North Carolina Department of Transportation
Division of Highways

Guidelines for Planting within Highway Right-of-Way



Roadside Environment Unit P.O. Box 25201 Raleigh, NC 27611 (919) 733-2920



GUIDELINES FOR PLANTING WITHIN HIGHWAY RIGHT-OF-WAY

FORWARD

The aesthetic quality of North Carolina's roadsides is influenced by a number of factors. Among these factors are right-of-way widths, adjacent land use, parallel overhead utility lines, advertising signs, and surrounding vegetation.

In order to protect the public investment in highways, the North Carolina Department of Transportation, Division of Highways, depends largely upon grass and legume covers to prevent roadside erosion and upon shrubs and trees for reduced mowing areas and for improvement of aesthetic quality.

Shrubs and trees within highway rights-of-way result from either retaining desirable vegetation during initial highway construction, allowing portions of roadsides to regenerate, or from planting or reforesting selected roadside areas. Limited monetary and manpower resources prevent the North Carolina Division of Highways from planting shrubs and trees on all roadside where these would be desirable. Planting of specific roadside areas is frequently undertaken by municipalities, garden clubs, or individuals after permission is granted from the Division of Highways.

North Carolina General Statute 136-93 provided,

"... no tree or shrub in or on any State road or State highways shall be planted, trimmed, or removed, ... without a written permit, and then only in accordance with the regulations of said Department of Transportation or its duly authorized officers or employees; and the work shall be under the supervision and to the satisfaction of the Department of Transportation or its officers or employees, and the entire expense of replacing the highway in as good condition as before shall be paid by the persons, firms, or corporations to whom the permit is given, or by whom the work is done."

Included herein, are guidelines for obtaining permits and for planting within highway right-of-way.

PROCEDURES FOR HANDLING REQUESTS FOR PERMITS FOR PLANTING ON HIGHWAY RIGHT-OF-WAY

Many requests are received from municipalities, civic organizations, and individuals for permission to plant trees, shrubs, vines, and flowers within highway right-of-way. In order to protect the public investment and to promote safety, utility, economy, and beauty in highways, the following procedures for handling planting requests have been developed:

Interstate and Other Controlled Access Highways

Planting by other than Division of Highways personnel on Interstate or Other Controlled-Access Highways is discouraged. These facilities are designed for high speed, unencumbered traffic movement and are usually fenced to prevent people, animals, or other impediments to traffic from entering the rights-of- way. The safety of highway users is paramount and considerable traffic devices are required when work is being done within these right-of-way.

In those instances where planting is desired by other than Division of Highways personnel, the requesting party should arrange a conference with the Area Roadside Environmental Engineer who will explain Division of Highways criteria for sight distances, recovery areas, and minimum setback distances. Following this explanation, the requesting party must prepare a detailed planting plan (to scale) describing the various species of plants to be used and the proposed locations of plants. The plan is to be submitted to the Division Engineer.

Other State System Right-of-Way

The attached Guidelines for Tree, Shrub, and Groundcover Planting on Highway Right-of-Way Other than Controlled-Access or Interstate are to be followed.

Upon receipt of a request for planting, accompanied by a plan and typical cross section, the Division Engineer or his representative, in conjunction with the Area Roadside Environmental Engineer, will make an on-site investigation of the proposed planting. If the planting proposal does not conform with the attached guidelines, the request may be denied by the Division Engineer. If the proposed planting is in conformity with the guidelines, the Division Engineer will issue a letter-type permit for planting with a copy of such permit (together with a plan and typical cross section) to the State Roadside Environmental Engineer.

Before any action will be taken on a request for a permit for planting within a municipality, the request must have the approval of the governing body since the planting permit will be issued to the municipality. Request for planting outside municipalities will be considered using the attached guidelines and permits for planting will be issued to the party requesting the permit.

Standard conditions to be enumerated in planting permits are:

- 1. In the event these plants require relocation or removal for highway construction, reconstruction, maintenance or safety, such removal or relocation will be done immediately by the (municipality/civic group/individual) upon notification by the Division of Highways, entirely at the expense of the permitee.
- 2. The Division of Highways will not be responsible for any damage to the planting which may be done by third parties.
- 3. Maintenance of the plantings will be the responsibility of (Division of Highways/permitee).

Other conditions as determined by the Division Engineer and Area Roadside Environmental Engineer which are peculiar to the specific planting proposal will be enumerated along with the standard conditions above.

The Roadside Environmental Unit in Raleigh may be consulted regarding any planting proposal which the Division Engineer and Area Roadside Environmental Engineer determine has merit but which does not conform with standards as previously described due to extenuating circumstances.

Three methods by which planting request may be approved are:

- 1. A planting permit can be issued to allow planting and maintenance of the planting by the permitee;
- 2. The permitee can furnish funds for the plant materials with highway landscape forces doing the planting and assuming maintenance of the planting:
- 3. The Division of Highways can assume the project entirely, bearing the cost of plant materials as well as doing the planting and plant maintenance. (These planting projects will normally be included in the Transportation Improvement Program with funding being approved by the Board of Transportation.)

The Division Engineer must determine the ability of Division Roadside Environmental forces to assume the additional maintenance of planting required before entering an agreement as described in number 2, preceding.

Roadside Environmental Unit personnel may assist requesting parties in the development of proposals for planting on highway right-of-way, as <u>workloads permit!</u> The North Carolina Division of Forest Resources, Urban Forestry Section, may be called upon by municipalities and civic organizations for assistance in planting proposals on city streets and other areas which are not a part of the State Highway System.

Planting Encroachment on NCDOT R/W

- I. Requesting party obtains approval of municipality (Only if the R/W is within a municipality)
- II. Conference with Area Roadside Environmental Engineer
- III. Explanation of Criteria to party by Area Roadside Environmental Engineer
 - A. Sight Distance
 - B. Recovery areas
 - C. Safety setbacks
- IV. Requesting party submits planting plan to Division Engineer
 - A. Scaled drawing
 - B. Plant list
 - C. Location of plants

Permitting Process

- I. Division Engineer requests investigation by Division Roadside Environmental Engineer an Area Roadside Environmental Engineer as appropriate
- II. Division Engineer either denies request or
- III. Division Engineer approves request and issues letter-type permit
 - A. Permit to municipality if within municipality
 - B. Permit to party if not in municipality
- IV. Copy of permit to State Roadside Environmental Engineer

GUIDELINES FOR TREE, SHRUB AND GROUNDCOVER PLANTING ON HIGHWAY RIGHTS-OF-WAY OTHER THAN CONTROLLED ACCESS OR INTERSTATE

The following guidelines for tree, shrub and groundcover planting apply to those State Highway System highways and streets with posted speed limits as indicated below. Planting that involves exceptions to these criteria will be considered on an individual basis.

