between strips. Unless otherwise specified, sod shall be placed on a minimum of 2 inches of topsoil.

(a) **Slopes 2:1 and Steeper.** Place sod strips with the long edges following the contour, not up and down the slope. Begin at the bottom of the slope and stagger the joints between strips.

(b) **Ditches.** Place sod strips with the long edges following the flow of water, not across the ditch. Center the lowest strip on the centerline of the ditch.

708.03.09 Securing. Secure turfgrass sod in ditches and slopes 2:1 and steeper with at least two fasteners per strip spaced no more than 2 ft apart. Drive the fasteners through the sod and firmly into the soil below so there is no gap at the top of the fastener.

708.03.10 Firming. Tamp or roll turfgrass sod after placing and stapling to tighten the joints between the sod strips, and to press the sod firmly into the soil. Hand tampers shall weigh approximately 15 lb with a flat surface of approximately 100 sq. in. Rollers shall weigh approximately 40 lb per ft of width.

708.03.11 Initial Watering. Perform the first watering within four hours after placing turfgrass sod. Wet the soil to a depth at least 3 in. below the sod.

708.03.12 Installation Acceptance. Submit a request for Installation Phase acceptance when operations are completed. Inspection will be conducted to verify completion. Installation Phase acceptance will be granted at that time.

708.03.13 Establishment Phase. The Establishment Phase will begin upon Installation Phase acceptance. Monitor the soil moisture and water needs of the sod. Promptly provide water when needed or when directed.

708.03.14 Final Acceptance. The Engineer and the Contractor shall walk the entire planted area as a prerequisite to preparation of an inspection report of turfgrass sod height, color, and percent coverage. When it is not possible to perform this inspection, Final Acceptance will be delayed until Inspection is possible. The Contractor shall prepare the inspection report following the field inspection and present the report to the Engineer for approval. A copy of the approved inspection report signed as approved by the Engineer shall be given to the Contractor with the original retained as part of project records.

Final Acceptance will be granted when the turfgrass sod has grown at least 4 in., exhibits dark green color, has at least 99 percent coverage, and is firmly rooted into the soil.

708.04 MEASUREMENT AND PAYMENT. Turfgrass Sod Establishment will be measured and paid for at the Contract unit price for one or more of the specified items. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

708.04.01 Turfgrass Sod Establishment. *Turfgrass Sod Establishment*, including preparing soil, applying fertilizer, placing sod and fasteners, and initial watering will be measured and paid for at the Contract unit price per square yard.

(a) Payment Schedule. Payments will be made according to the following schedule when construction requirements are met:

PAYMENT SCHEDULE		
CONSTRUCTION REQUIREMENTS	PERCENT OF TOTAL CONTRACT PRICE	PAYMENT FOR COMPLETED WORK
Sections 708.03.02 through 708.03.12	80	At Installation Phase Acceptance
Sections 708.03.13 and 708.03.14	20	At Final Acceptance
Total Payment	100	

(b) Forfeiture. Failure to complete operations as required or directed in conformance with the Payment Schedule will result in forfeiture of that percentage of payment.

708.04.02 Applying Limestone to Salvaged Topsoil and Nontopsoiled Areas per ton.

708.04.03 Applying Sulfur to Salvaged Topsoil and Nontopsoiled Areas per ton.

708.04.04 *Applying Gypsum to Salvaged Topsoil and Nontopsoiled Areas* per ton.

708.04.05 *Applying Compost to Salvaged Topsoil and Nontopsoiled Areas* per cubic yard.

708.04.06 Amending furnished topsoil will not be measured but the cost will be incidental to the Contract unit price for *Placing Furnished Topsoil*.

708.04.07 Topsoil. Topsoil shall be paid for under item Section 701.04 as appropriate.

708.04.08 Additional Watering of sod shall not be measured and shall be paid for as part of *Turfgrass Sod Establishment*.

SECTION 709 – SOIL STABILIZATION MATTING

709.01 DESCRIPTION. Install soil stabilization matting (SSM) in conjunction with seeding.

709.02 MATERIALS.

Topsoil	920.01
Soil Stabilization Matting	920.05.01
Fasteners	920.05.02
Water	920.09.01

709.03 CONSTRUCTION.

709.03.01 Soil Preparation and Seeding. Perform operations for the SSM type as follows:

- (a) **Type A and B.** Prepare soil and perform Turfgrass Establishment as specified in Section 705, but do not apply mulch. Install SSM immediately after seeding as specified in Sections 709.03.02 through .05.
- (b) **Type C.** Install Type C SSM as specified in Sections 709.03.02 through .05. Infill with soil and immediately perform Turfgrass Establishment as specified in Section 705, but do not till or apply mulch. Complete matting installation over seeded area as specified in Section 709.03.06.
- (c) **Type D.** Prepare soil and perform seeding as specified. Install Type D SSM immediately after seeding as specified in Sections 709.03.02 through .05.

709.03.02 Unrolling. Unroll SSM in the direction of the flow of water. Lay matting smoothly in firm, uniform contact with the soil surface, without stretching or tenting.

709.03.03 Overlapping. Overlap SSM with the upslope portion on top. Overlap edges at least 2 in., and ends at least 6 in.

709.03.04 Keying-in. Keying-in consists of the following operations:

- (a) **Trenching.** Trench into the soil perpendicular to the flow of water to at least 6 in. depth.

AREAS OF MATTING TO KEY-IN	
MATTING TYPE	AREA OF MATTING
A, B	Uppermost or leading-edge.
A, B	Edges adjacent to catch basins and structures.
B	Lowermost or toe-edge.
C, D	All edges
C	Folds of matting perpendicular to water flow every 20-25 ft.

- (b) **Fastening.** Install fasteners through SSM into the bottom of the trench.

- (c) **Backfilling.** Backfill the trench with firmly tamped soil.

709.03.05 Fastening. Refer to Section 920.05.02 and secure SSM with fasteners driven perpendicular to the soil grade, and flush with the surface of the matting as follows:

- (a) **Fastener Selection.** Use fasteners of the shape and length approved for the matting type as follows:

FASTENER SELECTION					
MATTING TYPE	FASTENER SHAPE	APPROVED FASTENERS			
		6 in. Length	8 in. Length	12 in. Length	18 in. Length
A	U-Shaped Staple	X	X		
	Circle-Top Pin	X	X		
	Round Head Pin	X	X		
	T-Head Pin	X			
	Wood Peg	X			
B, C, D	U-Shaped Staple		X	X	
	Fabric Pin			X	X

- (b) **Placement of Fasteners.** Install fasteners at the specified distance apart as required for the area of matting and the matting type as follows:

FASTENER PLACEMENT		
AREA OF MATTING	MATTING TYPE	MAXIMUM DISTANCE BETWEEN FASTENERS In.
Uppermost or Leading-Edge of Matting	A, B, C, D	6
Overlapping Edges of Matting	A, B, C, D	18
Center of Ditch	A, B, C, D	18
Lowermost or Toe-Edge of Matting	A, B, C, D	18
Throughout Matting	A, B, C, D	24
In Folds Every 20 to 25 ft	C	12

709.03.06 Infilling and Seeding Type C SSM. Perform the following operations after installing Type C SSM.

- (a) **Infilling.** Infill the matting with topsoil to provide a depth equal to twice the thickness of the matting. This shall be sufficient for a graded 24 in. tapered area beyond the outside edges of the matting.
- (b) **Seeding.** Firm the soil with a roller as specified in Section 708.03.10 and perform Turfgrass Establishment over the infilled matting and tapered area.
- (c) **Covering.** Install Type B SSM immediately after seeding to cover the seeded area. Secure the matting with 12 in. U-shaped staples, or 12 in. or 18 in. fabric pins.

709.03.07 Watering. Gently water SSM with a sprinkler or water-breaker nozzle within 48 hours of installation to bond the matting to the soil. Apply water at the rate of 300 gal per 1000 sq.ft. to wet the soil to a minimum 2 in. depth below the matting.

709.03.08 Installation Phase Acceptance. Inspection will be conducted to verify that operations were completed as specified. Installation Phase acceptance will be granted at that time.

