City of Annapolis Street Tree Master Plan

July 1997

Department of Public Works
160 Duke of Gloucester St.
Annapolis, Maryland 21401

City of Annapolis Street Tree Master Plan

TABLE OF CONTENTS

City of Annapolis Street Tree Master Plan

PREFACE

The master plan which follows provides guidelines for the planting of trees both within the public rights of way and on private properties adjacent to the rights of way for designated streets within the City of Annapolis. Although the benefits of trees are generally acknowledged, it should be noted that the placement of trees within the urban environment creates a potential for conflicts with sidewalks, overhead utilities, and sight lines. To minimize the potential conflicts and to maximize the benefits of planting trees, a site specific planting plan and planting details should be prepared for each site by a qualified design professional.

The **Introduction** provides general information describing the project area and the intended goals for street tree planting. To find specific information regarding the species of trees recommended for a certain area, the section entitled **Tree Index** should be reviewed. The Tree Index provides recommendations for specific types of trees for individual streets within the study area. Species representing different sizes of trees are given for each area, recognizing that available space in which to plant trees varies from site to site.

The Tree Index should be studied in conjunction with the 'Drawings' section. This portion of the study provides information on where trees should be located in relation to the overhead utilities and/or the street curb. Typical cross sections which show the face of a building in relationship to the street curb have been provided. The distance between the face of the curb and the face of the architecture varies widely throughout the study area. In some instances, there is a relatively large area between the street and the building. In cases such as this, larger species of trees are recommended. Conversely, in some situations, there is a very limited amount of space in which to plant trees. In these areas, medium or small trees are recommended. The section drawings will provide guidelines on which size tree to plant, and where to plant it in regard to the street and the existing utilities.

INTRODUCTION

This master plan is a guideline for the forestation of the public rights of way and the properties adjacent to the rights of way for designated streets within the City of Annapolis. The recommendations of various types of planting styles, as well as individual tree species, are based upon the analysis of existing conditions within the project area, the study of the assets and limitations of individual tree species, and the development of a design philosophy which integrates ecological and aesthetic considerations.

PROJECT AREA DESCRIPTION

Primary and secondary thoroughfares throughout the City of Annapolis connect several types of land uses. For the purposes of this study, these zones have been described as either Urban (UR) , Commercial Corridor (CC), or as Suburban (SR). The locations of the various land use Types are shown on Drawing P-1, "Street Tree Planting Type." Tree planting recommendations are based upon the physical characteristics of each type of area, descriptions of which follow.

Urban

West Street from Church Circle to Taylor Avenue
Annapolis Street and Melvin Avenue in West Annapolis
Sixth Street and Chesapeake Avenue in Eastport

The areas described as Urban contain both commercial and residential uses. The commercial and office use along inner West Street from Church Circle to Taylor Avenue is characterized by the close relationship between the architecture and the street. The two to three story historic and modern buildings form an unbroken edge on each side of the street. Sidewalk width varies from 8' to 12'. Green Ash, Honey Locust and Callery Pears are planted in single species groups in tree pits of varying sizes. Above ground utility lines run on alternating sides of the street west of Calvert Street.

Annapolis Street and Melvin Avenue, in West Annapolis, and Sixth Street and Chesapeake Avenue, in Eastport, also fall in the urban category. The traditional grid street pattern and narrow building set-backs define these neighborhoods, which also contain residential and commercial uses. A variety of small, early 20th century to modern residences and scattered commercial uses are located in close proximity to the street. The buildings are closely spaced to each other and, although set backs vary, they tend to be narrow. Typically, sidewalks three feet wide are found adjacent to the curb. In many areas retaining walls at the edge of the sidewalk define the boundary of the right of way. Assorted species of trees including evergreens, small ornamentals and large deciduous trees have been randomly planted on private property. These trees, combined with volunteer deciduous trees create an irregular, open tree canopy.

Commercial Corridor

South River Road to Edgewood Road
West Street from Hudson to Taylor
Taylor Avenue between Rowe Boulevard and West Street

The tremendous growth from the post war period to the present greatly expanded the traditional edges of Annapolis. This rapid development has resulted in a network of heavily trafficked, broad thoroughfares lined with commercial uses. While the development pattern is mixed, the dominant influence is the automobile. The traditional close relationship between buildings and the street, present in the urban commercial area, has been abandoned. Parking lots

separate commercial and office buildings from the road. Light poles, utility poles, and commercial signage line curb edges, which are frequently interrupted by driveways. Forest Drive, from South River Road to Edgewood Road, and West Street from Hudson to Taylor, are major connector roads and fall into the commercial corridor category. Taylor Avenue has also been placed in this category, as it may become a major connector between Rowe Boulevard and West Street.

Trees along these roads are thin and scattered. While a variety of species have been introduced by developers in compliance with city regulations, as on Forest Drive, much of outer West Street is devoid of trees. The tree planting that exists tends to be sporadic. Trunk utility lines run down one, and in places, both sides of the road.

Taylor Avenue represents a slightly different situation, as it currently contains residential neighborhoods mixed with some commercial. A mixture of tree species can be found along this street.

Suburban

Secondary streets in residential areas

Many of the secondary thoroughfares are located in primarily residential communities. These neighborhoods are characterized by larger lots with generous front and side yards. The houses, which range in style from the post war period to new, contemporary style single family dwellings, are set further back from the road . While sidewalks exist in some communities, in other areas lawns abut the curvilinear roadways. Typically, each property is served by its own driveway.

Clusters of apartments and townhouses are scattered throughout this district. In general, these are set back from the road by open lawns or landscape buffers. Institutional lands, public parks and educational facilities provide pockets of forested open space in these areas.

Commercial uses exist here as well, and are typically separated from the street by a landscape buffer. A variety of native and introduced tree species are found. Small ornamentals, including Dogwoods, Cherries, and Pears, are common. Norway, Red and Silver Maples create a limited canopy. The Silver Maples and Honey Locusts on Hilltop Road are among the few systematic street tree plantings.

OBSERVATIONS

The following observations were drawn from the analysis of existing conditions:

1. There is very little unified street tree planting. The overhead canopy provided by existing trees is limited. The species, condition, spacing and locations of existing trees vary throughout the limits of the project.

2. Above ground utilities line one and often both sides of the roadway. These lines are strung from 18' to 35' above the ground and limit tree planting and species. Utilities placed underground will also impact the location of trees.

3. The typically narrow ROW is frequently located at the back side of the sidewalk. This necessitates that street trees be planted on private property. While it is the policy of the City of Annapolis to plant trees on private land, the approval, willingness, and cooperation of individual property owners is of paramount importance. As planting locations in these situations are determined by individual property holders, the development of a less rigid planting scheme is more practical

than a more rigid scheme.

4. A variety of neighborhood characters and uses suggests a series of design solutions rather than a single city wide approach.

STREET TREE PLANTING GOALS

The goal of this project is to provide recommendations for the types of new street trees in the City of Annapolis. This project assumes that each land use in this study would benefit from the addition of an overhead canopy of trees. The benefits of trees include improved air quality, reduced water pollution, lower air temperatures and reduced fuel consumption. Trees separate vehicular and pedestrian traffic as well as provide unity and visual rhythm to otherwise fragmented areas. The tree species selections chosen for the City of Annapolis are based upon a desire to select the largest tree which can be sustained in the given growing conditions. It should be noted that although the advantages of trees are well known, they also create potential conflict with utilities, sidewalks, structures, and vehicular circulation. For this reason, the specific planting design and the development of planting details to minimize the conflicts for each site should be provided by a qualified design professional.

Several elements are critical to the achievement of this goal and influence the final recommendations. These include the selection of appropriate species to establish a visual unity which enhances the character of the individual districts, and the selection of appropriate species to insure the development of an ecologically viable tree canopy.

Species diversity avoids the creation of a monocultural planting scheme which has proven disastrous in other urban plans. Variety reduces the instances and consequences of disease and insect infestation. In each of the three Types of planting schemes, introduction of numerous species, whether varying block by block, or by a more random pattern in the suburban areas, introduces needed variety into the streetscape.

GUIDELINES FOR TREE PLANTINGS

1. Where space is limited, plant medium trees in beds a minimum of 10' from the utility poles. Large trees should be planted where they can be located at least 15' from the utility poles.