Distance from Travel Lane

The following are minimum distances from the curb or the edge of travel lanes for new plantings. Where existing tree distances outside curbs or edges of travel lanes have been established, replacement trees may be allowed to conform with established set-back distances.

35 Miles Per Hour or Less

Curb and Gutter Section

Large trees 10'
Small trees or large shrubs 5'

Small shrubs 1' to foliage line

Shoulder and Ditch Section

Large trees 12'
Small trees or large shrubs 8'

Small shrubs 6' to foliage line

Over 35 Miles Per Hour Through 45 Miles Per Hour

Curb and Gutter Section

Large trees 15'
Small trees or large shrubs 8'

Small shrubs 6' to foliage line

Shoulder and Ditch Section

Large trees 20' Small trees or large shrubs 10'

Small shrubs 8' to foliage line

Greater Than 45 Miles Per Hour

Curb and Gutter Section

Large trees 25' Small trees or large shrubs 20'

Small shrubs 10' to foliage line

Shoulder and Ditch Section

Large trees 30' Small trees or large shrubs 20'

Small shrubs 15' to foliage line

Vertical Clearance

A minimum clearance of 16 ft. above the entire pavement width must be maintained at all times, and also a minimum clearance of 7 ft. above a sidewalk or pedestrian space.

Sight Distances

Shrubs must be kept low, and trees and large shrubs under-trimmed sufficiently to permit clear sight in the area between 2 feet and 6 feet above roadway elevations. Due to widely varying conditions of topography, highway alignment and grade, type and volume of vehicular and pedestrian traffic, necessary sight distances longitudinally along the highway and in excess of the lateral minimum described above must be individual site determinations.

Selection of Plants

Tall-growing trees should not be selected for planting beneath utility lines and widespreading trees should not be used unless there is sufficient width of planting area to accommodate them without continued severe pruning.

Small trees and large shrubs should be used which are adaptable to undertrimming without destroying their desired normal appearance. Only low-growing shrubs are to be used in medians and close to the edge of shoulders to avoid need for continued severe pruning. In some locations, all shrubs should be omitted, but this must be an individual site determination.

In curb and gutter areas, groundcover is permissible between curb and shrubs to avoid a narrow mowing strip.

Pavement Removal

When pavement remains beneath traffic channelization islands, such pavement may not be broken or removed without written permission.

Effect on Mowing and Drainage

Trees should be placed sufficiently far apart, and shrubs should be grouped in beds and mulched in a shape that will facilitate mower operation and avoid excessive mower maneuvering or hand trimming. Plantings are to be minimum of 2 feet behind ditch line in cut sections and 2 feet outside shoulder break in fill sections, or the minimum distance from edge of travel lanes as stated in breakdown of speed limits as shown on Typical Sections, whichever is the greater.

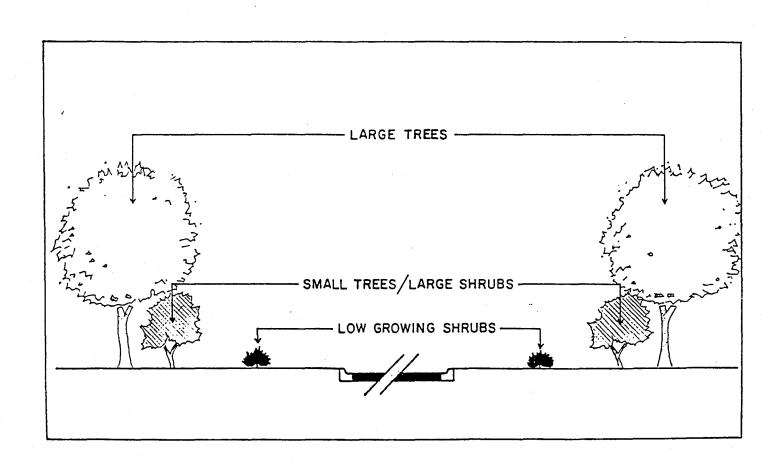
Traffic Operation and Safety

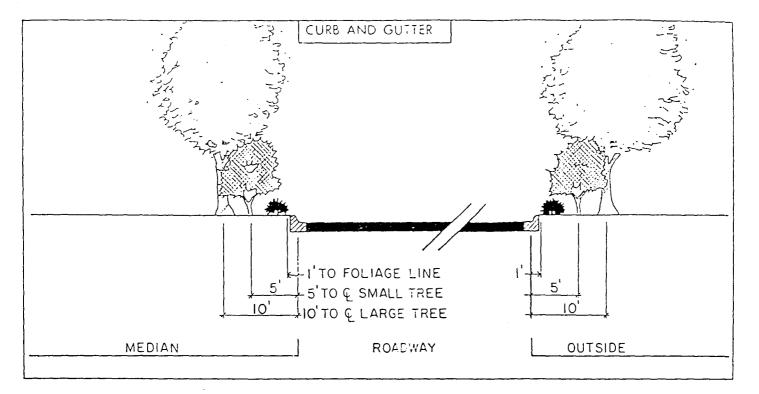
All plantings are to be maintained in a condition which will not interfere with nor endanger either vehicular or pedestrian traffic.

