

SECTION 804—SEEDING AND SOIL SUPPLEMENTS

804.1 DESCRIPTION—This work is furnishing and placing of seed and soil supplements of the type indicated, application of herbicides, and mowing.

804.2 MATERIAL—The Department may require pretesting reports from the Pennsylvania Department of Agriculture for verification of analysis and legality of labeling, in addition to control of materials, as specified in [Section 106](#).

(a) Soil Supplements.

1. Pulverized Agricultural Limestone. Conforming to the requirements of the Agricultural Liming Materials Act of 1978, P.L. 15, No. 9, as amended; The Agricultural Liming Materials Rules and Regulations (Title 7-Part V); 7 PA Code, Chapter 108 for labeling requirements; and as follows:

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|---|--|----|--|----|---|----|----------------------------|
| <ul style="list-style-type: none"> • % Total oxides (total calcium oxide and magnesium oxide equivalent) (ASTM C 25) • % Calcium carbonate equivalent (% by mass (weight)) (ASTM C 25) • % Fineness (minimum % by mass (weight)) <table style="margin-left: 20px; border-collapse: collapse;"> <tbody> <tr> <td>material passing 850 μm (No. 20 sieve)</td> <td style="text-align: right;">95</td> </tr> <tr> <td>material passing 250 μm (No. 60 sieve)</td> <td style="text-align: right;">60</td> </tr> <tr> <td>material passing 150 μm (No. 100 sieve)</td> <td style="text-align: right;">50</td> </tr> </tbody> </table> | material passing 850 μm (No. 20 sieve) | 95 | material passing 250 μm (No. 60 sieve) | 60 | material passing 150 μm (No. 100 sieve) | 50 | 50
89
95
60
50 |
| material passing 850 μm (No. 20 sieve) | 95 | | | | | | |
| material passing 250 μm (No. 60 sieve) | 60 | | | | | | |
| material passing 150 μm (No. 100 sieve) | 50 | | | | | | |

Furnish material having an effective neutralizing value (ENV) of not less than 90 when calculated according to 7 PA Code Chapter 108 as follows:

- % by mass (weight) passing 20 mesh - % passing 60 mesh x 0.4 = (a)
% by mass (weight) passing 60 mesh - % passing 100 mesh x 0.8 = (b)
% by mass (weight) passing 100 mesh x 1.0 = (c)
- Minimum Calcium Carbonate Equivalent (CCE) = % by mass (weight) of calcium carbonate
- (a) + (b) + (c) x CCE divided by 100 = ENV

2. Commercial Fertilizer. Conforming to the requirements of the Pennsylvania Soil Conditioner and Plant Growth Substance Law, Act of December 1, 1977, P.L. 258, No. 86 (3P.S.68.2), as amended.

Use dry formulations of 10-20-20 analysis for seeded and sodded areas. Use dry formulations of 20-10-5 and 16-8-16 analysis controlled release for tree, shrub, and vine type planting operations. Use dry formulations of 19-6-12 analysis controlled release for herbaceous wetland planting operations. Use other analysis as indicated or specified in the proposal.

3. Slow-Release Nitrogen Fertilizer. Conforming to the requirements of the Pennsylvania Soil Conditioner and Plant Growth Substance Law, Act of December 1, 1977, P.L. 258, No. 86 (3P.S.68.2) as amended.

Use dry formulations of either 38-0-0 ureaform, 32-0-0 to 38-0-0 sulfur coated urea, 31-0-0 IBDU, or another analysis as indicated and conform to the following requirements:

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|--|---------------------|-----------------|-------------------------------------|-----------------|---------------------|-----------------|--|
| <ul style="list-style-type: none"> • 38-0-0 ureaform <table style="margin-left: 20px; border-collapse: collapse;"> <tbody> <tr> <td>Total Nitrogen (TN)</td> <td style="text-align: right;">— 38.0% minimum</td> </tr> <tr> <td>Cold Water Insoluble Nitrogen (WIN)</td> <td style="text-align: right;">— 25.0% minimum</td> </tr> <tr> <td>Activity Index (AI)</td> <td style="text-align: right;">— 40.0% minimum</td> </tr> </tbody> </table> | Total Nitrogen (TN) | — 38.0% minimum | Cold Water Insoluble Nitrogen (WIN) | — 25.0% minimum | Activity Index (AI) | — 40.0% minimum | |
| Total Nitrogen (TN) | — 38.0% minimum | | | | | | |
| Cold Water Insoluble Nitrogen (WIN) | — 25.0% minimum | | | | | | |
| Activity Index (AI) | — 40.0% minimum | | | | | | |