2. Sufficient soil volume is necessary to support the selected tree. In areas where no planting beds exist, linear planting beds must be provided. The minimum opening should of a planting bed should be 5'x 10' with individual beds connected by a series of underground amended soil trenches. If sufficient soil (400 cubic feet per tree) cannot be provided, tree planting is not recommended, unless special planting details are provided.

3. Plant large canopy trees wherever possible. In more limited areas, plant medium or small trees.

4. The side streets which intersect these streets where new trees are planted should also be considered.In many instances, the side streets provide more space in which to plant and fewer conflicts with overhead utilities.

TREE INDEX

FORMAT OF STUDY

During the course of this study, streets were surveyed to compile existing condition information. Neighborhood character, architectural style, views, and visual sequences were noted. Commercial sign visibility and utility lines were taken into consideration, as were the existing soil and drainage conditions, the potential to create appropriate rooting space for new trees, and the condition of existing trees. The Street Tree Index (drawings T-1 through T-5,) lists specific trees for each street. The Plan drawings which follow illustrate conceptual planting schemes for each of the three types of neighborhoods.

Following the initial data gathering phase, typical street cross-sections, (see drawings S-1 through S-7), were produced to illustrate typical relationships between the street, sidewalk, and the buildings. These sections are general, and represent typical conditions found in one or more of the neighborhood types.

The Tree Index lists specific trees recommended for each street. Several choices of trees are listed, including large, medium, small, and fastigiate trees, as there are many instances where large trees are not the best choice. The Street Tree Index also references the appropriate cross section drawings which illustrate various types of planting. Descriptions of the various types of planting recommended for each type of neighborhood follow.

Urban

The addition of a single-species tree planting for various street within the urban area is recommended. This could include the addition of one species per block, or one new tree per several blocks, depending on conditions. The single tree scheme is slightly modified, however, where trees all of the same size will not do. Complementary medium or small trees have been called for in these instances. The extension of the street tree planting out toward the major commercial thoroughfares will serve to unify diverse and fragmented elements into a cohesive streetscape.

Sections S-1, S-2, S-3, S-4, and Section S-6 describe these areas. Large trees are recommended where they will not interfere with above ground utility poles. Medium trees, planted ten feet away from the utility poles, are recommended where larger trees might create conflict with the utilities . Medium trees are also recommended in areas where there is only eight feet of sidewalk from the the face of the curb to the face of the building. Where there is less than eight feet of space from the curb to the building, it is recommended that no trees be planted. Small trees are recommended where there is a narrow sidewalk and a minimum of five feet of planting bed can be provided.

Commercial Corridor

The goal for tree planting in this area is to relieve sight lines by providing an overhead canopy and providing a sense of visual rhythm. The planting of one species of large tree per block or several blocks (see the Street Tree Index) is recommended. As in the Urban area, trees will help to unify disparate elements of the streetscape. Sections S-2, S-6, and S-7 correspond to the Commercial Corridor.

Suburban

The suburban residential and commercial districts are areas of transition between the surrounding country side and the developed city. The architectural style, tree diversity, curvilinear road configuration and larger open spaces suggest a more informal natural approach to tree planting.The goal for tree planting in this area is to enhance the diverse canopy while reinforcing some of the intersections to provide character. A variety of primarily native tree species is recommended for these areas (see Mixed Species List), with a single species at the intersection of Hilltop and Spa Road, and the intersection of Tyler with Bay Ridge. Large canopy deciduous trees in less rigid groupings of three to five trees per species trees are recommended. Sections S-1, S-2, S-3, W-5, S-6, and S-7 relate to the suburban conditions.

PLAN DRAWINGS

An overview of the City is illustrated on P-1. The neighborhood types for each street, Urban, Commercial, or Suburban, are depicted on this plan. Drawings P-2, P-3, and P-4 illustrate conceptual planting schemes for an intersection in each of the three types of neighborhoods. These drawings show how new trees could be incorporated into the existing trees.

This report has suggested ideas for both the species and the location of trees within the City of Annapolis. It is hoped that individual property owners will be encouraged to plant their portion of the Street Tree Masterplan. Much research has been produced in the past ten years regarding the best ways to plant trees within the urban environment, a good portion of it by members of our own community. The opportunity to plant trees using this advanced technology enables the citizens of Annapolis to truly create a City of Trees.

Street Tree Index

Key
UR Urban
CC Commercial Corridor
SB Suburban

Street	Use	Large Tree	Medium Tree	Small Tree	Section	Ex. Trees
West Street						
Church Circle-Cathedral	UR		Gleditsia triacanthos inermis	Carpinus betulus	#3	Ashes,
Cathedral -Lafayette	UR		Gleditsia triacanthos inermis	Carpinus betulus - Hornbeam	#3, #4	Pears, Ashes
Lafayette-Colonial	UR	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre - Maple	#3, #4	Ashes, Honey Locusts
Colonial- Southgate	UR	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#3, #4	Pears, Honey Locusts
Southgate-Monticello	UR	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#3, #4	Pears
Monticello-Amos Garrett	UR	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#3, #4	Honey Locusts
Amos Garrett-Taylor	UR	Quercus phellos - Willow Oak		Carpinus betulus	#3	
Taylor-Brewer	CC	Quercus phellos		Carpinus betulus	#3	Maples, Oaks
Brewer-Woodlawn	CC	Quercus phellos		Carpinus betulus	#2, #6	Mixed Species
Woodlawn-Linden	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#2, #4	Mixed Species
Linden-Glen	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#2	Mixed Species
Glen-Locust	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#2	Mixed Species
Locust-N. Cherry Grove	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#2	Mixed Species
N. Cherry Grove-N. Southwood	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#2	Mixed Species
N. Southwood-Homeland	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#2	
Homeland-Admiral	CC	Quercus phellos		Carpinus betulus - Regent	#2	
Admiral-Chinquapin	CC	Quercus phellos		Carpinus betulus - Scholar	#4, #5	Norway Maples
Chinquapin-Lee	CC	Quercus phellos		Carpinus betulus - Tree	#6	Maples, Pears
Lee-Parole	CC	Quercus phellos		Carpinus betulus	#2	Mixed Species
Parole-Kirby	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#6	Mixed Species
Kirby-Hudson	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#2, #6	Mixed Species
Spa Rd.						
Forest-Hilltop	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#7	Mixed Species
Hilltop-Silopanna	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#5,#6, #7	Mixed Species
Silopanna-Central	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2,#5,#6,#7	Mixed Species
Central-Taylor	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1, #2, #7	Mixed Species
Taylor-West	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1, #3	Mixed Species
Chinquapin						
West-Virginia	CC	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#1,#2	Cherries, Pears
Virginia-George	CC	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#4, #5	Cherries, Pears
George-Forest	CC	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#1,#2, #5	Mixed Species

Street Tree Index

Street	Use	Large Tree	Medium Tree	Small Tree	Section	Ex. Trees
Taylor						
Rowe-Melrose	CC	Quercus phellos		Carpinus betulus	#5,#7	Mixed Species
Melrose-Cedar Park	CC	Quercus phellos		Carpinus betulus	#2,#7	Mixed Species
Cedar Park-Police Station	CC	Quercus phellos		Carpinus betulus	#5, #7	Mixed Species
Police Station-West Street	CC	Quercus phellos		Carpinus betulus	#2	Mixed Species
West-Spa	CC	Quercus phellos		Carpinus betulus	#2, #6,	Mixed Species
Tyler						
Bay Ridge-President	SB	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2	Mixed Species
President-Hilltop	SB	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2	Mixed Species
Hilltop Lane						
Forest-Spa	SB	Quercus phellos		Carpinus betulus	#2,#7	Mixed Species
Spa-Farragut	SB	Quercus phellos		Carpinus betulus	#2, #5,#7	Mixed Species
Farragut-Gemini	SB	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2, #7	Mixed Species
Gemini-Youngs Farm	SB	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2, #7	Honey Locusts, Mixed
Youngs Farm- Edelmar	SB	Quercus phellos		Carpinus betulus	#2, #7	Honey Locusts, Mixed
Edelmar-Primrose	SB	Quercus phellos		Carpinus betulus	#2, #7	Mixed Species
Primrose-Tyler	SB	Quercus phellos		Carpinus betulus	#2,#7	Mixed Species
Bay Ridge						
Sixth-Burnside	UR	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2	Mixed Species
Burnside-State	UR	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#1, #2	Mixed Species
State- Washington	UR	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#1, #2	Mixed Species
Washington-Adams	UR	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2	Mixed Species
Adams-Chesapeake	UR	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2	Mixed Species
Chesapeake-Madison	UR	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#1, #2	Mixed Species
Madison-Monroe	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1, #2	Mixed Species
Monroe-Jackson	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1, #2	Mixed Species
Jackson-Van Buren	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1, #2	Mixed Species

