

RECREATION AREA IMPROVEMENT (562)

Definition

Establishing grasses, legumes, vines, shrubs, trees or other plants or selectively reducing stand density and trimming woody plants to improve an area for recreation.

Purpose

To increase the attractiveness and usefulness of recreation areas and to protect the soil and plant resources.

Conditions where practice applies

On any area planned for recreation use.

Specifications guide

Treatments, plant materials and maintenance measures for each type of recreation area.

1. Grass and Legume Planting Guide - Refer to Section II-I of Field Office Technical Guide for recommended seeding mixtures to use by site condition.
2. Athletic Play Areas - Refers to activities such as baseball, football, soccer fields, playgrounds, and spectator areas surrounding athletic fields and playgrounds.
3. Park-like Areas Grassy Areas - including trees and shrubs-generally will be well mowed and gro=ed. These areas-may also include golf fairways.
4. Lightly Used Areas - Areas used for few activities. Trees and shrubs are often in the area, but turf may not be-mowed, or mowed infrequently. This will also include golf course rough adjacent to fairways.
5. Heavily Used Areas - Refers to picnic, camping, etc., areas where heavy foot traffic is a problem. It also includes trails for hiking, skiing, and snowmobiling.
6. Critical Area Stabilization - Applies to steep banks, fills, borrow areas, eroded land, streambanks, lake-shore lines or any area where an extreme.erosion hazard exists.

A. Establis'roent of Vegetation for.Ground Cover

1. All construction and final grading and shaping to include the necessary surface drainage will be completed before seeding operations are commenced.
2. If soil tests are not available for fertilizer needs, apply fertilizer as follows: For grass seedings, apply 60#N, 60#P, 60#K per acre. An additional 30 pounds of nitrogen should be applied on cool season grasses the following April or August after seeding. Seedings including legumes should include fertilizer with more phosphorous and potassium. Apply 20#-80#-- 80# per acre. On soils low to very low in phosphorous, double or triple the phosphorous application to all types of seedings.
3. Prepare a seedbed at least three inches in depth while incorporating lime and fertilizer. It is important that these areas have a firm And fine seedbed prepared before seeding.
4. Seeding Dates - Cool Season: Avoid mid-summer seeding unless the areas can be mulched and irrigated. Seed early in spring or fall. Check seeding chart for best seeding periods. Seedings after September 1 in northern Minnesota and September 15 in southern Minnesota are not recommended. Warm Season: Seed from May 15 to June 15 if not irrigated, July 1 if irrigated.
5. Areas subject to erosion will be mulched after seeding. See Standard and Specifications for Mulching.
6. Annual ryegrass at the rate of 10# /acre may be seeded only during the spring seeding period and on those areas where a quick cover to reduce erosion is needed. Do not use on mulched areas.

7. Mow all grasses high during establishment. Cool season 3-4 inches high and warm season 7-10 inches high.
8. Some areas, especially critical sites, will need sodding. Use fresh cut sod. On steep areas, apply sod stripe on the contour butting the ends of strips closely together. Stagger the joints on each plane of strips. Stake or peg sod strips on steep areas. Where water velocity over sod may be high, apply a heavy fiber or synthetic netting over the sod and stake down. Apply fertilizer and work into the soil as for seeding critical areas before laying sod. Roll and water sod to prevent air pockets and to prevent drying. Water must be applied in sufficient quantity to soak through the sod and into the soil below. When the soil is dry, water prior to laying sod, followed by frequent watering for 30 days after placement. Lay sod on moist surface to prevent dehydration.

B. Maintenance

1. Athletic fields, play areas, and parks: Fine textured grasses (bluegrass and red fescue) may be cut at the 2-inch height. Coarse textured grasses (Timothy, brome grass, etc.) should be mowed not shorter than four inches. Native prairie grasses are usually not mowed, but if they are, it should be at a 10-inch height.
2. If chemicals are used for weed control, follow manufacturer's recommendations. Many chemicals have been banned for use in areas used by people.
3. Two to three top dressings of fertilizer should be applied annually on heavily used areas. Apply a moderate rate of nitrogen - in the fall (September) with high rates of P and K (example: 6-24-24) at 200-400 pounds per acre. Apply not more than 40 pounds of N in the spring. The slow release type nitrogen-bearing material is recommended.
4. Use a mechanical aerifier in the spring before recreation activity is begun on heavily used areas and compacted soils. Aerate again after labor Day. Go over the area at least three times each period of use. Use the type of aerifier that punches holes and removes plugs of soil. Apply fertilizer after aeration.
5. Fertilize and place sod on small areas where the turf has been destroyed during the season.
6. Sparsely vegetated areas may be overseeded with appropriate grasses. Apply in February-March before freezing weather has passed. A good time to seed is after mechanical aeration.

