ORDINANCE NO.: 0-88-08

AN ORDINANCE AMENDING CHAPTER 25, ARTICLE V OF THE CODE OF ORDINANCES OF THE CITY OF WINTER HAVEN ADDING A SECTION ENTITLED "LANDSCAPE PROVISIONS", AND; REPEALING CHAPTER 14B, "LANDSCAPING OF VEHICULAR USE AREAS," AND 22A, "TREES AND SHRUBBERY," AND; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Winter Haven deems it appropriate to enact landscape regulations, which establish standards for the protection and enhancement of the public interest and the general welfare of the citizens of the City of Winter Haven, and;

WHEREAS, the City of Winter Haven finds it practical to consolidate all landscape regulations and incorporate same into Chapter 25, the Comprehensive Zoning Ordinance of the City of Winter Haven, Florida, and;

WHEREAS, the City of Winter Haven, consistent with the purposes setforth above, considers it necessary to repeal Chapters 14B, "Landscaping of Vehicular Use Areas" and 22A, "Trees and Shrubbery".

NOW, THEREFORE, BE IT ENACTED BY THE PEOPLE OF THE CITY OF WINTER HAVEN, FLORIDA:

SECTION 47. Landscape Provisions.

(1) Purposes and Intent. The City Commission of the City of Winter Haven finds that landscaping makes important contributions to the public safety and the general welfare of the City of Winter Haven. Therefore the regulations contained herein setforth requirements and standards for the provision of canopy trees, buffer yards between the various land uses; and the conservation of native plants and trees and the water resources of the City of Winter Haven. Specifically:

(a) The shade cast by the crown of the mature trees has an effect on the micro-climate, which lowers the ambient air temperature, thereby preserving property, protecting life and safety, and contributing to the conservation of energy and water resources.

(b) Buffer yards reduce the negative impacts of abutting land uses by shielding glare, noise, dust, dirt, litter, and view; thereby preserving property values and stabilizing land uses.

(c) The maintenance of native vegetation reduces the water demanded by landscaping, provides canopy, and preserves natural buffer yards; thereby protecting the innate character of the City of Winter Haven.

(2) Applicability: Except as specifically excluded herein, the requirements and regulations of the Ordinance shall apply to all land development, improvements, and construction that alters or changes the character of use of the land or improvements thereon.

(3) Definitions:

(a) Canopy. Canopy refers to the area shaded by the crown of mature tree, which is listed among the approved species for the City of Winter Haven

(b) Buffer Yard. A buffer yard is an area between land uses or surrounding a land use, which screens or blocks

vision, light, noise, pollutants, and other negative effects associated with land uses.

(c) Conservation. Conservation is the preservation of native plants and trees to provide canopy, buffer yards, and reduce water demanded to maintain landscaping.

(d) Impervious Surface. Impervious surfaces shall include all land paved with concrete or asphalt that is used for off-street parking, driveways, sidewalks, patios, and service areas.

(e) Land Form. Land forms are natural or man-made variations in the contour of the land.

(f) Landscape Structure. Landscape structures are man-made improvements which screen or block view, light, noise, pollutants, and other negative effects associated with land uses.

(4) Landscape Regulations: Landscape Regulations are hereby enacted and made an integral and supplemental part of this Ordinance. The Landscape Regulations shall not be codified in the Code of Ordinances of the City of Winter Haven, Florida, but shall be preserved as a permanent record of action taken by the City Commission. Said regulations shall contain:

(a) A list of species of trees that are considered to meet the definition of a canopy tree.

(b) The mature canopy for each species of tree.

(c) A list of species of trees, shrubs, and ground covers for selection and use in buffer yard.

(d) Descriptions and drawings of buffer yards.

(e) Descriptions and drawings of landscape structures and land forms.

(f) Specific requirements for the design of planting areas and buffer yards that will serve the dual purpose of landscaping and retention ponds.

(g) Regulations for the preservation and protecting of existing trees and plants during construction.

(h) A detailed map of the Central Business District, and exemptions applicable thereto.

(i) Any other descriptions, drawings, alternatives, examples, specifications, and requirements deemed appropriate to the purposes of this Ordinance by the City Commission.

(5) Canopy Requirements and Regulations:

(a) Unless otherwise specified in this Chapter, the standard for canopy is fifty percent (50%) coverage over all impervious surfaces associated with all land uses subject to this paragraph.

(b) When a proposed development site is barren of existing canopy, the standard shall be forty-five percent (45%).

(c) The Landscape Regulations setforth the mature

canopy for each species of tree. In calculating canopy requirements, each existing canopy tree, and each canopy tree planted in the landscape, shall be credited with its mature canopy.

(d) Canopy shall be interspersed with all impervious surfaces rather than restricted in any way to only a portion of the impervious surfaces serving the development.

(e) Single-family detached and duplex residential land uses are excluded from all canopy requirements of this Ordinance.

(6) Buffer Yard Requirements and Regulations:

(a) In order to minimize the negative impacts that different land uses inflict, buffer yards are required between uses. For purposes of this requirement, land uses are classified as follows:

LAND USE CLASSIFICATIONS

CLASS	LAND USE
I	Single family detached residential dwellings.
II	Duplex and other multi-family residential developments at a gross density of not more than four dwelling units per acre; outdoor recreation facilities; and cemeteries.
III	Professional offices of two stories or less with not more than eight (8) off-street parking spaces; and day care centers located in converted residential structures.
IV	Townhouses, regardless of density; mobile home parks at a gross density of not more than 8.0 dwelling units per acre; and multi-family residential developments at a gross density of 4.01 to 8.0 dwelling units per acre.
V	Mobile home parks, recreation vehicle parks, and multi-family residential developments with a gross density of greater than 8.0 dwelling units per acre; and electric, natural gas, telephone, and cable television substations, towers, and transfer locations.
VI	High rise (three stories or more) residential developments, regardless of density; and nursing homes.
VII	Professional offices with nine (9) or more off-street parking spaces; churches; schools; government buildings and facilities (excluding water and sewer treatment and public works storage and equipment facilities); and individual, free-standing retail and service businesses with not more than ten (10) off-street parking spaces.
VIII	All retail, wholesale, service, and supporting business uses not already classified; full-service automobile service stations; shopping centers; motels and hotels; and hospitals

IX Light industrial uses; and governmental public works storage and equipment facilities.

X Heavy industrial uses; and water and sewer treatment facilities.

(b) The four variables used to define buffer yards are; (1) the density of plant materials, (2) the width of the buffer yards, (3) landscape structures, and (4) land form. A combination of these variables shall be used in developing the buffer yards required by this Ordinance.

(c) The "Central Business District", as specifically defined in the Landscape Regulations, may be exempt from certain provisions of this Ordinance. Said exemptions are particularly setforth in the Landscape Regulations.

(7) Irrigation: All areas of landscaping required by any provision of this Ordinance shall be irrigated to insure the healthy growth and maintenance of all plant materials.

(8) Conservation Requirements and Regulations:

(a) A proposed land use subject to the provisions of this Ordinance may be credited with a reduction in the standard for canopy from fifty percent (50%) to not less than forty percent (40%) for the preservation of existing canopy trees on the site.

1. In order to receive maximum credit, all healthy canopy trees on site, which are greater than five inches (5") in diameter measured three feet (3') above the ground, must be preserved.

2. Preservation of fewer than all existing canopy trees shall reduce the maximum credit by the percent of trees removed.

(b) A proposed land use subject to the provisions of this Ordinance, may be credited with a reduction in the standard for a buffer yard width to seventy-five percent (75%) of that width.

1. In order to receive maximum credit, all healthy, native plant materials on the perimeter of the site, where buffer yards would be required, must be preserved.

2. Natural buffers may vary somewhat in width to accommodate the location of native plants, so long as the required area on the buffer yard is maintained. Structural elements, such as fences and walls of varying heights, may also be required.

(c) A proposed land use subject to the provisions of this Ordinance, shall utilize the most cost-effective, water conserving irrigation systems available.

(9) Landscape Plans and Specifications: Prior to the issuance of the required permits, the Code Enforcement Department shall require the submission of landscape plans, specifications and drawings for each building, structure, improvement or land use, which is subject to the provisions of this Ordinance. Said plans, specifications and drawings shall be drawn to scale with sufficient clarity and detail to indicate the type, nature and character of the improvements required by this Ordinance. The City shall

review said plans within five (5) working days after submission.

(10) Certificate of Final Inspection; landscape inspection required: A new land use shall not be occupied or a change be made in occupancy or the nature or the use of any building or part of building until after the City has conducted a final inspection of said land use, and the landscaping constructed as a part of the land use is found to be in compliance with this Ordinance.

(11) This ordinance shall be codified in the Code of Ordinances of the City of Winter Haven, Florida.

(12) This ordinance shall take effect immediately upon passage on second reading.

INTRODUCED AND PASSED on first reading this 23rd day of May, 1988.

PASSED on second reading this 13th day of June, 1988.

CITY OF WINTER HAVEN, FLORIDA

Sarah H. Hayes
MAYOR-COMMISSIONER
PROTEM

ATTEST:

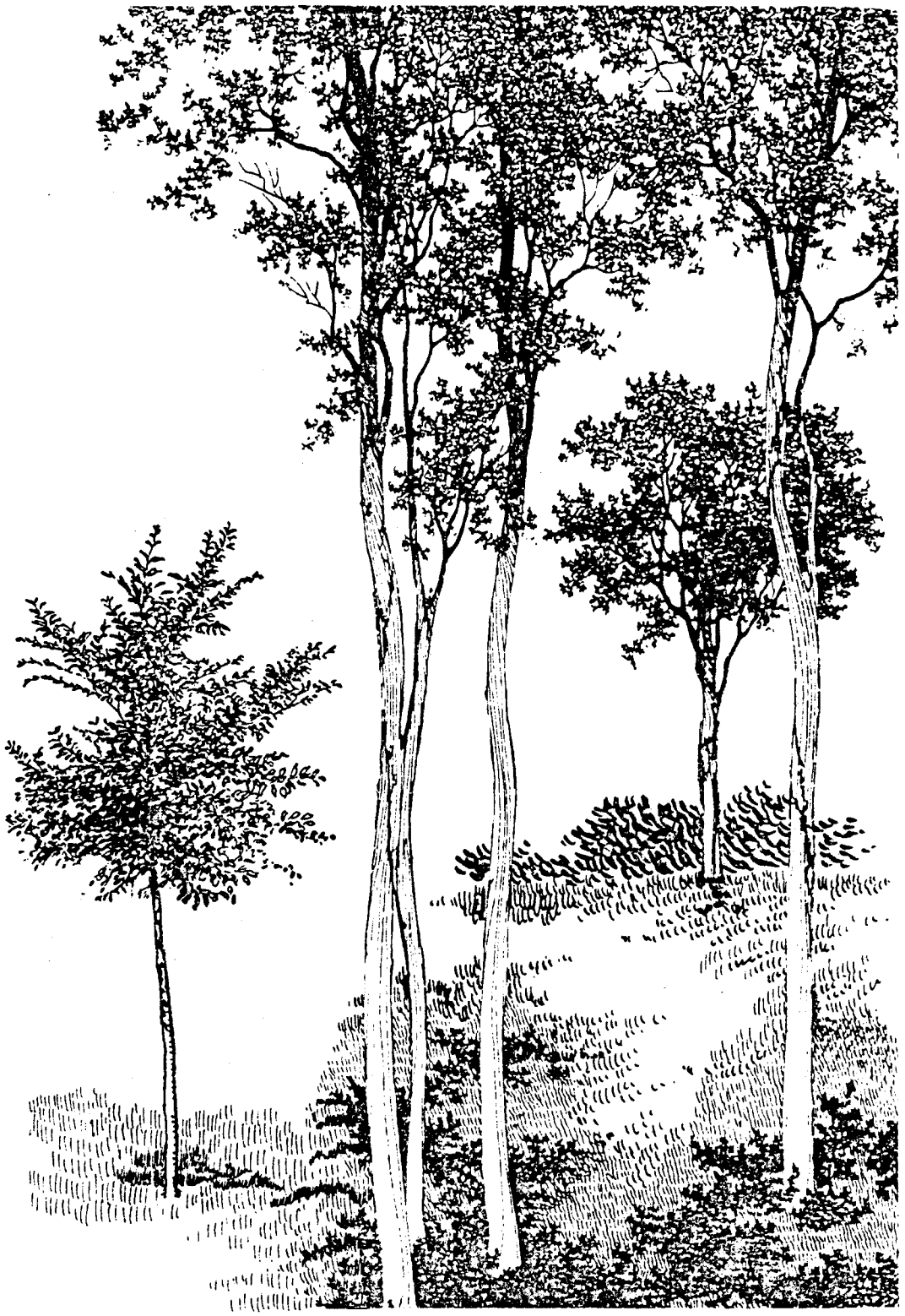
Dietta B. Runlock
CITY CLERK

Legal in form and valid if enacted:

Robert J. Patterson
CITY ATTORNEY

Attachment to
O-88-08

LANDSCAPE GUIDELINES



WINTER HAVEN, FLORIDA

LANDSCAPE ORDINANCE AND GUIDELINES

CITY OF WINTER HAVEN, FLORIDA

Adopted June 13, 1988

INTRODUCTION

These are the landscape regulations for the City of Winter Haven, Florida. This law is part of the Zoning Ordinance, which is Chapter 25 of the Code of Ordinances of the City.

The City Landscape Law has two parts. Both parts are enforceable as law and are to be construed and interpreted as one set of regulations covering the subject of landscaping. However, for the purpose of implementing the Law, the parts are referred to by different names.

The first part is called the "Ordinance". This part is contained in the City Code of Ordinances and sets forth the basic purposes, standards, requirements, and applications of the law. The second part is called the "Landscape Guidelines," because it has all the information necessary to design a landscape plan in compliance with the Ordinance.

With certain exceptions, this landscape law applies to every act of land development that changes the manner in which land, buildings, and other structures are used. The Ordinance states:

> "Except as specifically excluded herein, the requirements and regulations of this Ordinance shall apply to all land development, improvements, and construction that alters or changes the character or use of the land or improvements thereon."

