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3861
Plant Stock

3861.1 SCOPE

This Specification covers trees, shrubs, vines, and perennials of various species and varieties suitable for roadside landscape planting. The term "plant" shall mean any or all trees, shrubs, vines or perennials specified.

3861.2 REQUIREMENTS

Unless otherwise specified as collected stock (wild or grown in other than nursery conditions) or Department-furnished transplants, all plants furnished shall be from nursery grown stock and shall bear evidence of proper nursery care during growth. Plants will not be considered to be nursery grown unless they have been growing in a nursery for at least 2 years.

The Contractor shall comply with the current edition of "Inspection and Contract Administration Guidelines for Mn/DOT Landscape Projects," published by the Mn/DOT Landscape Architecture Unit, as the minimum and maximum criteria and standard for grading and accepting plant stock.

A Classification of Plants

Trees, shrubs, vines and perennials commonly used for landscaping purposes will be classified by species, variety, and size or age as indicated in the Contract.

When a dimensional size is specified in the Contract, it shall indicate the minimum range of height, stem caliper (diameter), or spread acceptable, as measured in accordance with standards in the current edition of "Inspection and Contract Administration Guidelines for Mn/DOT Landscape Projects."

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C Plant Names

All botanical and common names of plant materials specified shall be based on descriptions by Bailey in the latest edition of "Hortus Third."

D Plant Hardiness

All plant stock shall be deemed acceptable for hardiness if it is hardy to the Minnesota zone where the project site is located and:

- 1) Plant stock can be documented as continuously grown for at least the last two years within the acceptable limits shown on the Acceptable Plant Stock Growing Range Limits map in the Plan or
- 2) Plant stock, if grown outside the acceptable growing range limits, can be documented as having the seed source or root and graft stock originating from within the acceptable growing range limits.

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Any questions regarding plant stock hardiness or botanical identification will be resolved by the Engineer.

E Previous Transplanting

All plants with the exception of seedlings, perennials, machine-transplants, and collected stock if specified, must bear evidence of previous transplanting or root pruning at least once during growth at the nursery. Trees from forest plantations are not acceptable, unless proper transplanting and root pruning has been practiced to develop compact and fibrous root systems suitable for transplanting success.

F Quality and Condition

A Certificate of Nursery Inspection by the Department of Agriculture of the State or origin, or valid copy thereof, shall be supplied as specified in 2571.2A2 (Plant Stock Documentation).

All plants shall be first-class representatives of their normal species or variety, and shall be free of disease, disfiguring knots, sun scald, insect infestations, dead or broken branches, bark abrasions, and other objectionable conditions.

All trees shall have reasonably straight trunks and shall be fully branched and symmetrical on all sides as characterized by natural habits of growth and proper nursery care. Shrubs shall be of strong bushy stock with well developed and formed stems, canes, or branches. Vines and perennials shall be strong healthy plants of the size or age specified.

All plants shall have strongly developed root systems of sufficient size to permit successful establishment and good growth, typical of the species or variety specified. The root systems of container grown plants shall be sufficiently developed to hold the soil intact upon removal from the container. Large root stubs and/or large circling or girdling roots shall be considered evidence of lack of proper care and root pruning, and shall be sufficient cause for rejection of nursery grown plants.

G Digging and Handling

All plants shall be dug and handled with reasonable care and skill as necessary to prevent damage to stems, roots, branches, and trunk.

Plants that are balled and burlapped (B & B) shall be dug in a manner that preserves a firm ball of undisturbed soil around the root system. Plants shall conform to the recommended balling and burlapping specifications set forth in the current edition of "Inspection and Contract Administration Guidelines for Mn/DOT Landscape Projects."

Balled and burlapped plants shall be wrapped and bound so that the soil ball will remain intact and solid while being handled, shipped, and planted. Handling shall always be by the soil ball and not by the plant's branches or trunk. The use of wire baskets in conjunction with furnishing, loading, or planting balled and burlapped plants will be

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permitted; however, restrictions of 2571.3F (Installation of Plants) shall apply.

H Packing and Shipping

All plant material shipments shall comply with the nursery inspection and plant quarantine regulations of the States of origin and destination as well as with Federal regulations governing interstate movement of nursery stock.

All plants shall be true to name, and each bundle, bale or individual plant shall be legibly and securely labeled with the names and sizes of each species or variety and with the quantity contained in the individual bundles, boxes or bales.

All plants shall be packed and shipped as necessary to ensure arrival at the planting site in good condition. From the time plants are dug and until delivered to the planting site, the roots shall be protected at all times against drying-out, by covering the root systems with a suitable moisture-holding material. They shall also be adequately protected against other damaging climatic conditions such as sun, wind, and freezing temperatures. When transported in closed vehicles, the plants shall have adequate ventilation to prevent unwanted sweating.

3861.3 SAMPLING AND INSPECTION

The plants shall be subject to inspection by the Engineer prior to planting, but such inspection shall not be considered as final acceptance.

Final inspection and acceptance or rejection of plant stock shall be at the Project planting site.

All plants shall be in good condition upon delivery. Plants delivered with broken or bruised branches, stems, or canes will be rejected unless the damaged growth can be removed through pruning and without losing their symmetry or being trimmed to an unacceptable size. Balled and burlapped plants delivered with broken or disturbed balls, indicating the soil has been so loosened as to cause stripping of the small and fine feeding roots, will be rejected. Bare root plants shall be delivered in a dormant condition and should be installed while in a dormant condition.

