

TURFING ITEMS

ITEM T-901 SEEDING

DESCRIPTION

901-1.1 This work consists of preparing the ground and applying seed and fertilizer in conformance with the Plans and Specifications.

The intent of this work is to provide a living vegetative cover in the areas indicated on the Plans and to maintain the cover for the term of the Contract.

MATERIALS

901-2.1 SEED. Provide the seed mixture as specified in the Special Provisions. Provide seed collected or harvested within 2 years of the targeted seeding date. Provide all seed in pure live seed (PLS) unless otherwise directed.

Provide seed true of genus and species. Meet the applicable requirements of the State of Alaska Seed Regulations, 11 AAC 34, Articles 1 and 4, and the Federal Seed Act, 7 CFR Part 201.

The Engineer will review requests for species or cultivar substitution(s); genus substitution is not allowed. Substitution requests need to be submitted a minimum of 60 calendar days in advance of delivery.

- a. Prohibited and Restricted Noxious Weeds and Quarantined Pests.** Provide seed and appliances certified to be free of prohibited noxious weeds or quarantined pests, and certified to contain no more than the maximum allowable tolerances for restricted noxious weeds, according to Alaska Administrative Code, Title 11, Chapter 34 (11 AAC 34).
1. Seed or appliances found to contain prohibited noxious weeds or quarantined pests will be rejected, according to 11 AAC 34.020(a) and 11 AAC 105-180, respectively.
 2. Seed or appliances found to contain restricted noxious weed seed in excess of the maximum allowable tolerance per pound will be rejected, according to 11 AAC 34.020(b).

Prohibited and restricted noxious weeds are listed in 11 AAC 34.020, and can be viewed at the following URL: <http://plants.alaska.gov/invasives/noxious-weeds.htm>.

- b. Labeling.** Ensure each bag or container of individual seed species is labeled to meet requirements of 11 AAC 34.010. Do not remove labels from bags or containers.
- c. Certification.** Certify seed is free of prohibited noxious weeds and restricted noxious weeds are within allowable tolerances. Provide to the Engineer no later than 10 days prior to seeding 4 signed copies of a statement signed by the vendor identifying the lot number or lot numbers, certifying each lot of seed has been tested within the preceding nine months, by a recognized seed testing laboratory, a member of the Association of Official Seed Certifying Agency (AOSCA), or the Alaska Plant Materials Center.

Include the following in each certification:

- (1) name and address of laboratory
- (2) date of test
- (3) lot number
- (4) seed name
- (5) percent pure seed

- (6) percent germination
- (7) percent weed content
- (8) percent inert matter

Seed will be rejected if:

- d. Contains prohibited noxious weeds;
- e. Contains restricted noxious weeds above maximum allowable tolerances;
- f. Not certified as tested within the preceding nine months;
- g. Wet, moldy, or otherwise damaged in transit or storage; or
- h. Containers do not have labels or the labels have been removed.

Seed may be rejected for:

- i. Discrepancies in the lot numbers listed on the statement to the lot numbers indicated on the labels of the seed containers.

The Contractor shall immediately remove rejected seed from the project premises. If seed is rejected for containing prohibited noxious weeds or for exceeding maximum allowable tolerances of restricted noxious weeds, dispose of rejected seed according to 11 AAC 34.075(g).

901-2.2 FERTILIZER. Provide a 20-20-10 fertilizer containing no cyanamid compounds or hydrated lime. Tolerances of the chemical ingredients shall be plus or minus 2%.

Use standard commercial fertilizer supplied separately or in mixtures, and in moisture proof containers. Mark each container with the total net weight and with the manufacturer's guaranteed analysis of the contents showing the percentage for each ingredient.

CONSTRUCTION METHODS

901-3.1 SOIL PREPARATION. Clear all areas to be seeded of stones 4 inches in diameter and larger and of all sticks, stumps, noxious weeds, and other debris or irregularities that might interfere with the seeding operation, growth of grass, or subsequent maintenance of the grass covered areas.

Just prior to seeding, roughen the surface of all areas to be seeded by track-walking transversely up and down the slopes or using a scarifying slope board. Round the top and bottom of the slopes, when necessary, to facilitate tracking and to create a pleasing appearance, but do not disrupt drainage flow lines. Where fill is adjacent to wetlands, keep the equipment entirely on the fill slope.

901-3.2 SEEDING SEASONS. Seed and fertilize between May 15 and August 15.

Do not seed during windy conditions or when climatic conditions or ground conditions would hinder placement or proper growth.

901-3.3 APPLICATION. Apply seed and fertilizer at the rates specified in the Special Provisions. Use either of the following methods:

a. Hydraulic Method.