MINNESOTA
 PLANT ADAPTATIONS AND LIMITATIONS
 FOR
 PLANTS USED FOR RECREATION OR NON-AGRICULTURAL USES

Species	Soil Adaptation			Seeding Dates	Shade Tolerance	Trampling Tolerance	Flooding Tolerance	Fertility	
	Wet	Droughty	pH Range					Tolerance	Tolerance
<u>Grasses:</u> Bromegrass	Poor	Good	5.5 - 7.0	March-May Aug-Sept	Poor	Good	Fair	Fair	Poor
Tall Fescue	Fair	Good	5.0 - 6.5	March-May	Good	Excellent	Good	Good	Fair
Orchardgrass	Poor	Fair	5.5 - 7.0	March-May	Good-Excel.	Fair	Poor-Fair	Fair	Fair
Reed Canarygrass	Good	Good	5.5 - 6.5	March-May	Poor	Fair-Good	Excellent	Fair	Poor
Bluegrass	Poor	Poor	5.5 - 6.5	Aug-Sept	Fair	Good	Fair	Fair	Poor-Fair
Creeping Red Fescue	Poor	Good	5.5 - 7.0	March-May	Excellent	Good	Poor-Fair	Fair	Fair
Redtop	Good	Good	4.5 - 6.5	Aug-Sept March-May	Fair	Fair-Good	Good	Good	Good
<u>Legumes:</u> Crownvetch	None	Good	6.0 - 7.5	April-May	Good	Poor	Very Poor	Good	Good
Birdsfoot Trefoil	Fair	Good	5.5 - 7.0	April-May August	Poor	Poor-Fair	Good	Fair	Fair
Alfalfa	Poor	Good	6.2 - 7.5	April-May	Poor	Poor	Poor	Poor	Poor
White Clover	Fair	Poor	5.5 - 7.0	Aug-Sept April-May	Poor	Poor	Fair-Good	Fair	Fair
<u>Native Grasses:</u> Big Bluestem	Fair-Good	Fair	5.5 - 7.0	April-May	Poor	Poor	Good	Good	Good
Little Bluestem	Poor	Good-Excel.	5.0 - 7.5	April-May	Fair	Fair	Poor-Fair	Poor-Fair	Excellent
Indiangrass	Fair	Fair-Good	5.5 - 7.0	April-May	Poor	Poor	Fair	Fair	Good
Switchgrass	Good	Good	5.0 - 6.5	April-May	Poor-Fair	Good-Excel.	Good-Excel.	Good-Excel.	Good-Excel.
Sideoats grama	Poor	Good	5.0 - 7.5	April-May	Fair	Fair	Poor-Fair	Poor-Fair	Excellent

Poor - Fair - Good - Excellent

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 PLANT ADAPTATIONS AND LIMITATIONS
 FOR
 PLANTS USED FOR RECREATION OR NON-AGRICULTURAL USES

Species	Soil Adaptation				Seeding Dates	Shade Tolerance	Trampling Tolerance	Flooding Tolerance	Fertility	
	Wet	Droughty	pH Range	Low					Tolerance	Tolerance
<u>Grasses:</u> Brome grass	Poor	Good	5.5 - 7.0		March-May Aug-Sept	Poor	Good	Fair	Poor	Poor
Tall Fescue	Fair	Good	5.0 - 6.5		March-May	Good	Excellent	Good	Fair	Fair
Orchardgrass	Poor	Fair	5.5 - 7.0		March-May	Good-Excel.	Fair	Poor-Fair	Fair	Fair
Reed Canarygrass	Good	Good	5.5 - 6.5		March-May Aug-Sept	Poor	Fair-Good	Excellent	Poor	Poor
Bluegrass	Poor	Poor	5.5 - 6.5		Aug-Sept March-May	Fair	Good	Fair	Fair	Poor-Fair
Creeping Red Fescue	Poor	Good	5.5 - 7.0		Aug-Sept March-May	Excellent	Good	Poor-Fair	Fair	Fair
Redtop	Good	Good	4.5 - 6.5		March-May	Fair	Fair-Good	Good	Good	Good
<u>Legumes:</u> Crownvetch	None	Good	6.0 - 7.5		April-May	Good	Poor	Very Poor	Good	Good
Birdsfoot Trefoil	Fair	Good	5.5 - 7.0		April-May August	Poor	Poor-Fair	Good	Fair	Fair
Alfalfa	Poor	Good	6.2 - 7.5		April-May Aug-Sept	Poor	Poor	Poor	Poor	Poor
White Clover	Fair	Poor	5.5 - 7.0		April-May	Poor	Poor	Fair-Good	Fair	Fair
<u>Native Grasses:</u> Big Bluestem	Fair-Good	Fair	5.5 - 7.0		April-May	Poor	Poor	Good	Good	Good
Little Bluestem	Poor	Good-Excel.	5.0 - 7.5		April-May	Fair	Fair	Poor-Fair	Excellent	Excellent
Indiangrass	Fair	Fair-Good	5.5 - 7.0		April-May	Poor	Poor	Fair	Good	Good
Switchgrass	Good	Good	5.0 - 6.5		April-May	Poor-Fair	Good-Excel.	Good-Excel.	Good-Excel.	Good-Excel.
Sideoats grama	Poor	Good	5.0 - 7.5		April-May	Fair	Fair	Poor-Fair	Excellent	Excellent

