

SECTION 02900

LANDSCAPING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Soil preparation, mulching, and seeding of all disturbed areas including a revegetation mat for erosion control on 3:1 slope or greater
- B. Additional Requirements Specified Elsewhere
 - 1. Section 01340: Shop Drawings, Product Data, and Samples
 - 2. Section 01400: Quality Control
- C. Related Requirements Specified Elsewhere
 - 1. Section 02200: Earthwork
 - 2. Section 02950: Trees, Shrubs and Live Vegetation
- D. Fertilizer Application Rates
 - 1. Based on assumed soil conditions
 - 2. Application rates may be adjusted by Engineer upon review of soil analyses and conditions
 - 3. A change order will be negotiated to reflect change in application rates, if any

1.2 QUALITY ASSURANCE

- A. Applicator Qualifications
 - 1. Landscaping contractor, experienced in the State of Colorado
 - 2. Experienced with type and scale of work specified
 - 3. Adequate equipment and personnel to perform work
- B. Comply with local requirements and applicable codes and ordinances of State of Colorado and local governing authority
- C. Applicable Standards: American Association of Nurserymen "Standardized Plant Names"
- D. All seed free from noxious seeds such as Russian or Canadian Thistle, Bindweed, Johnson Grass, and Leafy Spurge

1.3 JOB CONDITIONS

- A. General
 - 1. Do not prepare or seed frozen soils

2. Do not seed when wind exceeds 5 mph
3. Perform seeding only after preceding work affecting ground surface is completed
4. Do not mulch over seeded areas when wind exceeds 15 mph
5. All wood-type shrubs and trees to be cleared and stockpiled for chipping

1.4 SUBMITTALS

- A. Source and representative seed analyses for all seed from source not more than six months old
- B. Certificates
 1. Certificates of compliance from vendor or grower certifying that the seed furnished is from a lot that has been tested by a recognized laboratory for seed testing within six months prior to date of delivery
- C. Seed analyses attached to seed containers on-site
 1. Pure live seed (PLS)
 2. Germination
 3. All crop seeds in excess of 1%
 4. Inerts
 5. Weeds
 6. Origin
- D. Maintenance Data
 1. Watering requirements
 2. Fertilizer requirements
 3. Other care information

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery
 1. Deliver fertilizer and seed to site in original unopened, labeled containers bearing manufacturer's guaranteed analysis, name, trade name, trademark and conformance to State law
 2. Use durable waterproof labels with water-resistant ink which will remain legible for at least 60 days
 3. Notify Engineer of delivery schedule in advance so material may be inspected upon arrival at jobsite
 4. Remove unacceptable material immediately from jobsite
- B. Storage
 1. Seed which has become wet, moldy or otherwise damaged in transit or in storage will not be acceptable

1.6 GUARANTEE

- A. Protect and maintain landscaped areas including native grass seeded areas by watering, fertilizing, replanting and weeding until acceptance by Owner at end of two-year warranty period
- B. Acceptance based on successful germination of all seed at rate given on seed analysis report

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil

1. Existing soils, free from lumps, clays, toxic substances, sticks, debris, vegetation, stones over 2", with no decomposed stone salts, alkali or construction debris
2. Where soil is excavated, stockpile topsoil and replace after backfilling
3. Where there is insufficient acceptable on-site topsoil, provide imported material conforming to CDOT specification section 207.02

B. Grass Seed

1. Maximum weed content: 1%
2. Native (PLS = Pure Live Seed)

Species	Variety	Seeding Rate bs. PLS/AC
Blue grama	Hachita, Alma, Lovington	1.5
Sand bluestem	Elida, Garden	8.0
Little bluestem	Pastura	3.5
Western Wheatgrass	Arriba, Barton	8.0
Sideoats grama	Butte, El Reno, Niner, Vaughn	4.5
Prairie junegrass	0.0	0.5
Galleta grass (floret)	Viva	<u>5.5</u>
		31.5*

*This for application by drilling. If broadcast, double the amounts shown.

3. Computation of quantity of seed required is based on the percentage of purity and percentage of germination
4. If seed available on the market does not meet the minimum pure live seed percentages specified, the Contractor must compensate for a lesser percentage by furnishing sufficient additional seed to equal the specified product
 - a. $\text{Pounds of Seed} \times (\text{Purity} \times \text{Germination}) = \text{Pounds of Pure Live Seed (PLS)}$

C. Fertilizer

1. Native seeded areas: Fed. Spec. O-F-241 available nutrients by weight
 - a. Nitrogen = minimum 40% available
 - b. Phosphorus = minimum 40% available
 - c. Potassium = N.A.