709.03.09 Establishment Phase. The Establishment Phase will begin upon Installation Phase acceptance.

709.03.10 Final Acceptance. Final Acceptance will be granted when the SSM is secure and the turfgrass or other vegetation seedlings have grown at least 4 in., exhibit dark green color and minimum percent coverage.

Turfgrass establishment will be accepted as specified in Section 705.03.14. Other vegetation seeding will be accepted as specified.

When turfgrass establishment or other vegetation seeding is not acceptable, remove Type A, B, or D SSM. Remove Type C matting when directed.

Prepare soil, reseed, and install new matting unless the original matting is approved for reuse. Apply additional fertilizer or soil amendments as directed.

709.04 MEASUREMENT AND PAYMENT. *Soil Stabilization Matting* will be measured and paid for at the Contract unit price per square yard for one or more of the specified items. The payment will be full compensation for all material, fastening, labor, equipment, tools, and incidentals necessary to complete the work.

(a) Payment Schedule. Payments will be made according to the following schedule when construction requirements are met:

PAYMENT SCHEDULE		
CONSTRUCTION REQUIREMENTS	PERCENT OF TOTAL CONTRACT PRICE	PAYMENT FOR COMPLETED WORK
Sections 709.03.01 through .08	80	At Installation Phase Acceptance
Sections 709.03.09 and .10	20	At Final Acceptance
Total Payment	100	

(b) Forfeiture. Failure to complete operations as required in accordance with the Payment Schedule will result in forfeiture of that percentage of payment.

709.04.01 *Type A Soil Stabilization Matting* per square yard.

709.04.02 *Type B Soil Stabilization Matting* per square yard.

709.04.03 *Type C Soil Stabilization Matting* per square yard.

709.04.04 *Type D Soil Stabilization Matting* per square yard.

SECTION 710 – TREE, SHRUB, AND PERENNIAL INSTALLATION AND ESTABLISHMENT

710.01 DESCRIPTION. Install and establish trees, shrubs, perennials, vines, and grasses.

710.02 MATERIALS.

Limestone	920.02.01
Sulfur	920.02.02
Iron Sulfate	920.02.03
Compost	920.02.05
Fertilizer	920.03
Shredded Hardwood Bark (SHB) Mulch	920.04.03
Plant Materials	920.07
Marking and Staking Materials	920.08
Water	920.09.01
Pesticides	920.09.03
Marking Dye	920.09.04
Spray Adjuvant and Wetting Agent	920.09.05

710.03 CONSTRUCTION.

710.03.01 General.

- (a) **Planting Seasons.** Install plants during the following Planting Seasons unless a Modification Request is approved:

PLANTING SEASONS					
SEASON	DECIDUOUS TREES, SHRUBS, VINES		EVERGREEN TREES, SHRUBS, VINES		PERENNIALS, GRASSES
	Balled & Burlapped, Bare Root	Container Grown	Balled & Burlapped	Container Grown	Container Grown
Spring	2/15 – 4/30	3/1 – 6/15	3/15 – 4/30	3/15 – 6/15	4/15 – 6/30
Fall	10/15 – 12/15	8/15 – 12/15	9/1 – 11/15	8/15 – 11/15	9/1 – 10/30

- (b) **Modification Request.** Submit a written Modification Request to perform installation out-of season, or to install plants of different species, cultivars, sizes, growth habits, or planting stock type.

The Engineer (with assistance from the Design Division and the Department of Environmental Protection and Sustainability) will evaluate the Request. If granted, a Notice of Approved Modification will be returned within 14 days afterwards.

- (c) **Pesticide Application.** Apply pesticides in conformance with the Maryland Pesticide Applicator’s Law and the manufacturer’s recommendations. The Contractor shall recommend treatment areas locations to the Engineer for approval in writing based upon an inspection of the project area by the Contractor’s representative and the Engineer. The proposed treatment plan shall be specific regarding the pests observed

within the project area and the treatments proposed for pest elimination. The types and amounts of chemicals to be applied shall be specified as part of the treatment plan. The Contractor shall receive written approval by the Engineer before treatment is begun.

The Contractor shall possess a Maryland Department of Agriculture Commercial Pesticide Business License and a Pesticide Applicator Certificate for the pertinent pesticide application Category: (2) Forest; (3-A) Ornamental Plant Exterior; (3-C) Turf; (5) Aquatic; (6) Right-of-Way and Weed.

A Maryland Certified Pesticide Applicator, or a Registered Pesticide Applicator under the supervision of a Certified Pesticide Applicator shall apply all pesticides.

- (d) Pesticide Application Reporting.** The Contractor shall record the location, acreage treated, the pesticide name and the quantity applied as part of the treatment plan. A copy of these records shall be submitted to the Engineer within 24 hours of application, using the Pesticide Application Reporting Form. The Engineer will make copies of these records available to interested regulatory agencies upon request. The Division of Construction Contracts Administration shall retain a copy of these records as part of project records.
- (e) Nutrient Management Plan (NMP).** See Section 701.03.01(b).
- (f) Nutrient Management Reporting.** See Section 701.03.01(c).
- (g) Plant Storage and Handling.** Refer to Section 920.07.05.
- (h) Seeding of wetland areas using *Wetmix Seeding*** shall be performed in accordance with the manufacturer's recommendations as included in the Contract Special Provisions.

710.03.02 Submittals and Inspection. Submit the following items:

- (a) Breakdown List of Contract Prices.** Refer to Section 710.04.01 and develop a Breakdown List of Contract Prices for each plant in the Contract. Include the cost of all installation and establishment operations in the per plant price.

Submit the written Breakdown List within 14 days after Award of Contract. The Breakdown List will be reviewed by the Engineer for completeness and balance, and will be approved or returned for correction.

- (b) Installation Phase Schedule.** Develop a Schedule with dates for completing the requirements of Sections 710.03.01 through .15, including:

OPERATIONS IN INSTALLATION PHASE SCHEDULE	
1	Layout, utilities review and marking.
2	Undesirable vegetation removal and herbicide application.
3	Planting pit excavation, soil preparation, and plant installation.
4	Planting beds roto-tilling and soil preparation, applying shredded hardwood bark (SHB) mulch, and plant installation.
5	Applying fertilizer solution after installation, and cleanup.

Submit the written Schedule at least 30 days before beginning landscape work. The Schedule will be reviewed by the Engineer for completeness and feasibility, and will be approved or returned for correction.

(c) Plant Material Inspection and Approval. The Engineer, accompanied by the Contractor or his representative, shall conduct the Inspection as specified in Section 920.07.02.

(d) Establishment Phase Schedule & IPM Program. Develop a Schedule with dates for completing the requirements of Section 710.03.22. Include an Integrated Pest Management (IPM) Plan with methods of pest monitoring (weeds, diseases, insects, mammals, etc.), pesticide selection, application rates, and scheduling.

Submit the written Establishment Phase Schedule & IPM Program at the Installation Phase Inspection.

The Schedule will be reviewed by the Engineer and will be approved or returned for correction.

710.03.03 Utilities Marking, Layout, and Inspection.

(a) Utilities Marking. Contact ‘Miss Utility’ or another approved service to identify and mark utilities in the rights-of-way.

(b) Conflicts. Notify the Engineer of conflicts that may involve design changes. Conflicts will be reviewed and resolved within 14 days after notice.

(c) Planting Layout. Provide the necessary materials and lay out the locations of planting pits and planting beds specified in the Contract Documents, or as adjusted by the Engineer.

(d) Inspection. At least 7 days notice will be required to schedule each stage of a layout inspection in consultation with the Engineer. Proceed with operations after layout approval.

710.03.04 Preparing Planting Pits. Perform the following operations when preparing planting pits for individual plants:

(a) Undesirable Vegetation. Eliminate undesirable vegetation as follows:

(1) Non-Selective Herbicide. Apply non-selective herbicide in water with wetting agent and dye at least 14 days before plant installation as follows:

NON-SELECTIVE HERBICIDE APPLICATION	
MATERIAL	RATE PER ACRE
Glyphosate Herbicide	5 lb of active ingredient
Marking Dye	6 to 15 oz
Water	40 to 50 gal

Cut and remove dead vegetation or debris that interferes with soil preparation, plant installation or future maintenance.