A few examples of actions which will require landscaping are: (1) changing a single-family home to a duplex; (2) converting a residential structure to an office or a day care center; (3) an addition to a home, an office or a commercial building, and; (4) constructing or erecting any improvement on vacant land.

As a general overview, the Ordinance sets forth three major standards. First, the shading of a portion of certain paved areas associated with development in the City. This is accomplished by the use of "canopy" trees. Second, the use of landscaping called "buffer yards" between neighboring land uses. And third, the conservation of water, native trees and shrubs, and natural ground coverings. The Guidelines provide step-by-step explanations stating "how to" use the lists, drawings, and tables in implementing an individual landscape plan, which meets the requirements of the Ordinance.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF DRAWINGS

SECTION I

THE ORDINANCE

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(a) The shade cast by the crown of mature trees has an effect on the micro-climate, which lowers the ambient air temperature, thereby preserving property, protecting life and safety, and contributing to the conservation of energy and water resources.

(b) Buffer yards reduce the negative impacts of abutting land uses by shielding glare, noise, dust, dirt, litter, and view; thereby preserving property values and stabilizing land uses.

(c) The maintenance of native vegetation reduces the water demanded by landscaping, provides canopy, and preserves natural buffer yards; thereby protecting the innate character of the City of Winter Haven.

(2) **Applicability**: Except as specifically excluded herein, the requirements and regulations of this Ordinance shall apply to all land development, improvements, and construction that alters or changes the character or use of the land or improvements thereon.

(3) **Definitions**:

(a) Canopy. Canopy refers to the area shaded by the crown of a mature tree, which is listed among the approved species for the City of Winter Haven.

(b) Buffer Yard. A buffer yard is an area between land uses or surrounding a land use, which screens or blocks vision, light, noise, pollutants, and other negative effects associated with land uses.

(c) Conservation. Conservation is the preservation of native plants and trees to provide canopy, buffer yards, and reduce water demanded to maintain landscaping.

(d) Impervious Surface. Impervious surfaces shall include all land paved with concrete or asphalt that is used for off-street parking, driveways, sidewalks, patios, and service areas.

(e) Land Form. Land forms are natural or man-made variations in the contour of the land.

(f) Landscape Structure: Landscape structures are man-made improvements and land forms, which screen or block view, light, noise, pollutants, and other negative effects associated with land uses.

(4) **Landscape Guidelines**: Landscape Guidelines are hereby enacted and made an integral and supplemental part of this Ordinance. The Landscape Guidelines shall not be codified in the Code of Ordinances of the City of Winter Haven, Florida, but shall be preserved as a permanent record of action taken by the City Commission. Said guidelines shall contain:

(a) A list of species of trees that are considered to meet the definition of a canopy tree.

(b) The mature canopy for each species of tree.

(c) A list of species of trees, shrubs, and ground covers for selection and use in buffer yards.

(d) Descriptions and drawings of buffer yards.

(e) Descriptions and drawings of landscape structures and land forms.

(f) Specific requirements for the design of planting areas andbuffer yards that will serve the dual purpose of landscaping and retention ponds.

(g) Regulations for the preservation and protection of existing trees and plants during construction.

(h) A detailed map of the Central Business District, and exemptions applicable thereto.

(i) Specifications for landscape irrigation systems; and

(j) Any other descriptions, drawings, alternatives, examples, specifications, and requirements deemed appropriate to the purposes of this Ordinance by the City Commission.

(5) Canopy Requirements and Regulations:

(a) Unless otherwise specified in this Chapter, the standard for canopy is fifty percent (50%) coverage over all impervious surfaces associated with all land uses subject to this paragraph.

(b) When a proposed development site is barren of existing canopy, the standard shall be forty-five percent (45%).

(c) The Landscape Guidelines setforth the mature canopy for each species of tree. In calculating canopy requirements, each existing canopy tree, and each canopy tree planted in the landscape, shall be credited with its mature canopy.

(d) Canopy shall be interspersed with all impervious surfaces rather than restricted in any way to only a portion of the impervious surfaces serving the development.

(e) Single-family detached and duplex residential land uses are excluded from all canopy requirements of this Ordinance.

(6) Buffer Yard Requirements and Regulations:

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LAND USE CLASSIFICATIONS

CLASS	LAND USES
I	Single family detached residential dwellings.
II	Duplexes and other multi-family residential developments at a gross density of not more than four dwelling units per acre; outdoor recreation facilities; and cemeteries.

III Professional offices of two stories or less with not more than eight (8) off-street parking spaces; and day care centers located in converted residential structures.

IV Townhouses, regardless of density; mobile home parks at a gross density of not more than 8.0 dwelling units per acre; and multi-family residential developments at a gross density of 4.01 to 8.0 dwelling units per acre.

V Mobile home parks, recreation vehicle parks, and multi-family residential developments with a gross density of greater than 8.0 dwelling units per acre; and electric, natural gas, telephone, and cable television substations, towers, and transfer locations.

VI High rise (three stories or more) residential developments, regardless of density; and nursing homes.

VII Professional offices with nine (9) or more off-street parking spaces; churches; schools; government buildings and facilities (excluding water and sewer treatment and public works storage and equipment facilities); and individual, free-standing retail and service businesses with not more than ten (10) off-street parking spaces.

VIII All retail, wholesale, service, and supporting business uses not already classified; full-service automobile service stations; shopping centers; motels and hotels; and hospitals.

IX Light industrial uses; and governmental public works storage and equipment facilities.

X Heavy industrial uses; and water and sewer treatment facilities.

(b) The four variables used to define buffer yards are; (1) the density of plant materials, (2) the width of the buffer yards, (3) landscape structures, and (4) land form. A combination of these variables shall be used in developing the buffer yards required by this Ordinance.

(c) The "Central Buisines District", as specifically defined in the Landscape Guidelines, may be exempt from certain provisions of this Ordinance. Said exemptions are particularly setforth in the Landcape Guidelines.

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(a) A proposed land use subject to the provisions of this Ordinance may be credited with a reduction in the standard for canopy from fifty percent (50%) to not less than forty percent (40%) for the preservation of existing canopy trees on the site.

1. In order to receive maximum credit, all healthy canopy trees on the site, which are greater than five inches (5") in diameter measured three feet (3') above the ground, must be preserved.

2. Preservation of fewer than all existing canopy trees shall reduce the maximum credit by the percent of trees removed.

(b) A proposed land use subject to the provisions of this Ordinance, may be credited with a reduction in the standard for a buffer yard width to seventy-five percent (75%) of that width.

1. In order to receive maximum credit, all healthy, native plant materials on the perimeter of the site, where buffer yards would be required, must be preserved.

2. Natural buffers may vary somewhat in width to accommodate the location of native plants, so long as the required area of the buffer yard is maintained. Structural elements, such as fences and walls of varying heights, may also be required.

(c) A proposed land use subject to the provisions of this Ordinance, shall utilize the most cost-effective, water-conserving irrigation systems available.

(9) **Landscape Plans and Specifications:** Prior to the issuance of the required permit, the Code Enforcement Department shall require the submission of landscape plans, specifications and drawings for each building, structure, improvement or land use, which is subject to the provisions of this Ordinance. Said plans, specifications and drawings shall be drawn to scale with sufficient clarity and detail to indicate the type, nature and character of the improvements required by this Ordinance. The City shall review said plans within five (5) working days after submission.

(10) **Certificate of Final Inspection; landscape inspection required:** A new land use shall not be occupied or a change be made in occupancy or the nature or the use of any building or part of a building until after the City has conducted a final inspection of said land use, and the landscaping constructed as a part of the land use is found to be in compliance with this Ordinance.

SECTION II

TREES AND SHRUBS

TREES FOR CANOPY AND BUFFER YARDS

This Section of the Landscape Guidelines lists all of the trees, the shrubs, ground covers and vines that thrive in the City of Winter Haven. The first part, Table I on pages 11 through 13, is a list of trees and their characteristics.

From left to right, Table I shows the scientific name of the tree; the common name; the site class; the light requirements; type; the crown spread; the canopy area; the form; the height; the distance the tree should be planted from an overhead power, phone or cable television line; and the use.

Species: The trees are listed alphabetically by the first word of the scientific name of the species, but the common name of the tree is shown just to the right so you can quickly find the tree you are looking for. The table lists fifty-eight (58) trees, so finding the one you want will take only a minute. **The important point** here is that these trees are the ones that we know will grow well in Winter Haven, and these trees will be required where you are meeting canopy and buffer yard requirements. If there is an existing tree on your property that can be credited as a canopy tree or it is in a place to be a buffer tree, but is not on the list, it will be accepted so long as it is healthy. No trees found in the list of "Noxious Tree Species" on page 67 may be planted to meet any canopy or buffer yard purpose.

Site class refers to the need for a soil and environment that is wet (hydric), medium (mesic), or dry (xeric). This is a general guide to where you should plant a particular tree to get the best growth results.

Light requirements may be thought of as high (full sun), medium (partial sun and shade), and low (mostly shaded). These light recommendations also give the tree the best chance of growth and survival to maturity.

Type simply tells you whether the tree is deciduous (drops its leaves) or persistent (evergreen). Evergreens are important in creating lasting buffer yards, while deciduous trees make the best canopy trees.

Crown spread is the diameter of the crown of canopy trees in feet. Canopy trees shade the impervious surfaces on your property, which are areas paved with asphalt and concrete. These areas are the driveways, parking lots, sidewalks, service areas, patios, and stoops not shaded by the building roof line. Crown spread refers to the crown of mature canopy trees, existing canopy trees, and trees planted to be canopy trees. It was established by a committee of expert landscape architects and foresters based on their experience and knowledge of trees. If an existing tree is larger in crown spread than what is in the table, you receive credit for the calculated shade area, based on its actual diameter. If it is smaller, the number in the table will be used in the calculation.

Canopy area is given in square feet. It is the shade area under the tree, based on the crown spread shown in the previous column. This is the area you will be credited with for a tree smaller than the crown spread in the table, or for the new tree you plant to provide canopy.

Form: On page 14 is Drawing 1., which shows the different shapes of trees in the list. They can be spreading, medium, or upright and are identified by a capital letter and a number. The codes that result appear in the column in the table entitled "form".

Height is also given in feet, and was determined by the experts who developed the list of trees. It is important in deciding where to locate a particular tree.

The column headed by "P/L" contains a letter "A" for trees that can be planted under an overhead line; a "B" for trees that must be planted 15 to 30 feet away from overhead lines; and a "C" for trees that must be planted at least 30 feet from the lines. This requirement will usually be important in buffer yards, but applies equally anywhere on your property.

Use: Finally, the table ends with a column entitled "use". Each tree is shown as an "O" (overstory trees), which means that it can be used as a large tree in a buffer yard. Overstory trees are the ones that will grow to be more than 25´tall. Or the tree can be a "U" (understory trees), which means that it can be used as a small or medium tree in a buffer yard. Understory trees will rarely grow to be thirty feet (30´) tall.

It is important at this point to be sure that you understand that all of the trees in this list can be used as canopy trees, if they provide shade over impervious surfaces, **and** each of them can be used to meet either the overstory or understory tree requirements of the buffer yards.

MEETING THE CANOPY STANDARD:

Before you begin development, you need to inventory all of the existing trees on your property, no matter where they are located. Some may be trees that will be in a buffer yard and others will be canopy trees. To qualify as a canopy tree, an existing tree must be:

a. Five inches (5") in diameter three feet (3´) above the ground,

b. Healthy (free from disease and flourishing), and

c. Listed among the species in Table I.

Complete your inventory by making note of the location of all of your canopy trees on a map or survey of your property, together with the diameter of the crown and the kind of tree it is. Count, name and locate all of the trees, regardless of size. If you will need to provide a buffer, then it is also a good idea to determine what kind and how many shrubs and ground covers may be in the area of your future

buffer yard. With this information, you will be able to draw a plan to meet the requirements of the Ordinance.

The standard for canopy is fifty percent (50%) coverage over all impervious surfaces on property subject to the Landscape Ordinance. But, if you save **all** of the existing canopy trees on you property, you earn a bonus! The maximum credit is a reduction of ten percent (10%) of the standard, which means you only have to provide forty percent (40%) canopy over your paved surfaces. If you cannot save all of the canopy trees, but can save some of them you will still earn a partial bonus.

Please note that if the base of a canopy tree that you want to remove is within the "drip line" (the crown spread) of a healthy canopy tree you wish to save, its removal does not count against the calculation of your canopy bonus.

Incalculating your partial bonus, suppose that you have eight (8) canopy trees and you decide that you must cut down three of them, then you have saved five (5). You have saved five-eighths (5/8) of your trees, which is 62.5%, so you get 62.5% of the ten percent (10%) bonus. Now, because of the partial bonus, your canopy requirement is 50% - 6.25% = 43.75%.

If you determine that there are no trees on your property that qualify as canopy trees (a,b, and c above), then you would not be able to earn the bonus; however, the Ordinance reduces your canopy requirement to forty-five percent (45%) anyway. And, you certainly have the option to save some of the smaller trees to provide canopy, just as long as they are healthy and on the list in Table I.

You now have a plan and you know what to do to be in compliance with the Landscape Ordinance. You know how many canopy trees you will need to plant and from your plan, you know where to plant them. If you have any questions, the Planning Department at City Hall will be glad to help you.

