

**DIVISION II
CONSTRUCTION AND MATERIAL SPECIFICATIONS
SECTION 2400 SEEDING, SODDING AND OVERSEEDING**

APPROVED AND ADOPTED THIS 15th DAY OF FEBRUARY 2017

**KANSAS CITY METROPOLITAN CHAPTER
OF THE AMERICAN PUBLIC WORKS ASSOCIATION**

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SECTION 2400 GENERAL

2400.1 Scope

This section governs all general specifications necessary for installation of seeding, sodding, native grasses, hydroseeding and overseeding in accordance with the Standard Drawings, the specifications and Special Provisions.

The Contractor shall furnish all plants and materials and perform all operations in connection with the preparation, fertilizing, placing, watering, weeding, firming and establishment, of sodded and seeded areas (both temporary and permanent applications). All areas of established yards shall be restored by sodding unless otherwise approved by the Owner. The Contractor shall sod and/or seed disturbed areas where shown on the Plans or by field inspection, as required by the Storm Water Pollution Prevention Plan and pursuant to all permits, applicable federal and state laws. The Contractor shall be responsible for establishment of grass.

2400.2 Referenced Standards

APWA
2150 Erosion Control

Kansas Department of Transportation
Standard Specifications for State Road and Bridge Construction, 2015 Edition
KDOT Division 2100, and Division 900

Missouri Highways and Transportation Commission
Missouri Standard Specifications for Highway Construction, 2011 Edition
MODOT Section 800

Federal and State Department of Agriculture Regulations

Applicable State Weed Laws, Missouri Revised Statutes Chapter 263, and Kansas Statutes Annotated, Chapter 2, Article 13.

American Sod Producers Association (A.S.P.A.) "Specifications for Turfgrass Sod", and "Specifications for Topsoil Material and Application"

2400.3 Definitions

- A.** Rough Grading is to mean the work necessary to prepare the subgrade for topsoil application and shall be compatible with the surrounding landscape while making a smooth transition to existing undisturbed conditions.
- B.** Subgrade is to mean that level of earth below the topsoil layer.
- C.** Compacted backfill is to mean a compaction of 90 percent standard proctor density for that material.
- D.** Tolerance is to mean that amount above or below a given line.
- E.** Certified Sod: State Certified Sod shall be turfgrass sod, grown from certified high quality seed that has

been inspected by the State Certification Agency.

- F. Certified Seed: A grass or legume seed named variety that has been reviewed and accepted and meets all state and federal requirements, rules and regulations. The seed shall be grown and processed in the United States or Canada and comply with the requirements of the corresponding State Seed Law. Certified Seed shall be packaged and labeled with an inspection certificate from the State Certification Agency stating genetic identity, purity, and freedom from noxious weeds as well as excessive amounts of other crop and weedy plants at time of harvest. Cleaning and conditioning of seed must result in a product that meets or exceeds minimum standards.
- G. Establishment Period: A period when planting work has been performed and initially accepted, and there is a Contract requirement to care for the planted areas in some way until the period ends.
- H. Fertilizer: The grade of fertilizer will be identified according to the percent nitrogen (N), percent of available phosphoric acid (P205), and percent water soluble potassium (K20), in that order, and approval will be based on that identification.
- I. Native Plant (existing): A variety of plant species occurring in its natural habitat without direct or indirect human actions.
- J. Noxious Weed: All weed designated by the State Weed Board as injurious to public health, agriculture, recreation, wildlife, or all public or private property. The United States Department of Agriculture (USDA) for the corresponding state will be the authority in determination of noxious weed species.
- K. Pure Live Seed (PLS): The amount of living seed in the total quantity of seed when non-viable seed or non-seed material is excluded. The following formula shall be used to determine the amount of commercial seed required to provide each kind of seed for the specified quantities of pure live seeds:

$$\text{Pounds of Commercial Seed Required} = \frac{10,000 \times \text{Pure Live Seed (lbs per acre)}}{\text{Purity (Percent)} \times \text{Germination (percent)}}$$
- L. Riparian: Related to the bank, shore, or water-influenced areas of a watercourse or water body.
- M. Sensitive Areas: Defined areas such as wetlands, natural water and riparian resources, special environmental zones, or where certain activities are restricted such as the use of chemicals.
- N. Specified Weeds: All noxious weeds as defined above, and all plant species identified in the Special Provisions or on the Plans as a species to be removed.
- O. Weed: A plant that is undesirable where it is growing.