(2) Manual Vegetation Removal. Remove undesirable vegetation within Bioretention Facilities manually without the use of herbicides.

(b) Excavation. Excavate planting pits to the depth required for the placement of root collars as specified in Section 710.03.09(c). Retain the excavated soil for preparation as backfill soil. Remove excess soil from the site, or spread it as directed.

(c) Pit Diameter, Compost, and Water. Use the following table to determine the diameter of the planting pit based upon the container or root ball diameter, the volume of compost or peat moss to be mixed into the backfill soil, and the amount of water to be used per watering event.

PREPARING PLANTING PITS AND BACKFILL SOIL					
Container or Root Ball Diameter In.	ANSI Z60 Container Size	Planting Pit Diameter In.	Compost or Peat Moss Cu.Ft.	14-14-14 Granular Fertilizer Oz.	Water per Event Gal.
3	#SP3	6	0.02	0.10	0.15
5	#SP4	10	0.02	0.12	0.2
6	#SP5 or #1	12	0.03	0.18	0.3
8	#2	17	0.09	0.30	0.5
10	#3	21	0.18	0.55	1.0
12	#5	24	0.28	0.75	1.5
14	#7	28	0.44	1.0	2.3
16	#10	32	0.65	1.3	3.5
18	#15	36	0.94	1.6	5.0
20	#20	40	1.27	2.0	6.8
24	#25	48	2.20	3.0	12
30	-	60	4.30	4.5	23
36	#45	72	7.40	6.5	40
42	#65	84	11.80	8.8	60

- (1) **Container Grown (CG) and Balled and Burlapped (BB).** Add 14-14-14 fertilizer to each planting pit during installation unless other rates are specified in the NMP.
- (2) **Bare Root (BR).** Excavate planting pits to accommodate roots when spread in natural position. Add 14-14-14 fertilizer to each planting pit during installation based upon the pit diameter unless other rates are specified in the NMP.
- (d) **Compost or Peat Moss.** Mix compost into the backfill soil as specified in Section 710.03.04(c) when installing all plants except Ericaceous species, which shall be amended with the same volume of peat moss.
- (e) **pH Adjustment.** Adjust soil pH to 6.0 to 6.5 for all plants except Ericaceous species, which shall be adjusted to pH 5.0 to 5.5. Use limestone to raise soil pH and iron sulfate to lower soil pH as specified in the NMP.
- (f) **Fertilizer.** At the time of installation, mix 14-14-14 fertilizer into the backfill soil of trees, shrubs, vines, perennials and grasses.

Use a scale with 0.01 oz accuracy to calibrate measures and verify application rates of 14-14-14 fertilizer.

710.03.05 Preparing Planting Beds. Perform the following operations when preparing planting beds:

- (a) **Undesirable Vegetation.** Eliminate undesirable vegetation as specified in Section 710.03.04(a). Cut or mow dead vegetation to a height of 1 in. and remove the debris.
- (b) **Fertilizer and Soil Amendments.** Uniformly apply fertilizer and soil amendments (limestone, iron sulfate, compost, peat moss) at rates specified in Section 710.03.04(c) unless other rates are specified in the NMP. Mix 14-14-14 fertilizer into the backfill soil of each planting pit within the planting bed. Refer to Section 710.03.04(f) and the following:
 - (1) **Areas Flatter than 4:1.** Apply compost to the soil surface of the bed to a 2 in. depth.
 - (2) **Slopes 4:1 and Steeper.** Mix compost or peat moss into the backfill soil of each planting pit within the bed.
- (c) **Roto-tilling.** Roto-till the soil of the bed as follows:
 - (1) **Areas Flatter than 4:1.** Roto-till to a depth of 6 in. to thoroughly mix compost and specified fertilizer or soil amendments into the soil.
 - (2) **Slopes 4:1 and Steeper.** Do not roto-till.
 - (3) **Bioretention Soil Mixture.** Do not roto-till.
- (d) **Debris Removal.** Remove debris, stones, and soil clods with a length or width greater than 2 in. that are uncovered during roto-tilling.
- (e) **Leveling.** Level the soil surface after roto-tilling, and leave it in a condition ready for shredded hardwood bark (SHB) mulching and plant installation.

710.03.06 Plant Acclimation. Ensure that container-grown plants are acclimated to prevailing weather conditions before installing. Install bare root plants while dormant when soil and air temperatures are above freezing.

710.03.07 Plant Care. Begin plant care at the time each plant is installed, and continue until Installation Phase Acceptance is granted.

710.03.08 Pruning. Prune to preserve the natural appearance of trees and shrubs. Remove water sprouts manually with pruners.

Remove damaged or undesirable wood of deciduous trees taller than 6 ft before installation. Prune deciduous trees and shrubs 6 ft or shorter at the time of installation.

710.03.09 Installing. Install plants vertically in planting pits and beds prepared as specified in Sections 710.03.04 and .05, and as follows:

- (a) **Removing Containers, Burlap, Wire Baskets.** Remove synthetic fabric, plastic, and metal containers before installing plants.

Remove twine and natural burlap from the tops of root balls to a depth at least 6 in. below the surface of the backfilled planting pit.

Cut and remove the tops of wire baskets from the upper half of the rootball.

- (b) **Preparing Roots.** Carefully remove the containers of container grown plants, and loosen the soil mass to eliminate girdling roots.

Spread the roots of bare root plants in a natural position, and work amended soil around the roots.

- (c) **Placing Root Collar.** Place the root collar of plants at or above the average soil surface grade outside the planting pit as follows:

ROOT COLLAR PLACEMENT	
SOIL CONDITIONS	HEIGHT OF ROOT COLLAR
Normal, Well Drained	Place collar at same level to 1 in. above average surface grade.
Compacted	Place collar at 1 to 2 in. above average surface grade.
Poorly Drained or Wet	Place collar as needed to ensure 25% of root mass is above average surface grade.

- (d) **Backfilling.** Remove clods, stones and other foreign material with a length or width greater than 2 in. from soil used for backfilling.

Place backfill soil that has been fertilized and amended as specified in Sections 710.03.04 and .05 under and around roots to stabilize plants in upright position and restore the grade.

Lightly compact backfill soil to reduce air pockets. Avoid excessive compaction of Bioretention Soil Mixture (BSM).

710.03.10 Soil Berming. Form a 4 in. high berm of backfill soil around planting pits and planting beds as follows:

- (a) **Planting Pits.** On areas flatter than 4:1, form the berm around the entire planting pit.

On slopes 4:1 and steeper, take soil from the upslope rim of the pit and place it on the downslope rim to form the berm.

(b) Planting Beds. On slopes 4:1 and steeper, form the berm as a shoulder at the lower edge of the bed.

Berm individual trees and shrubs installed within beds on slopes 4:1 and steeper as described in (a) above.

710.03.11 Edging. Cut edging at a steep angle into the mulched area to a 3 in. depth into the soil. On slopes 4:1 and steeper, cut edging outside of the bermed area on the lower edge of berm. Remove and discard excess soil.

(a) Planting Pits. Edge entirely around all planting pits except planting pits within planting beds.

(b) Planting Beds. Smoothly cut edging around all planting beds to the shapes specified.

710.03.12 Staking and Guying. Stake and guy trees the same day they are installed.

(a) Installation. When two or three stakes are specified for trees, install two stakes parallel to the direction of traffic, or as directed. Drive stakes vertically to a depth of 10 in. below the bottom of the pit, and 5 to 8 in. away from roots as follows:

STAKING AND GUYING				
TREE TYPE	CALIPER In.	HEIGHT Ft	SUPPORT	
			No. of Stakes	Length, ft
Shade	Under 1	6 and 8	2	6
	1 to 2	-	2	8
	2-1/2 to 3-1/2	-	3	10
	4 and over	-	-	3 guy wires attached to tree anchors
Flowering	3/4 to 2-1/2	-	2	5-8
	3 and over	-	-	3 guy wires attached to tree anchors
Evergreen	-	5 and 6	2	5-6
	-	7, 8 and 9	3	7-8
	-	10 and over	-	3 guy wires attached to tree anchors

(b) Maintenance. Promptly straighten trees that become crooked after installation. Repair or replace stakes, guys, and other support materials as needed.