Table I

Tree Species and Use Characteristics

Site Class: H = Hydric
M = Mesic
Z = Xeric

Light Requirements: L = Low
M = Medium
H = High

Form: Refer to Diagram on Page 16

Use: O = Overstory
U = Understory

Plant Type: D = Deciduous
E = Persistent

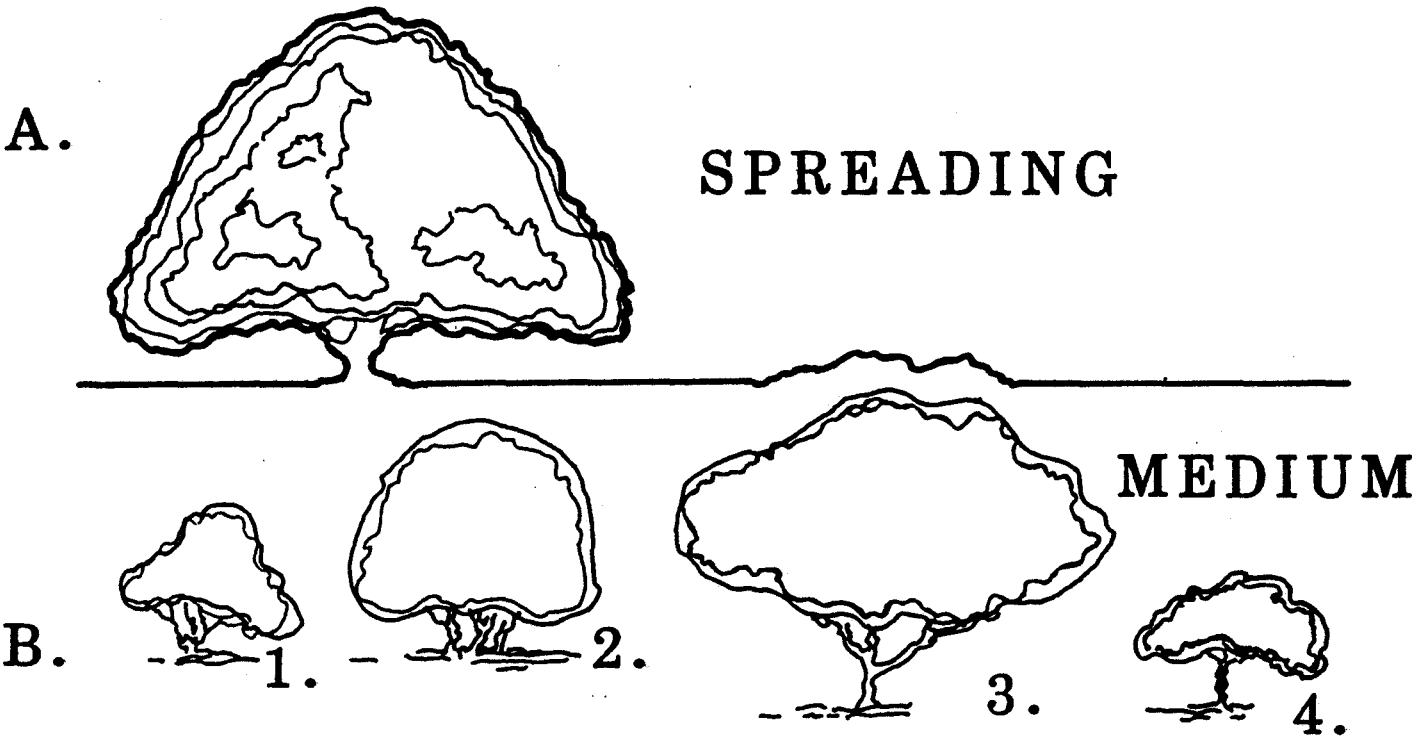
Proximity to Powerlines (P/L): A = under
B = 15-30 ft
C = 30 + ft

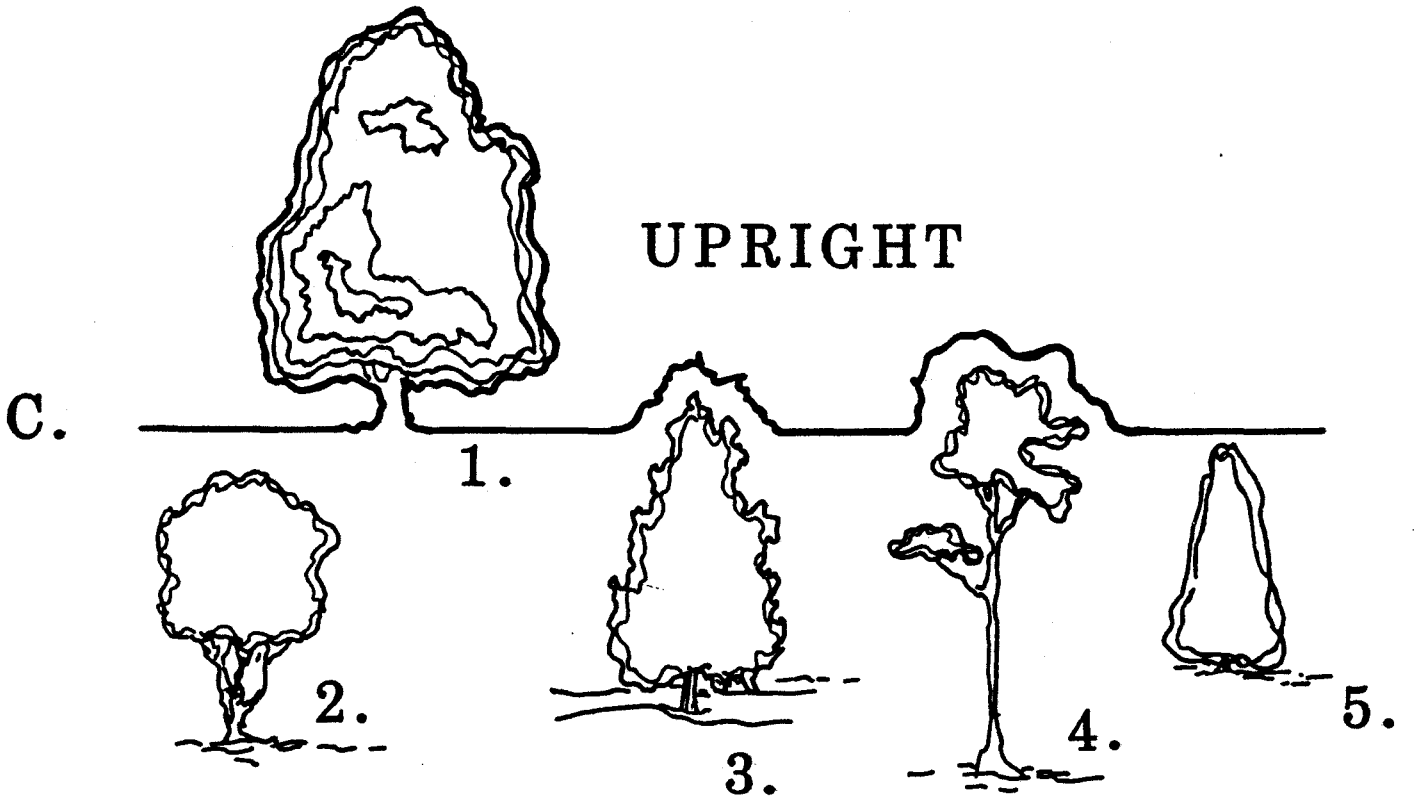
SPECIES		SITE CLASS	LIGHT	TYPE	CROWN SPREAD (ft)	CANOPY AREA (sq ft)	FORM	HEIGHT (ft)	P/L	USE
ACER										
A. rubrum	Red Maple	H-M	H	D	25	491	C1	35-50	B	O
BACCHARIS										
B. halimifolia	Groundsel Tree Salt Bush	H-M-Z	H	E	8	50	C2	7-12	A	U
BETULA										
B. nigra	River Birch	H	H	D	16	201	C1	45-65	B	O
CALLISTEMON										
C. rigidus	Bottlebrush, stiff	H-M	H	E	5	20	C2	8-15	A	U
C. viminalis	Bottlebrush, weeping	H	H	E	10	79	B4	15-20	A	U
CARPINUS										
C. caroliniana	American Hornbeam	H	M-H	D	12	113	C1	25-35		O
CARYA										
C. floridana	Scrub Hickory	Z	M-H	D	12	113	B2	10-20	A	U
C. glabra	Pignut Hickory	M	M-H	D	30	707	C1	80-100	C	O
C. illinoensis	Pecan	M	H	D	30	707	C1	60-100	C	O
C. tomentosa	Mockernut Hickory	M	M-H	D	30	707	C1	80-100	C	O
CELTIS										
C. laevigata	Sugarberry (Hackberry)	M	H	D	40	1257	C1	40-60	B	O
CHIONANTHUS										
C. virginicus	Fringe Tree	M	H-M	D	10	79	B2	15-25	A	U
CINNAMOMUM										
C. camphora	Camphor	M	H	E	30	707	A	40-50	C	O
CORNUS										
C. florida	Flowering Dogwood	M	M	D	16	201	B1	20-30	B	U
CRATAEGUS										
C. sp.	Hawthorne	M	M-H	D	12	113	B1	15-20	A	U
ERIOBOTRYA										
E. japonica	Loquat, Japanese Plum	M	H	E	10	79	B1	15-20	A	U

SPECIES		SITE CLASS	LIGHT	TYPE	CROWN SPREAD	CANOPY AREA	FORM	HEIGHT	P/L	USE
EUCALYPTUS										
E. cinerea	Silver Dollar Eucalyptus	M	H	E	12	113	B4	15-25	A	O
FRAXINUS										
F. caroliniana	Pop Ash	H	H	D	25	491	C1	40-60	B	O
GLEDITSIA										
G. aquatica	Water Locust	H	M	D	15	177	C1	40-60	B	O
GORDONIA										
G. lasianthus	Loblolly Bay	H-M	H	E	16	201	C3	30-40	B	O
ILEX										
I. attenuata	East Palatka Holly			E	16	201	C3	25-30	B	O
I. cassine	Dahoon Holly	H-M	M-H	E	16	201	C3	25-30	B	U
I. opaca	American Holly	M-Z	M-H	E	16	201	C3	30-45	B	O
I. vomitoria	Yaupon Holly	H-M-Z	M-H	E	8	50	C2	15-25	A	U
JUNIPERUS										
J. silicicola	Southern Redcedar	M-Z	H	E	12	113	C5	25-30	B	O/U
KOELREUTERIA										
K. elegans (bipinnata)	Golden Rain Tree	M	H	D	20	314	B3	30-50	B	O
LAGERSTROEMIA										
L. indica	Crapemyrtle	M	H		12	113	C2	15-25	A	U
LIGUSTRUM										
L. japonicum	Wax Leaf Ligustrum	M	M-H	E	6	28	B1	10-15	A	U
LIQUIDAMBAR										
L. styraciflua	Sweetgum	H-M	H	D	25	491	C3	60-100	C	O
MAGNOLIA										
M. grandiflora	Southern magnolia	H-M	M-H	E	25	491	C1	50-100	C	O
M. virginiana	Sweetbay magnolia	H-M	M-H	E	16	201	C3	30-60	B	O
MYRICA										
M. cerifera	Wax Myrtle	H-M	M-H	E	6	28	B2	10-18	A	U
OSMANTHUS										
O. americana	Wild Olive, Devilwood	H-M	H	E	8	50	C2	15-30	A	U
O. megacarpa	Scrub Olive	Z	H	E	10	79	C3	12-15	A	U
PARKINSONIA										
P. aculeata	Jerusalem Thorn	M	H	D	16	201	B3	20-30	A	U

SPECIES		SITE CLASS	LIGHT	TYPE	CROWN SPREAD	CANOPY AREA	FORM	HEIGHT	P/L	USE
PERSEA										
P. borbornia	Red Bay	H-M	M-H	E	12	113	C1	20-60	B	O/U
PINUS										
P. clausa	Sand Pine	Z-M	H	E	25	491	C3	60-80	B	O
P. elliottii	Slash Pine	M-H	H	E	25	491	C4	80-100	B	O
P. elliottii var. densa	South Florida Slash Pine	M-H-Z	H	E	25	491	C4	80-100	B	O
P. palustris	Longleaf Pine	Z-M	H	E	25	491	C4	80-100	B	O
PLATANUS										
P. occidentalis	Sycamore	M-H	H	D	30	707	C1	50-80	C	O
PRUNUS										
P. angustofoia	Chickasaw Plum	M-Z	H	D	12	113	B4	15-20	A	U
P. caroliniana	Cherry Laurel	M	M-H	E	12	113	C1	30-40	C	O
P. serotina	Wild Black Cherry	H-M-Z	H	D	20	314	C1	50-65	B	O
QUERCUS										
Q. chapmanii	Chapman Oak	Z-M	H	D	15	177	B1	15-20	A	U
Q. geminata	Sand Live Oak	Z-M	H	E	12	113	B4	15-30	A	U
Q. incana	Bluejack Oak	Z-M	H	D	12	113	C1	20-30	B	O
Q. laevis	Turkey Oak	Z-M	H	D	15	177	C1	40-50	B	O
Q. laurifolia	Laurel Oak	M	M-H	semi D	35	962	C1	60-100	C	O
Q. myrtifolia	Myrtle Oak	Z-M	H	E	10	79	B2	15-20	A	U
Q. nigra	Water Oak	H-M	M-H	semi D	30	707	C1	60-100	C	O
Q. virginiana	Live Oak	H-M	M-H	E	50	1964	A	50-60	C	U
TAXODIUM										
T. distichum	Baldcypress	H-M	H	D	20	314	C3/B4	60-100	B	O
TILIA										
T. caroliniana	Carolina Basswood	H-M	M-H	D	25	491	B2	50-60	C	O
ULMUS										
U. alata	Winged Elm	M	H	D	25	491	B3	20-25	B	U
U. americana var. floridana	Florida Elm	M	H	D	30	707	C1	80-100	C	O
U. parvifolia	Drake Elm, or Chinese Elm	M	H	semi D	16	201	B3	30-40	B	U

FORM





NOT TO SCALE

DRAWING 1

SHRUBS IN BUFFER YARDS

Shrubs that grow well in Winter Haven are listed in Table II on pages 16 through 19, and ground covers and vines for the City are listed in Appendix A beginning on page 63. As in Table I, the shrubs, ground covers, and vines are listed alphabetically by their scientific names, with the common name nearby. For the forty-nine (49) shrubs listed in Table II, the maximum height, soils requirements, and the period of flowering is provided. The soils are again classified as wet (hydric), medium (mesic), or dry (xeric).