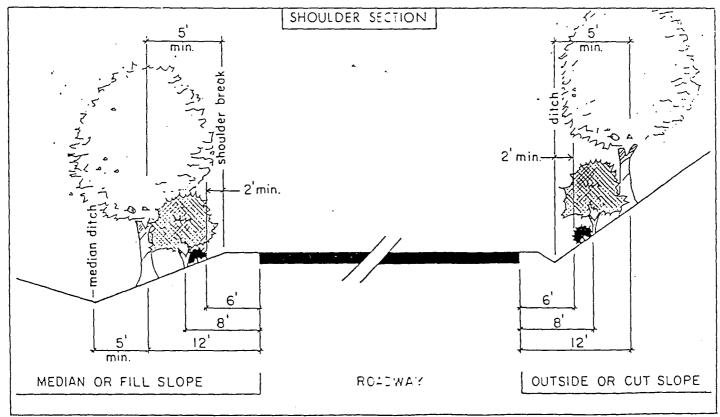
TYPICAL SECTIONS

FOR VARIOUS POSTED SPEED LIMITS

MINIMUM DISTANCES



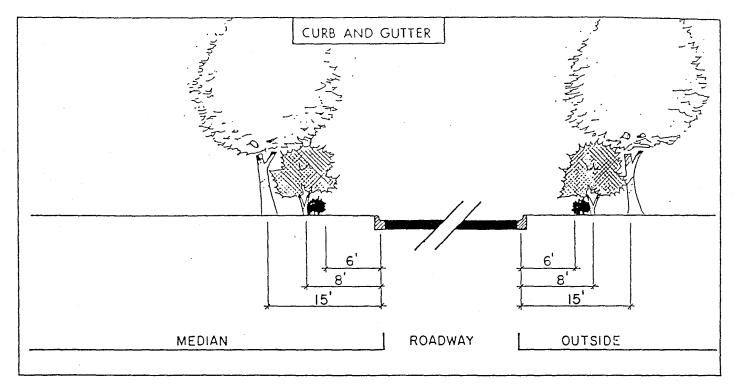


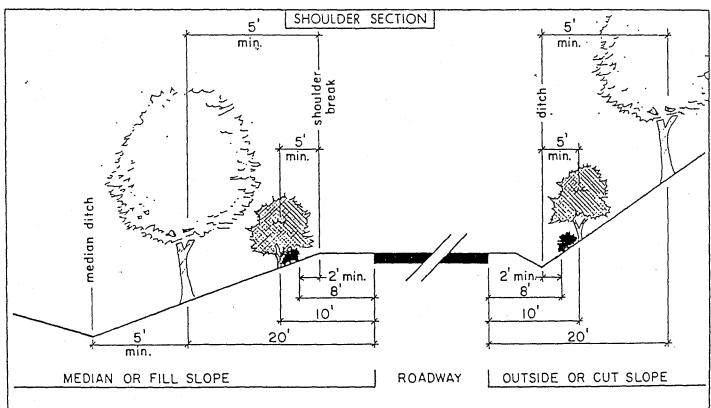


NOTES

- MEDIAN MUST BE AT LEAST 30' WIDE BEFORE LARGE TREES MAY BE PLANTED
- PAVEMENT WIDTH MAY VARY
- WHEN WIDTH OF SHOULDERS & DITCHES DO NOT COMFORM WITH THESE TYPICAL SECTIONS, THE 2 MINIMUM DISTANCE BEHIND THE DITCH & 2 MINIMUM DISTANCE OUTSIDE THE SHOULDER BREAK SHALL GOVERN.

GREATER THAN 35 MPH THROUGH 45 MPH

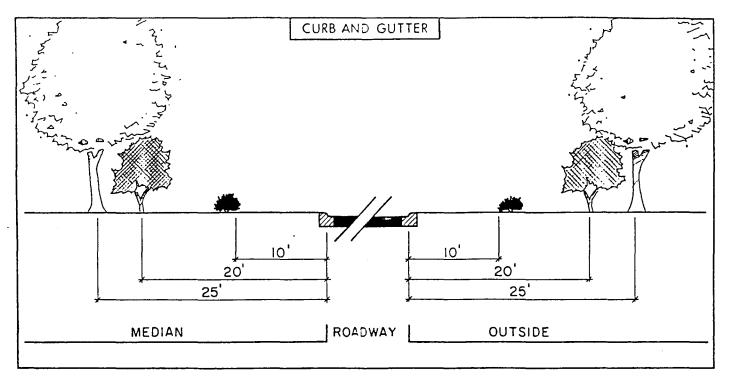


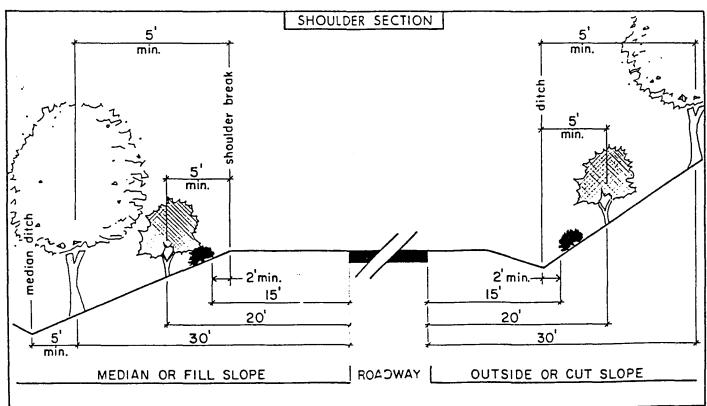


NOTES

- MEDIAN MUST BE AT LEAST 44' WIDE BEFORE LARGE TREES MAY BE PLANTED
- PAVEMENT WIDTH MAY VARY
- -WHEN WIDTH OF SHOULDERS & DITCHES DO NOT CONFORM WITH THESE TYPICAL SECTIONS, THE 2' MINIMUM DISTANCE OUTSIDE THE SHOULDER BREAK & 2' MINIMUM DISTANCE BEHIND THE DITCH SHALL GOVERN.