Street Tree Index

Street	Use	Large Tree	Medium Tree	Small Tree	Section	Ex. Trees
Bay Ridge						
Van-Buren-Tyler	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1, #2	Mixed Species
Tyler-Janice	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1, #2	Mixed Species
Janice- Warren	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1, #2	Mixed Species
Warren-Timber Creek	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2, #6	Mixed Species
Timber Creek-Victor P.way	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2	Mixed Species
V. Parkway-Forest Hills	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2	Mixed Species
Forest Hills-Bens	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2	Mixed Species
Bens-Forest Drive	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2	Mixed Species
Chesapeake Avenue						
Sixth-Burnside	UR	Quercus phellos		Carpinus betulus	#1, #2	Mixed Species
Burnside-State	UR	Quercus phellos		Carpinus betulus	#1, #2	Mixed Species
State-Washington	UR	Quercus phellos		Carpinus betulus	#1, #2	Mixed Species
Washington-Bay Ridge	UR	Quercus phellos		Carpinus betulus	#1, #3	Mixed Species
Forest Drive						
Edgewood-Bay Ridge	CC	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#6	Mixed Species
Bay Ridge-Thom	CC	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#7	Mixed Species
Thom-Annapolis Neck	CC	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#2, #6	Mixed Species
A.Neck-Tyler	CC	Zelkova serrata 'Village Green'	Acer rubrum 'Armstrong'	Acer campestre	#2, #6	Mixed Species
Tyler-Rosecrest	CC				#2, #7	Mixed Species
Rosecrest-Old Forest	CC		Sophora japonica 'Regent' - Scholar Tree	Sophora jap.'Regent' (pruned as nec.)	#6	Mixed Species
Old Forest-Spa	CC		Sophora japonica 'Regent'	Sophora jap.'Regent' (pruned as nec.)	#2	Mixed Species
Spa-Hilltop	CC	Quercus acutissima - Sawtooth Oak		Carpinus betulus - Hornbeam	#2, #6	Mixed Species
Hilltop-Cherry Grove	CC	Quercus acutissima		Carpinus betulus	#6	Mixed Species
Cherry Grove-Lincoln	CC	Quercus acutissima		Carpinus betulus	#7	Mixed Species
Lincoln-Chinquapin	CC	Platanus acerifolia 'Bloodgood'	Acer rubrum 'Armstrong'	Acer campestre	#6	Mixed Species
Chinquapin-Solomon's Island	CC	Platanus acerifolia 'Bloodgood'	Acer rubrum 'Armstrong'	Acer campestre	#2, #6	Mixed Species
					#2, #6	Mixed Species
Secondary Roads						
South River Rd.		Quercus phellos		Carpinus betulus	#1, #7	Mixed Species
Admiral Dr.	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1,#3	Mixed Species
Poplar Ave.	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#7	Mixed Species
Windell Ave.	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#7,	Mixed Species

Street Tree Index

Street	Use	Large Tree	Medium Tree	Small Tree	Section	Ex. Trees
Secondary Roads						
Cedar Park Rd.	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#1	Mixed Species
Farragut Rd.	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2, #7,	Mixed Species
Melvin Ave.	UR	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2, #7,	Mixed Species
Edgewood Rd	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2, #7,	Mixed Species
Annapolis St.	UR	Acer rubrum	Acer rubrum 'Armstrong'	Acer campestre	#2, #6	Mixed Species
Forest - Chinquapin-S. River	CC	Platanus acerifolia 'Bloodgood'	Acer rubrum 'Armstrong'	Acer campestre	#2, #6	Mixed Species
Taylor - Rowe-Annapolis St.	CC	Quercus phellos		Carpinus betulus	#2, #6	Mixed Species
Tyler - Hilltop-Forest	SB	Mixed species (See List)	Mixed species (See List)	Mixed species (See List)	#2	Mixed Species

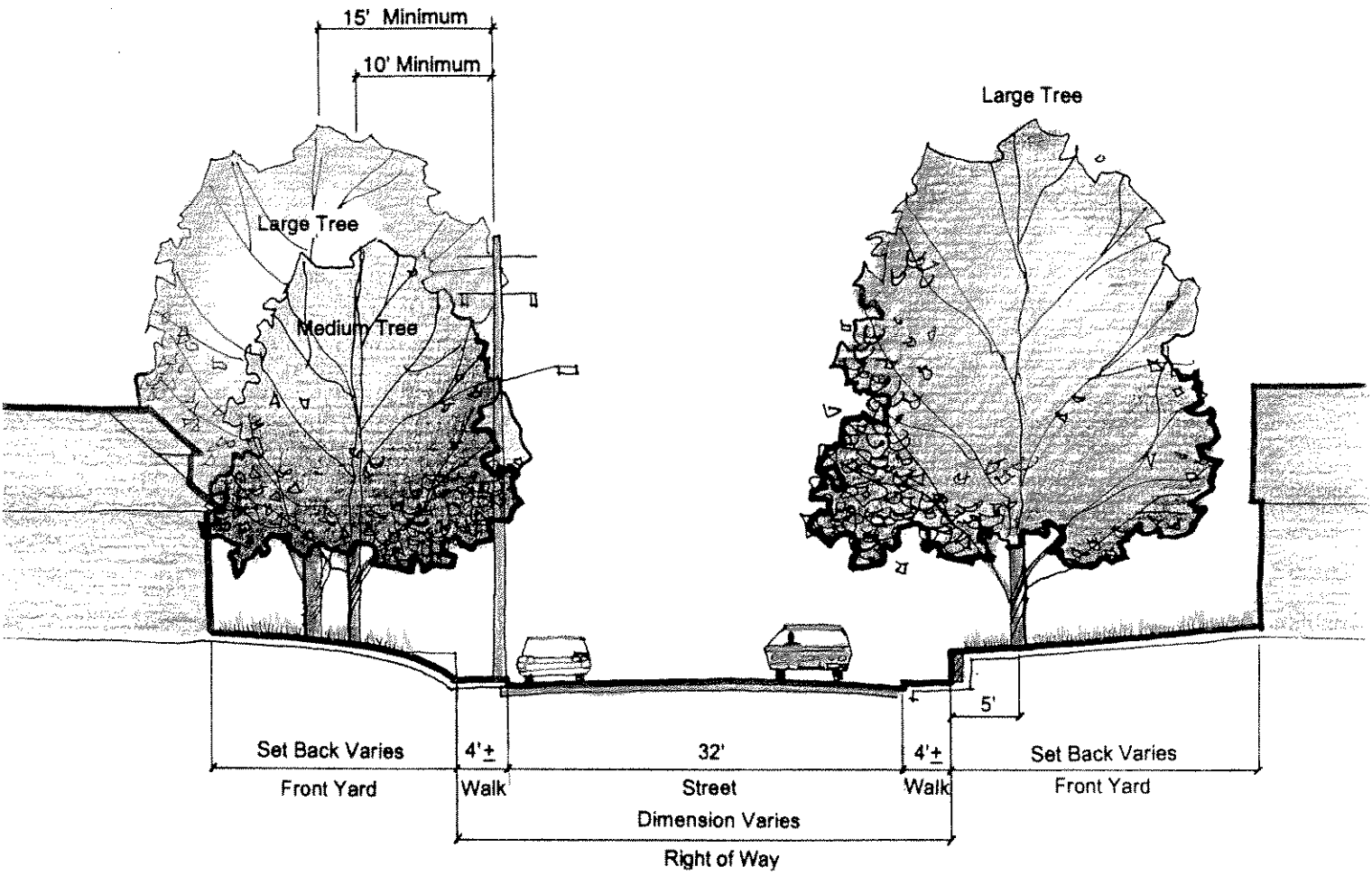
Mixed Tree List

Medium Trees

American Hornbeam	Carpinus caroliniana
Black Locust	Robinia pseudoacacia
Black Jack Oak	Quercus marilandica
Chestnut Oak	Quercus prinus
Common Hackberry	Celtis occidentalis
Common Persimmon	Diospyros virginiana
Green Ash	Fraxinus pennsylvanica
Hardy Rubber Tree	Eucommia ulmoides
Northern Red Oak	Quercus borealis
Pin Oak	Quercus palustris
Planetree Maple	Acer pseudoplatanus
Post Oak	Quercus stellata
Red Maple	Acer rubrum
Sawtooth Oak	Quercus acutissima
Scarlet Oak	Quercus coccinea
Shantung Maple	Acer truncatum
Southern Red Oak	Quercus falcata
Swamp White Oak	Quercus bicolor
Trident Maple	Acer buergeranum
Willow Oak	Quercus phellos