The forty-three (43) ground covers and vines in Appendix A, are listed by the same soils classifications used in the tables; by the light intensity requirements of the plants; and by the color and season of flowering. The light intensity is shown as "L" for low light, "P" for partial shade, and "F" for full sun. The ground covers and vines are in the appendix because there is no specific requirement to use them in a buffer yard. It is permissible to substitute them on the basis of "three-for-one" for medium/small shrubs in the buffer yard, if you choose to do so.

TABLE II

SHRUBS FOR BUFFER YARDS

KEY: Soils: H = Hydric, M = Mesic, Z = Xeric
Period: Sp = Spring, S = Summer, F = Fall
Height in Feet

SPECIES	MAX HT.	SOILS	PERIOD
Abelia grandiflora Glossy Abelia	5	M	S
Baccharis halimifolia Groundsel Tree/Saltbush	12	H-M-Z	F
Befaria racemosa Tarflower	7	M	S
Bumelia tenax Silver Buckthorn	10	Z	-
Camellia japonica Camellia	6	M	-
Carrissa g. Boxwood Beauty	3	M	-
Cortaderia selloana Pampas Grass	8	M	S
Cycas revoluta King Sago	5	M	-
Duranta repens Golden Dewdrop	12	M	Sp-S-F
Garberia heterophylla Garberia	3	Z	F
Gardenia jasminoides Gardenia	6	M	Sp
Hydrangea macrophylla Hydrangea	4	M	S
Hypericum hypericoides St. Andrew's Cross	2	H-M-Z	Sp-S
Hypericum reductum St. John's Wort	2	M-Z	S-F

SPECIES	MAX HT.	SOILS	PERIOD
Ilex cornuta `Bufordi' Buford Holly	8	M	-
Ilex cornuta `Dwarf Bufordi' Dwarf Buford Holly	5	M	-
Ilex cornuta `Rotunda' Rotunda Holly	4	M	-
Ilex glabra Gallberry	8	M	-
Ilex opaca arenicola Scrub Holly	15	M-Z	-
Ilex vomitoria `nana' Shillings Holly	3	M	-
Ilex vomitoria `Pendula' Weeping Yaupon Holly	8	M	-
Illicium anisatum Japanese Anise	15	M	-
Illicium floridanum Star Anise	15	H-M	Sp
Illicium parviflorum Florida Anise	8	H-M	S
Itea virginica Virginia Willow	6	H-M	Sp
Jasminum nitidum Shining Jasmine	6	M	S
Jasminum pubescens Downy Jasmine	5	M	S
Juniperus `Pfitzeriana' Pfitzer Juniper	6	M-Z	-
Juniperus conferta `Compacta' Dwarf Shore Juniper	2	M-Z	-
Juniperus squamata `Expansa'	2	M-Z	-

SPECIES	MAX HT.	SOILS	PERIOD
Leucophyllum frutescens Texas Sage	5	M	S
Ligustrum japonicum Ligustrum	15	M	-
Lyonia ferruginea Rusty Lyonia	8	M-Z	S
Lyonia lucida Shiny Lyonia/Fetterbush	6	M	S
Myrica cerifera Wax Myrtle	18	H-M	-
Persea humilis Silk Bay	15	M-Z	Sp
Pittosporum tobira Green Pittosporum	8	M	-
Pittosporum tobira `Compacta' Compact Pittosporum	6	M	-
Pittosporum tobira `Variegata' Variegated Pittosporum	6	M	-
Raphiolepis indica India Hawthorn	5	M	Sp
Rhododendron `Duc de Rohan' Azalea, `Duc de Rohan'	5	M	Sp
Rhododendren simsii Indian Azalea	10	M	Sp-S
Rhododendron serrulatun Swamp azalea	6	H-M	S
Serenoa repens Saw Palmetto	6	M-Z	-
Thryallis glauca Thryallis, Shower-of-Gold	5	M	S
Vaccinium darrowi Little Blueberry	2	M-Z	Sp

SPECIES	MAX HT.	SOILS	PERIOD
Viburnum obovatum Blackhaw	10	M	-
Viburnum suspensum Sandankwa Viburnum	6	M	-
Zamia floridana Coontie	2	M	-

SECTION III

BUFFER YARDS

BUFFER YARDS

"Greenery hides a multitude of sins." ...Frank Lloyd Wright

A buffer yard is an area of land between land uses and streets that screens and blocks vision, light, noise, pollutants, and other negative effects of one land use on another. The width, the density of landscaping, the addition of walls and fences, and the construction of berms in a buffer yard insure that it will do what it is intended to do.

According to Lane Kendig, "inventor" of the buffer yard idea, "It is obvious that buffer yards provide visual barriers which block out the glare of lights, signs, and other visual nuisances. In addition, planted buffers function in two ways to block noise. Distance and plant material reduce the intensity of noise, and wooded areas introduce the background noises of trees, wind, and birds. While these background noises do not actually reduce noise, they make it less noticeable and therefore less annoying. Buffers also shield the source of the noise from view, which tends to distract attention from the nuisance and thereby minimizes its perceived impact. They may also serve as a protective and safety barrier, insofar as they block physical passage. Finally, relatively heavily planted buffer yards reduce air pollution, dust, dirt, and litter. Greenery in urban areas may make important contributions to better air and aid improvements of water quality."

Buffer yards required by the Ordinance are on your property and remain in your ownership. While the buffer yards are a requirement, there are numerous options available to you. You therefore, may choose any of the options in order to meet the buffer yard requirements.

In this Section are tables that display the kind of buffer yards required between two land uses, and drawings of each of the buffer yards. Table III, on page 28, is for buffer yards between land uses, not including streets. Table IV, page 29, is for buffer yards between proposed land uses and vacant land, and Table V, page 30, is for buffer yards between land uses and streets.

In each table, the first column on the left contains the "Proposed Land Use". The land uses are described so that you can match your intentions to one of the classes of land uses, which is displayed in the second column. In Table III, the classes are also repeated across the top of the chart under the words "Adjacent **Existing Land Use**". In Table IV, all of the zoning districts of the city are across the top of the chart under the words "Adjacent **Vacant Land** (By Zoning District)". Finally, in Table V, the classifications of the streets are across the top under the words "Adjacent Arterial, Collector, or Residential **Street**". The key words are highlighted to emphasize and clarify for you where the buffer yards are required.

The buffer yards, which are designated by the capital letters from "A" through "I", appear in drawings on pages 31 through 39 in this Section. At the upper left you will find a list of the trees and shrubs required **for each one hundred feet (100'), or portion of the buffer yard** , with a symbol used in the drawings on the rest of the page.

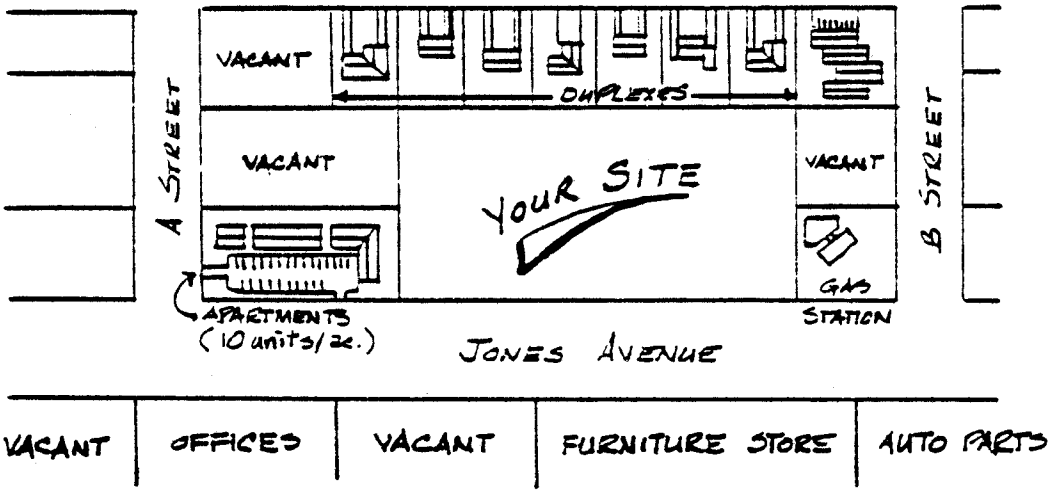
You will note that the trees are divided into "overstory" and "understory" categories, which was described in Section II of these guidelines. The shrubs are divided into "large" and "medium/small". Table II, pages 16 through 19, lists 12 large, 26 medium, and 11 small shrub species for you to select from. Ground covers and vines from Appendix A, may be substituted on a two-for-one basis for medium/small shrubs in a buffer yard. **Please note** that the option is still open for you to plant anything in the buffer yard you wish. However, if the plant materials are not on the list of approved species, you will not receive credit for meeting the minimum requirements of the Ordinance.

Below the list of required plants are a series of parallel drawings of the several options you have in providing your buffer yard. Each buffer yard requirement can be met by applying any of at least four different solutions show in the buffer yard drawings. Three of the buffer yards ("F", "G", and "I") give you five options. Left of each drawing is a number, which is the "Plant Unit Multiplier". The number "1" is the **standard buffer yard** and therefore, requires all of the plants listed. The other numbers are all preceded by decimals, indicating that only a portion of the plant material is required. This is because the buffer yard options are wider, or narrower, or they include a fence or a wall.

The drawings on the right of each page are to help you visualize what you buffer yard will look like when it has grown to maturity. In the upper right corner is what it will look like from your property looking toward you neighbor. The drawings below are what it will look like from the street. If a buffer yard is required along the street in front of you, the drawing in the upper right is how that buffer will appear.

MEETING THE BUFFER YARD REQUIREMENT:

In the following pages, you will find two examples of how to determine what the buffer yard requirements will be for two proposed developments in areas with a mixture of surrounding land uses. **The first example** is a one hundred (100) bed nursing home to be built on a seven acre site. The map below shows the site location and the nearby land uses.



STEP ONE: **IDENTIFY EACH OF THE ADJACENT LAND USES AND DESCRIBE THEM ON A MAP OR SITE PLAN.**

	DUPLEXES	
VACANT	YOUR PROPOSED NURSING HOME SITE	VACANT
APARTMENTS 10 units per acre		GAS STATION

JONES AVENUE - COLLECTOR STREET

STEP TWO: **FROM TABLES III, IV, AND V, DETERMINE THE LAND USE CLASS OF YOUR PROPOSED USE AND OF ALL OF THE ADJACENT USES AND ADD THESE TO YOUR MAP OR SITE PLAN.**

	DUPLEXES (LAND USE CLASS II)	
VACANT ZONED R-4	YOUR PROPOSED NURSING HOME SITE (LAND USE CLASS VI)	VACANT ZONED R-3
APARTMENTS 10 units per acre (CLASS V)		GAS STATION (CLASS VIII)

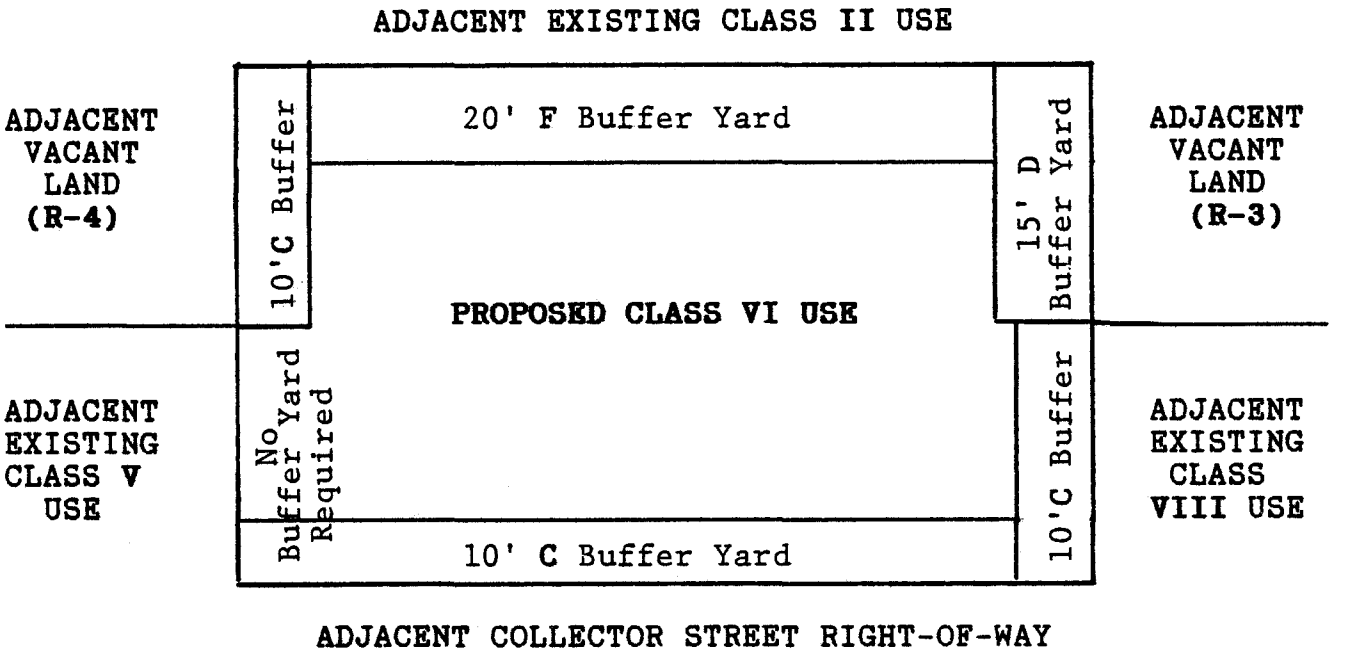
JONES AVENUE - COLLECTOR STREET

In Table III you found that your nursing home is a Class VI land use, that the gas station is a Class VIII land use, that the apartments at ten dwelling units per acre is a Class V land use, and that the duplexes are a Class II land use, since they are not single family detached and are less than four dwelling units per acre.

In Table IV you found that the zoning district for the vacant land is all you need to enter the table.

In Table V you found that since you know that Jones Avenue is a collector street, you can determine the buffer yard required there.

STEP THREE: DRAW IN THE BUFFER YARDS THAT YOU HAVE CHOSEN FROM THE TABLES AND THE DRAWINGS.