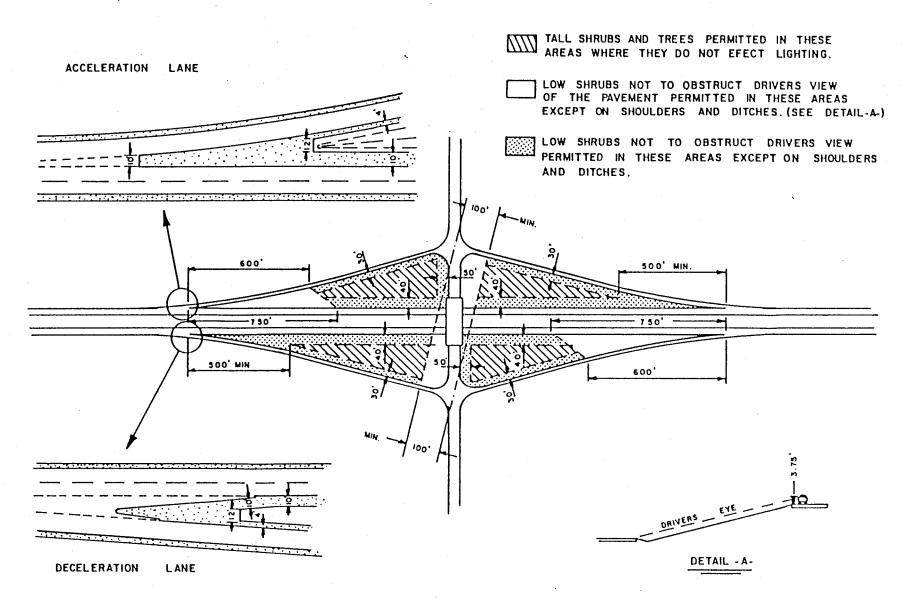
GREATER THAN 45 MPH





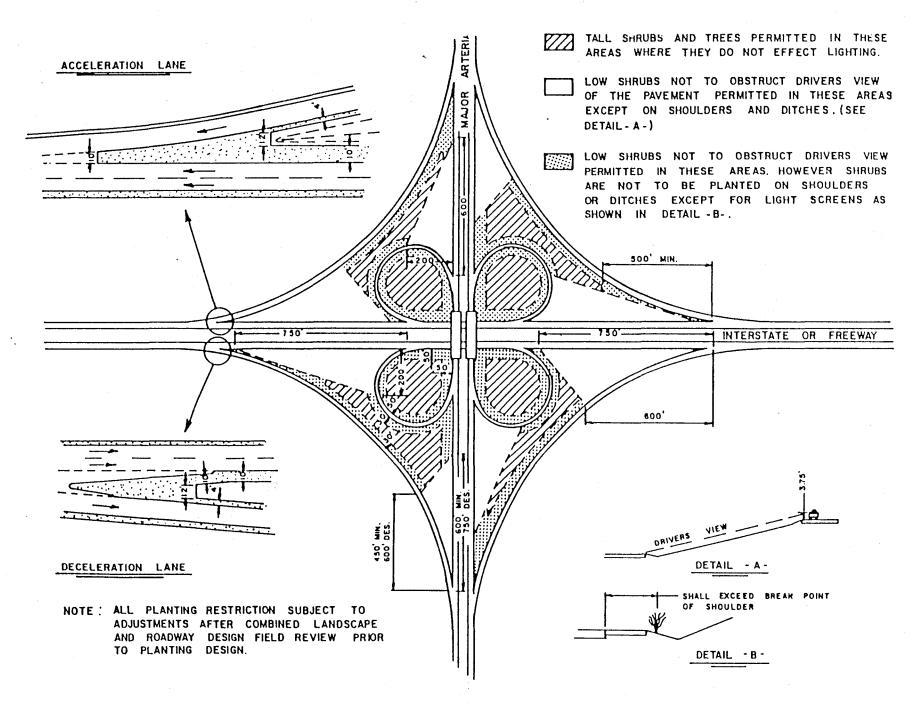
NOTES

- MEDIAN MUST BE AT LEAST 60' WIDE BEFORE LARGE TREES MAY BE PLANTED
- PAVEMENT WIDTH MAY VARY
- WHEN WIDTH OF SHOULDERS & DITCHES DO NOT CONFORM WITH THESE TYPICAL SECTIONS, THE 2' MINIMUM DISTANCE BEHIND THE DITCH & 2' MINIMUM DISTANCE OUTSIDE THE SHOULDER BREAK SHALL GOVERN.



NOTE: ALL PLANTING RESTRICTION SUBJECT TO
ADJUSTMENTS AFTER COMBINED LANDSCAPE
AND ROADWAY DESIGN FIELD REVIEW PRIOR
TO PLANTING DESIGN.

GUIDE FOR LANDSCAPE PLANTING AT DIAMOND INTERCHANGES



GUIDE FOR LANDSCAPE PLANTING AT CLOVERLEAF INTERCHANGES

PLANTING SUGGESTIONS

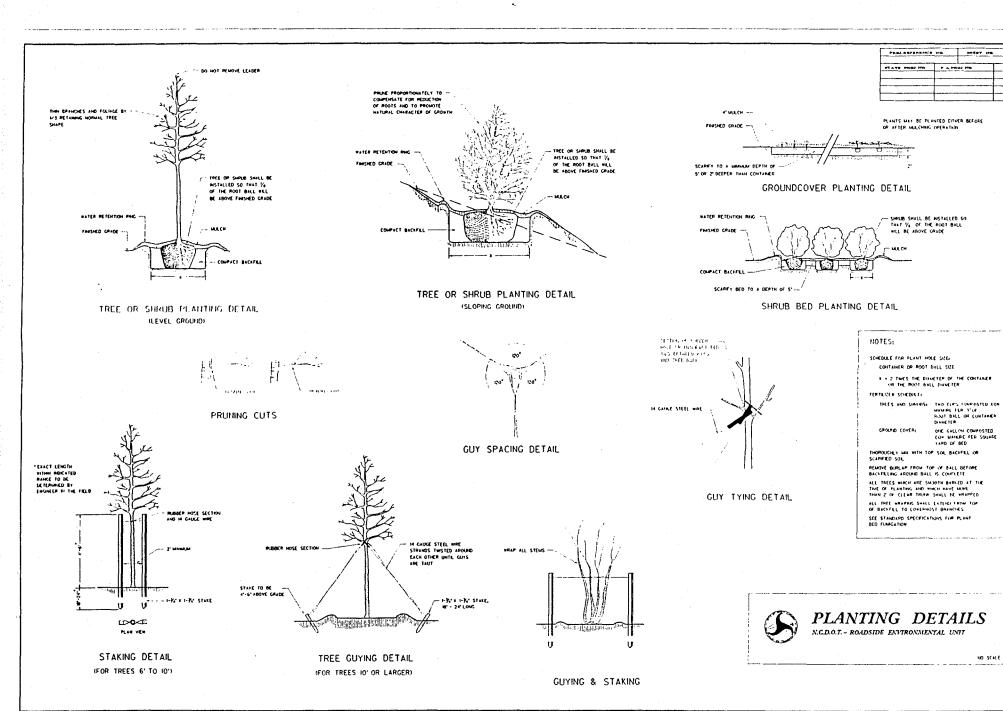
Plants should be planted in their permanent location immediately upon receipt or should be adequately protected until planted. It is not necessary to remove the burlap but the strings from around the stem of the plant must be removed and the burlap should be folded from the top of the ball after the plant is in the hole. The soil around the plant should be tamped to remove air pockets. Mulching, to help retain moisture is mandatory and should not contain substances which would inhibit normal development and growth of plants.