Large Trees

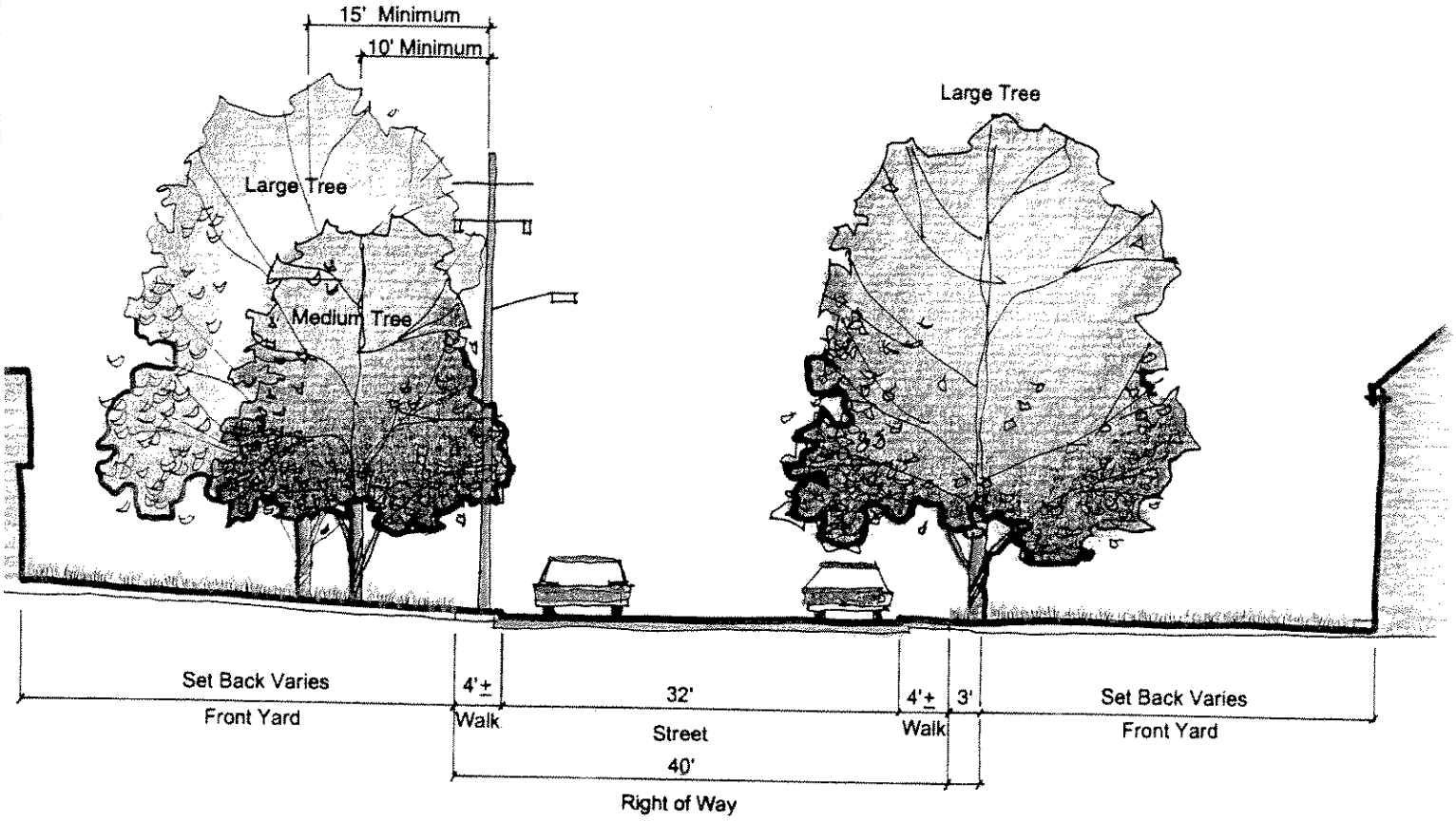
American Elm	Ulmus americana
American Linden	Tilia americana
Bald Cypress	Taxodium distichum
Black Gum	Nyssa sylvatica
Cucumbertree Magnolia	Magnolia acuminata
Eastern Cottonwood	Populus deltoides
Mockernut Hickory	Carya tomentosa
Pignut Hickory	Carya glabra
Plane Tree	Platanus acerifolia
Sweetgum	Liquidambar styraciflua
White Ash	Fraxinus americana
White Oak	Quercus alba
Yellow Poplar	Liriodendron tulipifera



Section 1 - Street - Walk - Wall - Lawn

This section shows the right of way located at the back of a relatively narrow sidewalk. On one side of the street a wall is located at the edge of the sidewalk, on the other, the sidewalk meets the lawn. This study recommends that a medium tree be planted eight feet back from the edge of the walk where there are utility poles, and recommends planting large trees five feet back from the walk where there are no utility poles.

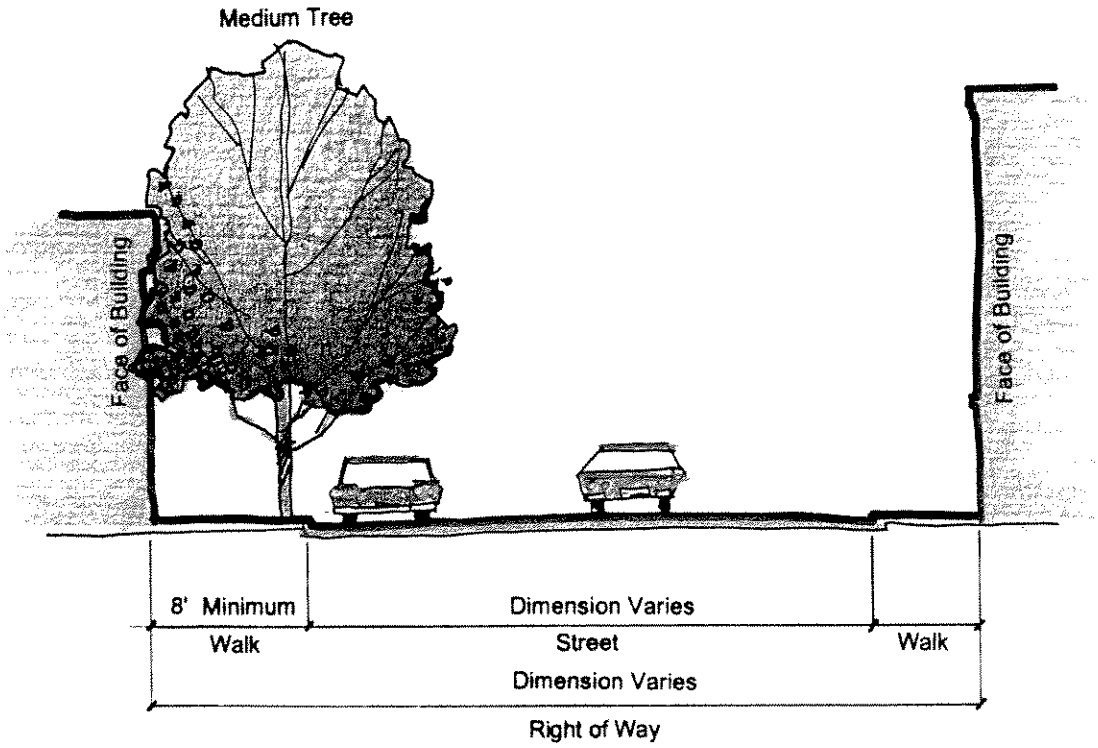
STREET TREE MASTER PLAN CITY OF ANNAPOLIS	TYPICAL STREET SECTION STREET - WALK- WALL-LAWN	S-1



Section 2 - Street - Walk - Lawn

This section illustrates the condition where the sidewalk is adjacent to the street, and a larger lawn, or a front yard meets it. Where there are utility poles, it is recommended that a medium tree be planted at least ten feet back from the pole. If there are no poles, a large tree should be planted at least six feet back from the edge of the curb.