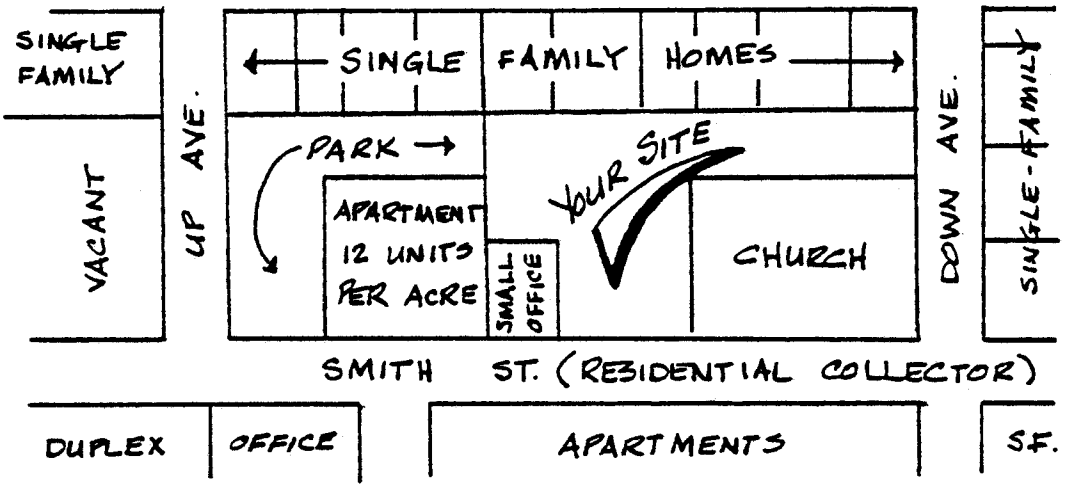


In Table III, you found that your Class VI land use, when compared to a Class II use (the Duplexes) at the top of the table, required an "F" buffer yard. Turning over to page 35 (Drawing 7 - Buffer Yard F), you found that the standard buffer yard is twenty feet (20′) in width. Also in Table III, you found that the Gas Station, which is a Class VIII use, requires a "C" buffer yard. Drawing 4 on page 32 shows that the standard buffer yard is ten feet (10′) wide. The Apartments, which are a Class V use, do not require a buffer yard at all.

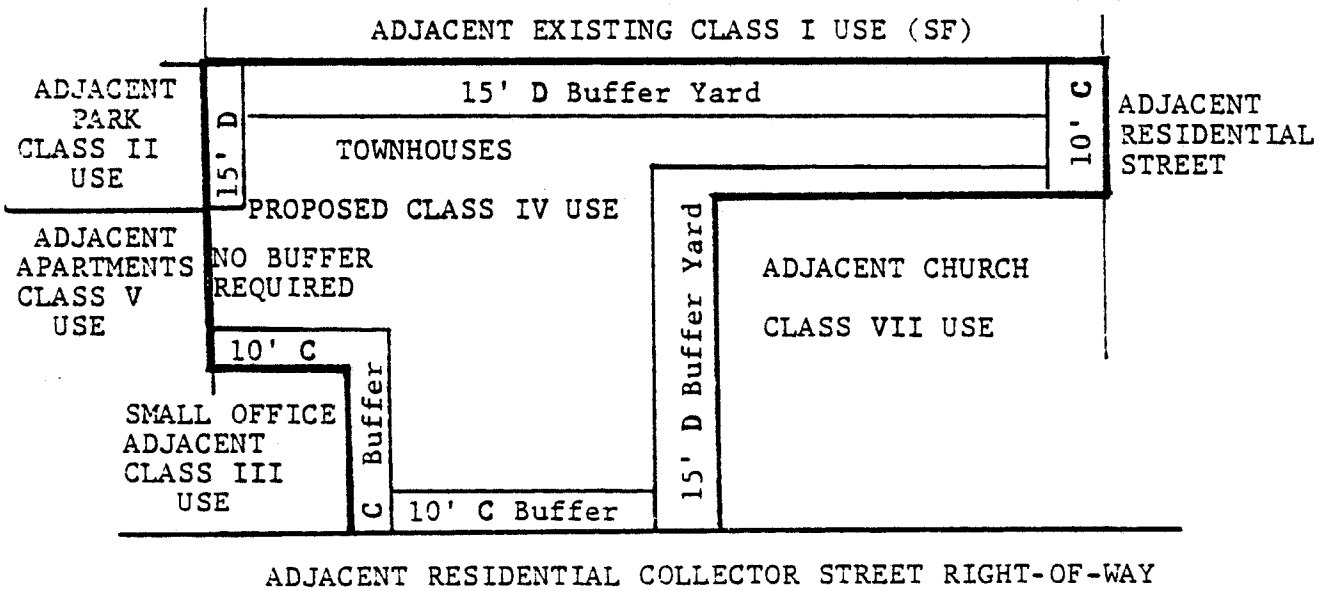
In Table IV, you found that the vacant land zoned R-3 required a "D" buffer yard, and the vacant land zoned R-4 required a "C" buffer yard. The standard "D" buffer yard is fifteen feet (15′) wide (Drawing 5, page 33), and the standard "C" buffer yard is ten feet (10′) wide.

To complete the buffer yards, you went to Table V to determine the requirement along the Collector Street in front of your property. Across the street are business land uses and zoning, and the Planning Department showed you a map indicating that Jones Avenue is a "Nonresidential Collector Street" (See Appendix B for Street Classifications). In the table you found that your nursing home will require a "C" buffer yard along the street, which you already know has a standard of ten feet (10') width.

The second example is a townhouse development that you intent to construct at a density of six (6) dwelling unit per acre on a site shown in the map below.



The buffer yard requirements are as shown on the site map below. Using the steps from the first example, can you reach the same conclusions?



Now that you are familiar with the buffer yard tables and the drawings, there are a few other things you should know about buffer yards. In the following paragraphs are some additional options and limitations on selecting the right buffer yard for your purposes and the plant materials to go in it.

a. Palm trees may be planted in your buffer yard. **The rule is that for each overstory or understory tree required by the drawings, you may substitute two (2) palm trees, up to a maximum of fifty percent (50%) of the required trees in the buffer yard.** Following are the palms that may be substituted two-for-one for overstory trees:

Cabbage Palm	(Sable Palmetto)
India Date Palm	(Phoenix Sylvestis)
Queen Palm	(Syagrus Romanzoffianum)
True Date Palm	(Phoenix Dactylifera)
Washingtonia	(Washingtonia Robusta)

b. The following two palm trees are special in that they may be substituted one-for-one for fifty percent (50%) of the overstory trees in your buffer yard:

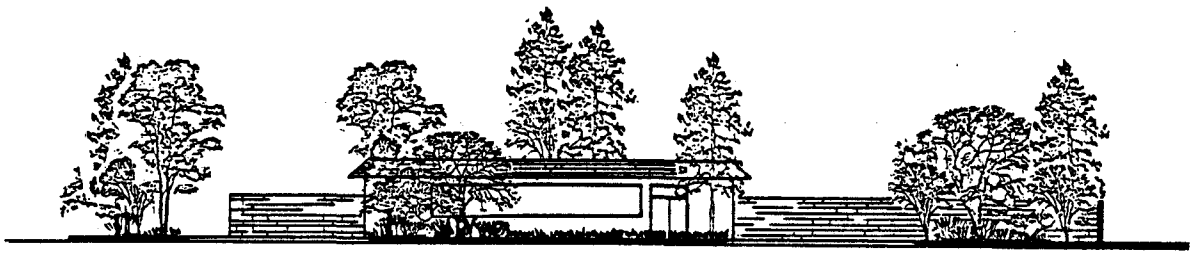
Canary Island Date Palm	(Phoenix Canariensis)
Senegal Date Palm	(Phoenix Reclinata)

c. Now, the following palms are the ones that may be substituted two-for-one, for up to a maximum of fifty percent (50%) of the understory trees required in your buffer yard:

Chinese Fan Palm	(Livistona Chinensis)
European Fan Palm	(Chamaerops Humilis)
Lady Palm	(Rhaphis Excelsa)
Paurotis Palm	(Acoelorrhaphe Wrightii)
Pigmy Date Palm	(Phoenix Roebelenii)
Pindo Palm	(Batia Capatata)
Wind Mill Palm	(Trachycarpus Fortani)

d. **Buffer yards are not the same thing as a "required yard" in the Zoning Ordinance.** In deciding how wide a buffer yard you may want to choose, you should consult the zoning setback for your property to see if it requires more or less width. **The rule here is that the more stringent requirement must be adhered to.** In other words if, as an example, the zoning setback is fifteen feet (15') and the buffer yard is ten feet (10'), you must maintain the fifteen foot (15') setback. Because of the options available in sizing the buffer yard, you may want to adjust it to the same fifteen feet (15'). If, however, the zoning setback is ten feet (10') and the buffer yard minimum is fifteen feet (15'), you must provide the fifteen foot (15') wide buffer, so the zoning setback "automatically" becomes fifteen feet (15').

e. Driveway access from an abutting street to your property will not count against your buffer yard. This means that the width, or widths, of the driveways will be subtracted from the length of the property line they cross, and only the unpaved portion of the property line must have a buffer yard. As an an example, if you have a property line that is two hundred feet (200′) long next to a street, and you will have a two-way driveway somewhere along that property line, the forty-two foot (42′) driveway is subtracted from the two hundred feet (200′) leaving one hundred fifty-eight feet (158′) that will be your buffer yard. The drawing below shows another example of how the buffer yard might look with two driveways.



f. Utility easements in a buffer yard do not prohibit the planting of shrubs in the area of the easement for an underground utility, **but no tree will be planted within twelve feet of a buried utility.** Easements for overhead wires only prohibit the planting of large trees, so understory trees are allowed in narrow buffer yards under power lines.

g. The "visibility triangle", which is the subject of regulations set forth in Section 26, Article V, of this Chapter of the city Code, shall be provided at all locations where a driveway intersects with a street. This means that plant materials must be sized to provide clear view of on-coming traffic, where the buffer yard us adjacent to the street.

h. Shrubs planted around padmount transformers should be set back far enough not to be damaged by maintenance of the transformer, as shown in the drawing to the right.

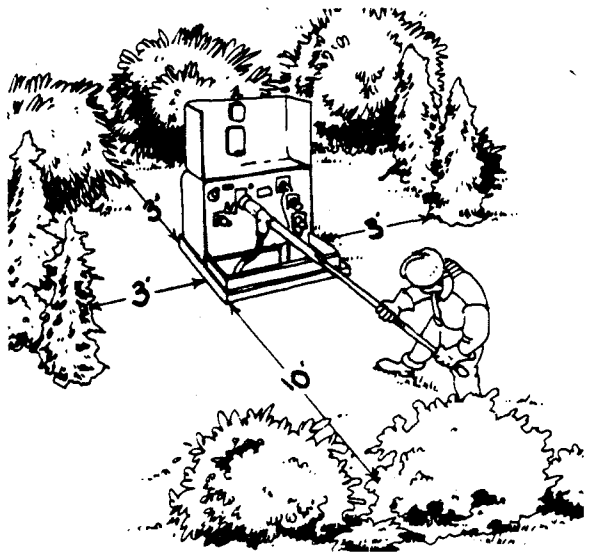


TABLE III: BUFFER YARDS BETWEEN LAND USES

		ADJACENT EXISTING LAND USE									
PROPOSED LAND USE	CLASS	I	II	III	IV	V	VI	VII	VIII	IX	X
Single family detached	I	A	B	C	D	E	F	F	G	H	I
Multi-family < 4du/ac. & rec./cem.	II	B	B	C	D	E	F	F	G	H	H
Small office & day care centers	III	C	C	B	C	D	D	E	F	F	G
Mobile home parks up to 8 du/ac. Multi-family (4.01-8 du/ac.) and Townhouses at any density	IV	D	D	C	-	-	C	D	E	E	F
Mobile home parks, recreation vehicle parks and multi-family greater than 8.0 du/ac.	V	E	E	C	-	-	-	C	D	D	E
High-rise residential at any density and nursing homes	VI	F	F	F	C	-	-	-	C	C	D
Offices, churches, schools, other government buildings and small retail businesses	VII	F	F	F	D	C	-	-	-	B	C
All other businesses, service stations, motels, hotels and hospitals	VIII	G	G	G	F	D	C	-	-	-	B
Light industry and governmental public works storage facilities	IX	H	H	H	F	E	D	C	-	-	-
Heavy industry and water and sewer treatment facilities	X	I	I	I	G	F	E	D	C	-	-

TABLE IV: BUFFER YARDS BETWEEN LAND USES AND VACANT LAND

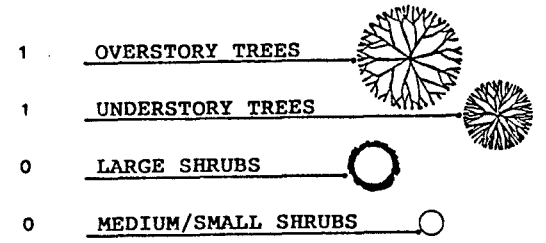
PROPOSED LAND USE	CLASS	ADJACENT VACANT LAND (BY ZONING DISTRICT)									
		RE/R-1	R-2/3	R-4	RP	RM	RT/BT	BR/MB	BA/BH	BW/ILR	ILS/IM
Single family detached	I	A	A	A	B	C	C	D	E	F	G
Multi-family < 4du/ac. & rec./cem.	II	A	A	B	B	C	C	D	E	F	G
Small office & day care centers	III	A	B	B	A	B	C	D	D	D	E
Mobile home parks up to 8 du/ac. Multi-family (4.01-8 du/ac.) and Townhouses at any density	IV	B	B	-	-	B	B	C	D	D	D
Mobile home parks, recreation vehicle parks and multi-family greater than 8.0 du/ac.	V	C	C	B	B	-	-	B	C	C	D
High-rise residential at any density and nursing homes	VI	D	D	C	C	B	-	B	C	D	D
Offices, churches, schools, other government buildings and small retail businesses	VII	D	D	D	C	C	C	-	-	B	B
All other businesses, service stations, motels, hotels and hospitals	VIII	E	E	E	D	C	B	B	-	-	-
Light industry and governmental public works storage facilities	IX	F	F	F	E	D	C	B	B	-	-
Heavy industry and water and sewer treatment facilities	X	G	G	G	F	E	D	C	C	B	-