2400.4 Submittals

Prior to delivery to the job site, Contractor shall submit to the Owner for approval the source and supplier of all grass seed, sod, fertilizer and mulch materials, along with the type of equipment to be used on this project and any tests completed. Manufacturer's bulletins, leaflets and other descriptive data which contain cuts, dimensions, and specifications will be acceptable for cataloged materials. Such bulletins, leaflets and other descriptive data shall be clearly marked to show which item is to be used and which paragraph of the contract specification it is to satisfy.

2400.5 Protection and Repair

The seeded/sodded area shall be kept free of traffic until accepted. If at any time before acceptance of the completed contract, any portion of the seeded surface becomes gullied or otherwise damaged, or the seeding has been damaged or destroyed, the affected portion shall be repaired to re-establish the specified condition prior to the acceptance of the work.

2400.6 Acceptance of Seeding and Sodding

- A.** Acceptance: Acceptance by the Owner will occur when areas seeded and/or sodded are determined to be established turf areas ready for mowing. Grass areas in excess of one (1) square foot that are dead or in poor condition regarding color and quality shall be replaced at the Contractor's expense prior to the initiation of the Maintenance Period.
- B.** Sod Watering: Throughout the Maintenance Period, the Contractor shall be responsible for watering the installed sod until it is established and ready for mowing. In the absence of rainfall, watering shall be performed daily during the first week and shall be sufficient to maintain moist soil to a depth of at least 4 inches. Soil on sod pads shall be kept moist at all times. Watering may be done during the heat of the day to help prevent wilting. After the second week, the Contractor shall water the sod as required to maintain adequate moisture in the upper 4 inches of topsoil necessary for the promotion of deep root growth until final acceptance as established turf areas ready for mowing.
- C.** Seed Watering: The Contractor shall be responsible for watering seeded areas, keeping all areas moist throughout the germination period, following the substantial germination of the seed, and during the occurrence of a dry or drought period. Continued watering will be required until final acceptance as established turf areas ready for mowing.
- D.** Acceptance Notification: After acceptance of the seeded or sodded area by the Owner, the Contractor shall by door hangers or other approved methods, notify all affected property owners that the maintenance of the grassed areas is now their responsibility.

2400.7 Clean-up

During the progress of this work and upon completion, thoroughly clean the project area, remove and properly dispose of all resultant dirt, debris and other waste materials.

2400.8 Guarantee

The Contractor shall guarantee all work and materials for a period of one full growing season (Spring to Fall) after the date of final acceptance of the project. During the guarantee period, all turf which dies or exhibits weed growth or undesirable grasses, free of eroded areas, bare spots, diseases and insects, shall be replaced with like material at the expense of the Contractor. Contractor to replace as originally specified areas which have failed to survive, as often as required, to establish the seeded/sodded lawn area until accepted, at no additional compensation. Contractor to repair and replace to original condition all damages to property resultant from the sodding operation and all damages as a result from the remedying of these defects, without additional compensation.

SECTION 2401 SEEDING

2401.1 Scope

This section governs furnishing all labor, materials and equipment necessary for complete installation of seeding in

accordance with the Standard Drawings, the specifications and Special Provisions. The Contractor shall furnish all plants and materials and perform all operations in connection with the preparation, fertilizing, placing, watering, firming and establishment, of seeding areas, complete and in strict accordance with these specifications and applicable Plans, and subject to the terms and conditions of the Contract. The Contractor shall seed disturbed areas where shown on the Plans or by field inspection and as required by the Storm Water Pollution Prevention Plan. The Contractor shall be responsible for establishment of grass.

2401.2 Materials

A. Seed: Seed shall be labeled in accordance with U.S. Department of Agriculture Rules and Regulations under Federal Seed Act. All seed shall be furnished in sealed standard containers unless exception is granted in writing by the Owner. Seed shall be free from noxious weeds and re-cleaned "Grade A" recent crop seed treated with appropriate fungicide at time of mixing. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable. Seed mix to be used will be identified prior to sowing. The minimum percentage by weight of pure live seed in each lot of seed shall be as follows:

1. Seeding – Mix #1 (Turf Areas)

Festuca arundinacea, Fineleaf Tall Fescue. Varieties- Hounddog V, Rebel Jr., Rebel III, Rebel 3D, Barlexas, Millennium, Southern Choice, Tar Heel, Wolf Pack, Bonsai 2000, Shortstop II Coyote, or other pre-approved substitutes 62.5%