Trees which have heavy tops or which are over six feet in height should be staked or guyed to prevent winds from loosening the roots. (See details following.)

All plants should be soaked thoroughly with water at planting time and once a week (unless soaking rains occur) thereafter during the first growing season. Keep the plant watered.

Deciduous shrubs should be cut back to between one-half and one-third their original size.

Evergreens usually need only light pruning and shaping after transplanting, if any. The central leader of trees should not be removed.



PLANT LISTS

The following pages contain lists of plants, in several categories, which have proven to be suitable and adaptable for highway plantings.

Highway roadsides are, typically, somewhat hostile environments for plant establishment and development. Subsoils are generally encountered and these contain minimal plant nutrients; water for highway plants depends totally upon rainfall since there is limited opportunity for irrigation; and automobile emissions are detrimental to many plant species. Selection of appropriate plant material which will survive in the roadside environment is the most important element in undertaking a highway planting project.

The following list of plants are typically used in highway plantings. These are suggested plants which my be considered in planting design.

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REMARKS	Denne Globose head	Native tone, Red fall color	Conical to mund head, Omnge color	Lacy texture, White pealing bark	Makive tree, Wet arras	White poeling barks, Pendulans branches	Irmo growth; Wet amos w/ good drainage	Gray shaggy bark; White ruth	First growing, Yellaw fall color	Smooth light-gray bork	Yen, slaw growing; lise male only	Mary Seat growing; Lacy foliage	Upright, semi-conicoly Madium density	Toxic roots; Course taxkum	Fast growing , Variable fall color	Yallaw fall color; Cylindeical hand	Course texture; Bok to med Curcumbers	Scaret fall color; Wat amas	Native trees White flowers	Gray-white barks Large broad hand.	Native true i Coarsa testura	Dansa mundad head	Dansa, broad head, Red fall color	Open, munded heads Scarlet fell color	Irregular beads Fine texture	Romaidal heads Drooping branches	Conical to rounded boad; Mary fine testure	Brodulaus branches; Wet arras	Randed head: Coarse testura	Seathery foliage: Russet fall color	Good substitute for Elmy follow: wood color		
HEIGHT	,08	120′	120,	,09	.06	,03	,000	120,	120,	,06	120,	135'	, 551	150,	125'	120,	90.	,06	75,	20,	,001	,8	75.	75'	,5L	.51	,05	30,	, 8	,051	,06		
A.5.N.5.	1.1.5.1	1.6.1.1	1.1.5.1,	1.1.5.1	1,1.3.1	1.6.1.1	1.5.1	1.1.5.2	1.1.5.1	1.1.3.2	1.1.5.2	1.1.3.1	1.2.1.1	1.1.5.2	1.1.5.2	1.1.5.1	1.1.5.3	1.1.3.2	1.1.5.3	1.6.11	1.1.5.1	1.1.5.2	1.1.5.1	1.1.3.1	1.1.5.1	1.1.5.1	1.1.5.1	1.1.5.1	1.1.3.1	1.5.2	1,1.8.2		
×																								•			.	-					
J.	12-14:2:24	12-14'12-24'	12-14:2-2%	10-12, 14-2"	10-12,118-2	B-10'114-14" 10-12'114-2"	12-14:2-2%	8-10;14-14.	12-14:2-24"	12-14', 2:2%	6.8′	12-14:12:2%	12-14', 2-2%"	12-14:2-24"	14-16-13-54	14:1613-54	G-B'	B-10',14-14	B-10',114-1'4	12:14,12:24	14:16:2:34.	12.H, 2-24.	12.14:12.2%	12-14'12-2%	12.14', 2.2%"	12-H,12.2%	12.14,12.2%	12-14,2-2%	12-14,12-24"	,8.9	12-14, 2-24		
۵	10-12: 14-2"	10-12,114-2	10-12,18-2	8-10'114-14- 10-12'114-2"	8-10':15-14" 10-12',14-2"	B-10'.14-14"	10-12,114-2	5-6'	10-12:14-2	D.12/114-2	5-6'	10-12 11 - 2	10-12,114-2	10-12',14.2"	14-14 12-14'12-24"	12-14,12-24	5-6'	56	5.6	10:12:115:2	12-14:2-24"	10-12'11"-2"	14-14- 10-12', 14-2"	10-12,114.2	10-12:114-2	10-12/14-2	10-12,1%-2	10-12,14-2	14-14- 10-12,114-2	5.6	10-12/14-2		
ъ	B-10's 14-1's"	8-10,114-14	8-10,114-14	68:4-1	.1-41,8-5	.1-%1.8-9	8-10,114-14	4.5	8-10;18-14	B:10'11'	4-5	8-10.11g	B-10-11-11	8-10'11%-11%	\$1-\$15O-B	B:10'11%-1%	4-5	4.5	4.5	B:10'119:15	B.O.I.S.IN.	B-10;14-14	B-10,114-14.	8.10,114.14	8.10'114-14"	8-10'114-14 10-12'114-2	B-10',14-14" 10-12',14-2"	8-10,14-14 10-12,14-2	8-10,714-14	4-5	8-10,118-14		
	NORWAY MAPLE	RED MAPLE	SUGAR MAPLE	CUTLEAF WEEPING BURCH *	RIVER BIRCH	EUROPEAN, WHITE, BIRCH	PECAN	SHAGBARK HICKORY	WHITE ASH	AMERICAN DEECH	GINKGO	THORNIESS HONEYLOCUST	COMMON HONEYLOCUST	EASTERN BLACK WALNUT	AMERICAN SWEETGUM	TuneTeck	CUCUMBERTREE MIGNOLIA	BLACK GUM	Sourwoon	WHITE POPLAR	SYCAMORE	WHITE DAK	NORTHERN RED OAK	SCAPLET DAK	WATER OAK	PIN OAK	WILLOW OAK	BABYLON WEEPING WILLOW	AMERICAN LINDEN	COMBON BAIDCYPRESS	LIAPANESE ZELKOVA		
	AP ACER PLATANOIDES	AR ACER RUDRUM	AS ACER SACCHARUM	PG BETULA PENDULA GPACILIS" CUMEAE WEEPING BIRCH	BN RETULA NIGRA	BP BETULA PENDULA	CT CARYA TILLINDENSIS	CO CARYA OVATA	FA FRAXINUS AMERICANA	EG FAQUS GRANDIFOLIA	GB GINKGO BILOBA	GI GLEDITSIA TRIACANTHOS INERMIS	GI GLERITSIA TRIACANTHOS	JN JUGIANS NIGRA	LS LIQUIDAMBAR STYRACIELUA	LT LIBIODENDRON TULIFIEERA	MA MAGNOLIA ACUMINATA	NS NYSSA SYLVATICA	OA OXYDENDRON ARBOREUM		PO PLATANUS OCCIDENTALIS	OA QUERCUS ALDA	OB QUERCUS RUCKA	OC QUERCUS COCCINEA	ON QUERCUS NIGRA	OP QUERCUS PAUSTRIS	CW QUERCUS PHELLOS	SA SALIK BABYLONICA	IA TILLA AMERICANA	Тр ТАХОВІЦМ ВІЗТІСНИМ	ZS ZELKOYA SERRATA		a secondorar prost