Urea Nitrogen	— 3.5% minimum
• 32-0-0 to 38-0-0 sulfur coated urea with a 7-day dissolution range of 20% to 30%	
• 31-0-0 IBDU	— Coarse grade (0.7 mm to 2.5 mm (28 mils to 98 mils))
• Water Insoluble Nitrogen (WIN)	— 27.0% minimum

(b) Seed.

1. General. Conforming to the Pennsylvania Seed Act of 1965 (Act No. 187) and amendments, and regulations of the Pennsylvania Department of Agriculture, Bureau of Plant Industry.

Have the Pennsylvania Department of Agriculture, Bureau of Plant Industry, conduct purity and germination analysis, following the current Rules for Testing Seeds, of the Association of Official Seed Analysis.

Use Penngift certified Crownvetch, Kentucky Bluegrass, Perennial Ryegrass, Creeping Red Fescue, Chewings Fescue, Hard Fescue, and Birdsfoot Trefoil seed.

Use Crownvetch seed, pretested by the Pennsylvania Department of Agriculture, in 5.0 kg (10-pound) (net) waterproof bags, with a tag attached to each bag.

Use a premixed seed with an inspection tag, stamped, dated, and signed by the Department of Agriculture inspector sewn or stapled to the outside of each bag. Do not use seed from bags that are not sealed or that have been stored with herbicides.

Do not use seed unless it has been inspected and sampled, as specified, or sampled by individual species and lot number, and mixed on the project under Department supervision.

Do not use seed with a test date older than nine months.

2. Seed Formulas. See Table A.

(c) Inoculant. Standard acceptable commercial product, for treating leguminous seed. A product consisting of a suitable carrier, containing a culture of nitrogen-fixing bacteria specific for the seed to be inoculated.

Keep lids on containers when not in use to avoid contamination. Store containers at moderate temperature. Do not use inoculant after the expiration date shown on the container.

(d) Herbicides. Conforming to all applicable Federal and State pesticide acts and registration requirements and as specified in PCID No. 1094 – Herbicides (Weed and Brush Control) issued by the Pennsylvania Department of General Services, Bureau of Purchases, Quality Assurance Division, for the appropriate type.

Furnish herbicide in manufacturer's labeled container as follows:

1. Selective Control in Seeded Areas. In areas seeded with Formula B or D, use Type 1, Class C-2, 4-D Liquid Amine Salt Formulations (Dimethylamine) listed in PCID No. 1094, for controlling broadleaf weeds.

(e) Mow-Line Delineator Stakes. Not used.

(f) Water. [Section 720.2](#)