Poa pratensis, Kentucky Bluegrass. Varieties- Baran, Nassau, Ram I, Nublu, Rugby II, Award, Blacksborg, Challenger, Eagleton, Limousine, Livingston, Midnight, Nuglade, Preakness, Princeton 105, Quantum Leap, 1757 or other approved substitutes 25.0%

Lolium multiflorum – annual ryegrass 12.5%

2. Seeding – Mix #2 (Low Use Areas)

Fescue ovina, Sheeps Fescue. Varieties- Azay, Big Horn, or other pre-approved substitutes 15.0%

Fescuca rubra subsp. Commutata, Chewings Fescue, Varieties-James town II, Victory, Tiffany, or other approved substitutes 20.0%

Fescuca longifolia, Hard Fescue. Varieties- Spartan, Tournament, Warwick, Discovery, Waldina, Aurora, 4 AG Attila, Reliant II, Scaldis, or other pre-approved substitutes 35.0%

Fescuca rubra subsp. Rubra, Creeping Red Fescue. Varieties- Shademaster II, Jasper, Cindy, Pennlawn, or other pre-approved substitutes 30.0%

3. Seeding Rate: Seed mixture shall be sown at the minimum rate of 10 pounds per 1000 square feet for new seeding. See Section 2406.3.E.1 for overseeding rates.

B. Inorganic Fertilizer: Inorganic fertilizer shall be composed of a formula 12-12-12, 13-13-13 or other approved substitute, and shall conform to the applicable State fertilizer laws. Fertilizer shall be of a type that can be uniformly distributed by the application equipment. Fertilizer may be furnished in a dry (granulated) or liquid form. When applied dry, the fertilizer shall be a granular, non-burning chemically combined product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer. Granular or

pellet form shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original unopened containers each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted. When applied in a liquid form, fertilizer may be chemically combined or may be furnished as separate ingredients.

- C.** Mulch: Mulch shall be the vegetative type, or wood cellulose fiber type, whichever is specified in the Special Provisions, or as approved by the Owner.
 - 1. Vegetative Type: The vegetative type shall be the cereal straw from stalks of oats, rye, wheat or barley and shall be free of prohibited and noxious weed seeds.
 - 2. Wood Cellulose Fiber Mulch: Wood cellulose fiber shall contain no germination or growth inhibiting ingredients, and shall be dyed an appropriate color to aid in visual metering in its application. It shall be easily and evenly dispersed and suspended when agitated in water, and when sprayed uniformly on the soil surface, shall form a blotter-like cover, which readily absorbs the water and allows infiltration to the underlying soil. The mulch material shall be supplied in packages of not more than 100 pounds gross weight, and shall be marked by the manufacturer to show the air dry weight content (air dry weight shall contain no more than 10 percent moisture).
- D.** Water: Water, hose and other watering equipment required for the work shall be furnished by the Contractor.
- E.** Other Materials: Other materials not specifically described but required for a complete and proper planting installation, shall be as selected by the Contractor subject to the approval by the Owner.
- F.** Equipment: The seeding operation shall be accomplished with equipment suitable for preparing the seed bed, sowing the seed, fertilizing, spreading the vegetative type mulch, or spreading the wood cellulose fiber mulch in accordance with the applicable requirements of the following sub-section entitled "Construction".
- G.** Top Soil: The Contractor shall make every reasonable effort to stockpile existing top soil prior to excavation and reuse it in the same general locations. No payment will be made for topsoil furnishing and placement necessary due to excessive hauling off of existing top soil on the project site.
- H.** Qualifications of Workman: Provide at least one person, who shall be present at all times during the execution of this work, who is thoroughly familiar with all materials and installation procedures included in the Sodding and Seeding operations as specified herein.
- I.** Delivery Containers: Deliver all items to the site in their original containers with all labels intact and legible at time of Owner inspection.
- J.** Protection: Use all means necessary to protect all materials before, during and after installation, and to protect the installed work and materials of all other trades.
- K.** Replacements: In the event of damage or rejection, immediately make all repairs and replacements to the approval of the Owner and at no additional cost to the Owner.
- L.** Weather Conditions: All sodding and seeding shall be performed during favorable weather conditions and only during normal and acceptable planting seasons when satisfactory growing conditions exist. The planting operations shall not be performed during times of extreme drought, when ground is frozen or during times of other unfavorable climatic conditions unless otherwise approved by Owner. The Contractor assumes full and complete responsibility for all such plantings and operations.