Poor - Fair - Good - Excellent

Soil Description	Athletic Play Areas	Park-Like Areas (Including Home Lawns)	Lightly Used Areas	Excessively Used Areas	Critical Area Stabilization (Usually not mowed)	Remarks
poor and somewhat poorly drained soils, high moisture holding capacity. may not be tilled, at surface drainage prevents standing water.	Kentucky bluegrass 30% Creeping Red Fescue 7-8% 6# / 1000 sq. ft.	Kentucky bluegrass 80% Redtop 20% 2# / 1000 sq. ft.	* Kentucky bluegrass 80% Redtop 20% 1-2# / 1000 sq. ft.	Reed canarygrass 4-6# / 1000 sq. ft.	Birdsfoot Trefoil 10# / acre Creeping Red Fescue 10# / acre	Soil compact. will be a problem on heavily used areas.
Pasture and Hay-crops 3, 4, and 5)	Kentucky bluegrass 30% Creeping Red Fescue 70% 6# / 1000 sq. ft.	* Kentucky bluegrass 80% Tall Fescue 20% 2# / 1000 sq. ft.	* Kentucky bluegrass 80% Tall Fescue 20% 2# / 1000 sq. ft.	Reed canarygrass 10# / acre	Reed canarygrass 10# / acre Redtop 4# / acre Switchgrass 25# / acre	Athletic area: should be tilled and drained and placed as baseball infields raised for better surface drainage and faster drying.
	Not recommended for play area.	Kentucky bluegrass 30% Creeping Red Fescue 70% 6# / 1000 sq. ft.	PARTIAL SHADE Kentucky bluegrass 30% Tall Fescue 70% 3# / 1000 sq. ft.	Not recommended for this area.	Reed canarygrass 30# / acre	* 5# / acre of Birdsfoot Trefoil may be added to mixture.

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Brief Soil Description	Athletic Play Areas	Park-Like Areas (Including Home Lawns)	Lightly Used Areas	Excessively Used Areas	Critical Area Stabilization (Usually not moved)	Remarks
Poor and very poorly drained with occasional standing water.	Not suitable.	Reed canary-grass 15#/acre	Reed canary-grass 12#/acre	Not suitable.	Reed canary-grass 20#/acre	This is a poor area for recreation but may be found around and in the fringes. Mow grasses high and infrequently.
(Pasture and Hay-land Suitability Groups 6 and 7)		Garrison creeping foxtail 20#/acre	Garrison creeping foxtail 15#/acre		Garrison creeping foxtail 25#/acre	
		Timothy 8#/acre	Timothy 6#/acre			
		Redtop 2#/acre	Redtop 2#/acre			
			Alsike			
			clover			
			2#/acre			

FULL SUNSHINE

All species above, that are given in percentage of a seeding mixture refers to percentage by weight of the total seeding mixture.

II. Shrub and Vine Planting Guide

A. Planting Dates and Methods

Most shrubs are planted in the spring before growth starts. For best results, existing competition should be removed. A hand planter or mechanical tree planter can be used. In any case, the shrub should be planted in a hole large enough to easily accommodate the roots. Soil should be packed around the roots and the plants should be watered adequately. For best results, follow instructions that are generally provided with the plants.

B. Spacing

It is desirable to allow at least three feet from foundations. Individual plants should be given ample room in which to grow. Plants for hedges are spaced closer together. The following spacings are provided as a general guide:

Ground cover (solid plantings)	3 ft. x 3 ft.
Hedges (one row)	1 ft to 6 ft. apart in the row.

Landscaping

Large shrubs (8 ft. to 12 ft. high)	7 ft. to 15 ft. apart
Medium shrubs (5 ft. to 8 ft. high)	5 ft. to 14 ft. apart
Small shrubs (less than 5 ft. high)	1 ft. to 4 ft. apart
Vines	1 ft. to 2 ft. apart

Screens and borders

Large shrubs	3 ft. to 6 ft. apart
Medium shrubs	3 ft. to 4 ft. apart
Small shrubs	1 ft. to 3 ft. apart
Vines	1 ft. to 2 ft. apart

Spacing between rows are often dependent upon size of maintenance equipment.

Wildlife food and cover (clump plantings)

Food	4 ft. x 4ft. to 10 ft. x 10 ft.
Cover	3-6 ft. x 3-6 ft

(Planting in clumps is encouraged, leaving half of the area in grass.)

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Site Soil Characteristics	Plant Species	Suitable for Admission Live Area	Shade Tolerant	Lead- scape	Hedge, Screening Wind- breaks	Wildlife Food and Cover	Road- side Cover	Ground Cover	Height (feet)	Type	Thorns	Foliage Texture	AESTHETIC VALUE			Remarks
													Flowers	Fruit Color	Fall Color	
Moderately deep to deep, moderate to well drained, good available water capacity for plant growth.	Arbor vitae (shrub types) (Thuja ssp.)	statewide	some	X	X	X			3-7	shrub				X	Conifer	
	Barberry, European (Berberis vulgaris)	4,5,6,7	X	X	X	X			8	shrub	X				Colorful berry	
(Windbreak Sui- bility Groups 1, 2, 3, 4 and 5)	Barberry, Japanese (Berberis thunbergii)	4,5,6,7	X	X	X	X			6	shrub	X		X	X	Colorful berry	
	Barberry (Berberis sp.)	1,3	some	X	X	X	X	X	1	trailing shrub					Not readily avail- able commercially	
	Spatterdock (Cotinus canadensis)	4,5,6,7	X	X	X	X	X	X	variable	vine			X	X	Berry poisonous, vines can be detrimental to trees	
	Blackberry, dewberry blackcap raspberry (Rubus sp.)	4,5,6,7			X	X	X	X	1-5	bramble	X	X	X	X	Excellent for jams and jelly	
	Bush Cinquefoil (Potentilla fruticosa)	statewide		X	X	X			4	shrub		X				
	Ruffalo berry (Sambucus racemosa)	statewide		X	X	X			8-10	shrub		X	X	X	Leaves have silvery color	
	Caragana (Siberian Pea- tree) (Caragana arborescens)	statewide	some	X	X	X			5-6	shrub			X			
	Cherry, European Bird (Prunus birdii)	statewide		X	X	X				shrub			X			
	Cherry, Manchurian (Hacking cherry) (Prunus japonica)	statewide		X	X	X			4-6	shrub			X	X		
	Cherry, Monticola (Ground cherry) (Prunus monticola)	statewide		X	X	X			4-6	shrub			X	X		
	Cherry, Prinosia (Prinosia sinensis)	statewide		X	X	X				shrub			X	X	Excellent for jams and jellies. Needs cultivation to com- plete first 2-3 years.	