- (1) Mix a slurry of seed, fertilizer, water, and other components as required by the Special Provisions. Add seed to the slurry mixture no more than 30 minutes before application.

- (2) Use hydraulic seeding equipment that will maintain a continuous agitation and apply a homogeneous mixture through a spray nozzle. The pump must produce enough pressure to maintain a continuous nonfluctuating spray that will reach the extremities of the seeding area, without causing damage to the seed bed. Use a hose attachment to reach areas where a fixed nozzle cannot reach.
- (3) If mulch material is required, add it to the water slurry in the hydraulic seeder after adding the proportionate amounts of seed and fertilizer.
- (4) Apply slurry at a rate that distributes all materials evenly.

b. Dry Method.

- (1) Use mechanical spreaders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical spreading equipment.
- (2) Moisten the soil prior to the application of seed and fertilizer and immediately afterwards.
- (3) Mix or rake the seed and fertilizer into the seed bed to a depth of 1/2 inch, unless mulch material is to be applied immediately.

901-3.4 MAINTENANCE OF SEEDED AREAS. Protect seeded areas against traffic using approved warning signs or barricades. Repair surfaces that are gullied or otherwise damaged following seeding by regrading and reseeding, as directed. Maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

Keep temporary erosion control measures in place until the vegetation is accepted.

Water the seeded areas, as required, for proper germination and growth. Use equipment that can acceptably water all seeded areas without vehicular traffic on seeded areas.

Reseed any seeded areas not showing evidence of satisfactory growth, as directed.

901-3.5 FINAL ACCEPTANCE. Final acceptance will be based on the following criteria and must provide 70% vegetative coverage of the seeded area. If seeding is completed by July 15th, coverage must be attained by September 30th. If seeding is completed by August 15th, coverage must be attained by June 15th of the following season. Final acceptance will be based on the Engineers approval.

METHOD OF MEASUREMENT

901-4.1 The work will be measured according to Subsection 90-02, and as follows:

- a. **Seeding by the acre.** By the area of ground surface acceptably seeded, fertilized, and maintained. Required reseeding is subsidiary.
- b. **Seeding by the pound.** By the weight of seed acceptably placed. Fertilizer is subsidiary. Any other work required will be measured separately.
- c. **Water for maintenance.** By the M-gal (1,000 gallons) acceptably placed. Use a conversion factor of 8.34 pounds per gallon, if measured by weight. Use a conversion factor of 7.48 gallons per cubic foot, if measured by volume.

BASIS OF PAYMENT

901-5.1 Soil preparation, fertilizer, and water required for hydraulic method are subsidiary. Mulching will be measured and paid for under Item T-908.

- a. **Seeding by the Acre.** Payment is for established vegetative mat.

b. Seeding by the Pound. Payment is for established vegetative mat.

c. Water for Seeding. Water applied for growth of vegetative mat.

Payment will be made under:

Item T901.010.0000	Seeding – per acre
Item T901.020.0000	Seeding – per pound
Item T901.030.0000	Water for Maintenance – per Mgal
Item T901.040.0000	Application of Bird Repellent – per contingent sum

ITEM T-903 SPRIGGING

DESCRIPTION

903-1.1 This item shall consist of planting sprigs of living grass plants at the locations shown on the plans or as directed by the Engineer in accordance with these Specifications.

MATERIALS

903-2.1 SPRIGS. Sprigs shall be healthy living stems (stolons or rhizomes), of native beach wildrye (*Leymus mollis*), harvested from areas within the airport property as shown on the plans or as directed by the Engineer. The presence of weeds or other material which might be detrimental to the proposed planting will be cause for rejection of sprigs.

903-2.2 NOT USED.

903-2.3 FERTILIZER. Provide a 20-20-10 fertilizer containing no Cyanamid compounds or hydrated lime. Tolerances of the chemical ingredients shall be plus or minus 2%.

Use standard commercial fertilizer supplied separately or in mixtures, and in moisture proof containers. Mark each container with the total net weight and with the manufacturer's guaranteed analysis of the contents showing the percentage for each ingredient.

903-2.4 WATER. All water used shall be sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass. Brackish water shall not be used at any time. It shall be subject to the approval of the Engineer prior to use.

CONSTRUCTION METHODS

903-3.1 GENERAL. Sprigging shall be done in accordance with the recommendations contained in the booklet, "Beach Wildrye Planting Guide for Alaska", 1994 by Stoney Wright with the Alaska Plant Materials Center located in Palmer, Ph. (907) 745-4469. This booklet can be downloaded at: http://plants.alaska.gov/reveg/coastal_06_beach-wildrye.php.