- M. Planting Dates: Recommended dates for all seeding and planting shall be March 15 through October 15 unless otherwise approved by the Owner.
- N. Pre-planting Inspection: Prior to the work of this section, the Contractor shall carefully inspect the installed work of all other trades and verify that all such work is complete to the point where installation may properly commence.
- O. Discrepancies: Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

2401.3 Construction

- A. All equipment used in the project and all workmanship shall meet the approval of the Owner.
- B. All areas to be seeded shall be tilled or disked to a depth of 3-4 inches and raked or smoothed to remove debris, clods, surface stone, 2-inches diameter or larger and weeds. Grades on the areas to be sodded or seeded shall be maintained in true, even and compacted conditions to prevent the formations of depressions. Areas overseeded, to be seeded that have washed or eroded shall be brought to grade and compacted thoroughly by the Contractor prior to placing the seeding or overseeding. No grading shall be done when the soils are in a muddy or frozen condition.
- C. Steel Edging: The finish sub-grade of areas to be planted shall be 2" below top of steel edging, if present, for grass sod and flush with top of steel edging for seeding.
- D. Other Edges: The finished sub-grade next to curbs, sidewalk and drive approaches shall allow for the seed to be placed level with the improvement. The sub-grade shall be finished level with the improvement for seeding.
- E. Fertilizer Application: For areas to be seeded, fertilizer shall be applied when area receives final grading and tillage.
- F. Application of Fertilizer: The Contractor has the option to obtain soil tests from a recognized testing laboratory, approved by Owner, to determine soil pH, nitrogen, phosphorus and potassium requirements and organic matter content. A pH of 5.8 to 7.0 and phosphorus and potassium levels of medium or higher range for the particular test used is required. Soils falling below these test levels must be supplemented with the appropriate materials to meet such test levels. If the above soil test is not performed a 13-13-13 fertilizer shall be applied at the rate of 400 pounds per acre.
- G. Acceptance of Plant Bed: Acceptance of the plant bed for seeding shall be obtained from the Owner for each section of area as indicated on the Plans. The Contractor shall be responsible for maintaining the accepted areas until the effective date for planting.
- H. Sowing shall be accomplished by use of an approved mechanical seeder or drill (hand spreader can be used in small areas), making sure that successive seed strips overlap to provide uniform coverage. Seed should be drilled to a depth of 1/2 inch.
 - 1. Seed mixed in proportions shown in Section 2405.2 may be broadcast by approved sowing equipment. The seed shall be uniformly distributed over the designated areas. The seed shall be covered to an average depth of 1/2 inch by means of a brush harrow, spike-tooth harrow, chain

harrow, cultipacker or other approved device.

2. Areas to be seeded shall be fertilized at rates specified in Section 2401.3.F. The seedbed shall be free of any irregularities in the surface, and shall be corrected in order to prevent formation of water pockets. All seeded areas are to be completely covered with hydromulch or with straw anchored to the soil a minimum depth of 3 inches by a disc harrow set nearly straight, to properly maintain soil moisture and to provide shade for the newly germinated chutes.
 3. Promptly after mulching, wet the seedbed thoroughly, keeping all areas moist throughout the germination period. Protect all turf areas by erecting temporary fences, barriers, signs, etc. as necessary to prevent trampling and disturbance.
 4. When delays in operations carry the work beyond the most favorable planting season for the grasses designated, or when conditions are such, by reason of drought, high winds, excessive moisture, or other factors that satisfactory results are not likely to be obtained, the seeding operation shall be stopped and work shall be resumed only when conditions are favorable again or when approved alternative or corrective measures and procedures have been put into effect. If inspection during seeding operations or after indicate there are areas which have been skipped, the sowing of additional seed on these areas will be required.
 5. The seeded areas will be inspected for acceptable grass coverage and will be acceptable when grasses designated are growing and are in good condition and no area more than ½ of one percent of the total areas shall be bare, of which no single area shall be more than one foot square in area. Any bare area larger than this will not be acceptable and shall be reseeded.
- I. Compaction: Immediately following the completion of seeding operations, the entire area shall be compacted by means of a roller weighing at least 60 but not more than 90 pounds per linear foot of roller.
- J. Maintenance Period: The Contractor shall be responsible for maintaining the installed grass seed and sod until all areas are complete and accepted by the Owner.
- K. Mulching: Mulching shall be done within 24 hours following the seeding operation except in the case of wood cellulose fiber type mulch.
1. Vegetative Type Mulch: After compacting the surface, mulch shall be uniformly spread at the rate of 1.5 tons per acre by means of a mechanical spreader or other approved means. As soon as the mulch is spread it shall be anchored to the soil a minimum depth of 3 inches by use of a heavy disc harrow, set nearly straight, or a similar approved tool. Discs of the anchoring tool shall be set approximately 9 inches apart. Anchoring shall be accomplished by not more than two passes of the tool.
 2. Wood Cellulose Fiber Type: Wood cellulose fiber mulch shall be added to the hydraulic seeder after the proportionate amounts of seed, fertilizer and water, and other approved materials are added. These ingredients shall be mixed to form a slurry which shall be applied at the rate of 1,000 pounds per acre. The mulch shall make a uniform coverage of the soil surface that will be satisfactory to the Owner.