* - Native, has good display of fall color.
X - Use, growth form or aesthetic value that applies to a specific plant.

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Site Soil Characteristics	Plant Species	Suitable for use in Administra- tive Area	Shade Tolerant	Land- scape	Wind- breaks	Wildlife Food and Cover	Road- side	Ground Cover	Height (feet)	Form	AESTHETIC VALUE			Remarks
											Thicket Former	Flowers	Fruit or Berry Color	
	Chokeberry, red (<i>Aronia arbutifolia</i>)	5,6,7	X	X	X	X	X	X	5-10	shrub	X	X	X	Excellent for jams and Jellies
	Clematis (Virginia Bower) (<i>Clematis virginiana</i>)	statewide		X		X	X	X	variable	vine	X	X	X	Causes dermatitis to some people if handled
	Cotoneaster (<i>Cotoneaster pyracantha</i>)	statewide	X	X	X	X	X	X	8	shrub	X	X	X	Glossy thick fol- iage, requires sun
	Crabapple (<i>Malus</i> species)	statewide	X	X	X	X	X	X	5-25	shrub or small tree	X	X	X	Much used for various purposes
	Current, Alpine (<i>Valeriana</i>)	statewide	X			X	X	X	variable	shrub	X	X	X	Excellent for jams and Jellies - Grows on wet soils
	*Dogwood, Gray (<i>Cornus racemosa</i>)	statewide	X	X		X		X	6-10	shrub	X	X	X	
	*Dogwood, Pagoda (<i>Cornus alternifolia</i>)	statewide	X			X		X	10-15	shrub	X	X	X	
	*Dogwood, Red Osier (<i>Cornus stolonifera</i>)	statewide	X	X		X		X	3-10	shrub	X	X	X	Attractive red twigs
	*Elderberry, American (<i>Sambucus canadensis</i>)	statewide				X		X	3-10	shrub	X	X	X	Excellent for jams and Jellies
	Dwarf Euonymus (<i>Euonymus fortunei</i>)	5,6,7	X						20	shrub	X	X	X	
	Euonymus (burning bush) (<i>Euonymus alatus</i>)	statewide	X						25	shrub	X	X	X	
	*Gilbert (Hazelnut) (<i>Corylus americana</i>)	5,6,7	X						5-8	shrub	X	X	X	Edible nut
	*Grape, Wild (<i>Vitis</i> species)	5,6,7	X						variable	vine	X	X	X	Kills out young trees by twining
	Ground huckleberry (New) (<i>Toxus canadensis</i>)	statewide	X	X					2-4	shrub	X	X	X	
	Hawthorne (Thornapple) (<i>Crataegus</i> species)	statewide	X	X	X				5-15	shrub	X	X	X	Many varieties

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X - Use, growth form or aesthetic value that applies to a specific plant.

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Site Soil Characteristics	Plant Species	Suitable for use in Administrative Area	Shade Tolerant	Land- scape Use	Hedges, Screening Wind- breaks	Wildlife Food and Cover	Road- side Cover	Ground Cover	Height (feet)	Form	AESTHETIC VALUE				Remarks
											Flowers	Fruit or Berry	Fall Color	Thicket Form	
	*Honeysuckle (shrub types)	statewide	X	X	X	X	X	X	10-12	shrub	X	X	X	X	Many varieties
	(Lonicera species)	statewide	X	X	X	X	X	X	1-2	shrub	X	X	X	X	
	Juniper, Creeping (Juniperus horizontalis)	statewide	partially	X	X	X	X	X	2-4	shrub	sharp needles	X	X	X	Conifer
	Juniper, Prostrate (Juniperus horizontalis)	statewide	X	X	X	X	X	X	8-10	shrub	some are	X	X	X	Conifer
	Juniper, Pfitzer (Juniperus chinensis)	statewide	X	X	X	X	X	X	8-10	shrub		X	X	X	Many varieties
	Lilac (Syringa species)	statewide	X	X	X	X	X	X	10-15	shrub		X	X	X	Low growing type - can be pruned for hedge
	Maple, Amur (Acer ginnala)	statewide	X	X	X	X	X	X	6-9	shrub		X	X	X	
	Spine bark (Physocarpus opulifolius)	statewide	X	X	X	X	X	X	10-15	shrub	some to touch	X	X	X	Early - spreads
	Plum, American (Prunus americana) and other species	4,5,6,7	X	X	X	X	X	X	2-3	shrub	X	X	X	X	Spreads by suckering
	Red cedar, Eastern (Juniperus virginiana)	4,5,6,7	X	X	X	X	X	X	2-6	shrub		X	X	X	Many varieties
	Rose, Kanchika (Rosa amabilis)	statewide	X	X	X	X	X	X	15+	shrub or small tree		X	X	X	Silver gray foliage
	*Rose, Rugosa and horticultural varieties (Rosa species)	2,4,5,6,7	X	X	X	X	X	X	2-6	shrub		X	X	X	Many varieties
	Russian olive (Elaeagnus angustifolia)	statewide	X	X	X	X	X	X	2-6	shrub		X	X	X	Many varieties
	Spiraea (Spiraea species)	4,5,6,7	X	X	X	X	X	X				X	X	X	

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X - Use, growth form or aesthetic value that applies to a specific plant.