D. Mulch Materials

1. Hay or straw mulch
 - a. Chopped straw of oats, barley, wheat or rye or grass hay
 - b. Free from noxious weed seeds
 - c. Rotted, brittle or molded hay not acceptable
 - d. 50% by weight greater than 10" in length
2. Fiber
 - a. Short wood fiber
 - b. "Conwed," "Silver Fiber" or equivalent

E. Revegetation Mat

1. To be used on all slopes of 3:1 or greater
2. May be used as an alternative to mulching
3. Product should be constructed in a web type configuration
4. Installation shall require an anchoring system to the slopes
5. Design basis: Excelsior Erosion Control Blanket; MIRAFI Miramat 2400; BonTerra S2

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify final grades have been established prior to beginning planting operations

3.2 PREPARATION

- A. Seed where indicated on Drawings and all disturbed areas

1. Seed all areas disturbed by construction including area of stockpiled embankment material

- B. Bed Preparation

1. Prepare to a minimum depth of 4" with disc, harrow or chiseling tools
2. Uproot all competitive vegetation
3. Work soil uniformly to a smooth surface free of clods, stones over 2" in any dimension or any material which will interfere with seeding equipment
4. Install imported topsoil to a minimum depth of 4"
5. Till across slopes
6. Do not till when soil moisture is unsuitable

- a. Soil texture after tillage shall be uniform, free of wet compressed or dry lumps
- 7. Do not prepare seed bed more than 24 hours in advance of seeding
- 8. Fertilize at rate of 50 lbs. nitrogen per acre and 40 lbs. phosphate per acre
 - a. Till fertilizer into soil a minimum of 2"

3.3 INSTALLATION

A. Seeding

- 1. Application rates per specified seed mix
- 2. Seed by drilling on all slopes 3:1 or flatter or wherever practical
- 3. Drill across slope
- 4. Plant ½" to 1" deep
- 5. Maximum distance between furrows: 4"
- 6. If drill furrow spacing exceeds 4", drill twice
- 7. Use grass wheels, rate control attachments, seed boxes with agitators and separate boxes for small seeds
- 8. Where slopes exceed 3:1 or in areas too small for drilling equipment, broadcast seed on ground surface
- 9. Do not permit vehicles or equipment on seeded areas
- 10. If rain or other factors adversely affect prepared seed bed between preparation and seeding, re-prepare as specified

B. Mulching

- 1. Apply hay or straw mulch uniformly at 4,000 lbs./acre
- 2. Spread mechanically or by hand
- 3. If hand-spread, tear apart and fluff before spreading
- 4. If soil has dried to 1" or more below surface, apply supplemental water
- 5. Crimp mulch into soil a minimum of 2" with mechanical crimps
- 6. Mechanical crimping by serrated discs; discs not more than 9" apart
- 7. Crimp across slope
- 8. Apply mulch and crimp within 24 hours after seeding
- 9. On slopes greater than 3:1, an agronomy blanket shall be used
- 10. Hydro-mulching is not an acceptable mulching method without Engineer and Owner approval

C. Watering

- 1. Water by truck or temporary sprinkler
- 2. Keep soil moisture within 1" of surface
- 3. Continue until grass is 1" minimum high

3.4 SCHEDULES

A. Planting Season

- 1. Seeding in one or another of two planting seasons within the calendar year (October 15th to May 31st)

- a. Spring planting season
- b. Fall planting season
2. Time of planting shall be coordinated with the Engineer and Owner
3. Seeding shall be accomplished within the time limits of the contract period unless arrangements are made otherwise with the Owner and Engineer

3.5 CLEANING

- A. Sweep and wash paved surfaces
- B. Remove planting debris from project site

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT AND PAYMENT

- A. All soil preparation, fertilization, seeding, mulching and maintenance for acceptable growth shall be included in the unit price established in the Schedule of Values and paid for based upon the actual area installed, not to exceed the maximum pay areas established on the Drawings. Areas disturbed outside of the maximum pay area shall be seeded and acceptable growth established by the Contractor at no additional cost to the Owner.

END OF SECTION