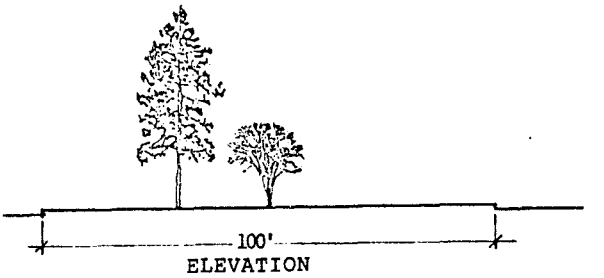
TABLE V: BUFFER YARDS BETWEEN LAND USES AND STREETS

		ADJACENT ARTERIAL, COLLECTOR, OR RESIDENTIAL STREET					
PROPOSED LAND USE	CLASS	MAJOR ARTERIAL	MINOR ARTERIAL	COLLECTOR NONRESIDENTIAL	COLLECTOR VACANT	COLLECTOR RESIDENTIAL	RESIDENTIAL STREET
Single family detached	I	D	D	C	B	B	B
Multi-family < 4du/ac. & rec./cem.	II	D	C	C	B	B	B
Small office & day care centers	III	C	C	B	B	C	C
Mobile home parks up to 8 du/ac. Multi-family (4.01-8 du/ac.) and Townhouses at any density	IV	C	C	C	C	C	C
Mobile home parks, recreation vehicle parks and multi-family greater than 8.0 du/ac.	V	C	C	C	C	C	D
High-rise residential at any density and nursing homes	VI	C	C	C	C	D	D
Offices, churches, schools, other government buildings and small retail businesses	VII	C	C	C	C	D	D
All other businesses, service stations, motels, hotels and hospitals	VIII	C	C	C	C	D	E
Light industry and governmental public works storage facilities	IX	C	C	C	D	D	E
Heavy industry and water and sewer treatment facilities	X	D	D	D	D	E	E

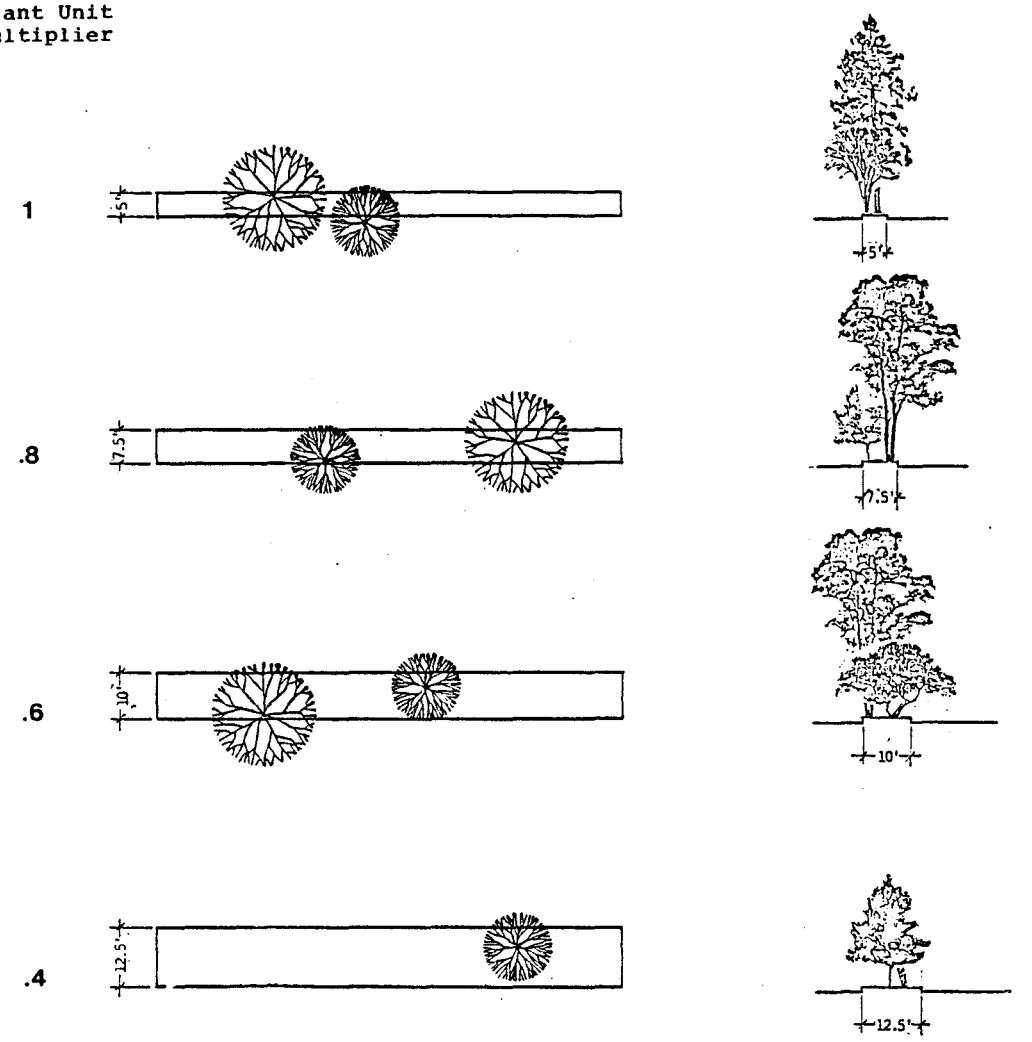
Note: Bufferyards of less than fifteen feet (15') in width shall substitute "understory trees" for "overstory trees" one-for-one. This requirement is imposed in order to avoid conflict with overhead and underground utilities. More specifically, no tree will be planted within twelve feet (12') of any underground utility.

REQUIRED PLANT UNITS / 100'





Plant Unit Multiplier



TYPICAL SECTIONS

DRAWING 2 BUFFERYARD A

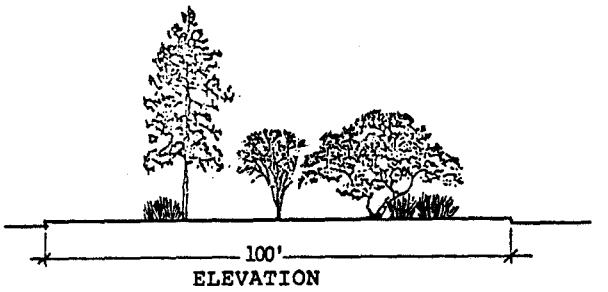
REQUIRED PLANT UNITS / 100'

1 OVERSTORY TREES

2 UNDERSTORY TREES

0 LARGE SHRUBS

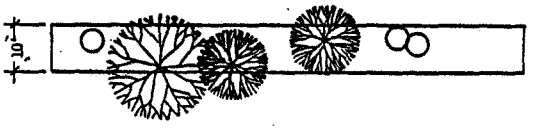
3 MEDIUM/SMALL SHRUBS



ELEVATION

Plant Unit Multiplier

1



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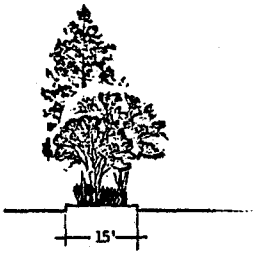

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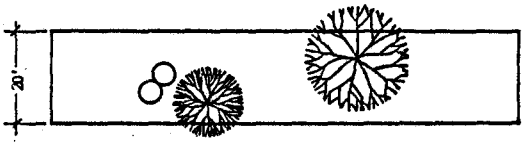
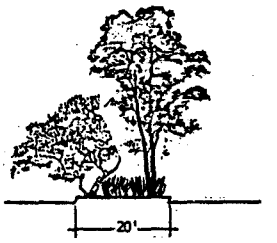
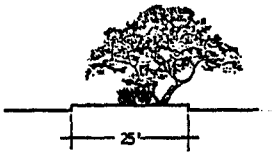




TYPICAL SECTIONS

.4



DRAWING 3 BUFFERYARD B

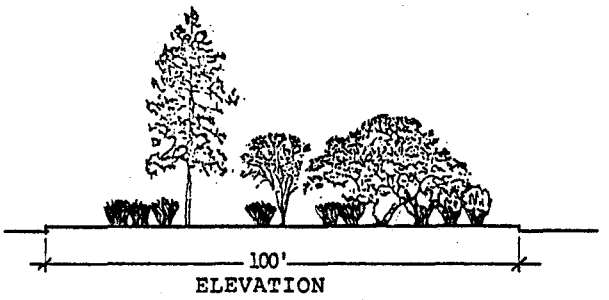
REQUIRED PLANT UNITS / 100'

1 OVERSTORY TREES

2 UNDERSTORY TREES

3 LARGE SHRUBS

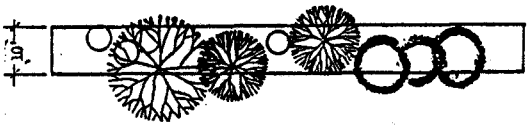
4 MEDIUM/SMALL SHRUBS

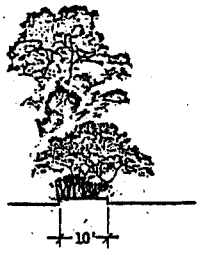


ELEVATION

Plant Unit Multiplier

1





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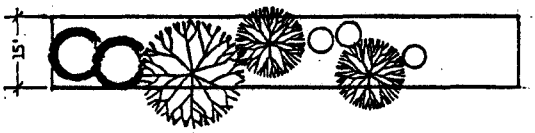

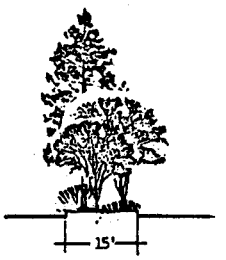

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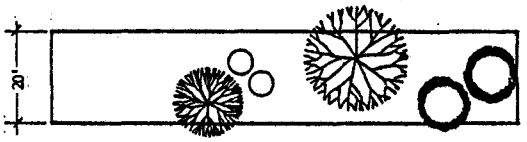

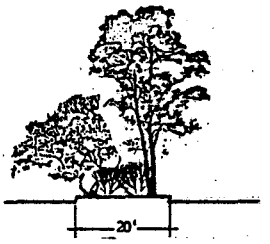

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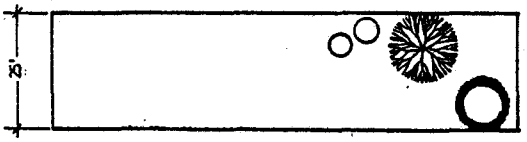
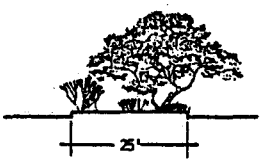


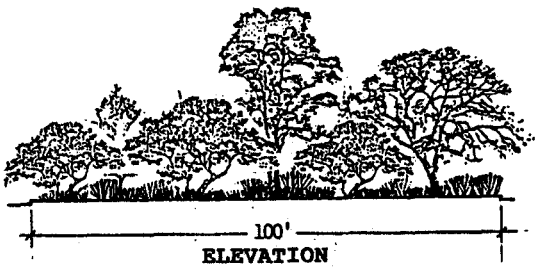


TYPICAL SECTIONS

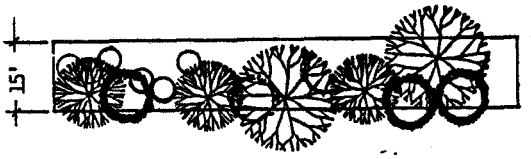
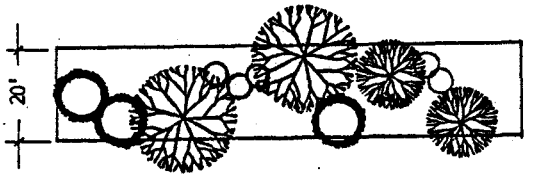
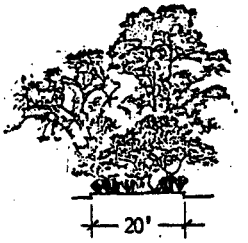
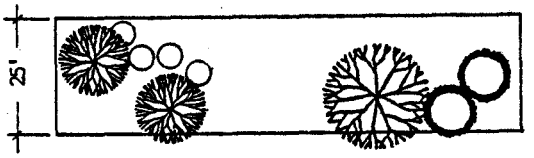
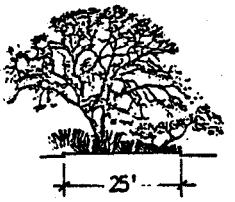
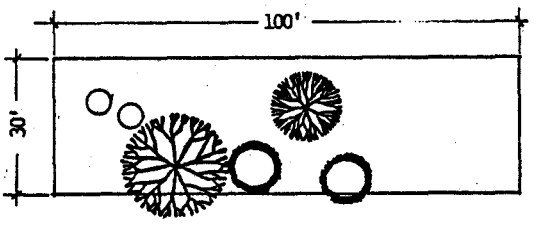
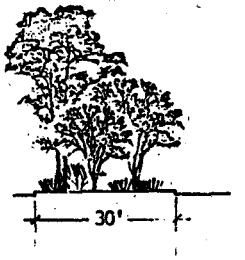
DRAWING 4 BUFFERYARD C

REQUIRED PLANT UNITS / 100'