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SHRUBS FOR LANDSCAPE PLANTING

Site Soil Characteristics	Plant Species	Suitable for Identification in Live Area	Shade Tolerant	Lead- scape	Wildlife Screening Breaks	Road- side	Ground Cover	Height (ft.)	Type	CROUPE FORM			AESTHETIC VALUE		
										Thicket Form	Flowers	Fruit Berry	Fall Color	Remarks	
	*Smac, smooth (<i>Rhus glabra</i>)	statewide		X	X	X		6-10	shrub			X	X	X	Shows red color in fall
	*Sumac, Staghorn (<i>Rhus typhina</i>)	statewide	X	X	X	X		10-15	shrub	X	X	X	X	X	
	Viburnum, American Cranberry Bush, (<i>Viburnum trilobum</i>)	statewide	X	X	X	X		7-9	shrub		X	X	X	X	Variegata, but slow growing
	Viburnum, Arrowwood, (<i>Viburnum dentatum</i>)	statewide	X	X	X	X		10-12	shrub		X	X	X	X	Slow growing - deep red in fall
	*Viburnum, blackhaw (<i>Viburnum cuneifolium</i>)	statewide	X	X	X	X		8-10	shrub		X	X	X	X	
	*Viburnum, maple leaf (<i>Viburnum acerifolium</i>)	statewide	X	X	X	X		3-5	shrub		X	X	X	X	
	*Viburnum, nanny berry, (<i>Viburnum lentago</i>)	statewide	X	X	X	X		9-12	shrub		X	X	X	X	Slow growing
	*Virginia Creeper (<i>Vitis rotundifolia</i>)	2,4,5,6,7	X	limited use	X	X	X		climbs	vine			X	X	Creeps
	Weigela (<i>Weigela species</i>)	5,6,7	X	X	X	X		4-8	shrub			X	X	X	Shows blossoms
	*Willows - shrubby types (<i>Salix species</i>)	statewide	X	X	X	X		3-10	shrub						Catkins on pussy- willow, especially attractive in spring

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X - Use, growth form or aesthetic value that applies to a specific plant.

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Site Soil Characteristics	Plant Species	USES										AESTHETIC VALUE				
		Suitable for use in Administra- tive Area	Shade Tolerant	Land- scape	Screening Wind- breaks	Wildlife Food and Cover	Road- side	Ground Cover	Height (feet)	Type	Thorns	Tablet Form	Flowers	Fruit or Berry	Fall Color	Remarks
Shallow or sandy, somewhat exces- sively drained. Soils with low available water capacity for plant growth.	Ruberry, Japanese (<i>SAEWATSI thunbergii</i>)	4,5,6,7	X	X	X	X	X	X	6	shrub	X		X	X		
	Bittersweet (<i>GELSENIUM speciosum</i>)	4,5,6,7	X	X	X	X	X	climbs	vine				X	X		Berry poisonous, vines can be detri- mental to trees
	Blackberry (<i>LAGUNA speciosa</i>)	4,5,6,7	X	X	X	X	X	1-5	bramble	X	X	X	X	X		Excellent for jams and jellies
(Windbreak Suits- Bility Group 5 and 7)	Buffalo berry (<i>SAMPERDIA arbutifolia</i>)	statewide		X	X	X	X	8-10	shrub	X		X	X			Leaves have silvery color
	Caragana (Siberian Pa- tree) (<i>CARAGANA arbutifolia</i>)	statewide	some	X	X	X	X	5-6	shrub							
	Cherry, Manchou (Manchou cherry) (<i>PRUNUS tomentosa</i>)	statewide		X	X	X	X	4-6	shrub				X	X		
	Cherry, Mongolian (Ground cherry) (<i>PRUNUS fruticosa</i>)	statewide		X	X	X	X	4-6	shrub				X	X		
	Choke Cherry (<i>PRUNUS virginiana</i>)	statewide	X	X	X	X	X	8-12	tall shrub				X	X		
	Crabapple (<i>Malus speciosa</i>)	statewide	X	X	X	X	X	20-25 or tall tree	shrub				X	X		
	Current, Alpine (<i>Alnus alpicola</i>)	statewide	X	X	X	X	X	6-7	shrub	X		X				Good hedge plant
	Dogwood, Gray (<i>CORNUS rugosa</i>)	statewide	X	X	X	X	X	6-10	shrub			X	X	X		Best dogwood for dry sites
	Escape, Wild (<i>LIUM speciosa</i>)	5,6,7	X	X	X	X	X	variable	vine				X	X		Kills out young trees by taking
	Euonymus (<i>Euonymus speciosa</i>)	statewide	X	X	X	X	X	5-15	shrub	X		X	X	X		Few types

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CRUISES FOR LANDSCAPE PLANTING

