SP-150551
(New)

SPECIAL PROVISIONS
FOR
LEVEE SEEDING

Fremont County
NHSN-002-1(122)--2R-36

Effective Date
July 2, 2019

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

150551.01 DESCRIPTION.

A. The work covered by these Special Provisions consists of furnishing all labor and materials, and performing all operations in connection with the seeding of the Missouri River Levee L-575 Highway 2 Setback Levee, seepage berm, and areas within 15 feet of the seepage berm and riverward levee toe, as shown in the contract documents.

B. References.
Comply with all applicable Federal, State, and/or County regulations governing materials and work. This shall include the USDA Federal Seed Act, latest version.

C. Delivery, Storage, and Handling.

1. Furnish seed in sealed original standard containers labeled with producer's name and seed analysis, and in accordance with the USDA Federal Seed Act.
- Remove from the site seed which has become wet, moldy, or otherwise damaged in transit.
- All labeling required by law shall be intact and legible.

2. Furnish fertilizer uniform in composition, free flowing and suitable for application with approved equipment, delivered to the site in bags or other containers, each fully labeled and bearing the name, and warranty of the producer.

D. Planting Conditions.
Do not plant when the ground is frozen, snow covered, muddy, or when air temperature exceeds 90°F.

150551.02 MATERIALS.

A. Topsoil.
See Standard Specifications.

B. Seed Quality.

1. Fresh, clean, new-crop seed labeled in accordance with USDA Rules and Regulations under the Federal Seed Act in effect on date of letting.

2. Provide seed of species, proportions, and minimum percentages of purity, germination and maximum percentage of weed seed as specified.

3. Approval of all seed for use shall be based on the accumulative total of PLS specified for each phase of work.

C. Levee Seeding Mix.
Levee seeding mix shall consist of the following specifications:

Botanical Name	Common Name	Amount	Minimum % Germination
	Seed Oats VNS	12.5%	90
Bromus inermis 'Leyss'	Smooth Brome Grass	37.5%	85
Festuca arundiancea 'Fawn'	Fawn Tall Fescue	29.5%	90

D. Rolled Erosion Control.
Provide Type 1 Turf Reinforcement Mat (TRM) in accordance with Section 4169 of the Standard Specifications.

E. Fertilizer.
Use fertilizer analysis based on soil test and meet applicable requirement of Iowa State Law.

F. Water.

1. Provide clean, fresh water free from impurities injurious to vegetation.

2. Water free from substances harmful to grass growth.

3. Provide water from source approved by the Engineer prior to use.

150551.03 CONSTRUCTION.

A. Levee Seeding Areas.

1. General.
- Limit preparation to areas which will be planted soon after.
- Levee seeding areas includes the levee embankment, seepage berm, and areas within 15 feet of the riverward toe and the landward seepage berm which will not have revetment or granular surfacing.
- Levee seeding areas shall also include the foreslopes of the levee entrances, up to 15 feet past the intercept with the roadway foreslope.

2. Topsoil.
Perform topsoil installation and finished grading in accordance with the Standard Specifications.

3. Seeding Preparation.

- Loosen surface to a minimum depth of 4 inches, but no more than 6 inches. Operation shall not extend into levee cohesive fill.
- Remove stones over 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter that will interfere with turf development or subsequent mowing operations.
- Prior to applying fertilizer in seeding areas, loosen areas to be seeded with a double disc or other suitable device if the soil has become hard or compacted.
- Correct any surface irregularities in order to prevent pocket or low areas which will allow water to stand.
- Limit fine grading to areas which can be planted soon after preparation.
- Restore seeding areas to specified condition if eroded or otherwise disturbed after fine grading and before planting or after planting and before erosion control mat placement.

B. Levee Seeding Installation.

1. Application Method.

- Seeding method shall be drill seeding (preferred) or broadcast drop seeding. Broadcast drop seeding shall only be used in inaccessible hard to reach areas or areas too small for drill seeding equipment.
- Drill Seeding. Seed shall be drilled at the rates specified. Use cultipacker seeders or grass seed drills. Drill seed uniformly to maximum average depth of 1/2 inch. Row markers shall be used when applying seed. The level of seed in the seed box shall be maintained half-full or above at all times during the seeding operation.
- Broadcast and Drop Seeding. Seed shall be uniformly broadcast at twice the rates specified. Sow one-half the seed in one direction, and sow remainder at right angles to the first sowing in those areas where pratical. Narrow strips of land may be seeded in one direction but with enough overlap to make sure all areas are seeded. Cover seed uniformly to a maximum depth of 1/2 inch by means of spike-tooth harrow, cultipacker, steel mat drag, raking or other approved devices.