903-3.2 ADVANCE PREPARATION AND CLEANUP. After grading of areas has been completed and before applying fertilizer, areas to be sprigged shall be raked or otherwise cleared of stones larger than 2 inches in any diameter, sticks, stumps, and other debris which might interfere with sprigging, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after grading of areas and before beginning the application of fertilizer, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

903-3.3 APPLYING FERTILIZER. Following advance preparation and cleanup, fertilizer shall be uniformly spread at a rate which will provide not less than the minimum quantity of each fertilizer ingredient as stated in the special provisions. Apply fertilizer at the rate of 550 pounds per acre. Apply fertilizer with power sprayers, blower equipment, or other approved methods.

903-3.4 HARVESTING SPRIGS. Harvesting may be performed by any method acceptable to the Engineer, including crisscross cultivation, shallow plowing, or other acceptable methods to thoroughly loosen the sprigs from the soil and to bring them to the surface. After loosening the sprigs from the soil, they shall be gathered in small piles or windrows, watered, and kept moist until planted. Stockpile sprigs in designated or approved areas.

Sprigs that have heated in stockpiles, have become frozen, permitted to dry out, or otherwise seriously damaged during harvesting or delivery shall be rejected and shall be disposed of as directed by the Engineer.

903-3.5 PLANTING SPRIGS. Accomplish planting and fertilizing after June 1 and before September 1. Sprigging shall not be done during windy weather, or when the ground is dry, excessively wet, frozen, or otherwise untiltable. If the soil is not moist when the sprigs are being set, water shall be applied until the soil is moist and in a workable condition.

Furrows shall be opened along the approximate contour of slopes at 3 foot spacings and 5 inches in depth. Sprigs shall be placed without delay in the open furrow at 3 foot on center spacing, and the roots of each sprig shall be covered immediately with soil by employing the “drop and stomp” planting method. Provide sprig spacing uniformity of plus-minus 6 inches. Provide depth uniformity of plus-minus 1 inch.

903-3.6 NOT USED.

903-3.7 ESTABLISHING TURF. The Contractor shall be responsible for the proper care of the sprigged areas during the period when the plants are becoming established and he shall protect the sprigged areas against traffic by warning signs or barricades approved by the Engineer. Surfaces gullied or otherwise damaged following sprigging shall be repaired by regrading and resprigging as directed. The Contractor shall water as directed, and otherwise maintain sprigged areas in a satisfactory condition until final inspection and acceptance of the work.

METHOD OF MEASUREMENT

903-4.1 Sprigging shall be measured by area, measured on the ground surface, completed and accepted.

BASIS OF PAYMENT

903-5.1 Payment will be made at the contract unit price. This price shall be full compensation for providing and placing all material including fertilizing and watering of sprigged areas, and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Item T903.010.0000	Sprigging – per acre
Item T903.020.0000	Sprigging – per square yard

ITEM T-905 TOPSOIL

DESCRIPTION

905-1.1 This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the Engineer.

MATERIALS

905-2.1 TOPSOIL. Provide a natural friable surface soil without admixtures of undesirable subsoil, refuse, or foreign materials and reasonably free from roots, clods, hard clay, noxious weeds, tall grass, brush sticks, stubble or other litter, and which is free draining and non-toxic.

The gradation shall conform to selected Class in Table 1 when tested according to ATM 304 If no class is indicated, meet the grading requirements in Table 1 for Class A topsoil.

**TABLE 1
TOPSOIL GRADING**

Sieve Designation	Percent Passing By Weight	
	CLASS A	CLASS B
3 in.	-	100
1/2 in.	100	-
No. 4	95-100	75-100
No. 16	64-90	50-95
No. 200	30-60	20-80
Organic Matter	10-40	5 min.

Percent of organic matter will be determined by loss-on-ignition of oven dried samples using ATM 203.

When necessary, amend natural topsoil to meet the above specifications, using approved materials and methods.

CONSTRUCTION METHODS

905-3.1 PREPARING THE GROUND SURFACE. Where grades in the areas to be topsoiled have not been established, smooth-grade the areas to the grades shown on the Plans. Maintain the prescribed grades in an even and properly compacted condition to prevent the formation of low places or pockets where water will stand.

Clear the surface of the area to be topsoiled of all stones larger than 2 inches in any diameter and all litter or other material which may be detrimental to proper bonding, the rise of capillary moisture, or the proper growth of the desired planting.