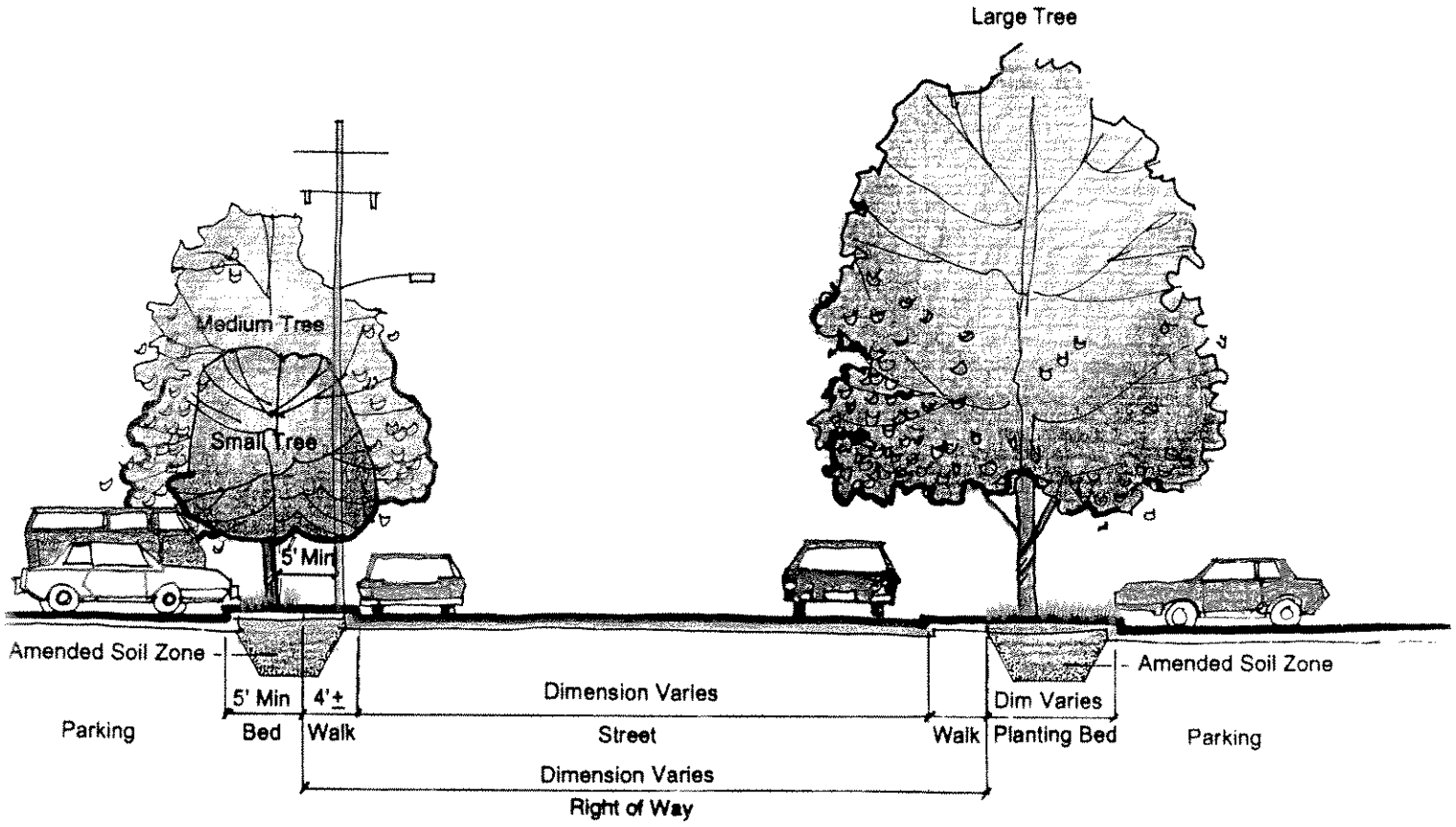
STREET TREE MASTER PLAN CITY OF ANNAPOLIS	TYPICAL STREET SECTION STREET - WALK - LAWN	S-2



Section 3 - Street - Walk - Building

Typically found in the more urban areas, this section shows a very tight relationship between the street and the face of the buildings. Where there is a minimum of ten feet of sidewalk, medium trees should be planted. Where there is less than eight and a half feet of sidewalk, it is the recommendation of this study that no trees should be planted.

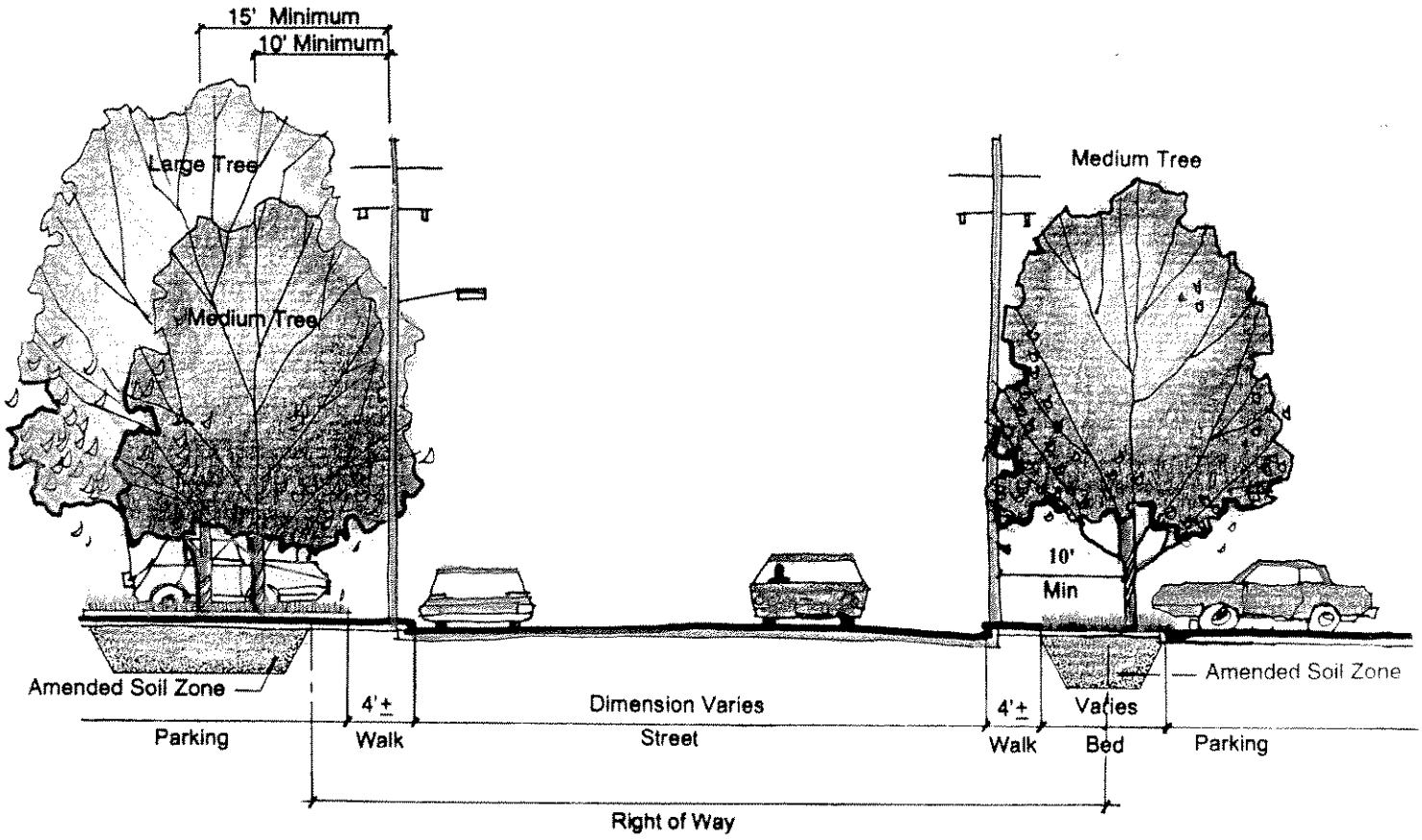
STREET TREE MASTER PLAN CITY OF ANNAPOLIS	TYPICAL STREET SECTION STREET - WALK - BUILDING	S-3