710.03.13 Mulching. Spread SHB mulch uniformly over the soil surface to a 3 in. depth. Promptly repair damage caused by washouts or construction activities.

(a) Planting Pits. Spread SHB mulch the same day that plants are installed. Mulch around the base of each plant to cover the soil of the planting pit to its outside edge, including the soil berm. Do not allow mulch to touch the bark or main stem of the plant.

(b) Planting Beds. SHB mulch may be spread before or after installing plants. Spread mulch over the entire bed and rake it to an even surface, including berms and shoulders. Ensure that mulch does not cover plants.

(1) Roto-tilled Beds. Spread mulch the same day after roto-tilling.

(2) Non-Roto-tilled Beds. Spread mulch within 3 days after plant installation.

When installation is completed, ensure that mulch uniformly covers the soil to a uniform 2 in. depth.

710.03.14 Fertilizing and Watering after Installation.

(a) Application Equipment. Fertilizer and watering equipment shall consist of sprinklers or hoses equipped with water breaker nozzles so the materials are applied with care to prevent damage to plants and minimize disturbance to SHB mulch.

(b) Fertilizer Solution. Fertilization after installation shall be done only if a need is established and shall be in accordance with Section 701.03.01(b)

(c) Nutrient Management Reporting. Refer to Section 701.03.01(c).

(d) Follow-Up Watering. Monitor and apply water during the Installation Phase to supply plant needs. Do not mix fertilizer with the irrigation water during the Installation Phase after the initial watering unless directed.

710.03.15 Cleanup. Remove grower's tape, plant stakes, pot markers, field tags, and similar materials at the time of installation. Ensure that the Inspection Approval markings and plant tags remain on trees and shrubs until the end of the Establishment Phase.

Keep turfgrass areas, paved surfaces, and sidewalks clean. Promptly remove excess and waste materials. Take precautions to avoid damage to existing structures, plants, and turfgrass. Repair damage caused to surrounding areas during installation, and fill ruts and reestablish turfgrass as necessary.

710.03.16 Relocating Plants. Begin plant relocation operations within 7 days after notice to relocate, and continue until work is completed. Remove plants installed in undesirable locations as directed by the Engineer, and reinstall these plants as specified herein.

710.03.17 Abandoned Planting Pits. Backfill abandoned planting pits when directed with excavated soil or approved backfill. Compact the backfill in 8 in. layers to the finished grade. Establish turfgrass as specified in Section 705.

710.03.18 Unacceptable Plants and Replacement Plants. Promptly remove and replace plants that are unacceptable at any time during the Installation Phase as specified in Section 920.07, or when requested.

Plants that are determined to be missing, dead, dying, damaged, diseased, deformed, underdeveloped, damaged by pesticides, or not true to species, cultivar, size or quality shall be replaced.

Refer to Section GP-5.09 regarding removal of defective work and materials, and Section GP-7.16 regarding Contractor responsibility for work, theft, damage, and loss.

(a) **Criteria.** The following criteria will be used to identify unacceptable plants:

CRITERIA FOR UNACCEPTABLE PLANTS			
Item	Plant Type	Condition	Unacceptable
1	Tree, Shrub, Vine, Perennial Grass	Death or Absence	Any dead or missing plant, any cause.
2	Tree, Shrub, Vine, Perennial Grass	Defoliation	More than 25% of leaf area dead, lost or dropped.
3	Tree, Shrub, Vine	Bark Wound	More than 15% of bark circumference or 2 in. length.
4	Shrub or Vine	Height Die-back	More than 25% of the shrub or vine height.
5	Tree	Leader Die-back	More than 10% of tree height.
6	Tree	Branch Die-back	More than 6 in. on 75% of branches.

(b) **Replacement Plants.** Replacement plants shall be true to species, cultivar, size, and quality as specified in the Contract Documents unless a Substitution Request is approved.

Install replacement plants as soon as feasible during the current Planting Season, or if between Planting Seasons, during the next Planting Season.

Promptly submit a Modification Request as specified in Section 710.03.01(b) when it is not possible to obtain plants that meet specifications.

Replacement plants shall meet the specifications of Section 920.07, and be installed and established as specified in Section 710 for 24 months, until Final Acceptance.

710.03.19 Installation Phase Inspection. Submit a request for Installation Phase Inspection when operations are completed, and provide the Establishment Phase Schedule as specified in Section 710.03.02(d).

The Installation Phase Inspection will be scheduled by the Engineer at the project with the Contractor to verify completion. At least 14 days notice will be provided before the scheduled Inspection so that it may be completed in the company of the Contractor.

710.03.20 Installation Phase Punch List. The Engineer in consultation with the Contractor will develop the Installation Phase Punch List and list of plants to be replaced. Complete the Punch List requirements and replace plants as required.

710.03.21 Installation Phase Acceptance. Re-inspection will be performed as needed. Installation Phase Acceptance will be granted when the Punch List and all Installation Phase requirements are completed.

The following list includes key Installation Phase requirements:

REQUIREMENTS FOR INSTALLATION PHASE ACCEPTANCE		
Item	Requirement	Section
a	Submittals are accepted and Inspections are completed.	710.03.01(b), 710.03.02, 920.07
b	Damaging pests are controlled.	710.03.02(c)
c	Layouts are inspected and approved.	710.03.03
d	Fertilizer and soil amendments are applied.	710.03.04 and 710.03.05
e	Planting pits and planting beds are weed free.	710.03.04(a) and 710.03.05(a)
f	Trees and shrubs are pruned.	710.03.08
g	Trees are installed vertically and straightened.	710.03.09
h	Planting pits and beds are bermed and edged.	710.03.10 and 710.03.11
i	Staking and guying are repaired or replaced.	710.03.12
j	SHB mulch is uniformly spread to the specified depth.	710.03.13
k	Washouts in planting pits and beds are repaired.	710.03.13
l	Plants are watered and fertilized.	710.03.04 and 710.03.14
m	Clean up is completed, plant tags and ribbons are removed.	710.03.15
n	Plants are relocated to approved locations.	710.03.16
o	Abandoned planting pits are filled and seeded.	710.03.17
p	Unacceptable plants are replaced.	710.03.18
q	Damage repairs and Installation Punch List is completed.	710.03.20
r	Pesticide Application and Nutrient Management Reporting Forms are completed.	710.03.01(d) and (f)
s	Plants are properly installed and successfully transplanted.	710.03.01 through .18
t	Establishment Phase Schedule & IPM Program is accepted.	710.03.02 (d)

710.03.22 Establishment Phase. The Establishment Phase begins upon Installation Phase acceptance. Maintain plants as specified in Sections 710.03.01 through 0.21, and as follows:

- (a) Period of Maintenance.** Maintain plants for 24 months after installation, until Final Acceptance.

- (b) Plant Watering.** Monitor the soil moisture and water needs of plants. Promptly apply water as specified in Section 710.03.04(c) to planting pits, and 600 gal of water per 1000 sq.ft. to planting beds when needed or when directed.
- (c) Pest Management.** Monitor and promptly control weeds, insects and other pests in conformance with the IPM Program, or when requested. Control weeds in mulched areas in preparation for inspection on or about the 15th of each month from March 15th to November 15th. Remove dead weeds taller than 6 in. Refer to Section 710.03.01(d) and complete the Pesticide Application Reporting Form.
- (d) Unacceptable Plants and Replacement Plants.** Refer to Section 710.03.18. Promptly remove and replace plants that have become unacceptable during the Establishment Phase as needed or as directed.
- (e) End-of-Season Foliage Removal.** Remove the aboveground parts of perennials and grasses that have declined during the months of November and March respectively, or as directed.
- (f) Refertilizing.** Refertilizing shall be performed only as directed by the Engineer in accordance with the NMP following soil testing demonstrating a need for refertilization.
- (g) Removing Supports.** Remove tree supports, hoses wires, guys and Inspection Approval markings in the final 30 days of the Establishment Phase. Pull stakes from the soil or cut them to ground level.
- (h) Establishment Phase Inspection and Punch List.** Refer to Sections 710.03.19 and .20. The Inspection will be scheduled and the Establishment Phase Punch List will be developed. Perform repairs, replacements and other work as specified in the Contract Documents and Punch List.

