Right of Way Development and Control
ESCM Training

Right of Way Development is unlike Construction

Materials are perishable, living things.
- Site preparation – healthy soil
- Healthy seeds
- Mulch
- Seed establishment
Section 01000 – Right of Way Development and Control

01030.00 Scope
This work consists of seeding and associated tasks to develop plant growth for erosion control, environmental mitigation and roadside development.

01040.00 Scope
This work consists of planting, but has sections that pertain to seeding too! (i.e., soil conditioners, amendments, bio-amendments, soil testing, top soil and wetland soil)

Section 01030 – Seeding

01030.02 Definitions

- Certified Seed – commercially available, named varieties of seeds; certified by OSU Seed Certification Service, will have a blue tag. Native plants are not usually certified.

- Pure Live Seed (PLS) – The amount of viable seed in the total quantity of seed
Section 01030 – Seeding

01030.02 Definitions

Noxious Weed – identified by ODA as harmful or a threat to economy and ecology of the state;

- Type A – of economic importance, with infestations small enough to eradicate or contain
- Type B – of economic importance, with regional abundance but may have limited distribution

Weed Management Area – identified on Plans, usually noxious weeds present

Noxious Weeds

Type A: Giant Hogweed / *Heracleum mantagazzianum*  
(Sap can cause burning, blisters & long lasting scars)

Type B: Butterfly Bush / *Buddleia davidii*  
(Flowers attract butterflies and have sweet fragrance)
Soil

Soil quality affects both seeding (01030) and planting (01040).

Specifications discuss soil in one location – Section 01040

- 01030.11 Topsoil – Refer to 01040.14
- 01030.12 Soil Modifiers – Refer to 01040.16, 01040.17 & 01040.18
- 01030.45 Soil Testing – Refer to 01040.13

Soils defined in Section 01040.14

Healthy soil is 1/3 mineral, 1/3 organic matter and 1/3 pore space, plus soil biology.
Section 01030 - Seeding

01030.13 Seed – Labels, Quality, Pure Live Seed, Inspection, Mixes

Look for:
- Compliance with Oregon and federal seed regs
- Testing date – Within 18 months of planting
- Not sprouted, moldy, wet or damaged

Seed Sizes Vary – From fewer than 100 per Lb. to as many as 2.5 million per ounce!

Weight per acre of seed is derived by calculating the number of seeds per pound against the # of seeds per SF
Nursery Label / Sample

Calculation of Amount of Seed (lbs / ac)

Specified Seeding Rate = 100 PLS / Ac

Actual Seeding Rate = **Specified Pure Live Seed Rate**

Germination 93% x Seed Purity 99.94%

\[(0.93 \times 0.9994 = 0.9294)\]

Actual Seeding Rate = \[
\frac{100}{0.9294}
\]

Actual Seeding Rate = **107.59** pounds per acre
Verify seed sack contains project specified seeds (01030.13)

Fertilizer 01030.14

- Type and quantity based upon soil testing and amendment report
- Not typically used on wetland mitigation sites or water quality plantings
- Use slow release types when fertilizers are used
- Use low phosphorus types near water bodies when used
- Stockpiled (select) topsoil, compost and/or mycorrhizae can reduce the need for fertilizer and improve overall soil quality
Fertilizer

- Labeled to document content of Nitrogen (N), Phosphorus (P) and Potassium (K)
- Always listed in order (N-P-K)

Example: a 5-10-5 fertilizer =
- 5% by weight nitrogen
- 10% by weight phosphorus
- 5% by weight potassium

Reading Fertilizer Labels

8 lbs out of 40 is fertilizer
01030.15 – Mulch for seeding

- Hydro-mulch – Wood pulp, BFM or high performance growth media (usually include tackifier and color tracer)
- Straw – Use only certified weed free straw
- Compost – See Erosion Control 00280.14(f) for compost blanket. Provide additional tackifier with compost blanket.

Mulch Types

- Compost Mulch
- Straw Mulch
- Hydromulch
Materials Specifications

- **01030.16 Tackifier**
  Liquid or dry powder. Plant-based (guar or plantain) or chemical (polyacrylamide).

- **01030.17 Pesticides**
  Contractor must get approval for use of pesticides before using.

Construction

- **01030.40 General**
  Retain all existing desirable vegetation!
  - Notify Agency 24 hours prior to seeding
  - No seeding in adverse weather
Site Preparation

01030.41 – References 01040.48
- 5 site prep methods for 8 seeding types
- Seeding areas are made weed free
- Stockpile selected topsoils as briefly as possible.
- Loosen subsoils, roughen cut slopes, texture fill slopes
- Haul and spread selected topsoils without compacting.

01030.42 – Weed Control Plan (WCP)
- Where specified WCP can be part of Planting Work Plan (PWP)
- Weed control inspections: Frequencies listed
- Weed removal: Work and required documentation
- Applicable when included in schedule list of items

01030.43 – Seeding

a) **Temporary** (used for erosion control 00280)

b) **Permanent Seeding** (defined in Specials)
   (Permanent seeding can be used for erosion control)

- **West of the Cascades**
  (March 1 - May 15 & September 1 - October 31)
  Extra time for irrigated areas

- **East of the Cascades**
  (October 1 - February 1) Unless in irrigated areas.