Immediately prior to dumping and spreading the topsoil, loosen the surface, by approved means, to a minimum depth of 2 inches to facilitate bonding of the topsoil to the covered subgrade soil.

905-3.2 OBTAINING TOPSOIL. Prior to the stripping of topsoil from designated areas, remove any vegetation, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, using approved methods.

When suitable topsoil is available on the site, remove this material from the designated areas to the depth directed. Spread the topsoil on areas already tilled and smooth-graded, or stockpile in approved areas. Grade the stockpile sites and adjacent areas which have been disturbed if required and put into a condition acceptable for seeding.

When suitable topsoil is secured off the airport site, locate and obtain the supply, subject to approval. Notify the Engineer sufficiently in advance of operations in order that necessary measurements and tests can be made. Remove the topsoil from approved areas and to the depth as directed. Haul the topsoil to the site of the work and stockpile or spread as required.

905-3.3 PLACING TOPSOIL. Spread the topsoil evenly on the prepared areas to a uniform depth of 4 inches after compaction. Do not spread when the ground or topsoil is frozen or excessively wet.

After spreading, break up any large stiff clods and hard lumps with a pulverizer or other effective means. Rake up and dispose of all stones or rocks (2 inches or more in diameter), roots, litter, or any foreign matter. After spreading, compact the topsoil with a cultipacker or by other approved means. The compacted topsoil surface shall conform to the required lines, grades, and cross sections. Promptly remove any topsoil or other dirt falling upon pavements or other surface courses.

Track topsoil with a dozer to make track marks running perpendicular to the direction of drainage.

METHOD OF MEASUREMENT

905-4.1 By the square yard, according to GCP Subsection 90-02, acceptably placed.

BASIS OF PAYMENT

905-5.1 Payment will be made at the contract unit price per square yard.

Stockpiling and rehandling of topsoil are subsidiary.

Payment will be made under:

Item T905.010.0010	Topsoiling, Class A – per square yard
Item T905.020.0010	Topsoiling, Class A – per lump sum
Item T905.030.0000	Organic Material – per cubic yard
Item T905.040.0000	Organic/Silt Material – per cubic yard

TESTING REQUIREMENTS

ATM 304 WAQTC FOP for AASHTO T 27/T 11 Sieve Analysis of Fine and Coarse Aggregates

ITEM T-908 MULCHING

DESCRIPTION

908-1.1 This work consists of providing, placing, and maintaining soil stabilization material where shown on the Plans.

MATERIALS

908-2.1 MULCH. Virgin/recycled wood fiber, recycled paper (wood cellulose), or an acceptable blend containing up to 50% recycled paper, with the following characteristics:

- a. Contains no growth or germination inhibiting factors.
- b. Will remain in uniform suspension in water under agitation and will blend with grass seed, fertilizer and other additives to form a homogeneous slurry, when required.
- c. Will form a uniform, blotter-like ground cover on application, having moisture absorption and percolation properties and the ability to cover and hold grass seed in contact with soil.
- d. Will not form a hard crust upon drying.
- e. Dyed a suitable color to facilitate inspection of its placement.

Ship the mulch in packages of uniform weight (plus or minus 5%) bearing the name of the manufacturer and the air-dry weight content.

Use a commercial tackifier on all slopes 4:1 or steeper. Use the amount recommended by the manufacturer.

908-2.2 ROLLED MATTING. Use materials that conform to one of the following standards:

- a. **Unbleached Single Jute Yarn.** Use yarn that is loosely twisted and not varying in thickness more than one-half its normal diameter. Provide jute mesh in rolled strips conforming to the following requirements.
 - (1) Width: 45 to 48 inches, \pm 1 inch.
 - (2) 78 warp-ends per width of cloth (minimum).
 - (3) 41 weft-ends per yard (minimum).
 - (4) Weight: 1.22 pounds per linear yard, \pm 5%
- b. **Knitted Straw Matting.** Commercially manufactured erosion control blanket. Use netting which is biodegradable. Straw shall be from oats, wheat, rye, rice, or other approved grain crops that are free from noxious weeds, mold, or other objectionable material. May contain coconut or other natural fiber to reinforce the straw. Follow the manufacturer's published recommendations.

908-2.3 STAPLES. U-shaped staples for anchoring matting, approximately 6 inches long and 1 inch wide. Machine-made: No. 11 gage or heavier steel wire. Hand-made: 12-inch lengths of No. 9 gage or heavier steel.

CONSTRUCTION METHODS

908-3.1 SURFACE PREPARATION. Smooth the surface and backfill all gullies and potholes before application. Remove all sticks and other foreign matter that prevents contact of the mulch or matting and the soil.