Section 4 - Street - Walk - Bed - Parking

Where a planting bed separates the street from adjacent parking, large trees can be planted in the absence of utility poles. Where there are utility poles, small or medium trees should be planted in a bed with a minimum depth of ten feet. Trees should be planted a minimum of five feet from the utility poles, and where no curb separates the planting from the parking, wheel stops should be provided. In situations where the existing soil is not adequate to sustain vigorous tree growth, amended soil zones should be provided. These amended soil zones should be site-specific and should be designed by a qualified professional.

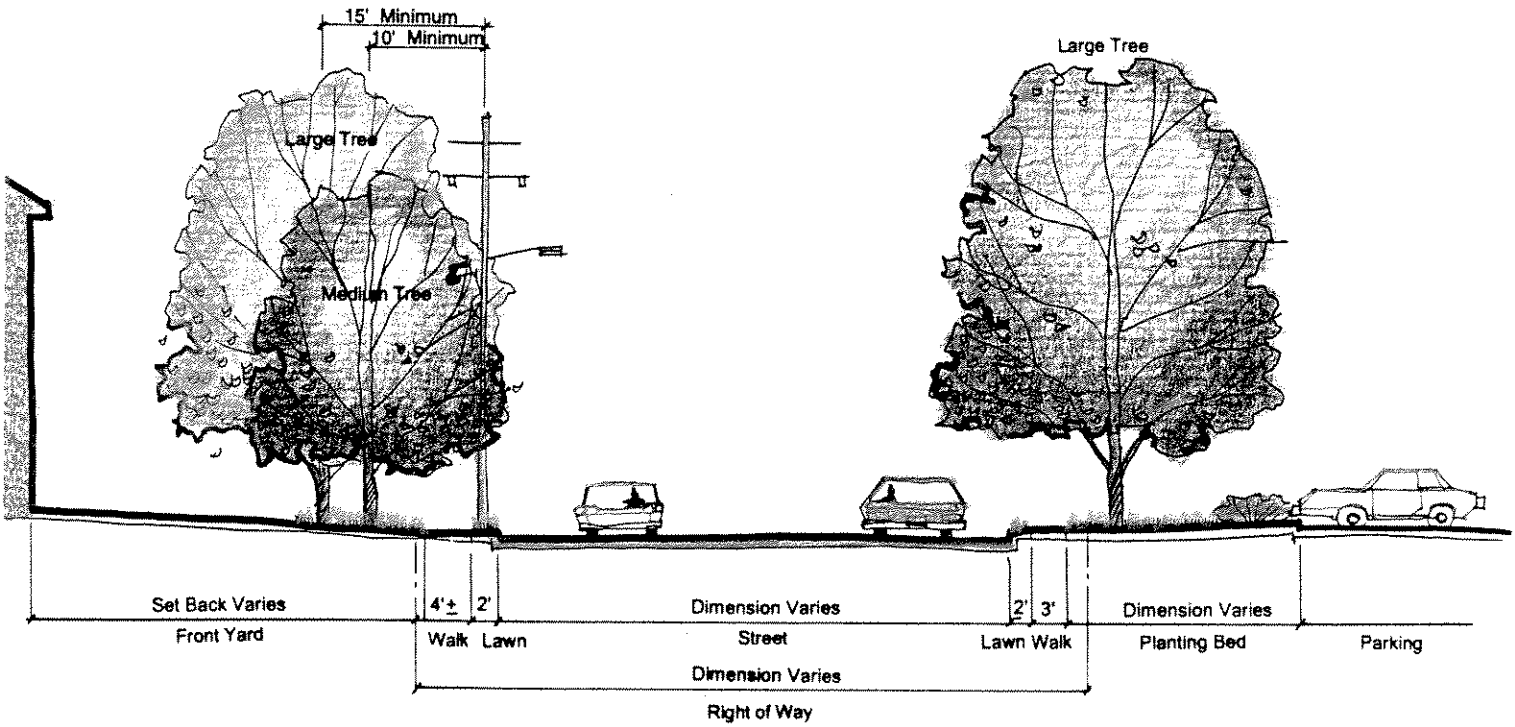
STREET TREE MASTER PLAN CITY OF ANNAPOLIS	TYPICAL STREET SECTION STREET - WALK -BED - PARKING	S-4



Section 5 - Street - Walk - Bed - Parking

Where a minimum planting bed depth of five feet cannot be provided, it is recommended that no trees be planted. If a minimum bed can be provided, plant large trees where there are no utility poles, and medium trees where the poles exist. In situations where the existing soil is not adequate to sustain vigorous tree growth, amended soil zones should be provided. These amended soil zones should be site-specific and should be designed be a qualified professional.

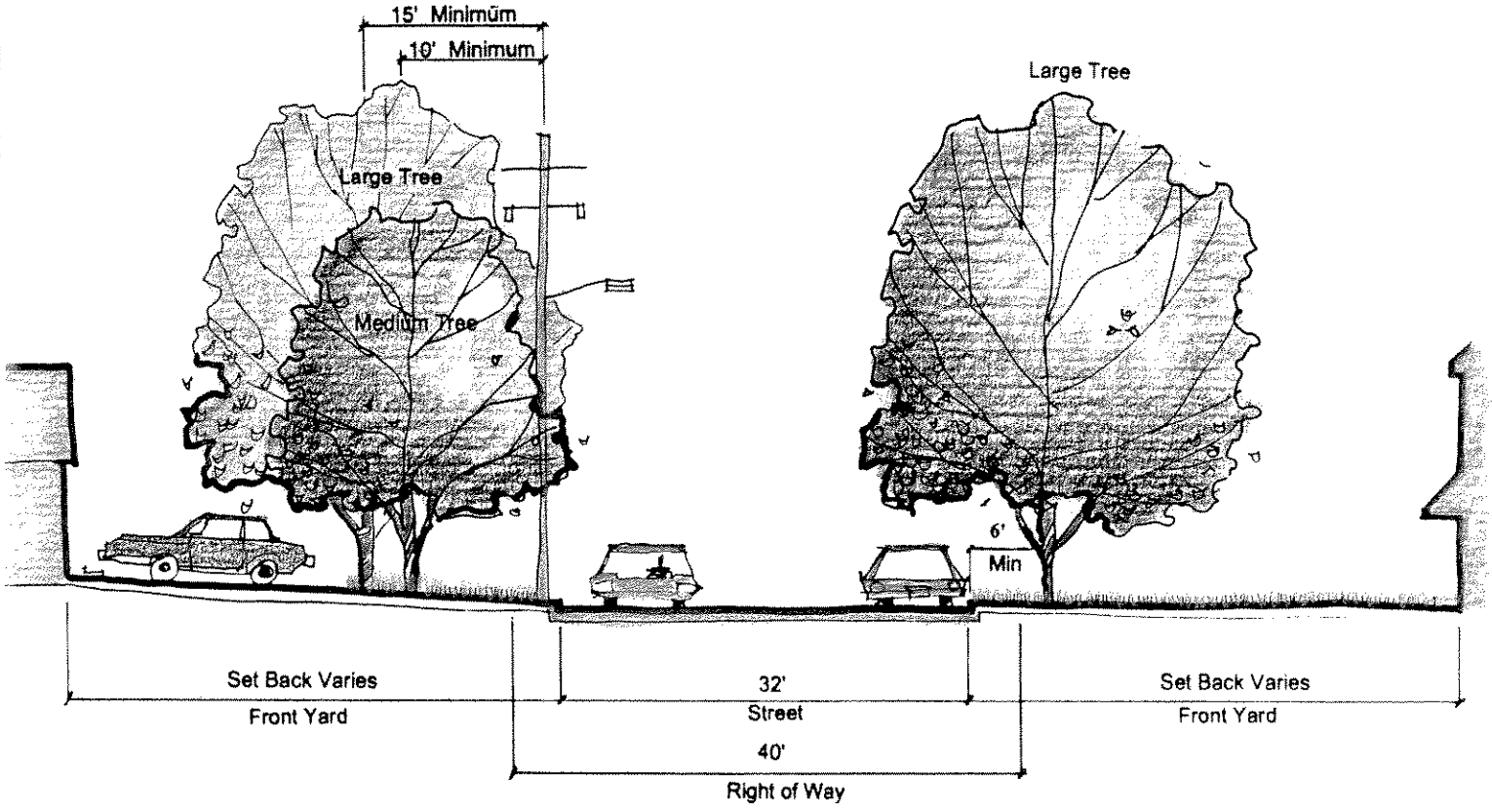
STREET TREE MASTER PLAN CITY OF ANNAPOLIS	TYPICAL STREET SECTION STREET - WALK - BED - PARKING	S-5