The Engineer may authorize installing plants that have broken dormancy, however, if authorized, the installation will be at the Contractor's own risk, and the initial planting operations payment for these plants will be withheld until they are determined to be initially acceptable after the first year of plant establishment.

The Engineer may inspect up to three balled and burlapped or container plants, of each variety delivered to the planting site, at random and inspect for condition and size of the root system. This may include pulling back the burlap and wire basket or removing containers. Any plants that become unsuitable for planting due to inspection shall be replaced by the contractor without any compensation.

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During the spring planting season, coniferous plants that have candled out (put out new growth) while being stored in a holding bin may be planted, however, coniferous plants that are dug after candling out will be rejected. Coniferous trees not fully branched from bottom to top and those that have been heavily sheared or pruned will be rejected. Only unsheared or lightly sheared conifers (those that have not been sheared within the last growing season and display buds or growth at the terminal ends of branches) shall be accepted. Pine trees shall have a terminal leader bud and terminal leaders shorter than 500 mm (**18 inches**) in length. A new central leader must be trained in conifers delivered with multiple or missing leaders.

Plants not conforming to dimensional requirements will be rejected. In measuring the height of coniferous trees of the pine, spruce and fir species, the upper limits shall be the midpoint of the terminal leader.

All rejected plants shall be removed from the Project by the Contractor and shall be replaced with acceptable plants of the required species and variety, unless otherwise directed by the Engineer.

3876 Seed

3876.1 SCOPE

This Specification covers introduced grass/legume and native grass and forb seeds used for planting to provide vegetative cover.

Pure live seed (PLS) is the percent of seed germination plus dormant and/or hard seed times the percent of seed purity of each species.

3876.2 REQUIREMENTS

A General Requirements

All seed shall conform to the latest seed law of the State, including Those governing labeling and weed seed tolerances. Tolerances for Germination and Purity, as determined by the Department of Agriculture, shall only apply to seed that has been previously tested and approved by the Department of Agriculture as a seed lot. Test for germination and viability shall have been made within 9 months of the date of installation.

All legume seed, including native legumes, shall have been pre-inoculated with the proper bacterial culture for the species being inoculated and with the bacteria culture designed for this purpose (pre-inoculation), in the manner and within the time specified by the manufacturer.

All native grass and forb seed shall be of current production seed or harvested from the previous two growing seasons.

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All sedge, rush and forb seed that requires special pregermination treatment such as cold moist stratification shall be so treated prior to installation.

All wild-type native grass and forb seed shall have a source of origin within Minnesota, eastern North Dakota, eastern South Dakota, northern Iowa, or western Wisconsin.

Origin certified seed shall have originated within the regions specified above and shall be accompanied by the appropriate Quality Mark documentation from the Minnesota Crop Improvement Association to verify this.

Wild-type is defined as seed that is derived directly from native, wild stock; including seed that was collected in the wild and placed into production or that which has been harvested directly from native stands. Wild-type varieties are regional or local ecotypes that have not undergone a selection process. Wild-type refers to all native seed referred to as "common" in the industry. Origin certified seed that is "yellow tag" is by definition wild type that has originated within a specified geographic region.

Native species requiring certification for origin shall have their origin documented by the Minnesota Crop Improvement Association (MCIA). This level of certification is at the "yellow tag" (YT) level according to the MCIA Quality Control program. Documentation for origin certification of native seeds shall accompany all shipments and shall be identified on the tags as well.

All native grass, sedge, rush and forb seed shall be either origin certified or wild-type. Origin shall be clearly identified on the seed label for all seed, including native forbs.

Use of varieties not listed herein will be considered unacceptable and will be subject to 1503.

B Requirements for Native Grasses, Sedges, Rushes

The Contractor shall supply and plant native grass as pure live seed (PLS). If the listed varieties are not available from the Approved Vendor or Source list on file with the Mn/DOT Erosion Control unit, other varieties may be substituted only by obtaining approval of the Engineer and the Erosion Control unit. The Contractor shall provide documentation of substitutions prior to acceptance. Germination values shall include not more than 20 percent dormant seed, except for wetland sedges, rushes and grasses for which up to 80% dormancy shall be allowed.

All native grass seeds that contain awns or excessive hairs shall be cleaned and de-bearded prior to their inclusion into mixtures.

TABLE 3876-1 NATIVE GRASS REQUIREMENTS GERMINATION, PURITY, AND ACCEPTABLE VARIETIES				
Trade Name	Scientific Name	Acceptable Origin & Varieties	Purity Min. %	Germ. Min.%
Bluestem, big	<i>Andropogon gerardi</i>	MN Certified (YT), Bison	85	70
Gramma, sideoats	<i>Bouteloua curtipendula</i>	MN Certified (YT)	85	70
Gramma, blue	<i>Bouteloua gracilis</i>	MN Certified (YT), SD, ND wild-type	80	70
Brome, fringed	<i>Bromus ciliata</i>	MN Certified (YT), MN, MT, Canada wild-type	85	70
Brome, Kalm's	<i>Bromus kalmii</i>	MN Certified (YT), MN wild-type	85	70
Hairy wood chess	<i>Bromus purgans</i>	MN Certified (YT)	85	70
Buffalo grass	<i>Buchloe dactyloides</i>	MN Certified (YT), MN, ND, SD, NE wild-type	85	70
Blue-joint grass	<i>Calamagrostis Canadensis</i>	MN Certified (YT), MN wild-type	85	70
Sedge, bottle-brush	<i>Carex comosa</i>	MN wild-type	85	60
Sedge, tussock	<i>Carex stricta</i>	MN wild-type	85	60
Sedge, fox	<i>Carex vulpinoidea</i>	MN wild-type	85	60
Wild rye, Canadian	<i>Elymus canadensis</i>	MN Certified (YT)	85	70
Bottle brush grass	<i>Elymus hystrix</i>	MN wild-type	85	70
Wheat grass, slender	<i>Elymus trachycaulus</i>	MN Certified (YT), MN, ND, SD, Canada wild-type, Revenue	85	70
Wild rye, Virginia	<i>Elymus virginicus</i>	MN Certified (YT), MN, WI, IA wild-type	85	70
Wheat grass, western	<i>Elytrigia smithii</i>	MN Certified (YT), MN, ND, SD wild-type	85	70
Manna grass, reed	<i>Glyceria grandis</i>	MN Certified (YT), MN wild-type	85	70
Manna grass, fowl	<i>Glyceria striata</i>	MN Certified (YT), MN wild-type	85	70
Common rush	<i>Juncus effusus</i>	MN Certified (YT), MN wild-type	85	60
June grass	<i>Koeleria macrantha</i>	MN Certified (YT), MN, ND, SD wild-type	85	70
Switch grass	<i>Panicum virgatum</i>	MN Certified (YT), Dakota	95	70