2	OVERSTORY TREES
3	UNDERSTORY TREES
4	LARGE SHRUBS
6	MEDIUM/SMALL SHRUBS



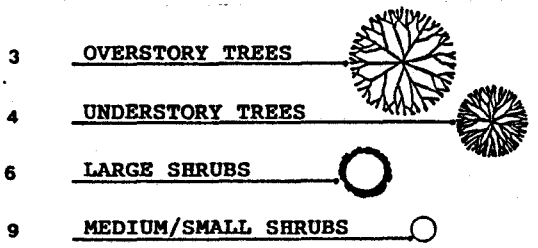
Plant Unit Multiplier

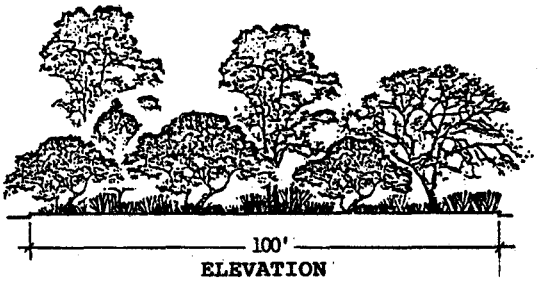
1		
.8		
.6		
.4		

TYPICAL SECTIONS

DRAWING 5 BUFFERYARD D

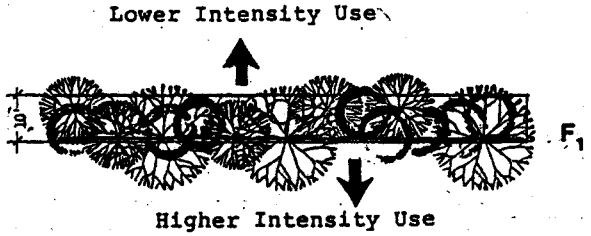
REQUIRED PLANT UNITS / 100'

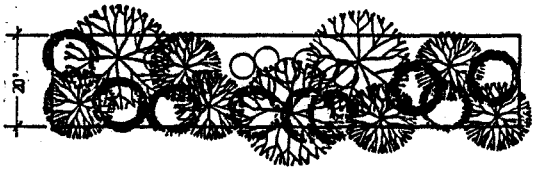


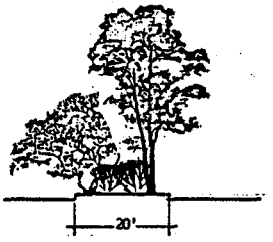


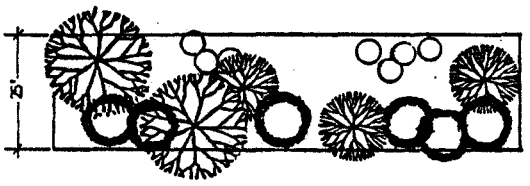
Plant Unit Multiplier

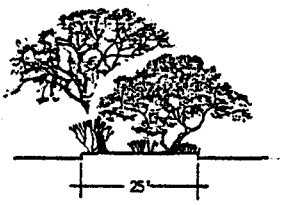
Structure Required

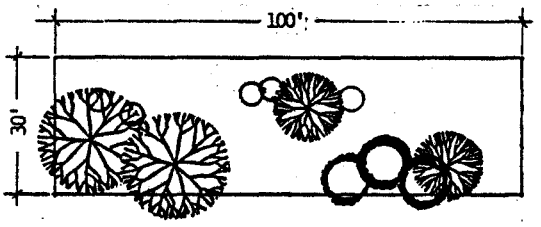


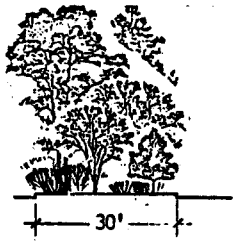










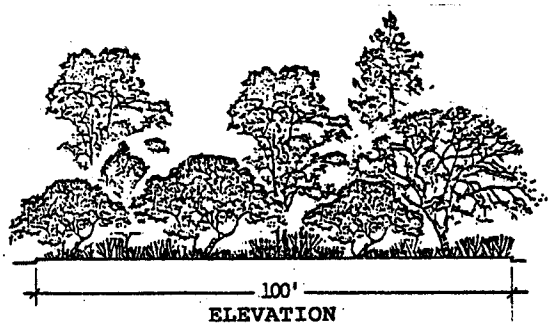


TYPICAL SECTIONS

DRAWING 6 BUFFERYARD E

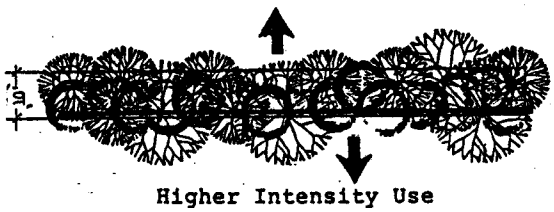
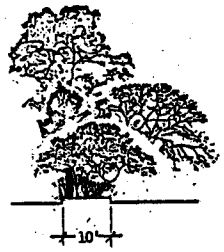
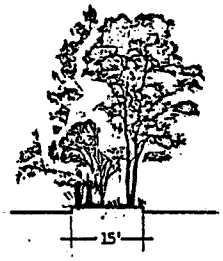
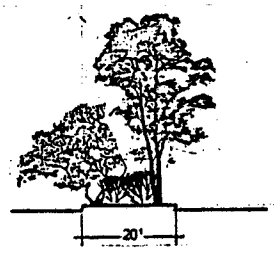
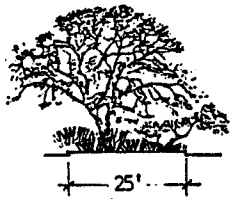
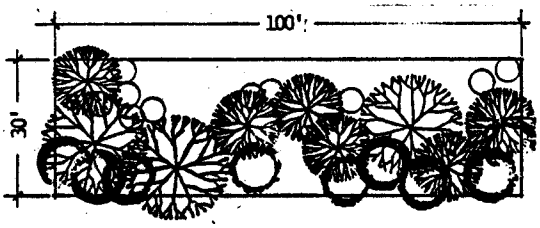
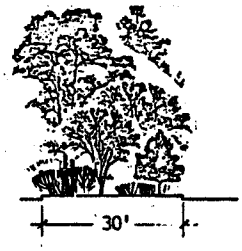
REQUIRED PLANT UNITS / 100'

4	OVERSTORY TREES
5	UNDERSTORY TREES
10	LARGE SHRUBS
15	MEDIUM/SMALL SHRUBS



ELEVATION

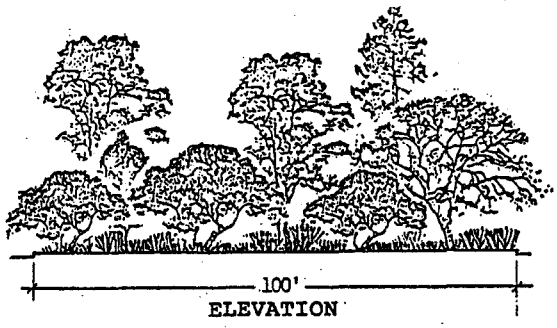
TYPICAL SECTIONS

Plant Unit Multiplier	Lower Intensity Use / Higher Intensity Use	Structure Required
.8		F_2 
.9		F_1 
1		
.8		
.6		

DRAWING 7 BUFFERYARD F

REQUIRED PLANT UNITS / 100'

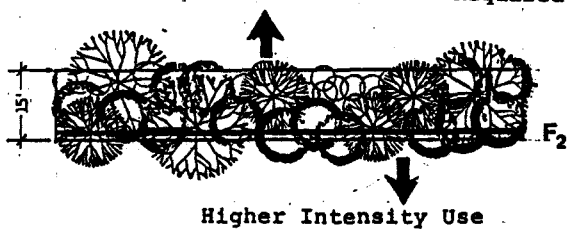
4	OVERSTORY TREES
6	UNDERSTORY TREES
12	LARGE SHRUBS
24	MEDIUM/SMALL SHRUBS



Plant Unit Multiplier

Lower Intensity Use

Structure Required



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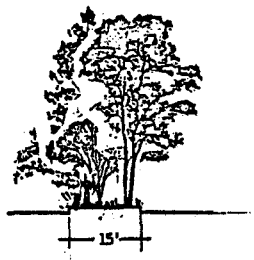
Higher Intensity Use



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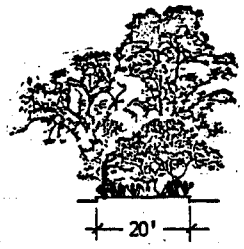

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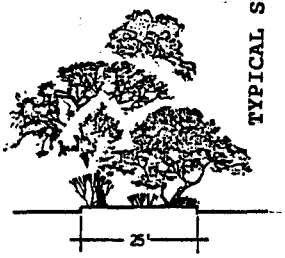
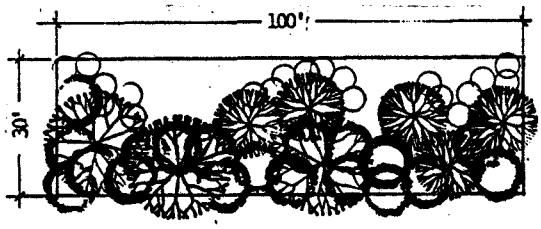


TYPICAL SECTIONS



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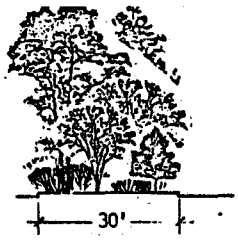

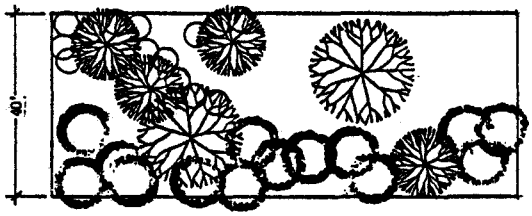

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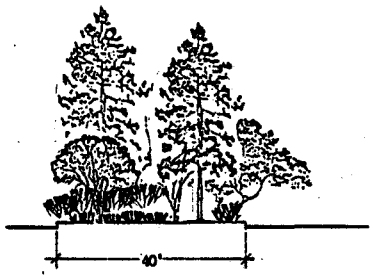
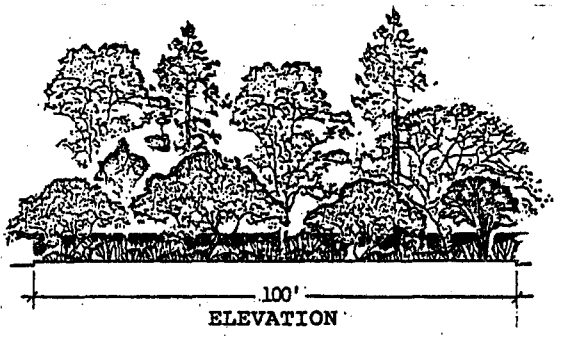


DRAWING 8 BUFFERYARD G

REQUIRED PLANT UNITS / 100'

5	OVERSTORY TREES
6	UNDERSTORY TREES
20	LARGE SHRUBS
30	MEDIUM/SMALL SHRUBS

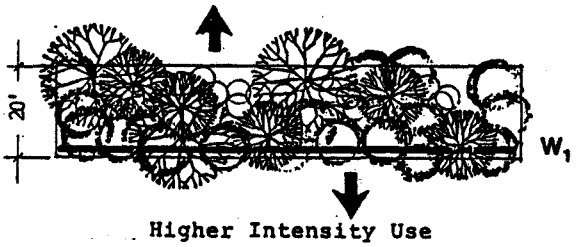


Plant Unit Multiplier

Lower Intensity Use

Higher Intensity Use

Structure Required



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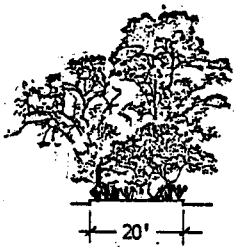

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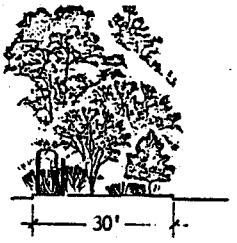

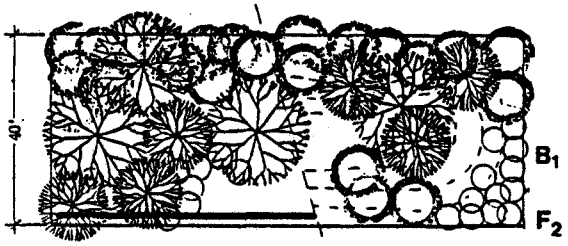

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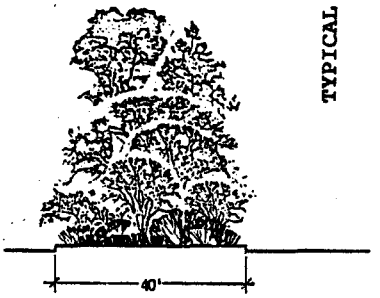
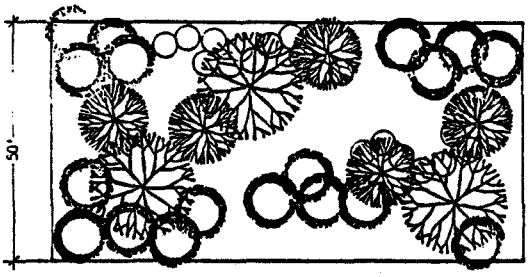