Ensure that the surface is moist at the time of placement. If area is to be seeded, soil preparation shall conform to Section 901-3.1.

908-3.2 APPLICATION. Apply soil stabilization material at the rate specified in the Special Provisions. If seeding is specified, complete the application of mulch or matting within 24 hours after seed is placed. When matting is shown on the plans, staple matting every 5 feet at overlapped joints and edges or as recommended by the manufacturer. Do not use vehicles or equipment which cause rutting or displacement of the subgrade or topsoil.

908-3.3 MAINTENANCE. Reshape and reseed any damaged areas and repair the mulch or matting as required.

Maintain the mulch or matting until all work on the project is complete and accepted.

METHOD OF MEASUREMENT

908-4.1 By the square yard, according to GCP Subsection 90-02, acceptably placed.

BASIS OF PAYMENT

908-5.1 At the contract unit price per unit of measure for the pay items listed below that appear on the bid schedule. Water, maintenance, and repair are subsidiary.

Payment will be made under:

Item T908.010.0000	Mulching – per square yard
Item T908.020.0000	Mulch – Straw – per square yard
Item T908.030.0000	Mulch - Shredded Bark Mulch – per square yard
Item T908.040.0000	Mulch - Hydraulic Erosion Control Products – per square yard

ITEM T-920 VEGETATIVE MAT

DESCRIPTION

920-1.1 Establish living vegetative cover by transplanting vegetative mats at the locations shown on the plans or as directed by the Engineer. Maintain the transplanted vegetative cover for the term of the contract. Comply with Fish Habitat Permit [*specify permit #*].

MATERIALS

920-2.1 VEGETATIVE MAT. Use the vegetative mat from the portion of the existing slough impacted by construction.

920-2.2 FERTILIZER. If needed, use fertilizer that conforms to the requirements of 901-2.2 Fertilizer, using the same application rate specified in 901-3.3 Application. Fertilizers should generally not be necessary for transplanting vegetative mats, but may be required for soil repairs in 920-2.4.

920-2.3 WATER. Ensure that the water is sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass.

920-2.4 SOIL FOR REPAIRS. Use native soils similar to those found at the source of the relocated vegetative mats for fill of areas to be repaired.

CONSTRUCTION METHODS

920-3.1 GENERAL. Prepare the areas to be revegetated with mats by removing rocks larger than 2 inches in any diameter, logs, wood, and other debris. Dispose of debris below grade in areas to be restored or in other approved disposal areas. Grade subsoil so top surface of relocated vegetative mat will be at finish grade.

920-3.2 OBTAINING AND STORING VEGETATIVE MAT. Remove the vegetative mat from the slough or designated source using a backhoe and measure in size according to the size of the backhoe bucket. Dig a test hole to determine the depth of the vegetative mat which will be the depth where most of the roots/rhizome matter is retained. Stockpile the vegetative mat on heavy-duty impervious construction plastic. Staple the sides of the plastic together to create a wall effect to trap moisture. Keep the vegetative mat moist. Do not cover the vegetative mat during stockpiling, except when it is transported (rolling the plastic will facilitate the transportation of the vegetative mat in one piece; in case the vegetative mat breaks apart, then the individual broken pieces can be independently planted). Stockpile the vegetative mat for a minimal amount of time within the construction area for up to six months, or as directed by the Engineer.

920-3.3 LAYING VEGETATIVE MAT. Scarify or add soil as necessary to the plant site to promote root growth, then add vegetative mat. Tap down the mat so that it is in direct contact with the soil, and water the mat thoroughly.

920-3.4 WATERING. Ensure that adequate water and watering equipment is on hand before relocating vegetative mat. Keep vegetative mat moist until it has become established and continued growth is assured. Water in a manner that will avoid erosion from the application of excessive quantities and avoid damage to the finished surface.

920-3.5 REPAIRING. When the surface has become bullied or otherwise damaged during the period covered by this contract, repair the affected areas to re-establish the grade and the condition of the soil, as directed by the Engineer.

METHOD OF MEASUREMENT

920-4.1 GCP Section 90 by the unit area of surface covered with vegetative mat in final position as accepted by the Engineer.

BASIS OF PAYMENT

920-5.1 This item will be paid for on the basis of the contract unit price per square yard for relocated vegetative mat in final position as full compensation for all labor, equipment, material, staking, and incidentals necessary to satisfactorily complete the items as specified. Water for maintenance is subsidiary except when it is listed in the bid schedule.

Payment will be made under:

Item T920.010.0000	Relocate Vegetative Mat – per square yard
Item T920.020.0000	Water for Maintenance – per Mgal