SECTION 2402 SODDING

2402.1 Scope

This section governs the furnishing all labor, materials and equipment necessary for complete installation of sodding, in accordance with the Standard Drawings, the specifications and Special Provisions.

2402.2 Materials

- A.** Sod: All grass sod shall be State Certified, nursery grown native mixture of Hounddog, Rebel, Pride, Cochise, Coyote or other substitute, as may be approved. Sod shall be a Tall Turf type Fescue with 10 percent Bluegrass that is free of objectionable grassy and broadleaf weeds. Sod shall be considered free of such weeds if less than 5 such plants are present per 100 square feet of area. Sod will not be acceptable if it contains any of the following weeds: Common burmudagrass,(wiregrass), quackgrass, johnsongrass, poison ivy, nutsedge, mumblewill, Canada thistle, bindweed, wild garlic, ground ivy, perennial sorral and brome grass, or as defined by current weed laws.
1. Pad Size: The sod shall be cut to supplier's standard width and length but not less than 12 x 24 inches and not more than 24 x 72 inches or bigger sizes that are approved by the Owner. There shall not be broken pads, torn or uneven ends.
 2. Strength: Root development shall be such that standard size pieces will support their own weight and retain their shape when suspended vertically from a firm grasp on the uppermost 10% of area.
 3. Mowing Height: Before harvesting sod, it shall be mowed uniformly at a height of 2 - 2½ inches. The sod shall be stripped or harvested by machine at a uniform thickness of 1½ inches ± ¼ inch. Measurement of thickness shall exclude top growth and thatch.
- B.** Fertilizer: Fertilizer shall be inorganic 12-12-12 or 13-13-13 grade, uniform in composition, free flowing and suitable for application with approved equipment, delivered to the site in convenient containers, each fully labeled, conforming to applicable state fertilizer laws, bearing the name, trade name, or trademark and warranty of the producer.
- C.** Top Soil: The Contractor shall make every reasonable effort to stockpile existing top soil prior to excavation and reuse it in the same general locations. No payment will be made for topsoil furnishing and placement necessary due to excessive hauling off of existing top soil on the project site.
- D.** Qualifications of Workman: Provide at least one person, who shall be present at all times during the execution of this work, who is thoroughly familiar with all materials and installation procedures included in the Sodding and Seeding operations as specified herein.
- E.** Delivery Containers: Deliver all items to the site in their original containers with all labels intact and legible at time of Owner inspection.
- F.** Protection: Use all means necessary to protect all materials before, during and after installation, and to protect the installed work and materials of all other trades.
- G.** Replacements: In the event of damage or rejection, immediately make all repairs and replacements to the approval of the Owner and at no additional cost to the Owner.
- H.** Weather Conditions: All sodding and seeding shall be performed during favorable weather conditions and only during normal and acceptable planting seasons when satisfactory growing conditions exist. The planting operations shall not be performed during times of extreme drought, when ground is frozen or during times of other unfavorable climatic conditions unless otherwise approved by Owner. The Contractor

assumes full and complete responsibility for all such plantings and operations.