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TABLE 3876-1 NATIVE GRASS REQUIREMENTS GERMINATION, PURITY, AND ACCEPTABLE VARIETIES				
Trade Name	Scientific Name	Acceptable Origin & Varieties	Purity Min. %	Germ. Min. %
Bluegrass, fowl	<i>Poa palustris</i>	MN Certified (YT), MN, ND, Canada wild-type	90	70
Bluestem, little	<i>Schizachyrium scoparium</i>	MN Certified (YT),	85	70
Bulrush, green	<i>Scirpus atrovirens</i>	MN Certified (YT), MN wild-type	85	60
Wool grass	<i>Scirpus cyperinus</i>	MN Certified (YT), MN wild-type	85	60
Bulrush, soft-stem	<i>Scirpus validus</i>	MN Certified (YT), MN wild-type	85	60
Indian grass	<i>Sorghastrum nutans</i>	MN Certified (YT)	85	70
Cordgrass, prairie	<i>Spartina pectinata</i>	MN Certified (YT), MN wild-type	85	70
Dropseed, rough	<i>Sporobolus asper</i>	MN Certified (YT), MN wild-type	90	70
Dropseed, sand	<i>Sporobolus cryptandrus</i>	MN Certified (YT), MN, ND, SD wild-type	95	70
Dropseed, prairie	<i>Sporobolus heterolepis</i>	MN Certified (YT)	90	70
Needle grass, green	<i>Stipa viridula</i>	MN Certified (YT), MN, ND, SD wild-type	90	80

C Requirements for Introduced Grasses....Table 3876-2

TABLE 3876-2 INTRODUCED GRASS REQUIREMENTS GERMINATION, PURITY, AND ACCEPTABLE VARIETIES				
Trade Name	Scientific Name	Acceptable Varieties	Purity Minimum %	Germination Minimum %
Bentgrass, seaside	<i>Agrostis palustris</i>	--	98	90
Redtop	<i>Agrostis stolonifera</i>	--	92	85
Oats	<i>Avena sativa</i>	--	99	85
Brome, smooth	<i>Bromus inermis</i>	Lincoln, Carlton, Sac, Signal, Manchar	90	85

TABLE 3876-2 INTRODUCED GRASS REQUIREMENTS GERMINATION, PURITY, AND ACCEPTABLE VARIETIES				
Trade Name	Scientific Name	Acceptable Varieties	Purity Minimum %	Germination Minimum %
Fescue, hard	<i>Festuca ovina</i> <i>var. duriuscula</i>	Durar, Scaldis, Reliant II, Warwick, Aurora	95	85
Fescue, red	<i>Festuca rubra</i>	Wintergreen, Dawson, Pen Lawn, Cindy	97	85
Fescue, sheep's	<i>Festuca sp.</i>	--	95	85
Ryegrass, perennial	<i>Lolium perene</i>	--	99	90
Ryegrass, annual	<i>Lolium italicum</i>	--	99	90
Timothy	<i>Phleum pratense</i>	--	99	85
Bluegrass, Canada	<i>Poa compressa</i>	Common, Reubens, Talon	95	82
Bluegrass, Kentucky-Elite	<i>Poa pratensis</i>	Adelphi, Aspen, Glade, Columbia, Estate, Eclipse, Jefferson, Midnight, Midnight II, NuGlade, Touchdown, Merit, Parade, Rambo, Fylking, Victa, Monopoly	95	82
Bluegrass, Kentucky-Improved	<i>Poa pratensis</i>	Baron, Odyssey, Rugby II, Shamrock	95	82
Bluegrass, Kentucky-Low Maintenance	<i>Poa pratensis</i>	America, Aquila, Caliber, Certified Park, Challenger, Impact, Kenblue, Nassau, Newport, Ram I, Nugget, Sydsport, South Dakota	95	82
Bluegrass, Kentucky-Park	<i>Poa pratensis</i>	Certified Park only	95	82

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TABLE 3876-2 INTRODUCED GRASS REQUIREMENTS GERMINATION, PURITY, AND ACCEPTABLE VARIETIES				
Trade Name	Scientific Name	Acceptable Varieties	Purity Minimum %	Germination Minimum %
Bluegrass SD Common	<i>Poa pratensis</i>		98	85
Alkali grass	<i>Puccinella distans</i>	Fult's, Salty	95	85
Wheat, winter	<i>Triticum aestivum</i>	--	99	85

D Requirements for Introduced Legumes.... Table 3876-3
Germination values determined by test shall include dormant seed for legumes.