Section 6 - Street - Lawn - Walk - Lawn

In some situations, a narrow lawn strip exists between the street and the sidewalk, which then meets either a front yard, or a planting bed and parking. It is not recommended to plant trees in lawn panels less than four feet wide. When the space between the back side of the street and the buildings is limited by utility poles or actual distance, medium trees should be planted. Large trees shouldbe planted if they can be placed further away from the poles.

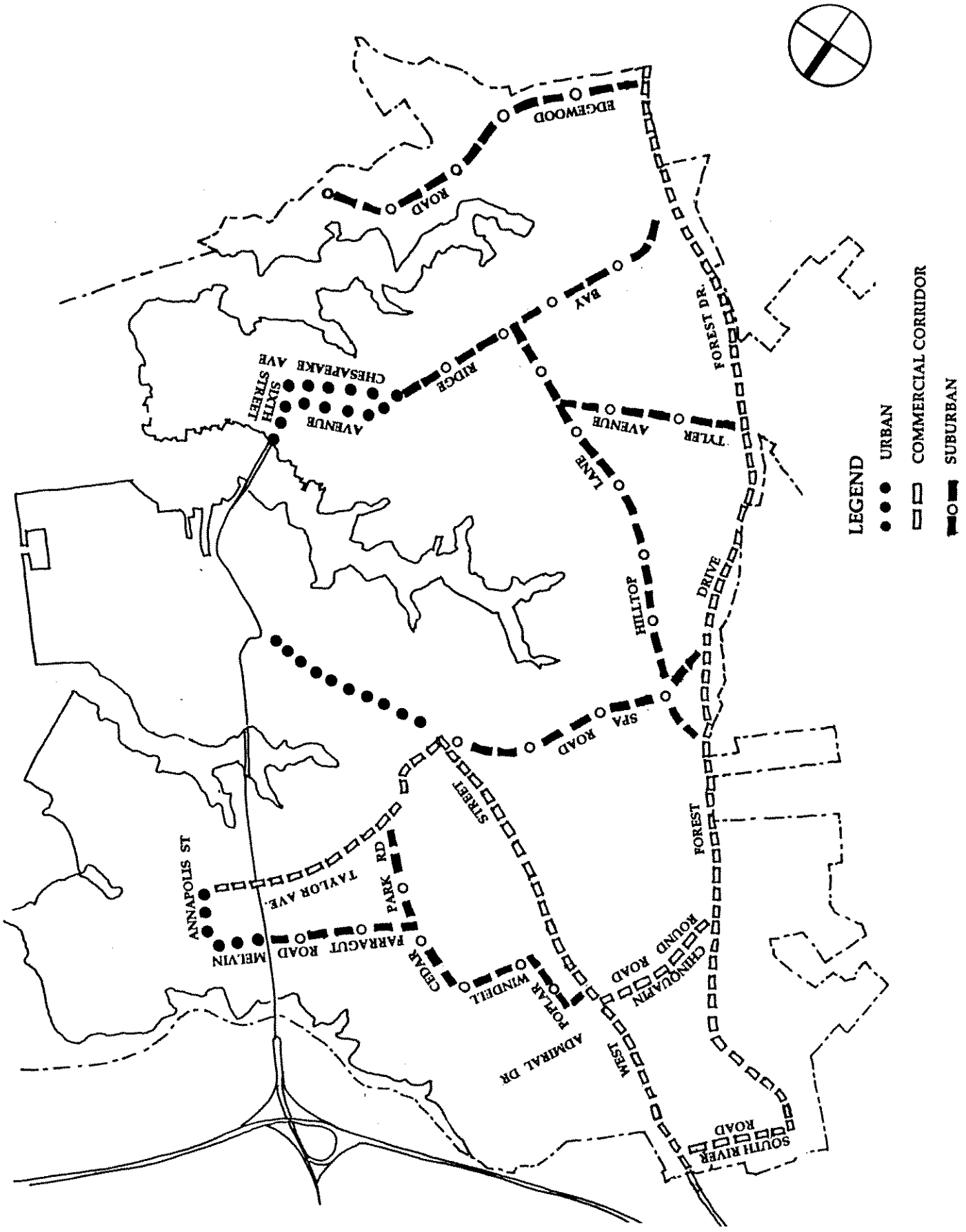
STREET TREE MASTER PLAN CITY OF ANNAPOLIS	TYPICAL STREET SECTION STREET - LAWN - WALK - LAWN	S-6



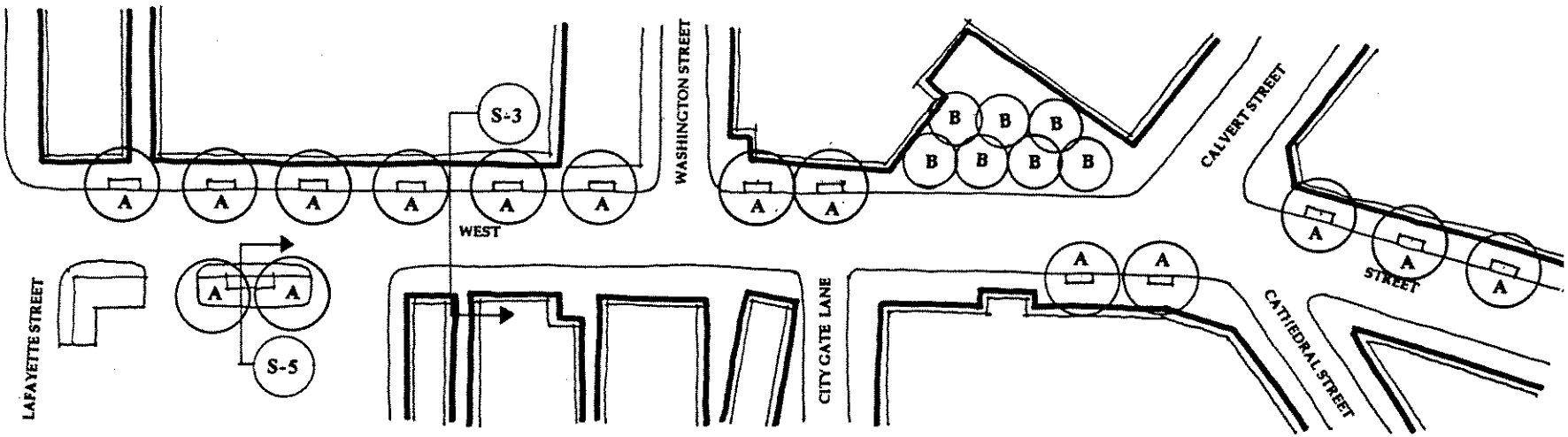
Section 7 - Street - Lawn

In some places, no sidewalk exists at all, and the street simply meets a residential front yard, or a lawn panel belonging to another use. In this situation, it is recommended that large trees be planted six feet from the edge of the street, where there are no utility poles, and medium trees be planted a minimum of ten feet from the edge of the street where there are utility poles.