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AF ABIES FRASERI	FRASER BAISAM EIR	3-4,	4.5	5.6		\$1.2.4	,55	Maist, cool slapes above 1000	
CD CEDRUS DECOMARA	DECODAR CEDAR	14.6	45	5.6.		5.1.2.4	,081	Gray-green pendulous branches	
TO TLEX OPACA	AMERICAN HOLLY	3-4	4-5.	5.6'		4.1.3.5	45'	Rymmidal, Red berries	
JY JUNIPERUS VIRSINIANA	EASTERN REDCEDAR	ż	4-5	.9-5		5.1.2.4	,00	Dense, pymmidal, Shradding, bark	
MG MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	3.4	5.6	8-10'		4.1.5.5	.8	Denne, pyramidal, Large langes & flowers	
PA PINUS THUNBERGIANA	JAPANESE BLACK PINE	2.5	, † ,	4.5		\$.1.2.4	,06	Dark-green folioges Coastal areas	
PE PINUS ECHINATA	SHORTLEAF PINE	3-4	4-5	5.6		2.1.2.4	.œ	Dark blue-green falsages Brand overd hand	
PT PICEA PUNGENS	COLORADO SPRUCE	3.4	4.5	5.6		5.1.2.4	,00	Blice-green frainger Stiff needles	
PT PINUS TAEDA	IDDIDILY PINE	3.4	4.5	5.4		5.1.2.4	æ.	Rounded head; Rapid grower; Sun to part shake	
Py PINUS SYLVESTRIS	SCOTCH PINE	*	4-5.	9		4.2.1.4	75′	Blucgman foliage	
Pw PINUS STROBUS	WHITE PINE	3.4	4.5'	5.6'		4.2.1.8	125'	Sounded or pyramidal babit; Soft-green	
PZ PINUS PALUSTRIS	LONGLEAF PINE	34	4-5	5-6'		3.1.Z.A	,06	Coarse, rounded head	
OV QUERCUS YIRGINIANA	LIVE OAK	GB': 4-1"	B-10'11'4-1'4"	0.12,11.2		1.1.5.2	,09	Proad, rounded head; Eve. texture	
TC TSUGA CAROLINIANA	CAROLINA HEMLOCK	34	4.5	5.6'		5.1.2.4	, 52	Compact, promistal habit; Dk. green	
TN TSUGA CANADENERS	CANADA HEMLOCK	3.4	4-5'	5.6		3.12.4	,06	Sknder, heiserbl branching	
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EVERGREEN SHRUBS

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AD_	AUCUBA JAPONICA MACULATA	GOLDDUST AUGUBA	*		23-3	5-1'			4.1.5.4	15'	Requires shade; Vanegated leaves
AG	ABELIA GRANDIFLORA	GLOSSY ABELIA	-		3-4'	4-5'			4.1.3.4	5'	Pink flower clusters; Danses Hardy
BJ	BERBERIS JULIANAE	WINTERGREEN BARBERRY			3-4'	4-5'			4.1.3.4	6.	Yellow flower clusters; Very dense
շս_	CLEYERA JAPONICA	CLEYERA			24.3	3-4'			4.1.3.4	9'	Red-bronze to green; White flowers
C.5_	CAMELLIA SASANGUA YAR.	SASANQUA CAMELLIA		24.3	3-4'	4:5'			4.1.8.5	20'	White to pink flowers; Full blooms
EK_	ELONYMUS KIAUTECHOYICUS	SPREADING ELIONYMUS		21.5	3-4'	4.5'			4.1.5.4	9'	Hardys Pink-red capeules
E P	ELAEAGHUS PUNGENS FRUITLANDI	FRUITLAND ELAEAGNUS			5-4'	4-5'			4,1,3,4	12'	Thornless Good for rural & urban
. Y	EUONYMUS FORTUNEL	WINTERCREEPER EUONYMUS			24 pot				6.6	4′	Dark green w/white yeins; Semi-shrut
IB_	ILEX CORNUTA BURFORDIL	BURFORD HOLLY		3-4	4:5'	5-6'			4,1.5.4	15'	Dark green folioge: Globose
C	ILEX CORNUTA ROTUNDA	DWARE CHINESE HOLLY	*	12-15	15-18"	18-24"			4.1.5.5	. 3'	Rounded, compact growth
G	ILEX GLABRA	INKBERRY	*	3-4'	4-5'	5-6'			4.1.5.4	9,	Myrtle-like foliage; Wet areas
Н	ILEX CRENATA HELLERI	HELLER'S LIAPANESE HOLLY	•	12-15*	15-18"	18-24"			4,1.5,1	3.	Globose & compact; Dark green
. Н	ILEX YOMITORIA HANA	DWARE YAUPON	3	12-15	15-18"	18:24*			4.1.34	3′	Globose & compact; Grey stems
V	ILEX VOMITORIA	YAUPON HOLLY		5-4'	4-5'	5-6			4.1.5.3	24'	Red barriess Good for dry areas
<u>.D</u> _	JUHIPERUS CHINEHEAS PEUT COMBICTA	COMPACT PEITZER JUNIPER		12:15	15-16	18-24			5.1.2.2	3'	Dense & compact : Grey: green tologe
IP_	JUNIPERIS CHINENSIS PATZERIANA	PEITZER JUNIPER	匚	J8-24°	24-50	3-4'			5.1.2.2	10'	Broad & flat-topped; Good for urban
KL_	KALMIA LATIFOLIA	MOUNTAINLAUREL		3-4'	4:5'	5.6			4.1.3.4	30'	Pink to white flower clusters; Acid so
LJ	LIGUSTRUM JAPOHICUM	JAPANESE PRIVET		24-30	5-4'	4.5			4.1.3.4	12'	Glassy foliage: Black berries
LL -	LIGUSTRUM LUCIDUM	GLOSSY PRIVET	-	3:1	1.5	5.6'			1.4,03,4		True-type habit 1 Dark green may fo
16	MYRICA_CERIFERA	SOUTHERN WAXMYRTLE			4:5	5:6'			400 a. 0	3G <u>'</u>	Shrub or treat Willowy foliage
7L	MAHONIA BEALEL	LEATHERLEAE MAHONIA	 	21.50	24:5	3.3.			4.1 5.4	2	Dark blue:green folioge; Betial shade
MM.	MAHONIA AQUIFOLIUM	HOLLY MAHOHIA		24:50	24.3	3-5%			4.1.5.4	4'	Dk. green, Grape-like berries; Bronse-radi
_םא	NANDINA DOMESTICA	NANDINA	*.		24-3	3-34'			4-1-3-4	<u>8′</u>	White flower clusters: Rad berras; Scarlet co
<u> </u>	OSMANIBUS METEROPHYLLUS	HOLLY OSMANTHUS		24.3	3.54	34.4'		-	H.1.5.4		Dr. green holly-like folioge: Sun or part she
20.	PRUNUS CAROLINIANA	CAROLINA LAURELCHERRY	<u> </u>	3-4'	5.6	G-8'			4.1.5.5	25'	Dense habit w/glassy folioge: Shrub or t
PG	PHOTINIA GLABRA	JAPANESE PHOTINIA	_	3-4'	4-5'	5-6			4.1.3.4	8·	Glossy Johnson Young folinge is red
PR	PHOTINIA SERRULATA	CHINESE PHOTINIA	二	3-4'	4.5'	5.6'			4.1.5.4	36′	Young foliage is red; Well-drained are
 3c_	BHODODENDRON CAROLINIANUM	CAROLINA RHODODENDRON	 - -	23-5	3-4'	4-5'			4.1.3.4		White to rose flowers ; Compact & munded
RI_	RHODODENDRON INDICUM	INDICA AZALEA	*	18-24"	24-5	3-4			4.1.5.4	G'	Red to scarlet flowers; Hardy
RO_	RHODODENDRON OBTUSUM LIAP.	KURUME AZALEA	*	12-15	15-18"	18-24			4.1.5.2		White, rad, pink & salmon flowers; Red cok
RR _	RHODODENDRON HYBRIDA _	HYBRID RHODODENDRON		18-24	23.3	3-41			4.13.4	5'	Dk green lakege; Red to white Nowers; Slow
Rw.	RHODODENDRON CATAWRIENSE	CATAWBA RHODODENDRON	-	18-21	23-5'	3-4'			4.1,5.4	چ. د	Spreading habit: Profuse purple-white
yR.	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	4	24-50	23.5	3-3%			4.1.5.4		Easily wind-burned I Red or black berrie

