# ITEM 765.4xx Seed Mix Description (TBD) POUND

DESIGNER INSTRUCTIONS:

* Native seed mix should be used in conjunction with 765.21 Annual Cover Crop for Native Seeding (when applicable and necessary); 765.635 Native Seeding and Establishment; and, if required for location and project intent, 765.664 Mowing for Native Seed Establishment.
* Complete information highlighted in Yellow. Remove highlights when complete.
* Calculate quantity of seed based on application rate and area. To address potential of seeding out of season, increase bid quantity by 50%.
* Consult with MassDOT Landscape Design regarding appropriate seed mix if necessary.

Work under this item shall consist of furnishing the mix(es) specified below in the required quantity.

## SUBMITTALS

1. Pre-Verification of Seed Availability. Within 30 days after the Notice to Proceed, the Contractor shall submit to the Engineer the supplier’s verification of availability of seed species in the required quantities and for the anticipated date of seeding. Verification shall be on the supplier’s letterhead and notarized by the supplier’s notary. Species not expected to be available should be noted and substitutions recommended.
2. Final Verification of Seed Availability. No earlier than 21 days prior to ordering, the Contractor shall submit to the Engineer the supplier’s verification of availability of seed species and in the required quantities. Verification shall be on the supplier’s letterhead and notarized by the supplier’s notary. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section. Substitutions or changes in the mix at this time must be approved by MassDOT Landscape Design Section.
3. Seed Worksheet provided herein shall be submitted to the Engineer prior to ordering seed to determine the number of pounds of Pure Live Seed required.
4. Seed Tags. The contractor shall submit original seed tags from each bag of seed used on the project or ensure that each tag is photo documented by the Engineer while on the unopened bag.

Number of tags submitted must correspond to number of bags delivered.

Species listed on the seed tag shall match the Final Verification of Seed Availability (Submittal #2) unless approved otherwise. Tag must include: variety and species name; lot number; purity; percentage of inert matter; percentage of weeds, noxious seeds, and other crop seeds; germination, dormant or hard seed; total viability; origin of seed; germination test date, net weight, and name and address of seller. The origin of seed must be listed on the seed tag for all species in the mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section.

1. Verification of Seed Delivery. Prior to payment, contractor shall submit the Seed Delivery Verification form contained within the contract or the Supplier’s Verification on company letterhead or a bill of lading. Supplier verification must include all information requested on the Verification form within this contract. The bill of lading must include variety and species name, lot number, net weight shipped, date of sale, invoice, project or seeding location, and name and address of Supplier. All information must be filled in and complete for acceptance. Information must match the seed tags and quantity of seed used on the job. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section
2. Seed Sample. If requested or if seed is from a previously opened bag, the contractor may be asked to submit to the Engineer a sample of seed from the seed bag (1-2 cups) at the time of seeding.

## SEEDING SEASON

The appropriate seeding seasons are:

 Spring: April 1 - May 15

Fall: October 1 - December 1 for dormant seeding

## PERMANENT SEED MIX(ES)

Calculating Pure Live Seed (PLS)

Quantities specified are PURE LIVE SEED. Greater quantities of ordered seed may be required to achieve actual specified seeding rates.

Pure Live Seed (PLS) is defined as a percentage calculated by multiplying the percent of pure seed by the percent of viable seed (total germination, hard seed, and dormant seed). For example:

If a seed label indicates 90% purity, 78% germination, 10% hard seed, and 2% dormancy, it is calculated to be 90% x [78 + 10 + 2]% = 81% PLS.

Therefore, each pound of PLS would need 1 pound / 0.81 = 1.2 pounds of seed with a 90% purity and 90% total germination

**Seed Mix(es)** shall be as specified below. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

*For each mix specified, insert seed mix and application rate where noted below. When required (e.g., unknown slope conditions), specify 30 pounds of cover crop to be seeded with the permanent mix (as in example below). Do not include a cover crop for slope mixes already containing an annual cover crop as part of the mix composition.*

*Insert Seed Mix Here*

**Application Rate**

**Mix X:** \_\_\_\_\_\_ lbs/acre PLS. Option1: In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season. Option 2: No cover crop shall be applied.

Any species substitutions shall be with a species having similar characteristics and function. Substitutions must be approved by MassDOT Landscape Design Section per the documentation submittal process.

**50% Increase Adjustment for Field Conditions**

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

* Seeding out of season

OR

* Seeding after Compost Blanket has been applied (unless already increased for out of season).

## METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Seed Description will be measured for payment by the pound of Pure Live Seed delivered and complete in place.

Seed Description will be paid at the contract unit price per pound of Pure Live Seed delivered upon approval of all Seed Submittal Documentation. Overseeding required to correct poor germination or establishment shall be incidental to the item.

Cover crop not included as part of the permanent mix composition will be paid for under Item 765.21, Annual Cover Crop. (delete sentence if no cover crop is required)

Application and care of native seed mix will be paid for separately under Item 735.635 Native Seeding and Establishment.

***NATIVE SEED WORKSHEET***

Project Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Project No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Contract No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Seed Mix Number & Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Contractor: Complete Prior To Ordering**

Pounds of Seed Required Per Contract:

 \_\_\_\_\_\_\_\_\_\_\_lbs./acre for \_\_\_\_\_\_\_Acre(s) OR \_\_\_\_\_\_\_\_ SY

 Additional 50% increase if required (out of season or seeding over compost blanket):

 \_\_\_\_\_\_\_\_\_\_\_**lbs. Total Seed Required**

 Calculated Quantity for **P**ure **L**ive **S**eed (PLS*1*):

 \_\_\_\_\_\_\_\_\_\_ **Total Pounds PLS**

**Engineer: Verification at Time of Application**

Number pounds delivered to site*2*: \_\_\_\_\_\_\_ Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Actual Seed Bag Tag/s Received or photo documented by Engineer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***1*** *PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).*

***2****Quantity delivered should match pounds* ***Total Pounds PLS*** *and* ***Verification of Seed Delivery****. Pounds should be shown on each Seed Tag.*

***SUPPLIER VERIFICATION OF SEED DELIVERY FOR MASSDOT PROJECTS***

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

We hereby certify that (*Seed Supplier*):­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Furnished to (*Contractor*): ­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For use on: (*Project Description*) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project #: \_\_\_\_\_\_\_\_\_\_\_\_\_ Contract #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Pounds of Pure Live Seed: \_\_\_\_\_\_\_\_\_\_\_\_\_

Of Mix (*Description*): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lot Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The material was delivered on (*Date*)\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The labels and contents meet all State and Federal regulations. The mixture consists of the following species, including cultivars (as applicable) and ecotype region, and at the following percentages (may be attached separately):

Name (print): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Supplier: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature and Seal: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_