2. Mulching.

- Mulching may be accomplished by hydromulching or by using hay and straw mulch as specified below on drilled or broadcast seeded areas.
- Hay or Straw Mulch. Hay or straw mulch shall be spread uniformly at the rate of 2 tons per acre. Mulch shall be spread by hand, blower-type mulch spreader, or other approved method. Mulching shall be started on the upper part of steep slopes, and continued uniformly until the area is covered. The mulch shall not be bunched or clumped. Sunlight shall not be completely excluded from penetrating to the ground surface. All seeded areas shall be mulched on the same day as the seeding. Mulch shall be anchored, crimped to the ground, immediately following spreading to prevent loss due to rain or wind.
- Mechanical Anchor Equipment. Mechanical anchor equipment shall be a V-type-wheel land packer; a scalloped-disk land packer designed to force mulch into the soil surface; or other suitable equipment. A minimum of two passes of anchor equipment shall be made over all seeded areas.
- Hydromulching. First mix water and fiber. Wood cellulose shall be applied as part of the hydromulching operation. Fiber shall be added and later spread at 2000 pounds, dry weight, per acre. Produce a slurry and hydraulically spray on the ground. Slurry shall form a blotter like cover impregnated uniformly. Spread with one application with no second application.

3. Rolling.
Immediately after seeding, firm entire area except for slopes in excess of 3 to 1 with a roller not exceeding 90 pounds for each foot of roller width. If seeding is performed with cultipacker-type seeder, rolling may be eliminated.

4. Watering.
Provide initial watering after installation as appropriate for planting conditions.

C. Maintenance and Replacement.

1. General.
- Begin maintenance of seeded areas immediately after each portion is seeded and continue until final acceptance or for a specific time period as stated below, whichever is longer.
- Provide and maintain temporary piping, hoses, and watering equipment as required to convey water from water sources and to keep seeded areas uniformly moist as required for proper growth.
- Protection of new materials: Provide barricade, coverings or other types of protection necessary to prevent damage to existing improvements indicated to remain. Repair and pay for all damaged items.
- Replace unacceptable materials with materials and methods identical to the original specifications unless otherwise approved by the Engineer.

2. Levee Seeded.
- Maintain levee seeded areas: 6 months, minimum, after installation and review of entire project area to be planted.
- Maintenance period begins at completion of seeding of entire leveed area to receive seed cover.
- Engineer will review seeded areas after installation for initial acceptance.
- Maintain seeded areas by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading, and reseeding as required to establish a smooth, uniform grass cover, free of weeds and eroded or bare areas.
- Lay out temporary watering system and arrange watering schedule to avoid walking over muddy and newly seeded areas. Use equipment and water to prevent puddling and water erosion and displacement of seed or mulch.
- Mow areas as soon as there is enough top growth to cut with mower set at recommended height for brome grass. Repeat mowing as required to maintain height. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Time initial mowing as required to maintain a height of 5 inches until establishment period is complete.
- Unacceptable seeding are those areas that do not meet the quality of the specified material, produce the specified results, or were not installed to the specified methods.
- Replant bare areas using same seed, mulching, and erosion control materials specified.
- Engineer will review final acceptability of installed areas at end of maintenance period.
- Maintain repaired areas until remainder of maintenance period or approved by Engineer, whichever is the longer period.

D. Rolled Erosion Control Installation.

1. Immediately after seeding, place the rolled erosion control in accordance with the Contract Documents, Iowa Department of Transportation Standard Specifications, the manufacturer's recommendations, or as directed by the Engineer. Install the erosion control blanket flat and parallel to the flow of water without stretching. Overlap adjacent and subsequent rolled erosion control in accordance with the manufacturer's recommendations but not less than 3 inches for adjacent sections or 12 inches for subsequent sections. Overlap with the

downhill and the upslope sections always on top. Anchor the erosion control blanket using wire staples after placing the erosion control blanket. Space the staples 3 to 4 feet apart in three rows along each strip, with one row along each edge, and one row alternately spaced in the center.

2. Use one additional row of staples for backslope and ditch intersection lines. Space staples a maximum of 9 inches apart across the width for all ditch anchor folds, splice joints, top of slope anchor folds, and terminations.

3. Excavate a 6 inch vertical slot at the top of slope. Extend the upslope terminal end of the rolled erosion control a minimum of 30 inches past the vertical slot. Place the upper edge of the last upslope section in a 6 inch vertical slot. Anchor the rolled erosion control material in the slot using staples placed at 12 inch or less intervals. Backfill and compact the slot using specified topsoil to anchor the upper portion of the rolled erosion control. Lightly seed the backfill and cover with the rolled erosion control that extends beyond the slot. Staple the overlapped portion downslope from the vertical trench using staples placed at 12 inch intervals or less. Bury the upstream terminal end of the rolled erosion control as directed by the Engineer. Anchor all other sections of the rolled erosion control in accordance with the manufacturer's recommendations but not less than two staples per square yard.

4. The erosion control mat type, materials, delivery, handling, payment, and quality control shall conform to the requirements of Iowa Department of Transportation Standard Specifications.

150551.04 METHOD OF MEASUREMENT.

Engineer will compute in acres to the nearest 0.1 acre the surface areas of

- Mowing
- Mulching
- Seeding and Fertilizing (Rural)

150551.05 BASIS OF PAYMENT.

A. Contract unit price per acre to the nearest 0.1 acres for the following. Payment is full compensation for preparing the area and furnishing and applying each material.
- Mowing
- Mulching
- Seeding and Fertilizing (Rural)

B. Payment for these items is full compensation for furnishing all materials, equipment, tools, and labor necessary to complete the work according to the contract documents. Payment will not be allowed for any area seeded until fertilizer and mulch are placed.