EVERGREEN SHRUBS

SMALL or FLOWERING TREES

											
				a	Ь	c	×		Δ.5.N.5.	HEIGHT	REMARKS
-A	ACER PALMATUM	JAPANESE MAPLE	*	3-4	4-5'	5-6			1,1,5,4	20'	Green to red colors Moundlike heb
A.	ACER PALMATUM ATROPURFUREUM	BLOODLEAF JAPANESE MAPLE	*	3:4'	4-5'	5.6'			1.1.5.4	20′	Very hardy Derk red leaves in seaso
	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY		4-5	5-6'	6-B'			2.1.5.4	€0′	Ubright habit; Yellow to red full color
A	CARPINUS CAROLINIANA	AMERICAN HORNBEAM		6-8'; %	8-10', 1"	10-12'; 14"			1.1.5.5	36	Multi-stemmed; Gray bark; Yellow to r
باعد	CERCIS CANADENSIS	EASTERN REDBUD		4-5'	5-6'	6-8			1.1.5.5	36'	Flat-topieres growth; Pink flowers
F	CORNUS FLORIDA	FLOWERING DOGWOOD		4-5'	5-6'	<u>6-8'</u>			1.1.5.4	40°	White flowers: Scarlet fall color
P.	CRATAEGUS PHAENOPYRUM	WASHINGTON_HAWTHORNE		4-5'	5-6'	6:8'			1.1.9.5	30'	Columnar dense branching, Red barrie
W.	CHIOMANTHUS VIRGINICUS	WHITE FRINGETREE	*	4-5'	5.6	6:8'			2.1.5.5	30′	White feathery flowers: Yllow fall colo
P	COELREUTERIA PANICULATA	PANICLED GOLDENRAIN TREE		4-5'	5-6'	6-8°			1.1.5.1	30'	Yellow panished flowers; Flat-topped he
	AGERSTROEMIA INDICA	COMMON CRAPEMYRTLE		4-5'	5-6	G-8'			1.1.25.4	21'	White and or lovender flowers , Flaky be
18	MALUS BACCATA	SIBERIAN CRADAPPLE		4-5'_	5-6'	G:8'			1.1.3.5	50'	White flowers: Upright, normy head; Harr
IE J	MALUS 'KATHERINE'	KATHERINE CRABAPPLE		4-5'	5-6'	G-B'			1.1.5.5		Double white flowers; Red fruit
IE I	MALUS FLORIBUNDA	UAPANESE A OWERING CRAMPPLE		4.5	5-6'	6-B'			1.1.3.5		Deep pink to red flowers ; Rounded head
1H_1	MALUS 'HOPA'	HOPA CRABAPPLE		4-5'	5.6'	6-8'			1.1.5.5	• 30'	Rose flowers , New Foliage in marrian
10	MAGHOLIA SOULANGEANA	SAUCER MAGNOLIA		3-4	4:5'	5-6'			1.1.3.4	25'	White to purple flowers, Shrublike ete
1 _ Y	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA		2-3'	3-4	4-5'			1.1.5.4	eo,	White fragrant flowers Same-exempres
P 1	PRUNUS CERASIFERA	PURPLELEAF PLUM		4:5'	5-G'	6 - 8'			1.1.3.3	24'	Reddish-purple foliage : Pink flamers
<u>, u 1</u>	"ATROPURPUREA". "RUMUS SERRULATA KWANZAN"	KWANZAN CHERRY		4-5'	5-6'	6-8'.			1.1.5.5	20′	Upright, low: branched; Deep pink flows
· Y	PRUNUS YEDOENSIS	YOSHINO CHERRY		4-5'	5-6'	6.8′			1.1.5.5	48'	While to pink flowers; Flattopped, bight
u J	SORBUS AUCUPARIA	EUROPEAN MOUNTAINASH	*	4-5'	5-6'	G-B'			1.1.3.4	45'	White flowers; Red barries, Red fall edo
20 1	YRUS CALLERYANA BRADFORD	BRADFORD PEAR	_	4-5	5-6'	6 -8′			1.1.3,5	30 ′	White flowers; Breamidal habit; Bed faller
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DECIDUOUS SHRUBS