710.03.23 Final Acceptance. Refer to Section 710.03.21. Final Acceptance will be granted when the Punch List and all Establishment Phase requirements are completed.

The following list includes key establishment requirements:

REQUIREMENTS FOR ESTABLISHMENT PHASE & FINAL ACCEPTANCE		
Item	Requirement	Section
1	Water sprouts are manually pruned and removed.	710.03.08
2	Trees are straightened.	710.03.09
3	Staking and guying are repaired or replaced.	710.03.12
4	Washouts in planting pits and beds are repaired.	710.03.13
5	Plants are relocated to approved locations.	710.03.16
6	Abandoned planting pits are filled and seeded.	710.03.17
7	Plants are successfully established for 24 months.	710.03.22(a) and (b)
8	Damaging pests are controlled.	710.03.22(c)
9	Planting pits and planting beds are weed free.	710.03.22(c)
10	Unacceptable plants are replaced.	710.03.22(d)
11	Annual foliage dieback of perennials and grasses is cut and removed.	710.03.22(e)
12	Plants are refertilized.	710.03.22(f)
13	Pesticide Application and Nutrient Management Reporting Forms are completed.	710.03.01(d) and (f)
14	Staking, guying, and Material Inspection Seals are removed.	710.03.22(g)
15	Damage repairs and Establishment Punch List are completed.	710.03.22(h)

710.04 MEASUREMENT AND PAYMENT. Tree, shrub, and perennial installation and establishment will be measured and paid for at the Contract unit price per each for one or more of the item, specified by common name, biological designation, and by container type, size, caliper or height. The payment will be full compensation for all plants, material, labor, equipment, tools, and incidentals necessary to complete the work.

710.04.01 Tree, Shrub, and Perennial Installation and Establishment. Tree, shrub, and perennial installation and establishment shall include the cost of trees, shrubs, perennials, vines, and grasses, layout, marking, pruning, planting pit excavation, fertilizer, soil amendments, backfilling, staking, guying, berming, edging, watering, pest management, plant maintenance, and all operations related to the Installation and Establishment Phases of each plant, until Final Acceptance.

Tree, shrub, and perennial installation and establishment will be paid for in monthly prorated payments based upon the approved Breakdown List of Contract Prices.

Refer to Section 710.03.02(a). In the event of change in the quantities required, payment adjustments will be based on the approved Breakdown List of Contract Prices.

(a) Payment Schedule. Payments will be made according to the following schedule when construction requirements are met:

PAYMENT SCHEDULE			
INSTALLATION AND ESTABLISHMENT PHASE COMPLETION		PERCENT OF TOTAL CONTRACT PRICE	PRO-RATED MONTHLY FOR COMPLETED WORK
Sections 710.03.01 through .21	Installation Phase	70	Duration of Installation Phase
Sections 710.03.22(a) through (d)	Establishment Phase Care & Maintenance	20	At Each Monthly Inspection
Sections 710.03.22(e) through (h)	Establishment Phase Removal & Replacement and Final Acceptance	10	At Final Acceptance
Total Payment		100	

(b) Forfeiture. Failure to complete operations as required or directed in conformance with the Payment Schedule will result in forfeiture of that percentage of payment based upon the Breakdown List of Contract Prices.

710.04.02 Constructing Planting Beds. *Constructing Planting Beds* will be measured and paid for at the Contract unit price per square yard. The price shall include the cost of layout, marking, fertilizer, soil amendments, roto-tilling, berming, edging, applying 3 in. of SHB mulch, and all operations related to construction of the planting bed.

Mulching individual planting pits of trees, shrubs, perennials, vines, and grasses within planting beds will not be measured but the cost will be incidental to Section 710.04.01.

710.04.03 Relocating Plants. *Relocating Plants* will be measured and paid for at the Contract unit price per cubic foot of planting pit volume excavated as specified in Section 710.03.04(c).

Refer to the following Table to determine planting pit volume based upon planting pit diameter:

RELOCATING PLANTS			
PIT DIAMETER In.	PIT VOLUME Cu.Ft.	PIT DIAMETER In.	PIT VOLUME Cu.Ft.
3	0.1	16	10
5	0.3	18	14
6	0.5	20	19
8	1.2	24	35
10	2.4	30	65
12	4.0	36	110
14	5.7	42	175

710.04.04 Abandoned Planting Pits. *Abandoned Planting Pits* will be measured and paid for at the Contract unit price per cubic foot of excavated planting pit as specified in Section 710.04.03.

710.04.05 Additional Mulching. *Additional Mulching* will be measured and paid for at the Contract unit price per square yard of 1.0 in. depth of shredded hardwood bark (SHB) mulch over designated areas.

710.04.06 Composted Wood Chip Mulch. *Composted Wood Chip (CWC) Mulch* will be measured and paid for at the Contract unit price per square yard at 1.0 in. depth over designated areas.

710.04.07 Wetmix Seeding of wetlands shall be measured and paid for at the Contract unit price per pound (lb) applied.

SECTION 711 – ANNUALS AND BULBS INSTALLATION AND ESTABLISHMENT

711.01 DESCRIPTION. Install and establish annuals and bulbs.

711.02 MATERIALS.

Limestone	920.02.01
Sulfur	920.02.02
Iron Sulfate	920.02.03
Compost	920.02.05
Fertilizer	920.03
Shredded Hardwood Bark (SHB) Mulch	920.04.03
Plant Materials	920.07
Marking and Staking Materials	920.08
Water	920.09.01
Pesticides	920.09.03

711.03 CONSTRUCTION.

711.03.01 General.

(a) Regional Areas. Refer to Section 705.03.01(a).

(b) Planting Seasons. Install plants during the following Planting Seasons unless a Modification Request is approved:

PLANTING SEASONS		
SEASON	PLANTS	INSTALLATION DATE
Spring	Container Grown Summer Annuals	5/10 – 6/10
Fall	Container Grown Winter Annuals	9/10 – 10/31
	Spring Flowering Bulbs	9/10 – 12/31

(c) Modification Request. See Section 710.03.01(b).

(d) Pesticide Application. See Section 710.03.01(c).

(e) Pesticide Application Reporting. See Section 710.03.01(d).

(f) Nutrient Management Plan (NMP). See Section 701.03.01(b).

(g) Nutrient Management Reporting. See Section 701.03.01(c).

(h) Plant Storage and Handling. See Section 920.07.05.

711.03.02 Submittals and Inspection. Submit the following items as indicated:

(a) Breakdown List of Contract Prices. Refer to Section 710.03.02(a).

(b) Installation Phase Schedule. Refer to Section 710.03.02(b) and submit the Schedule with dates for completing the requirements of Sections 711.03.02 through .12.

(c) Plant Material Inspection and Approval. The Engineer, accompanied by the Contractor or his representative, shall conduct the Inspection as specified in Section 920.07.02.

(d) Establishment Phase Schedule & IPM Program. Refer to Section 710.03.02(d) and submit the Schedule with dates for completing the requirements of Section 711.03.17.

711.03.03 Utilities Marking, Layout, and Inspection. Refer to Section 710.03.03.

711.03.04 Preparing Planting Beds and Planting Areas.

(a) Planting Beds. Refer to Section 710.03.05 for preparing beds and planting holes for container grown annuals and bulbs. Dig holes for bulbs to the depth and width recommended for the species or variety by the grower.

(b) Planting Areas for Naturalized Daffodils. Dig planting holes to 3.0 diameter and to a 5 in. depth. Mix 0.20 oz of 14-14-14 fertilizer into the backfill soil of each bulb, or as specified in the NMP. Firmly cover each bulb with backfill soil to the level of the surrounding grade.