Site Cell Characteristics	Plant Species	U S E S										G R O W T H F O R M			A E S T H E T I C V A L U E		
		Suitable for use in Administra- live Area	Shade Tolerant	Land- scape	Hedges, Wind- breaks	Screening, Food and Cover	Wildlife	Ground Cover	Road- side	Height (feet)	Type	Thorns	Thicket Form	Flowers	Fruit or Berry	Fall Color	Remarks
	Honeyuckle (<i>Lonicera</i> species)	statewide	X	X	X	X	X	X	6-12	shrub			X	X	X	Many varieties	
	Juniper, Creeping (<i>Juniperus horizontalis</i>)	statewide	partially	X	X	X	X	X	1-2	shrub	X		X	X	X	Conifer	
	Juniper, Prostrate (<i>Juniperus procumbens</i>)	statewide	X	X	X	X	X	X	1-2	shrub	X		X	X	X	Conifer	
	Juniper, Pfitzer (<i>Juniperus chinensis pfitzeriana</i>)	statewide	X	X	X	X	X	X	6-8	shrub	some					Ornamental conifer	
	Lilac (<i>Syringa</i> species)	statewide	X	X	X	X	X	X	8-10	shrub			X			Many varieties - not all good for dry sites.	
	Maple, Amur (<i>Acer glabrum</i>)	statewide	X	X	X	X	X	X	15	tall shrub					X	Small tree - may be pruned into a hedge.	
	Peashrub (Siberian Pea- tree) (<i>Carsana abrotanensis</i>)	statewide	some	X	X	X	X	X	5-6	shrub			X	X	X	Early - spreads	
	Plum, American (<i>Prunus americana</i>)	statewide	X	X	X	X	X	X	10-15	shrub	some		X	X	X	Bearly - spreads	
	*Russian olive (<i>Elaeagnus angustifolia</i>)	statewide	X	X	X	X	X	X	15+	shrub			X	X	X	Silver gray foliage	
	*Sumac, smooth (<i>Rhus glabra</i>)	statewide	X	X	X	X	X	X	6-10	shrub			X	X	X		
	*Sumac, Staghorn (<i>Rhus typhina</i>)	statewide	X	X	X	X	X	X	10-15	shrub			X	X	X		
	*Viburnum, Arrowwood (<i>Viburnum dentatum</i>)	statewide	X	X	X	X	X	X	10-12	shrub			X	X	X	Slow growing - deep red color in fall.	

* - Native, has good display of fall color.
X - Use, growth form or aesthetic value that applies to a specific plant.

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SHRUBS FOR LANDSCAPE PLANTING

Site Soil Characteristics	Plant Species	Suitable for use in Administra- tive Areas	USES					GROWING FORM				AESTHETIC VALUE			
			Shade Tolerant	Wind- break	Hedges, Screening, Wind- break	Wildlife Food and Cover	Road- side	Ground Cover	Height (feet)	Trunk Form	Thicket	Flowers	Fruit or Berry	Fall Color	Remarks
	Viburnum, blackhaw (Viburnum prunifolium)	statewide	X	X	X	X	X	X	8-10	shrub		X	X	X	
	Viburnum, nanny berry (Viburnum lentago)	statewide	X	X	X	X	X	X	9-12	shrub		X	X	X	Slow growing
	Virginia Creeper (Parthenocarpus sulmifolia)	2,4,5,6,7 limited use	X			X	X	X	climbs	vine			X	X	

* - Native, has good display of fall color.
X - Use, growth form or aesthetic value that applies to a specific plant.

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Standard
Section IV-562

SHRUBS FOR LANDSCAPE PLANTING

Site Soil Characteristics	Plant Species	Suitable for use in Administra- tive Area	USES			Height (feet)	Type	Thorns	AESTHETIC VALUE			Remarks	
			Shade Tolerant	Land- scape	Hedges, Screening, Wind- breaks				Wildlife Foot and Road- side	Ground Cover	Thicket Former		Flowers
Poor and very poorly drained, soils with high available water capacity for plant growth, but with- out adequate arti- ficial drainage.	Ashby vine (shrub type) (<i>Amelanchier</i> species)	statewide	some	X	X	3 - 7	shrub				X	X	Noted for waxy gray berries
	*Dogwood, Gray (<i>Cornus fasciosa</i>)	statewide	X	X	X	6 - 10	shrub			X			
	*Dogwood, Pagoda (<i>Cornus alternifolia</i>)	statewide	X		X	10-15	shrub			X	X	X	
(Umbreak Suite- billy Group 5.1, 9 and 10)	*Dogwood, red oster (<i>Cornus stolonifera</i>)	statewide	X	X	X	3 - 10	shrub			X	X	X	Attractive red twig
	*Elderberry, American (<i>Sambucus canadensis</i>)	4, 5, 6, 7	X	X	X	3 - 10	shrub			X	X	X	Used for jams and jellies
	Hawthorne (<i>Crataegus</i> species)	statewide	X		X	5 - 5	shrub				X	X	Many types
	Honeysuckle (shrub types) (<i>Lonicera</i> species)	statewide	X	X	X	6 - 12	shrub			X	X	X	Spreads by seed
	Flax, American (<i>Trinum americanum</i>)	statewide	X		X	10-15	shrub			X	X	X	Hardy - spreads
	Russian olive (<i>Elaeagnus angustifolia</i>)	statewide	X	X	X	10-15	shrub					X	Silvery gray foliage
	Willow (shrubby types) (<i>Salix</i> species)	statewide		X	X	2 - 8	shrub						Flowers yellow especially attractive in early spring
	Winterberry (black alder) (<i>Ilex verticillata</i>)	statewide	X			6 - 9	shrub					X	Colorful fruit

* - Native, has good display of fall color.
X - Use, growth form or aesthetic value that applies to a specific plant.