**TABLE A (Metric)
Seeding Requirements**

Formula and Species	% By Mass	Minimum %		Max. % Weed Seed	Seeding Rate kg/1000 m ²
		Purity	Germination		
Formula B					11.5 Total
• Perennial Ryegrass mixture (Lolium perenne). A combination of improved certified varieties with no one variety exceeding 50% of the total Ryegrass component.	18	98	90	0.15	2.0
• Creeping Red Fescue or Chewings Fescue	30	98	85	0.15	3.5
• Kentucky Bluegrass mixture (Poa pratensis). A combination of improved certified varieties with no one variety exceeding 25% of the total Bluegrass component.	52	98	80	0.20	6.0
Formula C					5.00 Total
• Crownvetch (Coronilla varia)	45	99	70	0.10	2.25
• Annual Ryegrass (Lolium multiflorum)	55	98	90	0.15	2.75
Formula D					11.5 Total
• Tall Fescue (Festuca arundinacea var. Kentucky 31)	70	98	85	0.15	8.0
• Creeping Red Fescue or Chewings Fescue	30	98	85	0.15	3.5
Formula E					5.5 Total
• Annual Ryegrass (Lolium multiflorum)	100	98	90	0.15	5.5
Formula L					13.00 Total
• Hard Fescue mixture (Festuca longifolia). A combination of improved certified varieties with no one variety exceeding 50% of the total Hard Fescue component.	54	98	85	0.15	7.00
• Creeping Red Fescue	36	98	85	0.15	4.75
• Annual Ryegrass (Lolium Multiflorum)	10	98	90	0.15	1.25
Formula W					5.5 Total
• Tall Fescue (Festuca arundinacea var. Kentucky 31)	73	98	85	0.15	4.0
• Birdsfoot Trefoil mixture (Lotus corniculatus). A combination of varieties (Viking, Empire, Conec, Dawn, Leo, Bull, Maitland) with no one variety exceeding 50% of the total Trefoil component.	18	98	80*	0.10	1.0
• Redtop (Agrostis alba)	9	92	80	0.15	0.5

* Recommended 10% hardseed and 70% normal sprouts.

**TABLE A (English)
Seeding Requirements**

Formula and Species	% By Weight	Minimum %		Max % Weed Seed	Seeding Rate lb/1000 yd ²
		Purity	Germination		
Formula B					21.0 Total
• Perennial Ryegrass mixture (Lolium perenne). A combination of improved certified varieties with No one variety exceeding 50% of the total Ryegrass component.	20	98	90	0.15	4.0
• Creeping Red Fescue or Chewings Fescue	30	98	85	0.15	6.0
• Kentucky Bluegrass mixture (Poa pratensis). A combination of improved certified varieties with no one variety exceeding 25% of the total Bluegrass component.	50	98	80	0.20	11.0
Formula C					9.0 Total
• Crownvetch (Coronilla varia)	45	99	70	0.10	4.0
• Annual Ryegrass (Lolium multiflorum)	55	98	90	0.15	5.0
Formula D					21.0 Total
• Tall Fescue (Festuca arundinacea var. Kentucky 31)	70	98	85	0.15	15.0
• Creeping Red Fescue or Chewings Fescue	30	98	85	0.15	6.0
Formula E					10.0 Total
• Annual Ryegrass (Lolium multiflorum)	100	98	90	0.15	10.0
Formula L					24.0 Total
• Hard Fescue mixture (Festuca longifolia). A combination of improved certified varieties with no one variety exceeding 50% of the total Hard Fescue component.	55	98	85	0.15	13.0
• Creeping Red Fescue	35	98	85	0.15	8.5
• Annual Ryegrass (Lolium Multiflorum)	10	98	90	0.15	2.5
Formula W					10.5 Total
• Tall Fescue (Festuca arundinacea var. Kentucky 31)	70	98	85	0.15	7.5
• Birdsfoot Trefoil mixture (Lotus corniculatus). A combination of varieties (Viking, Empire, Norcen, Dawn, Leo, Bull, Maitland) with no one variety exceeding 50% of the total Trefoil component.	20	98	80*	0.10	2.0
• Redtop (Agrostis alba)	10	92	80	0.15	1.0

* Recommended 10% hardseed and 70% normal sprouts.

804.3 CONSTRUCTION—

(a) **General.** Spread seeds where indicated and at the rates specified in Table A, or as otherwise indicated. Spread seeds within the following dates, or as otherwise indicated or directed.

804.3(a)

804.3(c)

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| <ul style="list-style-type: none"> • Formula B, D, and L | <ul style="list-style-type: none"> — March 15 to June 1
August 1 to October 15 |
| <ul style="list-style-type: none"> • Formula C | <ul style="list-style-type: none"> — Ryegrass Portion:
March 1 to October 15 Crownvetch Portion:
Anytime except September
and October |
| <ul style="list-style-type: none"> • Formula E | <ul style="list-style-type: none"> — March 15 to October 15 |
| <ul style="list-style-type: none"> • Formula W | <ul style="list-style-type: none"> — April 1 to June 15
August 16 to September 15 |

Extend seeding dates where project conditions warrant. Apply full treatment or apply only 50% of the permanent seeding and soil supplements and apply the remaining 50% within the next seeding dates, as directed in writing.