Omit the requirements of Sections 711.03.05 through .10 when installing naturalized daffodils.

711.03.05 Soil Berming. Refer to Section 710.03.10.

711.03.06 Edging. Refer to Section 710.03.11.

711.03.07 Mulching. Refer to Section 710.03.13.

711.03.08 Plant Acclimation. Refer to Section 710.03.06.

711.03.09 Plant Care. Refer to Section 710.03.07.

711.03.10 Installing. Handle annuals and bulbs with care to avoid damage or bruising. Refer to Section 710.03.09 and the following:

(a) Foliage Removal. Remove dead foliage of annuals and other unwanted vegetation from the previous season without damaging or disturbing perennials or other desirable vegetation.

(b) Mulch. Remove and conserve SHB mulch at sites where annuals or bulbs will be installed before digging the planting hole. Replace mulch to a depth of 2 in. over bulbs and around the stems of annuals.

711.03.11 Fertilizing and Watering After Installation.

(a) Application Equipment. Refer to Section 710.03.14(a).

(b) Fertilizer Solution. Refer to Section 710.03.14(b).

(c) Nutrient Management Reporting. Refer to Section 701.03.01(c).

(d) Follow-Up Watering. Refer to Section 710.03.14(d).

711.03.12 Cleanup. Refer to Section 710.03.15.

711.03.13 Unacceptable Plants and Replacement Plants. Refer to Sections 710.03.18 and 920.07 and replace unacceptable plants as specified in Section 711 for the remainder of the growing season until Final Acceptance.

711.03.14 Installation Phase Inspection. Refer to Section 710.03.19.

711.03.15 Installation Phase Punch List. Refer to Section 710.03.20.

711.03.16 Installation Phase Acceptance. Refer to Section 710.03.21 and provide the Establishment Phase Schedule as specified in Section 711.03.02(d).

Installation Phase Acceptance will be granted when the Punch List and all Installation Phase requirements are completed.

The following list includes key Installation Phase requirements:

REQUIREMENTS FOR INSTALLATION PHASE ACCEPTANCE		
Item	Requirement	Section
a	Submittals are accepted and Inspections are completed.	710.03.01(b), 711.03.02, 920.07
b	Dead foliage in existing beds is removed.	711.03.10(a)
c	Fertilizer and soil amendments are applied.	711.03.04
d	Planting pits and planting beds are bermed and edged.	710.03.10 and 710.03.11
e	SHB mulch is uniformly spread to the specified depth.	710.03.13 and 711.03.10(b)
f	Plants are watered and fertilized.	711.03.04 and 711.03.11
g	Damaging pests are controlled.	710.03.02(c)
h	Cleanup is completed, plant tags and ribbons are removed.	710.03.15
i	Washouts in and around planting beds are repaired.	710.03.13
j	Unacceptable plants are replaced as needed or required.	710.03.18
k	Damage repairs and Installation Phase Punch List are completed.	710.03.20
l	SHA Pesticide Application and Nutrient Management. Reporting Forms are completed.	710.03.01(d) and (f)
m	Plants are properly installed and successfully transplanted.	711.03.01 through .13
n	Establishment Phase Schedule & IPM Program is accepted.	710.03.02(d) and 711.03.16

711.03.17 Establishment Phase. The Establishment Phase for annuals and bulbs planted in beds begins upon Installation Phase Acceptance. Maintain all plants except naturalized daffodils as specified in Sections 711.03.01 through .16 and as follows:

(a) Period of Maintenance. Plants shall be maintained for one Planting Season, until Final Acceptance.

(b) Plant Watering. Refer to Section 710.03.22(b).

- (c) **Pest Management.** Refer to Section 710.03.22(c).
- (d) **Unacceptable Plants and Replacement Plants.** Refer to Section 710.03.22(d). Promptly remove and replace plants that have become unacceptable during the Establishment Phase as needed, or at the request of the Engineer.
- (e) **End-of-Season Foliage Removal.** Remove the foliage of annuals that have declined in late summer or fall, as directed by the Engineer. Remove the foliage and flower stems of bulbs planted in beds after they have declined at the end of their growing season in June.
- (f) **Establishment Phase Inspection and Punch List.** Refer to Section 710.03.22(h). The Inspection will be scheduled and the Establishment Phase Punch List will be developed. Perform repairs, replacements and other work as specified in the Contract Documents and Punch List.
- (g) **Final Acceptance.** Refer to Section 710.03.23. Final Acceptance will be granted when the Punch List and all Establishment Phase requirements are completed.

The following list includes key establishment requirements:

REQUIREMENTS FOR ESTABLISHMENT PHASE & FINAL ACCEPTANCE		
Item	Requirement	Section
1	Washouts in and around planting beds are repaired.	710.03.13
2	Plants are watered as needed and refertilized as requested.	710.03.14(d) and 710.03.22(b)
3	Damaging pests are controlled.	710.03.22(c)
4	Planting beds are weed free.	710.03.22(c)
5	Pesticide Reporting and Nutrient Management Fertilizer Reporting Forms are completed.	710.03.01(d) and (f)
6	Unacceptable plants are replaced as requested.	711.03.17(d)
7	End-of-season foliage removal is completed.	711.03.17(e)
8	Damage repairs and Establishment Punch List are completed.	711.03.17(f)

711.04 MEASUREMENT AND PAYMENT. *Annuals and Bulbs Installation and Establishment* will be measured and paid for at the Contract unit price for one or more of the specified items. The payment will be full compensation for all plants, material, labor, equipment, tools, and incidentals necessary to complete the work.

711.04.01 Annuals and Bulbs Installation and Establishment. *Annuals and Bulbs Installation and Establishment* shall be measured and paid for at the Contract unit price per square yard and shall include the cost of plants, layout, marking, pruning, planting pit

excavation, fertilizer, soil amendments, backfilling, berming, edging, watering, pest management, plant maintenance, and all operations related to the Installation and Establishment Phases of each plant, until Final Acceptance.

Annuals and Bulbs Installation and Establishment will be paid for in monthly pro-rated payments based upon the approved Breakdown List of Contract Prices and the following Payment Schedule.

Refer to Section 711.03.02(a). In the event of change in the quantities required, payment adjustments will be based on the approved Breakdown List of Contract Prices.

(a) Payment Schedule. Payments will be made according to the following schedule when construction requirements are met:

PAYMENT SCHEDULE					
INSTALLATION AND ESTABLISHMENT PHASE COMPLETION		PERCENT OF TOTAL CONTRACT PRICE			PRO-RATED MONTHLY FOR COMPLETED WORK
		Annuals in Beds	Bulbs in Beds	Naturalized Bulbs	
Sections 711.03.01 through .16	Installation Phase	70	80	100	Duration of Installation Phase
Sections 711.03.17(a) through (d)	Establishment Phase In-Season Maintenance	20	10	–	At Each Monthly Inspection
Sections 711.03.17(e) through (g)	End-of-Season Maintenance, Removal & Replacement, and Final Acceptance	10	10	–	At Final Acceptance
Total Payment		100	100	100	

(b) Forfeiture. Failure to complete operations as required or directed in conformance with the Payment Schedule will result in forfeiture of that percentage of payment based upon the Breakdown List of Contract Prices.

711.04.02 Constructing Planting Beds. Refer to Section 710.04.02

711.04.03 Refertilizing. *Refertilization* authorized after the Engineer grants Installation Phase acceptance will be measured and paid for at the Contract unit price per 1000 gallons.

711.04.04 Additional Mulching. Refer to Section 710.04.05.

SECTION 712 – TREE BRANCH PRUNING

712.01 DESCRIPTION. Prune tree branches.

712.02 MATERIALS. Not applicable.

712.03 CONSTRUCTION.

712.03.01 General.

(a) **Permits.** Obtain a Roadside Tree Permit from the Maryland Department of Natural Resources - Forest Service.

(b) **Tree Preservation Program (TPP).** Adhere to the requirements of the TPP when developed by the County.

712.03.02 Breakdown List of Contract Prices. Refer to Section 712.04 and develop a Breakdown List of Contract Prices for each tree in the Contract. Include costs for pruning and completing all operations per tree.