STREET TREE MASTER PLAN CITY OF ANNAPOLIS	TYPICAL STREET SECTION STREET - LAWN	S-7



STREET TREE MASTER PLAN CITY OF ANNAPOLIS	STREET TREE PLANTING TYPE	P-1



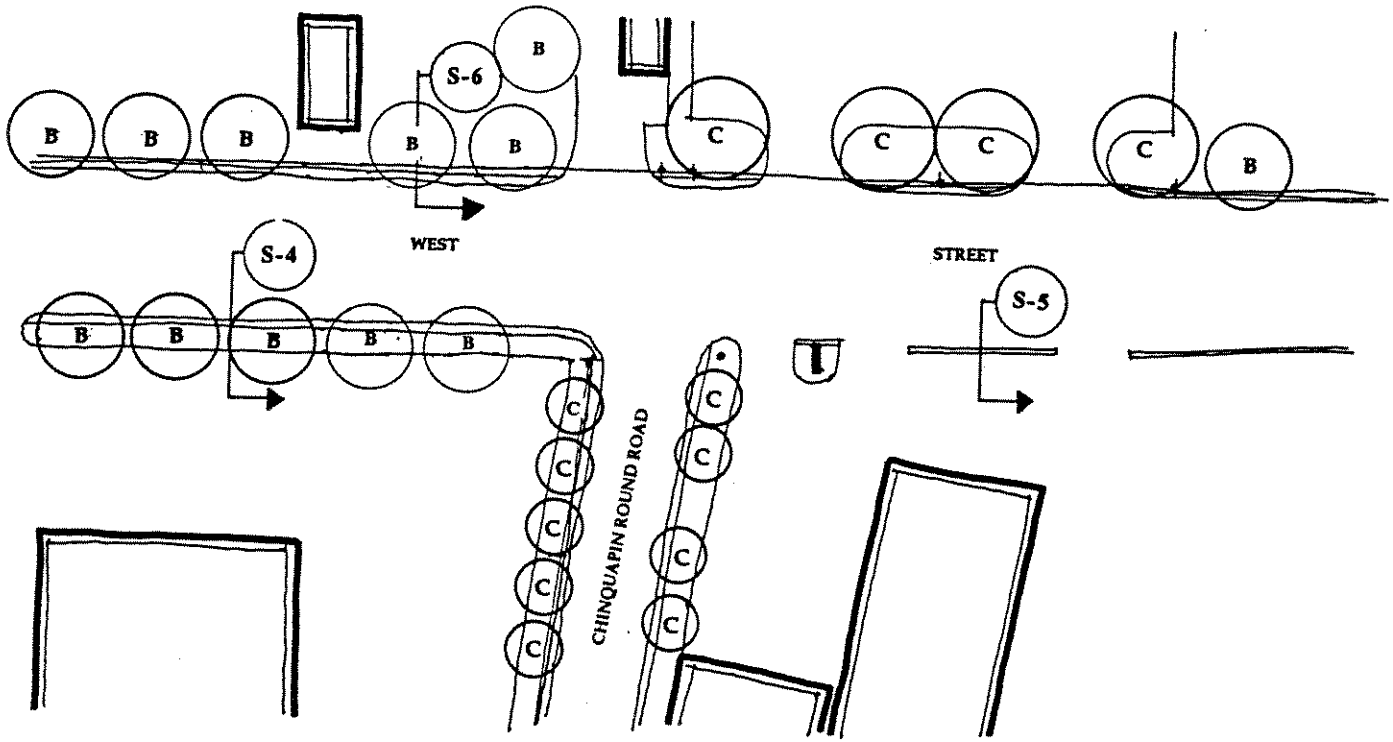
LEGEND

A — MEDIUM TREE

B — EXISTING TREE

Sheet P-2 - Urban

This plan depicts the intersection of Calvert and Cathedral Streets with West Street. This plan illustrates how medium trees can be planted where there is a minimum of eight feet of sidewalk. Note that where this minimum cannot be provided, no trees are planted.



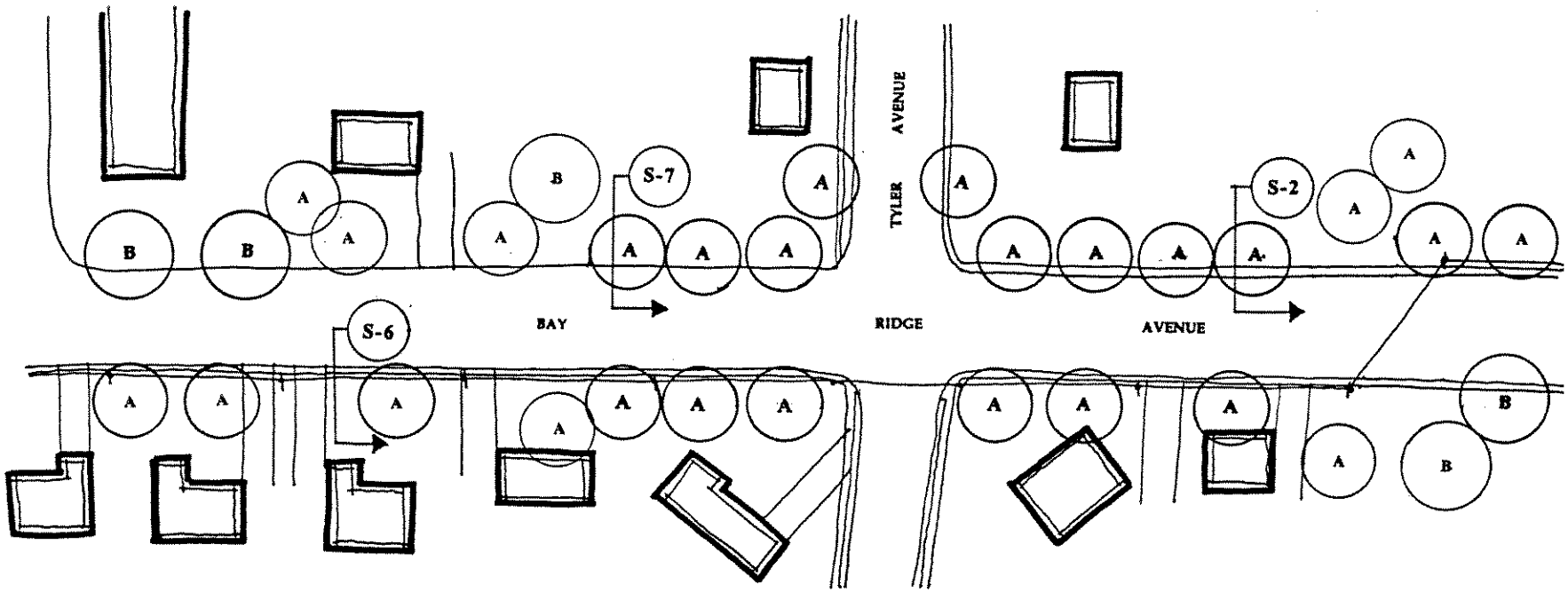
LEGEND

B MEDIUM TREE

C EXISTING TREE

Sheet P-3 - Commercial Corridor

This plan represents the intersection of Chinquapin Round Road with West Street. Medium trees have been planted in new beds adjacent to existing parking, and on the north side of the street medium trees have been planted set back from the sidewalk.Using the side streets or driveways will allow more depth and volume to be added to the tree canopy.



LEGEND

A MEDIUM TREE

B LARGE TREE

Sheet P-4 - Suburban

This drawing shows the intersection of Bay Ridge Road and Tyler Avenue. Large trees are shown where they do not conflict with utility poles, and medium trees are shown where poles are an issue. Note that a looser planting scheme is suggested for these areas, complementing the more relaxed list of mixed trees.

Bibliography

Arnold, Henry F. *Trees in Urban Design*. New York: Van Nostrand Reinhold Company. 1993.

Dirr, Michael. *Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses.* Champaign, IL: Stipes Publishing Co. 1990.

Gerhold, Henry D., Lacasse, Norman L., Wandell, Willet N., eds. *Street Tree Factsheets.* University Park, Pa.: Penn State University Press, 1993.

Wyman, Donald. *Trees for American Gardens.* New York: Macmillan Publishing Co., Inc. 1965

Zion, Robert L. *Trees for Architecture and the Landscape*. New York: Van Nostrand Reinhold Company. 1968.