TABLE 3876-3 INTRODUCED LEGUMES REQUIREMENTS GERMINATION, PURITY, AND ACCEPTABLE VARIETIES				
Trade Name	Scientific Name	Acceptable Varieties	Purity Minimum %	Germination Minimum %
Alfalfa, creeping	<i>Medicago sativa</i>	Rambler, Victoria, Teton, Travois, Spredor 2	99	85
Alfalfa, perennial	<i>Medicago sativa</i>	Vernal	99	85
Alfalfa, annual	<i>Medicago sativa</i>	Nitro, Condor, El Grande, Maricopa, Mesa, Prestige, Tulane, Westar, Beacon, Coronado, Mecca, Sundor	99	85
Clover, alslike	<i>Trifolium hybridum</i>	--	99	85
Clover, red	<i>Trifolium pratense</i>	Lakeland, Arlington	99	85
Clover, white	<i>Trifolium repens</i>	----	99	85

E Requirements for Native Forbs (Wildflowers) Table 3876-4
All forb seed shall be of wild-type as defined in 3876.2A.

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The Contractor shall supply and plant native forb seed as a bulk rate. Native forb seed shall be tested for viability with a standard germination test performed according to 3876.3. If the test meets or exceeds the minimum percent germination requirement for each respective species, the Engineer will accept the seed for viability. If a species is called for that is not listed in Table 3876-4, its purity shall be no less than 50 percent and its viability no less than 20 percent.

**TABLE 3876-4
NATIVE FORB SPECIES (WILDFLOWERS)
GERMINATION, PURITY, AND ACCEPTABLE VARIETIES**

Trade Name	Scientific Name	Purity Min. %	Germ. Min. %
Yarrow	<i>Achillea millefolium</i>	80	40
Hyssop, fragrant- giant	<i>Agastache foeniculum</i>	80	50
Water Plantain	<i>Alisma subcordatum</i>	80	40
Meadow garlic	<i>Allium canadense</i>	80	40
Onion, prairie	<i>Allium stellatum</i>	80	40
Anemone, Canada	<i>Anemone canadensis</i>	80	40
Milkweed, marsh	<i>Asclepias incarnata</i>	80	60
Milkweed, butterfly	<i>Asclepias tuberosa</i>	80	60
Aster, sky-blue	<i>Aster azureus</i>	80	50
Aster, heath	<i>Aster ericoides</i>	80	50
Aster, smooth-blue	<i>Aster laevis</i>	80	50
Aster, large-leaved	<i>Aster macrophyllus</i>	60	40
Aster, New England	<i>Aster novae-angliae</i>	80	50
Aster, upland-white	<i>Aster ptarmicoides</i>	80	50
Aster, swamp	<i>Aster puniceus</i>	60	40
Aster, silky	<i>Aster sericeus</i>	80	50
Aster, panicled	<i>Aster simplex</i>	80	40
Aster, flat-topped	<i>Aster Unbellatus</i>	80	40
Milkvetch, Canada	<i>Astragalus canadensis</i>	90	70
Partridge pea	<i>Chamaecrista fasciculata</i>	90	70
Tic-seed, stiff	<i>Coreopsis palmata</i>	80	40
Prairie clover, white	<i>Dalea candidum</i>	90	70
Prairie clover, purple	<i>Dalea purpureum</i>	90	70
Tick-trefoil, showy	<i>Desmodium canadense</i>	90	70
Coneflower, narrow-leaved	<i>Echinacea angustifolia</i>	80	50
Joe-pye weed	<i>Eupatorium maculatum</i>	60	50
Boneset	<i>Eupatorium perfoliatum</i>	60	50
Long-leaved bluets	<i>Hedyotis longifolia</i>	80	40
Sneezeweed	<i>Helenium autumnale</i>	80	40
Giant sunflower	<i>Helianthus giganteus</i>	80	40
Ox-eye, common	<i>Heliopsis helianthoides</i>	80	60
Great St. John's wort	<i>Hypericum pyramidalatum</i>	80	40

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**TABLE 3876-4
NATIVE FORB SPECIES (WILDFLOWERS)
GERMINATION, PURITY, AND ACCEPTABLE VARIETIES**