- I. Planting Dates: Recommended dates for all seeding and planting shall be March 15 through October 15 unless otherwise approved by the Owner.
- J. Pre-planting Inspection: Prior to the work of this section, the Contractor shall carefully inspect the installed work of all other trades and verify that all such work is complete to the point where installation may properly commence.
- K. Discrepancies: Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

2402.3 Construction

- A. Sod shall not be harvested or delivered when excessively wet or dry. Sod shall be harvested, delivered and installed within a period of 36 hours. Protect sod from sun, wind, dehydration, and rain prior to installation that cannot be placed immediately on delivery. Sod showing visible signs of heating or dehydration will be rejected.
- B. Areas to be sodded shall be fertilized at the rates specified in Section 2401.3.F. The sod-bed shall be free of any irregularities in the surface resulting from fertilizing or other operations and shall be corrected in order to prevent the formation of water pockets. Freshly graded areas, which have set long enough to become dry and crusted over, shall be tilled as specified above, prior to placing the sod.
- C. The first row of sod should, if possible, be laid in a straight line with subsequent rows placed parallel and tightly against one another. Lateral joints shall be staggered as in brick laying to promote more uniform growth and strength. Care shall be exercised to ensure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would otherwise cause air drying of the roots. Where new sod meets existing grassed areas, a straight, vertical edge shall be cut to allow smooth match. Sod shall be watered and firmed in accordance with Section 2400.6.B. If it is necessary to walk excessively on newly laid sod or soil, walking boards should be laid for this purpose.
- D. Sod shall be laid with staggered joints and at right angles to direction of slope. Sod shall be secured by tamping or rolling. On slopes 4:1 or steeper and in drainage channels, all sod shall be anchored at minimum two-foot intervals to prevent movement under rainfall conditions.
- E. The Contractor shall be responsible for having adequate water available at the site prior to and during the installation of the sod and the areas to be seeded. The sod shall be watered immediately after installation to prevent drying during progress of the work. As sodding is completed on any one section, the entire area shall be thoroughly irrigated to a one inch depth below the new sod pad. After a short drying period, the sod shall be rolled with a roller weighing not less than 60 or more than 90 pounds per linear foot to firm the sod pad and smooth minor surface irregularities. Subsequent watering should maintain sod and soil moisture to a depth of at least four inches, supplement rainfall, to promote growth, promote proper rooting to insure sod survival, and to prevent dormancy.
- F. Apply second application of fertilizer at the rate of 300 pounds per acre two weeks after laying sod and prior to final acceptance.
- G. The sodded areas will be inspected for the acceptable grass coverage and will be acceptable when grasses designated are growing and are in good conditions, and no area more than ½ of one percent of the total

area shall be bare or dead, of which no single area shall be more than one foot square in area. Any bare or dead area larger than this will not be acceptable, and shall be resodded.

- H. Maintenance Period – The Contractor shall be responsible for maintaining the installed grass seed and sod until all areas are complete and accepted by the Owner.
- I. Maintenance of sodded areas shall include watering, weeding, mowing to a 2½ inch height after growth has exceeded 3 inches and prior to a 4 inch growth, replacement and installation of sod as originally specified for sodded areas failing to survive, and repair of rutting, should that occur. Clippings from mowing which mat on the grass are to be removed.

SECTION 2403 NATIVE GRASSES

2403.1 Scope

This section governs the furnishing all labor, materials and equipment necessary for complete installation of native grasses, in accordance with the Standard Drawings, the specifications and Special Provisions.

2403.2 Materials

Furnished and installed per Section 2403.3. Annual plants which sprout rapidly and survive for only one growing season are suitable only for establishing temporary vegetative cover. See Temporary Seeding, Section 2153.5.

- A. The seed mix will be as follows:
 Short-grass Mix
 Seeding Rate: 6.42 lb/Acre (40.3 Seeds/ft²)

GRASSES:				
SCIENTIFIC NAME	COMMON NAME	% of Mix	Seeds/ft ²	Rate/Acre
Bouteloua curtipendula	Sideoats Grama	18.69%	2.6	1.200 PLS lb
Elymus canadensis	Canada Wild Rye	9.35%	1.1	0.600 PLS lb
Koeleria cristata	June Grass	1.56%	7.3	0.100 PLS lb
Schizachyrium scoparium	Little Bluestem	34.27%	12.1	2.200 PLS lb
Sporobolus aspera	Rough Dropseed	6.23%	4.4	0.400 PLS lb
Sporobolus cryptandrus	Sand Dropseed	0.31%	2.6	0.020 PLS lb
Sporobolus heterolepis	Prairie Dropseed	0.16%	0.1	0.010 PLS lb