- **Wetland** (East and West)
  (September 1 - October 31 & March 1 - April 30)
Seeding Timing – 01030.43

- Apply temporary seeding to stabilize disturbed soils and slopes that will be exposed for 2 months or longer. Do not count solely on temporary seeding for immediate erosion control!
- Apply permanent seeding on areas to be left dormant for 1 year or more.
- 3 weeks to achieve required coverage

Drill seeding
Establishment

01030.60 General, 01030.61 Establishment

- Temporary seeding: min 70% cover – no timeframe
- Permanent seeding: min 90% cover – either 45 days after seeding, or no timeframe for erosion control
- East of the Cascades 30% cover
- Water quality seeding – 100% cover
Measurement & Payment

01030.80, .90 Seeding

- Unit, Area Basis (mulch is measured by area basis)
- Partial Payments: 70% at seeding, 30% at completion

Your roadsides are now seeded!

01040 PLANTING: Materials – Soil

- 01040.13 Soil Testing and Amendment Report
  For soil fertility by a qualified testing lab. Should identify amendments, bio-amendments and fertilizer needed in a report.

- 01040.14 Topsoil
  3 types (plus water quality mixture identified in Sections 01012, 01011 & 01014)

- 01040.15-.17 Soil Conditioners, Amendments and Bio-Amendment
  Conditioners modify soil structure; amendments improve soil nutrition; fertilizers increase availability of specific elements necessary for plant growth, bio-amendments introduce soil biology into the soil.
Soil Biology

Many varieties of nematodes exist.

Bacteria, fungi, protozoa, nematodes, arthropods and earthworms decompose organic materials, sequester nitrogen, fix nitrogen from the air, enhance soil aggregation and porosity, prey on crop pests and are food for above-ground animals.

01040.17 Soil Biology – Mycorrhizal Fungi

- Symbiotic relationship: Mycorrhizae take inexpensive sugars from host plant and help uptake water and nutrients from soil that would otherwise be unavailable.
- Mycorrhizae release chemicals into the soil that unbind nutrients from soil
- Microscopic filaments of mycorrhizal hyphae (roots) may comprise several miles per cubic inch.
- Soil bio-amendments discussed in Section 01040.17
Roadside soils are frequently poor quality:
Stripped of topsoil layer or compacted mineral soil with little pore space or soil biology
**Retain existing vegetation wherever possible!**

Section **01040.48** describes site preparation required for planting
### 01040.43 & 01040.44 Area Preparation

**01040.43 Topsoil**
- Excavate and install or stockpile < 28 days.
- Prepare subsoil – eliminate compaction
- Haul, spread and finish grade and cleanup.

**01040.44 Select Wetland Topsoil**
- Excavate first, then place selected wetland topsoils directly to site. Or stockpile < 28 days.
- Sub-excavate to grade, seek Agency approval.
- Haul, spread carefully, seek Agency approval.

### 01040.48 Area Preparation

Incorporate soil amendments (01040.45), soil bio-amendments (01040.46), fertilizers (01040.47) as recommended by soil test results.
03020 Compost

- Many applications in erosion control, soil conditioning, and mulching.
- Watch for appropriate particle sizes, debris bits and state of decomposition of organics.
- Certified at the source, not by the load.
- Check lab results for analysis

Communication

- Pre-Construction Conference – the best opportunity to ask questions before they become issues.
- Professional of Record (POR) on-call to Project Manager / Inspector if issues arise. Must be kept apprised of contract change orders.
- Regular inspections and enforcement of contract documents are key to success!
- Post-Construction Conference / Project Manager’s narrative – the best opportunity for learning how to improve next time.
### SEEDING

<table>
<thead>
<tr>
<th>Due</th>
<th>Section</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>precon</td>
<td>01030.30(a)</td>
<td>Certification that weed control coordinator meets requirements of 01030.30(a)</td>
</tr>
<tr>
<td>precon</td>
<td>01030.42(a)</td>
<td>Weed control work plan</td>
</tr>
<tr>
<td>within 60 days of execution of contract</td>
<td>01030.13(g)</td>
<td>List of seed sources for all specified seeds. Verify that all specified seed has been located and will be available.</td>
</tr>
<tr>
<td>before using</td>
<td>01030.17</td>
<td>Submit proposed pesticides and receive approval. Submit a copy of manufacturers federal registered label. If requested, submit MSDS sheet.</td>
</tr>
<tr>
<td>before using</td>
<td>01030.30(b)</td>
<td>Certification that pesticide applicator possesses an Oregon Commercial Pesticide Applicators License (each individual applicator who will be performing work)</td>
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### PLANTING

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<thead>
<tr>
<th>Due</th>
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<th>What</th>
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<tbody>
<tr>
<td>within 90 calendar days of award of contract</td>
<td>01040.04(a)</td>
<td>Planting Work Plan</td>
</tr>
<tr>
<td>before arranging procurement of materials</td>
<td>01040.04(a)</td>
<td>List of project materials for approval</td>
</tr>
<tr>
<td>before planting</td>
<td>01040.13(a)</td>
<td>(1) Soil fertility analysis of existing soils performed by a certified lab (2) Soil amendments report</td>
</tr>
<tr>
<td>before planting</td>
<td>01040.13(b)</td>
<td>(1) Soil Bio-amendments report</td>
</tr>
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<td>20 days before furnishing topsoil</td>
<td>01040.14</td>
<td>(1) Give agency notice of intent to use source (2) Provide access to the agency to the source (3) Provide a 20-pound representative soil sample for testing (4) Obtain approval of source</td>
</tr>
<tr>
<td>prior to construction</td>
<td>01040.15</td>
<td>Submit 15-pound sample of soil conditioner for approval.</td>
</tr>
<tr>
<td>prior to use</td>
<td>01040.16</td>
<td>Approval of soil amendments</td>
</tr>
<tr>
<td>90 days after execution of contract</td>
<td>01040.19(e)</td>
<td>List of nursery sources for specified plants</td>
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</tbody>
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Presenter Information

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