Submit the written Breakdown List within 14 days after Notice of Award. The Breakdown List will be reviewed by the Engineer for completeness and balance, and will be approved or returned for correction.

712.03.03 Maryland Licensed Tree Expert (LTE). A LTE shall perform or directly supervise the Operations in conformance with the Maryland Roadside Tree Law, the Forest Conservation Act, and accepted arboricultural practices.

712.03.04 Meetings. Meet with the Engineer and the LTE to review areas, Operations, and the approved Breakdown List of Contract Prices before beginning Operations.

712.03.05 Marking. Identify trees to be pruned, and obtain approval before beginning Operations.

712.03.06 Equipment. Equipment and tools shall conform to accepted arboricultural practices.

712.03.07 Notice. Notify the Engineer at least 10 days before beginning Operations.

712.03.08 Operations. The Contract Documents will indicate the trees to be selectively pruned or the dimensions or goals to be achieved by pruning. Meet ANSI A300 standards for Tree Care Operations. Tree branch pruning shall conform to one or more of the following Operations, as specified:

- (a) **Cleaning.** To remove dead, diseased, and broken branches.
- (b) **Thinning.** To reduce the density of live branches.
- (c) **Raising.** To provide vertical clearance to a height of 15 ft, or as specified in the Contract Documents.
- (d) **Reducing.** To decrease the height or spread.
- (e) **Specialty Pruning.** To meet the needs of young trees, at planting, once established, pollarding, for restoration, to maintain vistas, or to accommodate utilities.

712.03.09 Wood Chipping. Chip wood and disperse or dispose of chips as directed.

712.03.10 Cleanup and Restoration. Promptly disperse or remove and dispose of wood debris and other waste materials as directed.

Avoid damage to existing structures, plants, and turfgrass. Keep turfgrass areas, paved surfaces, and sidewalks clean. Restore ruts and damaged turfgrass areas by seeding as specified in Section 705 before beginning any new landscape operations.

712.03.11 Damage Repair. Do not injure vegetation to be preserved.

Repair injuries to bark, trunks, or limbs by cutting, smoothing, and tracing the bark in accordance with ANSI A300 Standards for Tree Care Operations.

712.03.12 Damage Compensation. Monetary compensation for damage or loss of trees will be calculated and assessed in conformance with the Guide for Plant Appraisal of the Council of Tree & Landscape Appraisers.

712.04 MEASUREMENT AND PAYMENT. *Tree Branch Pruning* will not be measured, but will be paid for at the Contract lump sum price based upon the Breakdown List of Contract Prices.

The payment will be full compensation for all labor, material, equipment, tools, and incidentals necessary to complete the work. If the County requests a change, the units and payment will be adjusted on the basis of the approved Breakdown List of Contract Prices.

SECTION 713 – BRUSH REMOVAL

713.01 DESCRIPTION. Remove brush as specified.

713.02 MATERIALS.

Herbicide	920.09.03(a)
Marking Dye	920.09.04

713.03 CONSTRUCTION.

713.03.01 General.

- (a) **Permits.** Obtain a Roadside Tree Permit from the Maryland Department of Natural Resources - Forest Service.
- (b) **Tree Preservation Program (TPP).** Adhere to the requirements of the TPP when developed by the County.
- (c) **Pesticide Application.** Refer to Section 710.03.01(c).
- (d) **Pesticide Application Reporting.** Refer to Section 710.03.01(d).

713.03.02 Maryland Licensed Tree Expert (LTE). A LTE shall perform or directly supervise the Operations in conformance with the Maryland Roadside Tree Law, the Forest Conservation Act, and accepted arboricultural practices.

713.03.03 Meetings. Meet with the Engineer and the Licensed Tree Expert to review areas and Operations before beginning Operations.

713.03.04 Marking. Mark areas where brush is to be removed. Identify trees and shrubs to be preserved and protected. Ensure that marking and identification is completed and approved before beginning Operations.

713.03.05 Equipment. Equipment and tools shall conform to accepted arboricultural practices.

713.03.06 Notice. Notify the Engineer at least 10 days before beginning Operations.

713.03.07 Operations. Brush removal shall involve cutting, herbicide treatment, and debris removal of areas of living or dead vegetation. Do not injure vegetation identified for preservation.

One or more of the following Operations will be specified:

(a) Operation 1 - Brush Removal. Cut vegetation to a height of no more than 1 in. above the soil surface. Remove wood debris.

(b) Operation 2 - Brush Removal with Stump Treatment. Cut vegetation as in Operation 1. Immediately treat the cambium layer and exposed bark of live stumps with an approved herbicide solution and marking dye. Remove wood debris.

713.03.08 Wood Chipping. Chip wood and disperse or dispose of chips as directed.

713.03.09 Cleanup and Restoration. Promptly remove, disperse, or dispose of wood debris and other waste materials as directed.

Avoid damage to existing structures, plants, and turfgrass. Keep turfgrass areas, paved surfaces, and sidewalks clean. Restore ruts and damaged turfgrass areas by seeding as specified in Section 705 before beginning any new landscape operations.

713.03.10 Damage Repair. Do not injure vegetation to be preserved.

Repair injuries to bark, trunks, or limbs by cutting, smoothing, and tracing the bark in accordance with ANSI A300 Standards for Tree Care Operations.

713.03.11 Damage Compensation. Monetary compensation for damage or loss of trees will be calculated and assessed in conformance with the Guide for Plant Appraisal of the Council of Tree & Landscape Appraisers.

713.04 MEASUREMENT AND PAYMENT. *Brush Removal* will be measured and paid for at the Contract unit price per square yard, as specified. The payment will be full compensation for all labor, material, equipment, tools, and incidentals necessary to complete the work.

SECTION 714 – TREE FELLING

714.01 DESCRIPTION. Fell trees as specified.

714.02 MATERIALS.

Furnished Topsoil	920.01.02
Herbicide	920.09.03(a)
Marking Dye	920.09.04

714.03 CONSTRUCTION.

714.03.01 General.

- (a) Permits.** Obtain a Roadside Tree Permit from the Maryland Department of Natural Resources - Forest Service.
- (b) Tree Preservation Program (TPP).** Adhere to the requirements of the TPP when developed by the County.
- (c) Pesticide Application.** Refer to Section 710.03.01(c).
- (d) Pesticide Application Reporting.** Refer to Section 710.03.01(d).

714.03.02 Breakdown List of Contract Prices. Refer to Section 714.04 and develop a Breakdown List of Contract Prices for each tree in the Contract. Include costs for felling and completing all operations per tree.

Submit the written Breakdown List within 14 days after Notice of Award. The Breakdown List will be reviewed by the Engineer for completeness and balance, and will be approved or returned for correction.

714.03.03 Maryland Licensed Tree Expert (LTE). A LTE shall perform or directly supervise the Operations in conformance with the Maryland Roadside Tree Law, the Forest Conservation Act, and accepted arboricultural practices.

714.03.04 Meetings. Meet with the Engineer and the LTE to review areas, Operations, and the Breakdown List of Contract Prices before beginning Operations.

714.03.05 Utilities and Tree Marking.

- (a) Utilities Marking.** Contact ‘Miss Utility’ or another approved service to identify and mark utilities in the rights-of-way. Contact Property Management personnel, Board of Education, etc. as applicable to mark utilities on County property.
- (b) Tree Marking.** Mark trees to be felled. Obtain approval before beginning Operations.

714.03.06 Equipment. Equipment and tools shall conform to accepted arboricultural practices.

714.03.07 Notice. Notify the Engineer at least 10 days before beginning Operations.

714.03.08 Operations. Tree felling shall involve cutting, stump removal, stump grinding, herbicide treatment, and debris removal of selected living or dead trees.

When trees cannot be felled as a unit without danger to traffic or injury to other plants or property, remove the top sections until the tree can be safely felled.