Trade Name	Scientific Name	Purity Min. %	Germ. Min. %
Iris, wild	<i>Iris versicolor</i>	80	40
Iris, blue-flag	<i>Iris virginica-shrevii</i>	80	60
Bushclover, round-headed	<i>Lespedeza capitata</i>	80	50
Blazingstar, rough	<i>Liatris aspera</i>	80	50
Blazingstar, dotted	<i>Liatris punctata</i>	80	50
Blazingstar, tall	<i>Liatris pycnostachya</i>	80	50
Lobelia, great-blue	<i>Lobelia siphilitica</i>	80	40
Lupine, wild	<i>Lupinus perennis</i>	80	40
Monkey flower	<i>Mimulus ringens</i>	80	40
Bergamot, wild	<i>Monarda fistulosa</i>	80	40
Bee balm, spotted	<i>Monarda punctata</i>	70	40
Beardtongue, foxglove	<i>Penstemon digitalis</i>	80	40
Penstemon showy	<i>Penstemon grandiflorum</i>	80	40
Mountain mint	<i>Pycnathemum</i>	80	40
Coneflower, columnar	<i>Ratibida columnifera</i>	80	50
Coneflower, grey-headed	<i>Ratibida pinnata</i>	80	50
Prairie rose	<i>Rosa arkansana</i>	80	40
Black-eyed Susan's	<i>Rudbeckia hirta</i>	80	60
Golden-glow, wild	<i>Rudbeckia laciniata</i>	80	40
Brown-eyed Susan	<i>Rudbeckia triloba</i>	80	40
Goldenrod, grass-leaved	<i>Solidago graminifolia</i>	70	40
Goldenrod, gray	<i>Solidago nemoralis</i>	80	40
Goldenrod, upland	<i>Solidago ptarmicoides</i>	80	40
Goldenrod, stiff	<i>Solidago rigida</i>	80	50
Goldenrod, showy	<i>Solidago speciosa</i>	80	40
Tall meadow rue	<i>Thalictrum dasycarpum</i>	80	40
Spiderwort, prairie	<i>Tradescantia bracteata</i>	80	50
Spiderwort, Ohio	<i>Tradescantia ohiensis</i>	80	50
Vervain, blue	<i>Verbena hastata</i>	80	50
Vervain, hoary	<i>Verbena stricta</i>	80	50
Ironweed	<i>Veronia fasciculata</i>	80	50
Culver's root	<i>Veronicastrum virginianum</i>	80	40
Vetch, American	<i>Vicia americana</i>	80	60
Alexander's, heart-leaved	<i>Zizia aptera</i>	80	50
Alexander's, golden	<i>Zizia aurea</i>	80	50

F Seed Mixture Designations

The seed mixture or species to be furnished and used shall be as indicated in the Contract. The mixtures shall be a uniform blend of the designated seeds, proportioned as specified in Table 3876-5.

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Mixtures in the 300 series shall be blended according to size and texture so that they can be installed from the appropriate seed box. The fine seed shall be installed from the fine seed box and the fluffy seed from the fluffy seed box. Forbs are added to mixtures by blending fine and fluffy seeds with the corresponding grass seed components using the mixtures provided in Table 3876-6. The inclusion of forbs is indicated in Table 3876-5.

F1 Native Harvest

Unless otherwise specified, native harvest shall consist of seed that has been harvested directly from wild stands within 80 km (**25 miles**) of the Project. Seed originating from outside the specified area will not be acceptable. Approximately 70 percent of the mixture shall consist of big bluestem and Indian grass, each with a minimum germination percent of 70 percent. The minimum percent PLS of the big bluestem and Indian grass portion of the native harvest mix shall be no less than 50 percent. In addition, the native harvest shall contain a minimum of five species of native grasses and shall also consist of no less than 3 percent (by mass) of native forbs. All species contained in the native harvest mix shall be listed with their relative percentages on the packing slip. Components comprising less than 1 percent of the mix may be listed as "trace". Germination results for the species tested shall be contained on the label. In addition, the native harvest mix shall contain no more than 25 percent non-viable matter. Non-viable matter includes but is not limited to chaff, non-viable seed, hulls, trash, and straw.

**TABLE 3876-5
SEED MIXTURE DESIGNATIONS**

Temporary Mixes		
Mixture	Plant Species	% of Total
100	Winter wheat	100.0
110	Oats	100.0
130	Oats	40.0
	Winter wheat	40.0
	Rye grass	10.0
	Alfalfa, annual	10.0
Total:		100.0

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Mixture: 150			
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Rye-grass, perennial	16.8	15	37.5
Wheat-grass, slender	5.6	5	12.5
Red clover	11.2	10	25.0
Alfalfa, vernal	11.2	10	25.0
GRAND TOTALS:	44.8	40	100.0
<i>Purpose: 1-2 Year Temporary Stabilization</i>			

Mixture: 190			
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Red Clover	6.7	6	10.0
Alsike Clover	4.7	4.2	7.0
Alfalfa, creeping	10.7	9.6	16.0
Brome grass, smooth	8.1	7.2	12.0
Rye-grass, perennial	16.8	15	25.0
Wheat-grass, slender	3.4	3	5.0
Vetch, hairy	16.8	15	25.0
GRAND TOTALS:	67.2	60	100.0
<i>Purpose: 2-5 Years Roadside Stabilization</i>			

Mixture: 240			
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Brome grass, smooth	10.9	9.7	13.0
Bluegrass, Kentucky "Certified Park"	22.6	20.2	27.0
Bluegrass, Canada	10.9	9.7	13.0
Switch grass	2.1	1.9	2.5
Wheat-grass, slender	3.4	3.0	4.0
Fescue, Hard "Reliant II"	5.9	5.3	7.0
Rye-grass, perennial	16.8	15.0	20.0
Dropseed, sand	2.1	1.9	2.5
Bluestem, little *	2.9*	2.6*	3.5*
Red clover	5.9	5.3	7.0
Prairie clover, purple	0.5	0.4	0.5

GRAND TOTALS:	84	75	100.0
* Bulk with 50% PLS minimum			
<i>Purpose: Sandy- Roadside</i>			

Mixture: 250			
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Brome grass, smooth	11.0	9.8	14.0
Bluegrass, Kentucky " Certified Park"	22.7	20.3	29.0
Bluegrass, Canada	11.0	9.8	14.0
Switch grass	2.4	2.1	3.0
Wheat-grass, slender	3.1	2.8	4.0
Rye-grass, perennial	16.5	14.7	21.0
Timothy	2.4	2.1	3.0
Redtop	2.4	2.1	3.0
Alfalfa, creeping	4.7	4.2	6.0
White Clover	2.4	2.1	3.0
GRAND TOTALS:	78.6	70	100.0
<i>Purpose: General Roadside excluding sandy sites</i>			