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III. Tree Planting Guide

Refer to Table 3, Section 11-1 of Field Office Technical Guide as a guide for tree planting to adapted sites. Only the commonly used species are listed. Many horticultural varieties do well in Minnesota, but have been omitted for the sake of brevity. The species listed are well suited to Minnesota conditions and should do well in recreation area plantings. Similar, closely related varieties can be expected to give some good results.

A. Planting Dates and Methods

Most trees are planted in the spring before growth starts. For best results, existing competition should be removed. Either a hand planter or a mechanical tree planter may be used. In any case, large planting stock should be planted in a hole twice the diameter of the root system. Soil should be packed around the roots and the plants should be watered frequently. Peat moss is often added followed by periodic fertilizer applications. For best results, follow instructions that are generally provided with the plants. Refer to Tree Planting Standard and to the "Urban, Runoff, Erosion and Sediment Control Handbook.

B. Spacing

Spacing	Shade Trees	Street Trees	Lawn Trees	Hedges & Screens	Windbreaks
Large Trees Over 60'	20'x20' to 50'x50'	50'x100'	Specimen or clump type plantings	Not available	See windbreak specifications
Medium trees 30' to 60'	15'x15' to 25'x25'	35'to75'	Specimen or clump type plantings	Minimum of 6' except northern white cedar 4'	See windbreak specifications
Small trees less than 30'	Not suitable	Not suitable	Specimen or clump type plantings	3' to 5'	See windbreak specifications

TREES FOR LANDSCAPE PLANTING

Description of soils in the Windbreak Suitability Group(s)	TREES FOR LANDSCAPE PLANTING		Hedges, Screens & Windbreaks
	Shade Trees	Street Trees	
1. Well drained to somewhat poorly drained moderately coarse to fine textured non-calcareous soils on slopes of 0-12 percent.	Sugar Maple (LO)	Norway Maple (NR)	Norway Maple (MR)
	Red Oak (IR)	Pin Oak (MP)	Flowering Crab (SR)
	Basswood (LO)	Honey Locust (MO)	White Cedar (MC)
	Hackberry (MR)	Basswood (LO)	Pine Species (LP)
3. Same soils on steeper slopes.	Green Ash (LO)	Green Ash (LO)	White Spruce (MP)
	Bur Oak (IR)	Sugar Maple (LO)	Poplar Species (LC)
	Norway Maple (NR)	Hackberry (MR)	Russian Olive (SR)
	Silver Maple (LO)		Upright Yew (SP)
4. Well to moderately well drained, medium and medium coarse textured soils subject to occasional flooding on slopes of 0-2 percent.	Honey Locust (MO)		
	White Oak (IR)		
2. Excessively drained to somewhat poorly drained calcareous soils, 0-12 percent slopes.			
3. Same soils on steeper slopes.			

SUNNY SITES

PARTIAL SHADE

SUNNY SITES

TREES FOR LANDSCAPE PLANTING

Description of soils
in the Windbreak Suitability Group(s)

Hedges, Screens
& Windbreaks

Lawn Trees

Street Trees

Shade Trees

(continued)

PARTIAL SHADE

Ponderosa Pine (LP) White Spruce (MP)
White Spruce (MP) Ponderosa Pine (LP)
Blue Spruce (MP) Red Cedar (SP)
Mt. Ash (SO)
Hackberry (MR)
Green Ash (MO)

Green Ash (LO)
Hackberry (MR)
Green Ash (MO)

Green Ash (LO)
Hackberry (MR)

SUNNY SITES

Norway Maple (MR) Red Cedar (SP)
Flowering Crab (SR) Russian Olive (SR)
Paper Birch (MO) Pine Species (LP)
Red Cedar (SP) Upright Yew (SP)
Pine Species (LP) White Spruce (MP)
White Spruce (MP) White Cedar (MC)
Russian Olive (SR)
Mtn. Ash (SO)

Bur Oak (IR)
Red Oak (IR)
Hackberry (MR)
White Oak (IR)
Silver Maple (LO)
Green Ash (MO)
Honey Locust (MO)

Green Ash (MO)
Hackberry (MR)
Honey Locust (MO)

5. Moderately deep and deep, moderately coarse to moderately fine textured soils underlain by coarse textured materials or bedrock on slopes of 0-12 percent.

PARTIAL SHADE

White Pine (LP) Upright Yew (SP)
White Spruce (MP) White Pine (LP)
White Spruce (MP)

Hackberry (MR)
Green Ash (MO)

Hackberry (MR)
Green Ash (MO)

6. Same soils on steeper slopes.

Ponderosa Pine (LP) Red Cedar (SP)
Austrian Pine Red Pine (MP)
Red Pine (LP) Ponderosa Pine (LP)
Russian Olive (SR) Austrian Pine
Russian Olive (SR)

Bur Oak (IR)
Hackberry (MR)
Green Ash (MO)
Red Maple (MO)
Honey Locust (MO)
Red Maple (MO)