WILDFLOWERS:					
SCIENTIFIC NAME	COMMON NAME	% of Mix	Seeds/ft ²	Rate/Acre	
Aster laevis	Smooth Blue Aster	0.31%	0.4	0.020	PLS lb
Astragalus canadensis	Canada Milk Vetch	1.56%	0.6	0.100	PLS lb
Chamaecrista fasciculata	Partridge Pea	6.23%	0.4	0.400	PLS lb
Dalea candidum	White Prairie Clover	0.93%	0.4	0.060	PLS lb
Dalea purpurea	Purple Prairie Clover	6.23%	2.6	0.400	PLS lb
Desmanthus illinoensis	Illinois Bundle Flower	7.79%	0.8	0.500	PLS lb
Desmodium canadense	Showy Tick Trefoil	0.93%	0.1	0.060	PLS lb
Lespedeza capitata	Round-headed Bush Clover	0.31%	0.1	0.020	PLS lb
Ratibida pinnata	Yellow Coneflower	3.12%	3.1	0.200	PLS lb
Rudbeckia hirta	Black-eyed Susan	2.02%	1.5	0.130	PLS lb

2403.3 Construction

- A. Prior to planting the topsoil in the disturbed area shall be tilled to 6 inches and compacted to approximately 80% density.
- B. Native grass seed shall be installed using a rangeland type grain drill seeder per the rates stated. Depths of seeding plants should be ½ inch.
- C. Spread and crimp 2,000 lbs. per acre of clean straw or hay within seven days of seeding.
- D. Contractor shall provide a minimum of one watering after planting to establish the cover crop.
- E. Cover crop shall provide 70% cover within 21 days of seeding.
- F. Contractor shall guarantee that seeded areas will have 80% cover within two full growing seasons.
- G. Contractor shall allow one application of selective herbicides in the spring to control weeds.
- H. Care must be taken to comply with manufacturers labels.

SECTION 2404 HYDROSEEDING

2404.1 Scope

This section governs furnishing all labor, materials and equipment necessary for complete installation of

hydroseeding, in accordance with the Standard Drawings, the specifications and Special Provisions. Seed and fertilizer, mixed in proportions previously specified, may be broadcast in a hydromulch with water which forms an emulsion and covers the prepared designated areas in a uniform manner.

2404.2 Materials

Areas to be hydroseeded shall be fertilized at rates specified in Section 2401.3.F. The seed-bed shall be free of any irregularities in the surface, and shall be corrected to prevent formation of water pockets. Hydromulch used shall be a wood fiber mulch with tackifier, such as Conwit 2000, or approved equivalent. Hydromulch shall be applied at the rate of 1500 lbs. per acre.

2404.3 Construction

- A. Seed and fertilizer, mixed in proportions previously specified, may be broadcast in a hydromulch with water which forms an emulsion and covers the prepared designated areas in a uniform manner.
- B. Areas to be hydroseeded shall be fertilized at rates specified in Section 2406.3. The seed-bed shall be free of any irregularities in the surface, and shall be corrected to prevent formation of water pockets.
- C. Hydromulch used shall be a wood fiber mulch with tackifier, such as Conwit 2000, or approved equivalent. Hydromulch shall be applied at the rate of 1500 lbs. per acre.
- D. Hydroseeder filling tank should be $\frac{1}{2}$ full of water before adding seed, fertilizer and hydromulch components. Begin agitation while adding remaining water so that a uniform mixture is obtained. Seed, fertilizer and hydromulch components shall not be added to water more than four (4) hours prior to application.
- E. Discharge hydromulch slurry mix on prepared soil for uniform distribution.
- F. Keep all areas seeded moist throughout germination period. Protect all turf areas by erecting temporary fences, barriers, signs, etc. as necessary to prevent trampling and disturbance.
- G. The seeded areas will be inspected for acceptable grass coverage and will be acceptable when grasses designated are growing and are in good condition and no area more than $\frac{1}{2}$ of one percent of the total areas shall be bare, of which no single area shall be more than one foot square in area. Any bare area larger than this will not be acceptable and shall be reseeded.
- H. Contractor shall provide a minimum of one watering after planting to establish the cover crop.
- I. Cover crop shall provide 70% cover within 21 days of seeding.
- J. Contractor shall guarantee that seeded areas will have 80% cover within two full growing seasons.
- K. Contractor shall allow one application of selective herbicides in the spring to control weeds.
- L. Care must be taken to comply with manufacturers labels.

SECTION 2405 OVERSEEDING

2405.1 Scope

This section governs the furnishing all labor, materials and equipment necessary for complete installation of overseeding in accordance with the Standard Drawings, the specifications and Special Provisions. Overseeding is the planting of grass seed directly into the existing turf, without tearing up the turf, or the soil.

2405.2 Materials

All designated existing turf areas being overseeded shall use seed previously specified at the rate of 160 pounds per acre in a uniform manner. Areas to be overseeded shall be fertilized at rates previously specified.