Mixture: 260			
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Bluegrass, Kentucky "Certified Park"	35.8	32	32.0
Bluegrass, Canada	11.2	10	10.0
Bluegrass, Kentucky - Low Maintenance ¹	33.6	30	30.0
Fescue, hard	9.0	8	8.0
Rye-grass, perennial	22.4	20	20.0
GRAND TOTALS:	112	100	100.0
¹ Any accepted low maintenance Kentucky Bluegrass Except "Park"			
<i>Purpose: Commercial Turf</i>			

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Mixture: 270			
Common Name	Bulk Rate		% of Mix Component
	kg/ac	lb/ac	
Bluegrass, Kentucky - Elite	33.6	30	25.0
Bluegrass, Kentucky - Improved	33.6	30	25.0
Bluegrass, Kentucky - Low Maintenance	33.6	30	25.0
Red fescue, creeping	10.8	9.6	8.0
Rye-grass, perennial	22.8	20.4	17.0
GRAND TOTALS:	134.4	120	100.0
<i>Purpose: Residential Turf</i>			

Mixture: 280			
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Alfalfa, creeping	16.8	15	30.0
Brome grass, smooth	11.2	10	20.0
Redtop	3.4	3	6.0
Rye-grass, perennial	16.8	15	30.0
Switch grass	2.2	2	4.0
Timothy	2.2	2	4.0
Wheat-grass, slender	3.4	3	6.0
GRAND TOTALS:	56	50	100.0
<i>Purpose: Agricultural Roadsides</i>			

Mixture: 310			
Common Name	PLS Rate		% of Mix Component
	kg/ha	lb/ac	
Bluestem, big	2.8	2.5	25.0
Indian grass	2.8	2.5	25.0
Wild-rye, Virginia	2.2	2.0	20.0
Switch grass	0.6	0.5	5.0
Blue-joint grass	0.3	0.25	2.5
Green bulrush	0.3	0.25	2.5
Wool grass	0.3	0.25	2.5
Giant bur reed	0.3	0.25	2.5
Cordgrass, prairie	1.7	1.5	15.0
Grass Totals:	11.3	10.0	100.0
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Winter Wheat*	62.7	56.0	80.0
Rye-grass, annual	12.5	11.2	16.0
Wheatgrass, slender	3.1	2.8	4.0
Cover Crop Totals:	78.3	70	100.0
Wet Forbs Mixture (Table 3876-6)	2.2	2.0	100.0
GRAND TOTALS:	91.8	82.0	100.0
*Oats to be substituted for spring plantings			
<i>Purpose: Native mix for wetter areas. Infiltration ponds, dry ponds, wet ditches. Tall height.</i>			

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Mixture: 325			
Common Name	PLS Rate		% of Mix Component
	kg/ha	lb/ac	
Bluestem, big	1.7	1.5	15.0
Fringed brome	1.7	1.5	15.0
Wheat grass, slender	1.7	1.5	15.0
Virginia wild-rye	1.7	1.5	15.0
Switch grass	0.6	0.5	5.0
Fowl bluegrass	1.7	1.5	15.0
Indian grass	1.7	1.5	15.0
Prairie cord grass	0.6	0.5	5.0
Grass Totals:	11.4	10.0	100.0
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Blue-joint grass	0.22	0.2	10.0
Bottlebrush sedge	0.34	0.3	15.0
Tussock sedge	0.22	0.2	10.0
Fox sedge	0.22	0.2	10.0
Reed manna grass	0.22	0.2	10.0
Fowl manna grass	0.22	0.2	10.0
Green bulrush	0.22	0.2	10.0
Wool grass	0.22	0.2	10.0
Soft-stem bulrush	0.34	0.3	15.0
Sedge Totals:	2.22	2.0	100.0
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Winter Wheat*	61.6	56	80.0
Rye-grass, annual	12.3	11.2	16.0
Wheatgrass, slender	3.1	2.8	4.0
Cover Crop Totals:	77	70	100.0
Wet Forbs Mixture (Table 3876-6)	2.2	2.0	100.0
GRAND TOTALS:	92.8	84.0	100.0
*Oats to be substituted for spring plantings			
<i>Purpose: Native sedge/prairie meadow mix. Reaches a height of 915 mm to 1220 mm (36 to 48 inches). Developed for use on hydric soils and for wetland restoration.</i>			

Mixture: 328			
Common Name	PLS Rate		% of Mix Component
	kg/ha	lb/ac	
Bluestem, big	2.2	2	12.5
Brome, fringed	2.2	2	12.5
Wild-rye, Virginia	4.4	4	25.0
Switchgrass	1.1	1	6.3
Bluegrass, fowl	5.5	5	31.3
Indian grass	2.2	2	12.5
Grass Totals:	17.6	16.0	100.0
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Winter Wheat*	61.6	56.0	80.0
Rye-grass, annual	12.3	11.2	16.0
Wheatgrass, slender	3.1	2.8	4.0
Cover Crop Totals:	77	70	100.0
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Milkweed, marsh	0.33	0.3	15.0
Prairie clover, purple	0.33	0.3	15.0
Tic-trefoil, showy	0.33	0.3	15.0
Sunflower, early	0.33	0.3	15.0
Black-eyed Susan	0.55	0.5	25.0
Vervain, blue	0.33	0.3	15.0
Economy Forbs Totals:	2.2	2.0	100.0
GRAND TOTALS:	96.8	88.0	100.0
*Oats to be substituted for spring plantings			
<i>Purpose: Native mix for infiltration ponds, dry ponds, temporary wet ditches. Tall height.</i>			