Use tillage and soil supplements before permanent seeding on topsoiled areas, where temporary seeding or mulching has been applied.

The Contractor may apply permanent seed and/or soil supplements without tilling on untoptoiled areas, where temporary seeding or mulching has been applied.

(b) Tillage. On topsoiled areas, 1:3 (3:1) and flatter, loosen the surface to a depth of at least 50 mm (2 inches) by disking, harrowing, or other acceptable methods until the tillage is satisfactory. On untoptoiled areas, 1:3 (3:1) and flatter, till only as directed. Also, till or scarify areas if the surface is glazed or crusted.

Correct surface irregularities by filling depressions and leveling rough or uneven areas. Remove metal objects, stones larger than 50 mm (2 inches) in any dimension, and other debris or objects deemed detrimental to maintenance operations.

(c) Soil Supplements. Prepare areas for seeding by uniformly applying supplements, except in areas that will receive Formula E seed. Document bulk delivery as specified in [Section 804.2\(a\)2](#).

Blend the initial soil supplements into the soil at least 50 mm (2 inches), on topsoiled areas, by raking, disking, harrowing, or other acceptable methods. Blend the supplements into the soil during tillage operations.

Apply slow-release nitrogen fertilizer to the surface of Formula B, D, L, and W seeded areas before project completion. Do not apply slow-release nitrogen fertilizer supplement to Formula C seeded areas.

Apply soil supplements as follows, unless otherwise indicated:

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| <ul style="list-style-type: none"> • Pulverized Agricultural Limestone | <ul style="list-style-type: none"> — 435 kg/1000 m²
(800 lb/1000 yd²) |
| <ul style="list-style-type: none"> • 10-20-20 Analysis Commercial Fertilizer | <ul style="list-style-type: none"> — 80 kg/1000 m²
(140 lb/1000 yd²) |
| <ul style="list-style-type: none"> • 38-0-0 Ureaform Fertilizer | <ul style="list-style-type: none"> — 30 kg/1000 m²
(50 lb/1000 yd²) |
| or | |
| <ul style="list-style-type: none"> • 32-0-0 to 38-0-0 Sulfur Coated Urea Fertilizer | <ul style="list-style-type: none"> — 35 kg/1000 m² to 30 kg/1000 m²
(59 lb/1000 yd² to 50 lb/1000 yd²)
as directed |
| or | |
| <ul style="list-style-type: none"> • 31-0-0 IBDU Fertilizer | <ul style="list-style-type: none"> — 35 kg/1000 m²
(61 lb/1000 yd²) |

(d) Inoculating Legumes. Inoculate leguminous seed, such as Crownvetch and Birdsfoot Trefoil, with proper cultures, according to the manufacturer's directions. Protect inoculated seed from prolonged exposure to sunlight before sowing. Reinoculate seed not sown within 24 hours. If using hydraulic seeders, use inoculant four times the manufacturer's recommended rate.

If inoculated seed is held in a slurry with fertilizers for more than 1 hour, reinoculate or apply legumes separately.

(e) Seeding. At the rates specified in Table A, sow seeds uniformly on the prepared areas by the helicopter, hydraulic placement, broadcasting, drilling, or hand seeding methods. Inspect seeding equipment and adjust the equipment, if required, to ensure the specified application rates. Periodically perform a check on the rate and uniformity of application, as directed.

Prior to seed application of each designated seed formula, thoroughly clean-out seed tank by rinsing with clean water to prevent contamination from one seed formula to the next. Repeat rinsing cycle until tank is clean. Collect all non-applied seed derived from each clean-out event and remove as waste from the project.

(f) Rolling. After seeding, roll topsoiled areas that are to be mowed. Use a roller with a mass (weight) not more than 100 kg/m (65 pounds per foot). If soil is wet or frozen, roll only when directed.