One or more of the following Operations will be specified:

- (a) **Operation 1 - Felling and Stump Removal.** Fell trees and remove the stumps or grind them to a depth at least 8 in. below the soil surface. Remove wood debris and stump grindings. Within 24 hours after removal or grinding, backfill the stump holes with topsoil to the surrounding soil level. Seed as specified in Section 705.
- (b) **Operation 2 - Felling and Stump Treatment.** Fell trees and remove wood debris. Cut stumps to a height of no more than 4 in. above the soil surface. Treat with herbicide as specified in Section 713.03.07(b).
- (c) **Operation 3 - Felling and Removal.** Fell trees and remove wood debris. Cut stumps to a height of no more than 4 in. above the soil surface.
- (d) **Operation 4 - Felling and Delimiting.** Fell trees and cut stumps to a height of no more than 12 in. above the soil surface. Branches of felled trees that extend higher than 3 ft above the soil surface shall be cut or delimited to a height of no more than 3 ft above the soil surface. Do not remove wood debris.

714.03.09 Wood Chipping. Chip wood and disperse or dispose of chips as directed.

714.03.10 Cleanup and Restoration. Promptly remove, disperse, or dispose of wood debris and other waste materials as directed.

Avoid damage to existing structures, plants, and turfgrass. Keep turfgrass areas, paved surfaces, and sidewalks clean. Restore ruts and damaged turfgrass areas by seeding as specified in Section 705 before beginning any new landscape operations.

714.03.11 Damage Repair. Do not injure vegetation to be preserved.

Injuries to bark, trunks, or limbs shall be repaired by cutting, smoothing, and tracing the bark in accordance with ANSI A300 Standards for Tree Care Operations.

714.03.12 Damage Compensation. Monetary compensation for damage or loss of trees will be calculated and assessed in conformance with the Guide for Plant Appraisal of the Council of Tree & Landscape Appraisers.

714.04 MEASUREMENT AND PAYMENT. *Tree Felling* will not be measured, but will be paid for at the Contract lump sum price based upon the Tree Felling Size Classes and the Breakdown List of Contract Prices specified in Section 714.03.02.

The payment will be full compensation for all labor, material, equipment, tools, and incidentals necessary to complete the work. Felled trees shall be classed according to the following table of Tree Felling Size Classes, and be paid as per their Size Class:

TREE FELLING SIZE CLASSES			
TREE DIAMETER AT BREAST HEIGHT IN.	TREE PAY CLASS	TREE DIAMETER AT BREAST HEIGHT IN.	TREE PAY CLASS
Under 10+	A	31 to 35+	F
10 to 15+	B	36 to 39+	G
16 to 20+	C	40 to 45+	H
21 to 25+	D	46 to 50+	I
26 to 30+	E	Over 51	J

If the County requests a change, the units and payment will be adjusted on the basis of the Tree Felling Size Classes and the Breakdown List of Contract Prices.

SECTION 715 – TREE ROOT PRUNING

715.01 DESCRIPTION. Prune tree roots as specified.

715.02 MATERIALS.

Salvaged Topsoil	920.01.01
Furnished Topsoil	920.01.02

715.03 CONSTRUCTION.

715.03.01 General.

(a) Permits. Obtain a Roadside Tree Permit from the Maryland Department of Natural Resources - Forest Service.

(b) Tree Preservation Program (TPP). Adhere to the requirements of the TPP when developed by the County.

715.03.02 Maryland Licensed Tree Expert (LTE). A LTE shall perform or directly supervise the Operations in conformance with the Maryland Roadside Tree Law, the Forest Conservation Act, and accepted arboricultural practices.

715.03.03 Meetings. Meet with the Engineer and the LTE before beginning Operations.

715.03.04 Utilities Marking and Conflicts.

(a) **Utilities Marking.** Contact ‘Miss Utility’ or another approved service to identify and mark utilities in the rights-of-way.

(b) **Conflicts.** Notify the Engineer of conflicts that may affect operations. Conflicts will be reviewed by the Engineer and resolved within 14 days after notice.

715.03.05 Marking. Mark areas to be root pruned, and obtain approval before beginning Operations.

715.03.06 Equipment. Use a vibratory knife or other equipment and tools that conform to accepted arboricultural practices.

715.03.07 Notice. Notify the Engineer at least 10 days before beginning Operations.

715.03.08 Operations. Meet ANSI A300 standards for Tree Care Operations. Cleanly cut tree roots to a depth of 24 in. along the approved line, and immediately backfill trenches with excavated soil.

715.03.09 Cleanup and Restoration. Promptly remove, disperse, or dispose of wood debris and other waste materials as directed.

Avoid damage to existing structures, plants, and turfgrass. Keep turfgrass areas, paved surfaces, and sidewalks clean. Restore ruts and damaged turfgrass areas by seeding as specified in Section 705 before beginning any new landscape operations.

715.03.10 Damage Repair. Do not injure vegetation to be preserved. Repair injuries to bark, trunks, or limbs by cutting, smoothing, and tracing the bark in accordance with ANSI A300 Standards for Tree Care Operations.

715.03.11 Damage Compensation. Monetary compensation for damage or loss of trees will be calculated and assessed in conformance with the Guide for Plant Appraisal of the Council of Tree & Landscape Appraisers.

715.04 MEASUREMENT AND PAYMENT. *Tree Root Pruning* will be measured and paid for at the Contract unit price per linear foot. The payment will be full compensation for all labor, material, equipment, tools, and incidentals necessary to complete the work.

SECTION 716 – TREE FERTILIZING

716.01 DESCRIPTION. Fertilize trees as specified.

716.02 MATERIALS.

Fertilizer 920.03 and as specified in the TPP.

716.03 CONSTRUCTION.

716.03.01 General.

- (a) **Permits.** Obtain a Roadside Tree Permit from the Maryland Department of Natural Resources - Forest Service.
- (b) **Tree Preservation Program (TPP).** Adhere to the requirements of the TPP when developed by the County.
- (c) **Nutrient Management Reporting.** See Section 701.03.01 (c).

716.03.02 Maryland Licensed Tree Expert (LTE). A LTE shall perform or directly supervise the Operations in conformance with the Maryland Roadside Tree Law, the Forest Conservation Act, and accepted arboricultural practices.

716.03.03 Meetings. Meet with the Engineer and the LTE before beginning Operations.

716.03.04 Marking. Identify trees to be fertilized, and obtain approval before beginning Operations.

716.03.05 Equipment. Equipment and tools shall conform to accepted arboricultural practices.

716.03.06 Notice. Notify the Engineer at least 10 days before beginning Operations.

716.03.07 Operations. Meet ANSI A300 standards for Tree Care Operations. One or more of the following Operations will be specified:

- (a) **Operation 1 - Broadcast Fertilizing.** Apply fertilizer uniformly over the soil surface in accordance with the NMP.
- (b) **Operation 2 - Injection Fertilizing.** Inject fertilizer solution through a pressurized probe, at points 2 to 3 ft apart, to a depth of 8 to 10 in.

(c) **Operation 3 - Drill Fertilizing.** Place fertilizer into 1 to 3 in. diameter drilled holes, at points 2 to 3 ft apart, to a depth of 8 to 10 in.

716.03.08 Cleanup and Restoration. Avoid damage to existing structures, plants, and turfgrass. Keep turfgrass areas, paved surfaces, and sidewalks clean. Restore ruts and damaged turfgrass areas by seeding as specified in Section 705 before beginning any new landscape operations.

716.03.09 Damage Repair. Do not injure vegetation to be preserved.

Repair injuries to bark, trunks, or limbs by cutting, smoothing, and tracing the bark in accordance with ANSI A300 Standards for Tree Care Operations.

716.03.10 Damage Compensation. Monetary compensation for damage or loss of trees will be calculated and assessed in conformance with the Guide for Plant Appraisal of the Council of Tree & Landscape Appraisers.

716.04 MEASUREMENT AND PAYMENT. *Tree Fertilizing* will be measured and paid for at the Contract unit price for one or more of the specified items. The payment will be full compensation for all labor, material, equipment, tools, and incidentals necessary to complete the work.

716.04.01 *Tree Broadcast Fertilizing* per square yard.

716.04.02 *Tree Injection Fertilizing* per square yard.

716.04.03 *Tree Drill Fertilizing* per square yard.