SUNNY SITES

6. Coarse textured, moderately well to excessively drained, droughty soils on slopes of 0-12 percent.

7. Same soils on steeper slopes.

TREES FOR LANDSCAPE PLANTING

Description of soils in the Windbreak Suitability Group(g)	Shade Trees	Street Trees	Lawn Trees	Hedges, Screens & Windbreaks
8. Somewhat poorly to very poorly drained, coarse to fine textured non calcareous soils on slopes of 0-12 percent.	Hackberry (MR) Green Ash (MO)	Hackberry (MR)	Ponderosa Pine (LP) Hackberry (MR) Red Cedar (SP)	
	Sugar Maple (MO) Black Ash (MC) Silver Maple (LO) Cottonwood (LO) Red Maple (LO) Honey Locust (MO)	Red Maple (LO) Black Ash (MC) Green Ash (MO) Hackberry (MR) Silver Maple (LO) Pin Oak (MP)	Mt. Ash (SO) Willow Species (MP) White Birch (MO) Pin Oak (MP) Honey Locust (MO)	White Cedar (MC) Willow Species (MP) Black Spruce (MP) Poplar Species (LC)
9. Somewhat poorly to very poorly drained, moderately coarse to fine textured calcareous soils on slopes of 0-2 percent.	Sugar Maple (MO) Black Ash (MC)	Hackberry (MR) Black Ash (MC)	Mt. Ash (SO)	White Cedar (MC)
	Willow Species (MP) Hackberry (MR) Honey Locust (MO) Green Ash (MO) Poplar Species (LC)	Green Ash (MO) Hackberry (MR)	White Spruce (MP) Willow Species (MP) Honey Locust (MO)	Willow Species (MP) Poplar Species (LC)
	Hackberry (MR) Green Ash (MO) Honey Locust (MO)	Green Ash (MO) Hackberry (MR)	White Spruce (MP)	

The letters in parenthesis following each tree species indicate the general tree height and shape at maturity. The first letter indicates height; s-less than 30', M-30-60', L-more than 60'. The second letter indicates shape; C-columnar, O-oval, P-pyramidal, R-round.

4. Trimming

Trimming should only be used to prevent, correct, or improve an undesirable situation. Refer to Standards for Woodland Pruning.

It is necessary to trim in order:

1. To control undesirable habits of growth.
2. To remove dead, broken, or disease and insect infested branches.
3. To produce a more compact and sturdy plant.
4. To produce a desired formal shape or size.
5. To improve flowering or fruiting.
6. To improve chances of survival at transplant time.
7. To remove tree limbs whose ends reach below 8 in a recreation area or below 12' along recreation trails.
8. To provide air circulation and space and permit establishment of grass in recreation areas.

Slash Disposal: All slash shall be removed from the area.

5. Thinning

A sufficient number of trees of all sizes should be removed so the canopy formed by those remaining will shade approximately 40 percent of the area. Among those removed should be trees whose form, age or condition, growth habit, or other special characteristics render them a hazard to people using the area. The trees remaining on the area should be healthy, vigorous individuals, and their number should include as large a variety of species as possible. They should also be distributed as evenly as possible through the area. T-f thinning is done during the dormant season (approximately November 1 to March 1), deciduous trees to be retained could be selected and marked during the summer when the size and density of their canopies can be evaluated and their proper distribution determined.

SCIENTIFIC NAMES OF TREES LISTED

American Beech	<i>Fagus granifolia</i>
basswood	<i>Tilia americans</i>
black ash	<i>Fraxinus nigra</i>
black cherry	<i>Prunus serotina</i>
black oak	<i>Quercus velutina</i>
blue beech	<i>Carpinus caroliniana</i>
blue spruce (Colorado blue spruce)	<i>Picea pungens</i>
bur oak	<i>Quercus macrocarpa</i>
cottonwood	<i>Populus deltoides</i>
flowering crab (apple)	<i>Mul,us Sp</i>
green ash	<i>Fraxinus pennsylvanica</i>
hackberry	<i>Celtis occidentalis</i>
hawthorn	<i>Crataegus sp.</i>
horsechestnut	<i>Aesculus hippocastanum</i>
jack pine	<i>Pinus banksiana</i>
aurel willow	<i>Salix pentandra</i>
Lombardy poplar	<i>Populus nigra va. italica</i>
mountainash	<i>Sorbus sp.</i>
orthern red oak	<i>Quercus rubra</i>
Norway maple	<i>Acer platanoides</i>
Norway 'Spruce	<i>Picea abies</i>
paper birch	<i>Betula paprifera</i>
eastern red cedar	<i>Juniperus Virginians</i>

WATER QUANTITY

Area improvement resulting from planting vegetation may decrease runoff through retarded flows providing the oppor- tunity for infiltration. Where increased infiltration exceeds increase in evapotranspiration, deep percolation may occur.

Area improvement resulting from thinning and removal of unwanted vegetation may have minor impact on runoff.

The improvement of recreation area may have minor impact on ground water quantity. Any impact should be an increase in groundwater quantity. Increases in infiltrated runoff may be generally offset by additional consumptive use of established vegetation.

WATER QUALITY

The long term effect of recreation improvement may be a reduction of sediment in surface water. Short term sediment increases may be noted during and immediately after construction due to disturbing the soil surface. Surface water quality may be degraded in both the long and short term by an increase in chemicals in the form of fertilizers and pesticides used to establish or control vegetation. Surface water quality may also be degraded by organic waste, fuels, and other chemicals associated with recreation activity.

Minor amounts of soluble chemicals such as nutrients and pesticides may percolate below the rootzone when precipitation exceeds transpiration and rootzone storage.