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			a	Ь	c	×	SOURCE	05N6.	HEIGHT	REMARKS
CL CHAENOMELES SPECIOSA	FLOWERING QUINCE	-	18-24"	24-30"	214-5'			2.1.5.4	Ġ.	Apple-like fruit: Red while omnge & salmon
CN CORNUS SERICEA	REDOSIER DOGWOOD	1		4-5'	5-6'			2.1.5.5	7,	Red twigs in winter; Good for moist areas
EA EUONYMUS ALATA	WINGED EUONYMUS	#	JB-24°	24-30"	24.5			2.1.5.5	9,	Harizontal branches Scarlet fell color
FI FORSYTHIA INTERMEDIA	BORDER FORSYTHIA			23.3	3-4'			2.1.5.4	- 9;	Yellow flowers: Upright & arching habit
HY HYPERICUM PATHLUM, HIDCOTE,	HENRY ST. JOHNSWORT	1	15-IA*	18-24"	24-30			6.1	3′	Yallaw flowers . hins-Oct . Semi-evergreen
LE LONICERA FRAGRANTISSIMA	WINTER HONEYSUCKLE	-		23-31	5-4'			2.1.5.4		White flowers; Red berries; Semi-everymen
MS MAGNOLIA STELLATA	STAR MAGNOLIA	=		4-5'	5-6'			1.1.5.4	20'	White to red flowers; Bronze-yellow color.
RG RHUS GLABRA	SMOOTH SUMAC	1	18-24"	24-30	3:4		COLLECTED	2.1.5.6	12.	Grasn flowerspikes to rad in fall; Scarlet
RH ROSA HYBRIDA	CLIMBING ROSE	*	No. 5	No. 2	No.1			5.5	40'(TE TEAINED)	Variable flower colors; Sun or part shade
SA SASSAFRAS ALBIDUM	COMMON SASSAFRAS	干	18-24*	21.50	3-4'		COLLECTED	1.1, 5.5	.eo.	Grows in poor soil Orange-scarlet color
ST SPIRAEA THUNBERGI	THUNBERG SPIREA			2*-5	5-4			2.1.5.4	5.	Feathery Faliage: Tiny white flawer clienters.
SV SPIRAEA VANHOUTTEL	VANHOUTTE SPIREA	+		24-5'	3-4'			2.1.3.4	1 6	White flower chaters; Bast of species
CS CYTISUS SCOPARIUS	SCOTTH DROOM		2-21/6'	2*-5	3-4'			2.1.5.4	(e)	Yellow pea-like flowers, green winter twigs
PIL RHUS COPALLINA	FLAMPLEAF SIME	-	1614.	2.5'	3-4			2.1.5.G	30	Geen flower spiles crimen fruit, scarlet
P.F. ROSA_BIMOSA	RUGO: A ROSE		No.2	No. I've					<u> </u>	pink to white ringle flowers; crange in untima
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[#] SECONDARY PLANT + A.M. N. S. - AMERICAN STANDARD FOR NURSERY STOCK

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REMARKS	Ok.gmen fologi Die Boers i Bet stode !	Bat growth; Rad barries, Rad fall color	Full sun or part shade a Batel blooms Dead one	Burgla-med folioge during fall & winter	Ok green to wine ; Inflow flowers, Smarshade	Evergreen, Black bernies	Frathery foliage, Ricole full color	Needle-like folinge, Good for sord	Blue color during winters Brostrate Inbit	While to yellow flowers Same avergreen	Digramila wooder blooms; Black berree; Shake	Blue-yidet flower clusters & Deciduous	White Prograst, profes Houtes	LANK DOWNER PRINCE.	Large luma-yellow floures	Acres and the Contract of the Parison	Color Maria																						
HEIGHT	4.	2%'	.ei	3.	20'(IE IRMHED)	90'(IE TRANED)	, 4 ,	12.	, o	15'(IE TENINED)	В.	25'(IE TRAINED)	o,	je,	3.	ja	9																						
A.5,N.6.	3	4.1.5.1	ç.s	9	-	3	5.1.2.1	5.1.2.1	5.1.2.1	9.	7.3	3	6.3				4																-						
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J	24. pat	3 pot	24. pot	2%. px	2yr Mal	24. pot	19-24	IB-24	IB-24,	4 pot	4° pot	2 priNa	2 yr. heary	2 FAN	2 FAN	1 411 71.6											.; .; 					-					Ĭ +		
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	CARPET BUGGE	ROCK COTONEASTER	CROWNVETCH	PURPLELEAE WINTERCREEPE	CAROLINAJESSAMINE	ENGLISH INY	ANDORRA CREEPING JUNIPER	SHORE JUNIPER	BLUE RUG JUNIPER	HALL'S JAPANESE HONEYSIKKLE	DIGDLUE LIRIOPE	CHINESE WISTERIA	SWREGAMINA CLEMATIS	TPWAY DAYLLY	YELLOW DRYLLY	NACH ICA ORGE																							
	AJ AJUGA REPTANS	CH COTONEASTER HORIZONTALIS	CV CORDINALA VARIA	EF EUGNYMUS FORT, VEG. COLORATA, PURPLELEAE, WINTERCREEPER,	GS GELSEMIUM SEMPERVIRENS	HH HEDERA HELIX	JA JUNIPERIS HORIZ PLUMOSA	JC JUNIPERUS CONFERIA	JW JUNIPERUS HORIZ WILTONII	LH LONICERA JARONICA HALLIANA	LM LIRIOPE MUSCARI	WS WIETERIA SINENSIS	Ch. CLEMATIS PROJUBLATA	HE HEMEROCALIS FILVA	HE HEMETOCKIES THUNKARIONIES YELLOW DAYLING	Box with High Louis	WOOD OF THE PARTY																						* SECOLODARY PLANT