(g) Mow-Line Delineation. Not used.

(h) Herbicides. Apply herbicides as directed, to areas that are to be mowed and where weed growth is prominent.

The Representative will designate existing plants or groups of plants to be saved within these areas before herbicide application. If directed, more than one application may be required to control undesirable growth.

Apply material with application personnel certified by the Department of Agriculture and with equipment specified in [Section 108.05\(c\)](#).

(i) Liability. Final acceptance of seeding and soil supplement materials will be subject to the results of official sampling and testing. If the purity or germination of any seed species does not meet the requirements of Table A, reseed with approved seed, not to exceed the original specified rate. If soil supplements do not meet the requirements, reapply with approved supplements not exceeding the original specified rates. Where directed, replace desirable vegetation damaged during mowing or herbicide application.

Redress and reapply designated seed and soil supplements to seeded areas exhibiting less than 70% coverage of the surface area with germinated grass stems after 90 days of growth. Calculate the germination and growth period from the date of the seeding operation when the seeding operations are performed within the normal specified dates. Perform this operation in the next applicable seeding date if necessary.

(j) Maintenance. Maintain grass and legume ground cover areas, within the grading limits, until the entire project has been completed. Mow as specified in Section 804.3(k).

Control any noxious weed growth found within the right of way, by herbicide spraying and cutting. These plants are defined by the Pennsylvania Weed Control Act of 1982, P.L. 228, No. 74 and as amended by further legislation. Submit, for approval, a schedule of work and list of herbicide material to be used before starting this operation.

If a slope failure occurs on a slope previously completed, and requires further excavation and redressing to reestablish the slope, reapply the seeding and soil supplement work as specified for the original slope.

(k) Mowing. Maintain turf grass areas within the grading limits, by mowing with approved equipment until the entire project has been completed.

Submit a proposed schedule of mowing operations that covers the length of the construction project for approval.

1. Roadside Turf Areas. Turf grass areas established with Formula D requires a different degree of mowing maintenance than areas established with Formulas B and L. Three mowing cycles per year, scheduled between April and October, are anticipated for mowing areas seeded with Formula D. The number of cycles may be adjusted based on the degree of turf establishment, project length, weather conditions, or other factors. Consult the District Roadside Manager for schedule, safety requirements, and mowing equipment approvals.

Schedule the first mowing cycle early in the growth flush period before all seed heads have emerged. Schedule the second mowing approximately 3 to 4 weeks after the first cut to remove the remaining seed heads. Schedule the last mowing cycle in the fall, as directed. Do not mow grass shorter than 100 mm (4 inches) to allow a low growing, competitive ground cover. Do not mow under the following conditions:

- When soil and grass blades are wet.
- During drought conditions, or during summer months when the temperatures are consistently over 32 °C (90F), and when the grass exhibits dormancy.
- Within 7 days of any scheduled herbicide application or 7 days after a herbicide treatment.

2. Lawn Turf Areas. Maintain Formula B and L turf grass areas at a desired height of 50 mm (2 inches). Initiate mowing operations when grass seedlings reach a height of 75 mm (3 inches). Continue mowing operations during the active growing season throughout the length of the project. Follow the non-mow requirements indicated for Formula D grass. Mow at a normal frequency when the grass reaches the 75 mm (3-inch) height, unless directed otherwise.

804.4 MEASUREMENTS AND PAYMENT—

(a) Seeding and Soil Supplements. Kilogram (Pound)

Measured by the number of kilograms (pounds) of seed actually incorporated into the work for the seed formula and soil supplement applications specified in this specification.

The Department will pay for reseeding and reapplying soil supplements on failed slope areas, as specified in [Section 804.3\(j\)](#), at the contract unit price, in addition to the original accepted application of seeding and soil supplements.

(b) Seeding. Kilogram (Pound)

Measured by the number of kilograms (pounds) of seed actually incorporated into the work for the seed formula specified in this specification.

(c) Herbicides. 1000 Liters (1000 (M) Gallons)

For the type indicated.

(d) Mowing. Hectare (Acre)