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Mixture: 330			
Common Name	PLS Rate		% of Mix Component
	kg/ha	lb/ac	
Gramma, sideoats	3.4	3.0	21.5
Gramma, blue	2.8	2.5	18.0
Bluestem, little	3.9	3.5	25.0
June grass	1.1	1.0	7.0
Dropseed, sand	1.1	1.0	7.0
Wild-rye, Canadian	3.4	3.0	21.5
<i>Grass Totals:</i>	<i>15.7</i>	<i>14.0</i>	<i>100.0</i>
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Winter Wheat*	62.7	56.0	80.0
Rye-grass, annual	12.5	11.2	16.0
Wheatgrass, slender	3.1	2.8	4.0
<i>Cover Crop Totals:</i>	<i>78.3</i>	<i>70</i>	<i>100.0</i>
Dry Forbs Mixture (Table 3876-6)	0.6	0.5	100.0
GRAND TOTALS:	94.6	84.5	100.0
*Oats to be substituted for spring plantings			
<i>Application: Native mix for Sandy/dry areas. Short height.</i>			

Mixture: 340			
Common Name	PLS Rate		% of Mix Component
	kg/ha	lb/ac	
Bluestem, big	3.3	3.0	21.5
Bluestem, little	2.8	2.5	18.0
Wild-rye, Canadian	2.2	2.0	14.0
Gramma, sideoats	2.2	2.0	14.0
Switch grass	0.6	0.5	4.0
Dropseed, sand	0.6	0.5	3.5
Bluegrass, Canada	3.4	3.0	21.5
June grass	0.6	0.5	3.5
Grass Totals:	15.7	14.0	100.0
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Winter Wheat*	62.7	56.0	80.0
Rye-grass, annual	12.5	11.2	16.0
Wheatgrass, slender	3.1	2.8	4.0
Cover Crop Totals:	78.3	70	100.0
Dry Forbs Mixture (Table 3876-6)	0.6	0.5	100.0
GRAND TOTALS:	94.6	84.5	100.0
*Oats to be substituted for spring plantings			
<i>Purpose: Native mix for Sandy/Dry areas. Mid-height.</i>			

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Mixture: 350			
Common Name	PLS Rate		% of Mix Component
	kg/ha	lb/ac	
Bluestem, big	3.4	3.0	21.5
Indian grass	2.8	2.5	18.0
Bluestem, little	2.8	2.5	18.0
Gramma, sideoats	3.4	3.0	21.5
Wild-rye, Canadian	2.2	2.0	14.0
Switch grass	1.1	1.0	7.0
Grass Totals:	15.7	14.0	100.0
Common Name	Bulk Rate		% of Mix Component
	kg/ha	lb/ac	
Winter Wheat*	62.7	56.0	80.0
Rye-grass, annual	12.5	11.2	16.0
Wheatgrass, slender	3.1	2.8	4.0
Cover Crop Totals:	78.3	70	100.0
Mesic Forbs Mixture (Table 3876-6)	0.6	0.5	100.0
GRAND TOTALS:	94.6	84.5	100.0
*Oats to be substituted for spring plantings			
<i>Application: Native mix for general roadside areas.</i>			

TABLE 3876-6
FORBS

Mixture: Mesic Forbs		
Common Name	Botanical Name	% of Mix
Aster, smooth-blue	<i>Aster laevis</i>	5.0
Milkvetch, Canada	<i>Astragalus canadensis</i>	5.0
Prairie clover, white	<i>Dalea candidum</i>	5.0
Prairie clover, purple	<i>Dalea purpureum</i>	5.0
Tick-trefoil, Showy	<i>Desmodium canadense</i>	5.0
Coneflower, narrow-leaved	<i>Echinacea angustifolia</i>	5.0
Ox-eye, common	<i>Heliopsis helianthoides</i>	5.0
Coneflower, grey-headed	<i>Ratibida pinnata</i>	5.0
Blazingstar, rough	<i>Liatris aspera</i>	5.0
Blazingstar, tall	<i>Liatris pycnostachya</i>	5.0
Bergamot, wild	<i>Monarda fistulosa</i>	5.0
Penstemon, showy	<i>Penstemon grandiflorum</i>	5.0
Mint, mountain	<i>Pycnathemum virginianum</i>	5.0
Coneflower, columnar	<i>Ratibida columnifera</i>	5.0
Black-eyed Susan	<i>Rudbeckia hirta</i>	5.0
Goldenrod, stiff	<i>Solidago rigida</i>	5.0
Vervain, blue	<i>Verbena hastata</i>	5.0
Vervain, hoary	<i>Verbena stricta</i>	5.0
Alexanders, heart-leaved	<i>Zizia aptera</i>	5.0
Alexanders, golden	<i>Zizia aurea</i>	5.0
	Total:	100.0

Rate: 0.6 kg/ha (½ pounds per acre) Bulk.