2405.3 Construction

- A. The seed-bed shall be free of any irregularities in the surface, and shall be corrected in order to prevent formation of water pockets.
- B. Seed shall be applied with a seed drill. The seed drill shall verticut the soil to a minimum depth of ½ inch at not more than 1½ inch spacing between furrows.
- C. Areas that have washed or eroded shall be brought to grade and compacted prior to overseeding.
- D. The seeded areas shall be inspected for acceptable grass coverage and will be acceptable when grasses designated are growing and are in good condition. Not more than ½ of one percent of the designated turf area shall be bare, of which no single area shall be more than one foot square in area. Any area left unseeded larger than this will not be acceptable, and be reseeded.

SECTION 2406 MEASUREMENTS AND PAYMENTS

2406.1 General

There will be no measurement or separate payment for any items of work not specifically identified and listed in the Contract Documents and all costs will be included in the Contract unit prices for other items listed in the Contract Documents.

2406.2 Methods of Measurement

The quantities of accepted work shall be measured or determined as follows:

- A. Seeding
 - 1. Seeding will be measured per acre or hundredth part thereof. Seeding will be measured complete, in-place, to the nearest acre. No measurement will be made in areas that are not grassed, such as street paving, driveways, parking areas, gardens, and sidewalks. Areas that are disturbed which lie outside the Contractor's seeding limits, as defined by the Plans or Contract Documents, will not be measured for payment, but shall be restored to a condition equal to or better than that existing prior to construction.
 - 2. Sanitary Sewer Project Construction: Seeding will be measured horizontally in linear feet along the centerline of sewer, regardless of the width of disturbed areas or type of seed used. Seeding will be measured only when centerline of sewer lies in grassed areas to be seeded as shown on the Plans. When centerline of sewer lies in areas that are not grassed, such as street paving, driveways,

parking areas, gardens, etc., no measurement will be made. Areas that are disturbed which lie outside the Contractor's normal trenching operation areas will not be measured for payment, but shall be restored to a condition equal to or better than that existing prior to construction. Each area measured will be measured either as seeding or sodding, but not as both. When sewer ends in grassed area, measurement will be made only to centerline of manhole.

3. Horizontal in linear feet along the back of curb (edge of pavement) regardless of the width of disturbed areas or type of seed used. Measurement will be made on each side of the roadway. No measurement will be made through or along intersecting roadways, drive approaches or similar structures.
4. No measurement in field, per Contract unit quantity only.

B. Sodding

1. Sodding will be measured per square yard or tenth part thereof. Sodding will be measured complete, in-place, to the nearest acre. No measurement will be made in areas that are not grassed, such as street paving, driveways, parking areas, gardens, and sidewalks. Areas that are disturbed which lie outside the Contractor's seeding limits, as defined by the Plans or Contract Documents, will not be measured for payment, but shall be restored to a condition equal to or better than that existing prior to construction.
2. Sanitary Sewer Project Construction: Sodding will be measured horizontally in linear feet along the centerline of sewer. Regardless of width of disturbed areas or type sod used. Sodding will be measured only when centerline of sewer lies in grassed areas to be seeded as shown on the Plans. When centerline of sewer lies in areas that are not grassed (such as street paving, driveways, parking areas, gardens, etc.) no measurement will be made. Areas that are disturbed which lie outside the Contractor's normal trenching operation areas will not be measured for payment, but shall be restored to a condition equal to or better than that existing prior to construction. Each area measured will be measured as either seeding or sodding, but not as both. When sewer ends in grassed area, measurement will be made only to centerline of manhole.
3. Horizontal in linear feet along the back of curb (edge of pavement) regardless of the width of disturbed areas or type of sod used. Measurement will be made on each side of the roadway. No measurement will be made through or along intersecting roadways, drive approaches or similar structures.
4. No measurement in field, per Contract unit quantity only.

2404.3 Basis of Payment

Payment for seeding and sodding will be paid for at the Contract Unit Prices as listed in the Unit Prices Bid Form. Such payment and price shall constitute full compensation for all labor, materials, tools and equipment necessary to complete the item.

The following items are considered subsidiary to the "Seeding" and "Sodding" pay items and no additional payment will be provided: Soil Preparation, Scalping of Existing Vegetation, Top Soil, Fertilizer, Mulch, Watering, Seed, Compaction, Maintenance, Protection and Repair, and Clean-up.

END OF SECTION