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Mixture: Dry Forbs		
Common Name	Botanical Name	% of Mix
Leadplant	<i>Amorpha canescens</i>	10.0
Milkweed, butterfly	<i>Asclepias tuberosa</i>	2.0
Aster, heath	<i>Aster ericoides</i>	4.0
Tic-seed, stiff	<i>Coreopsis palmate</i>	2.0
Yarrow	<i>Achillea millefolium</i>	2.0
Long-leaved bluets	<i>Hedyotis longifolia</i>	1.0
Bushclover, round-headed	<i>Lespedeza capitata</i>	3.0
Blazingstar, rough	<i>Liatris aspera</i>	4.0
Blazingstar, dotted	<i>Liatris punctata</i>	3.0
Lupine, wild	<i>Lupinus perennis</i>	5.0
Prairie clover, white	<i>Dalea candidum</i>	5.0
Prairie clover, purple	<i>Dalea purpureum</i>	16.0
Prairie rose	<i>Rosa arkansana</i>	1.0
Black-eyed susan	<i>Rudbeckia hirta</i>	18.0
Goldenrod, gray	<i>Solidago nemoralis</i>	3.0
Goldenrod, upland	<i>Solidago ptarmicoides</i>	1.0
Goldenrod, stiff	<i>Solidago rigida</i>	2.0
Goldenrod, showy	<i>Solidago speciosa</i>	2.0
Vervain, hoary	<i>Verbena stricta</i>	14.0
Alexander's, golden	<i>Zizia aurea</i>	2.0
	Total:	100.0
Rate: 0.6 kg/ha (½ pounds per acre) bulk		

Mixture: Wet Forbs		
Common Name	Botanical Name	% of Mix
Hyssop, fragrant giant	<i>Agastache foeniculum</i>	2.0
Water plantain	<i>Alisma subcordatum</i>	4.0
Meadow garlic	<i>Allium canadense</i>	1.0
Anemone, Canada	<i>Anemone Canadensis</i>	1.0
Milkweed, marsh	<i>Asclepias incarnata</i>	2.0
Aster, panicked	<i>Aster simplex</i>	3.0
Aster, New England	<i>Aster novaeangliae</i>	3.0
Aster, red-stalked	<i>Aster puniceus</i>	3.0
Aster, flat-topped	<i>Aster umbellatus</i>	1.0
Tick trefoil, Canada	<i>Desmodium glutinosum</i>	1.0
Joe-pye weed	<i>Eupatorium maculatum</i>	17.0
Boneset	<i>Eupatorium perfoliatum</i>	10.0
Goldenrod, grass-leaved	<i>Solidago graminifolia</i>	2.0
Sneezeweed	<i>Helenium autumnale</i>	1.0
Giant sunflower	<i>Helianthus giganteus</i>	2.0
Ox-eye, common	<i>Heliopsis helianthoides</i>	1.0
Great St. John's wort	<i>Hypericum pyramidalatum</i>	2.0
Iris, wild	<i>Iris versicolor</i>	1.0
Blazingstar, tall	<i>Liatris pycnostachya</i>	8.0
Bergamot, wild	<i>Monarda fistulosa</i>	1.0
Prairie clover, white	<i>Dalea candidum</i>	1.0
Prairie clover, purple	<i>Dalea purpureum</i>	2.0
Mountain mint	<i>Pycnathemum virginianum</i>	1.0
Black-eyed susan	<i>Rudbeckia hirta</i>	6.0
Goldenrod, stiff	<i>Solidago rigida</i>	2.0
Tall meadow rue	<i>Thalictrum dasycarpum</i>	2.0
Vervain, blue	<i>Verbena hastata</i>	14.0
Ironweed	<i>Veronia fasciculate</i>	1.0
Culver's root	<i>Veronicastrum virginicum</i>	3.0
Alexander's, golden	<i>Zizea aurea</i>	2.0
	Total:	100.0
Rate: 2.2 kg/ha (2 pounds/acre) bulk		

3876.3

3876.3 INSPECTION AND ACCEPTANCE

Certified Source - Sources with established quality control and so approved by the Erosion Control unit may supply seed in accordance with the Guaranteed Analysis method on file with the Mn/DOT Erosion Control unit. Seed guaranteed as meeting the pertinent requirements of this Specification shall be identified by official guaranteed analysis labels affixed to each container of seed in addition to the customary seed tag. For each lot of each type of seed, test reports from the Minnesota Department of Agriculture Seed Laboratory or a certified commercial seed analyst shall be available.

Noncertified source – All seed shall be sampled and tested prior to use. The Contractor shall submit to the Engineer the proposed source at least 6 weeks prior to time of use to allow adequate time for testing and approving the material. Current test results as conducted by a certified seed analyst or by a state Seed Laboratory may be accepted in lieu of Department testing.

As an alternate to the above testing or the Guaranteed Analysis method, Certified Seed bearing the Quality Mark of the Minnesota Crop Improvement Association will be acceptable. Certified Seed bearing the Quality Mark of agencies so authorized in other states will be acceptable providing that their germination and purity requirements equal or exceed those established by the Minnesota Crop Improvement Association.

The Department reserves the right to conduct its own inspection of seed either at the supplier's warehouse or at the Project site. Should the results of the Department's inspection disagree with those obtained at the origin, the Department's findings shall be conclusive and binding.

All bags of seed shall be labeled with the mixture number and the vendor from which it was obtained. All Seed not planted within 9 months after it has been tested for germination shall be sampled and retested before use, at no cost to the Department. Seed testing shall be in accordance with the methods on file with the Mn/DOT Erosion Control unit.

The Contractor shall obtain all native grass and forb seeds from an Approved Vendor or Source for native seeds as listed with the Mn/DOT Erosion Control unit or listed in the Contract. A Certification of Compliance shall be furnished for all native seed mixes supplied to the project in accordance with 1603. The Certificate of Compliance shall state the amount of origin certified seed if any in the mix and the conversion of PLS to bulk weight. Each native seed mixture shall have a separate Certificate of Compliance.