TYPICAL SECTIONS



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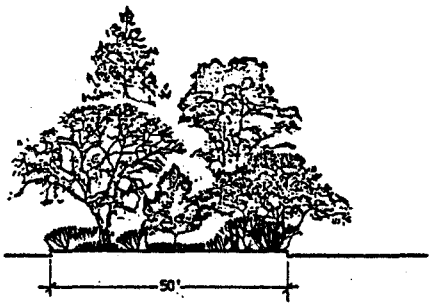
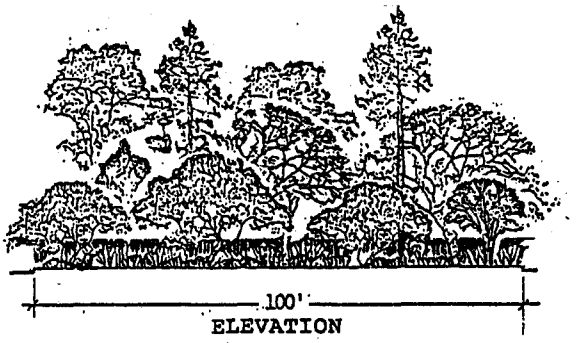
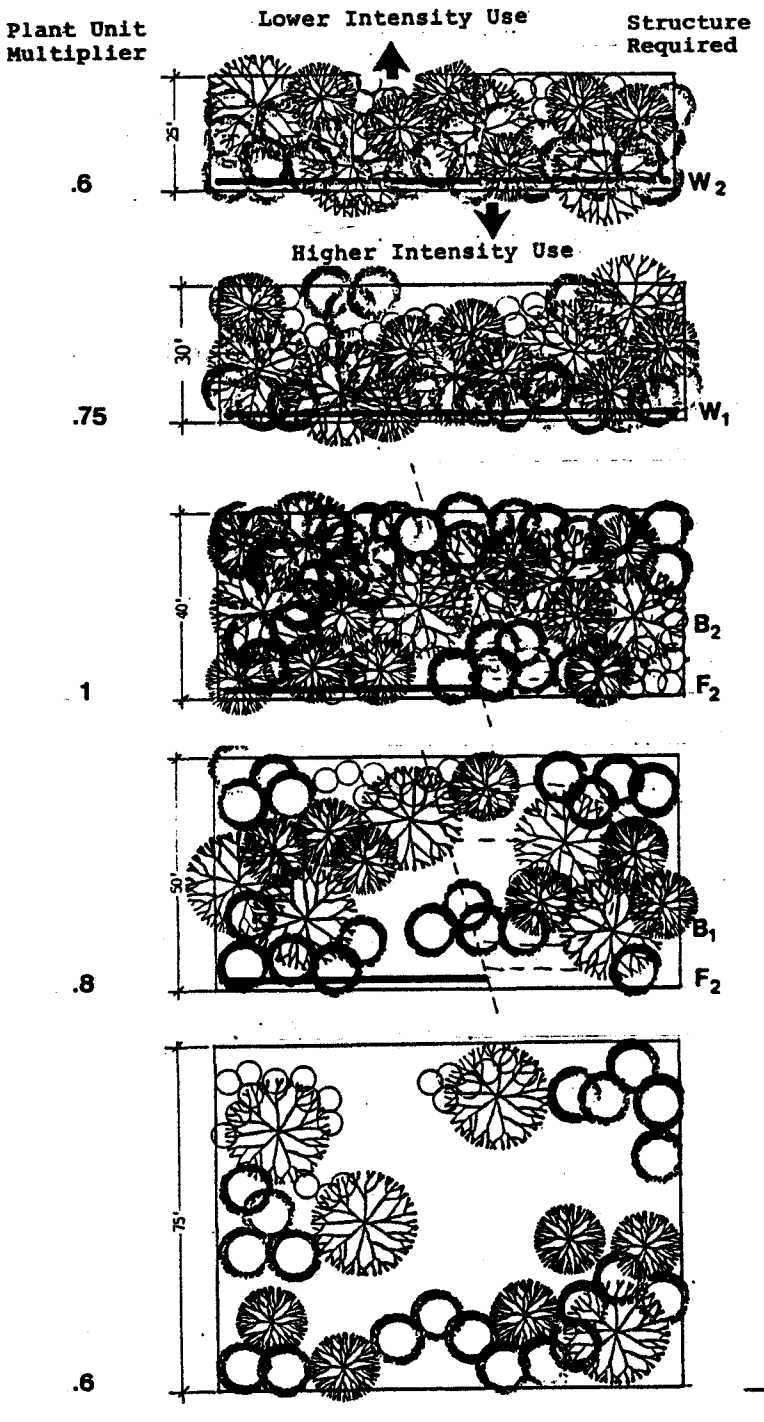


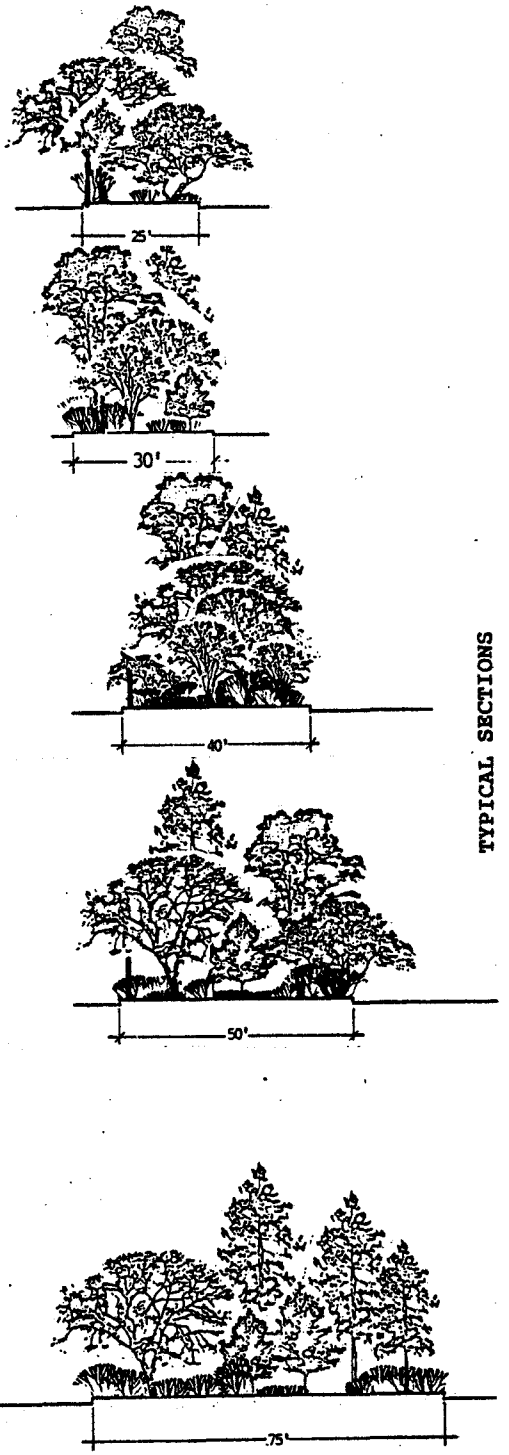
DRAWING 9 BUFFERYARD H

REQUIRED PLANT UNITS / 100'

6	OVERSTORY TREES
8	UNDERSTORY TREES
30	LARGE SHRUBS
36	MEDIUM/SMALL SHRUBS







TYPICAL SECTIONS

DRAWING 10 BUFFERYARD

SECTION IV

FENCES, WALLS AND BERMS

FENCES, WALLS AND BERMS FOR BUFFER YARDS

This Section contains drawings of the fences, walls and berms that may be used to meet the requirements of certain buffer yards. Each drawing contains several options for meeting the requirements, particularly in regard to the design of fences and walls. Berms are of two heights, depending on the buffer yard; four (4) or five (5) feet.

In the drawings of the "E" through "I" buffer yards on pages 35 through 39, there are letter and number combinations to the right of the buffer yard options. These indicate the requirement for a fence (F), a wall (W), and a berm (B). The small number with the capital letter tells you which fence, wall or berm is required.

For instance, in the "E" buffer yard (Drawing 6), one of the options has the notation "F1" to the right. In Drawing 11 of this Section you will find that and "F1" fence is four feet (4') high and made of wood, and that it can be designed in any of the patterns shown on the remainder of the drawing.

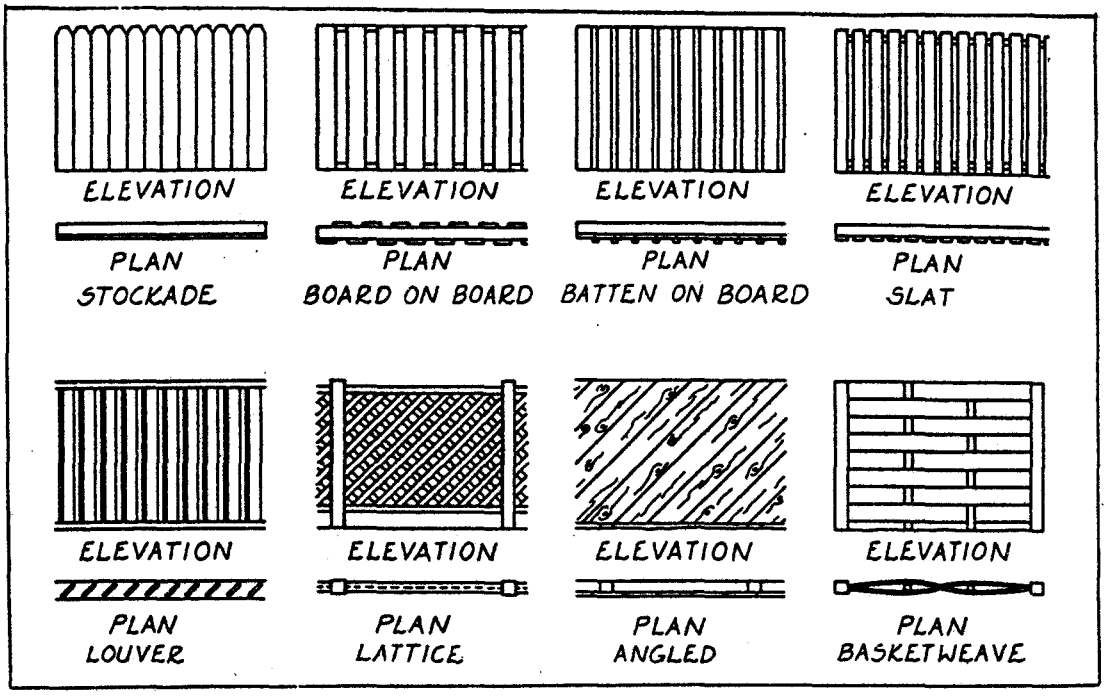
The example applies equally where you find the notation "W1" on Drawing 9, which is the "H" buffer yard. This means that by turning to Drawing 12 of this Section, you will find that "W1" is a six foot (6') high wall made of stone, brick, block or other masonry. There are ten different patterns or finishes, any of which will be in compliance with the Ordinance.

The last subject of this Section is the "berm." The word means a "mound or wall of earth," and it is required in two of the options you may choose in the "H" and "I" buffer yards on pages 38 and 39. The options for your berm are one that is four feet (4') in height and another the is five feet (5') high. Please note that the maximum slope permitted in constructing a berm is twenty-five percent (25%). This equates generally to a three foot (3') rise in ten feet (10').

There are no secrets or surprises to the requirement for fences, walls and berms. It is your option whether or not to use them, depending on the buffer yard you need, the space you have to plant and build your buffer yard, and the option you decide upon. The only time you may be required to add a fence, wall or berm to a buffer yard is when you are preserving a native buffer yard, which the subject of the next section of these guidelines.

FENCES

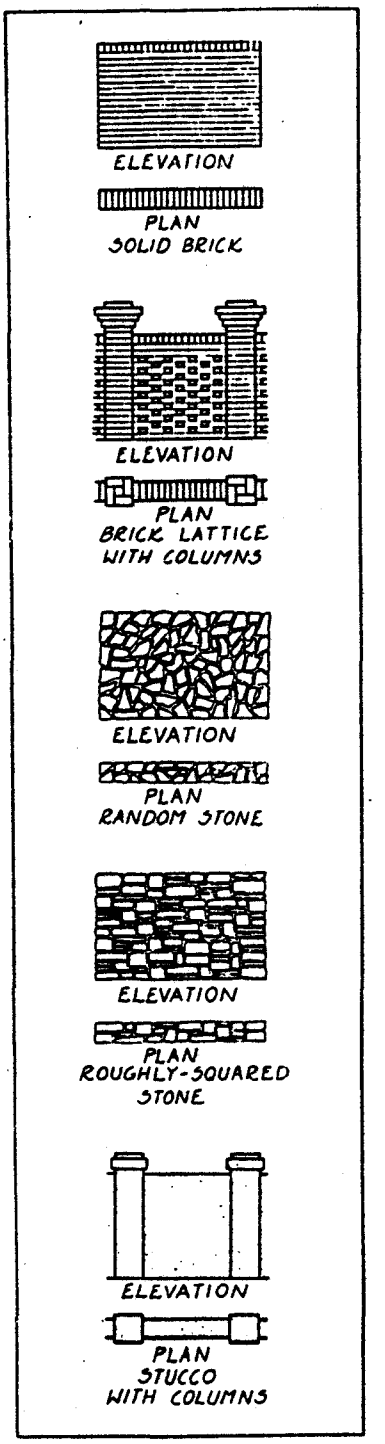
SYMBOL	HEIGHT	MATERIAL
F_1	4'	Wood
F_2	6'	Wood

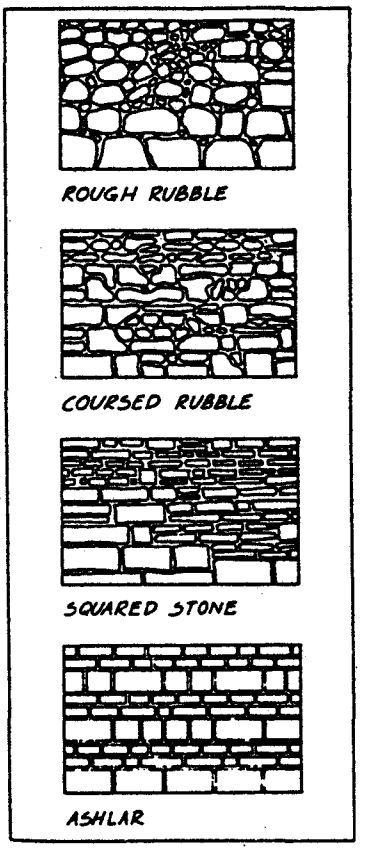


DRAWING 11

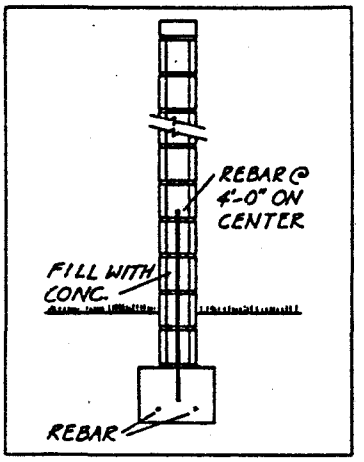
WALLS

SYMBOL	HEIGHT	MATERIAL
W_1	6'	Masonry
W_2	8'	Masonry



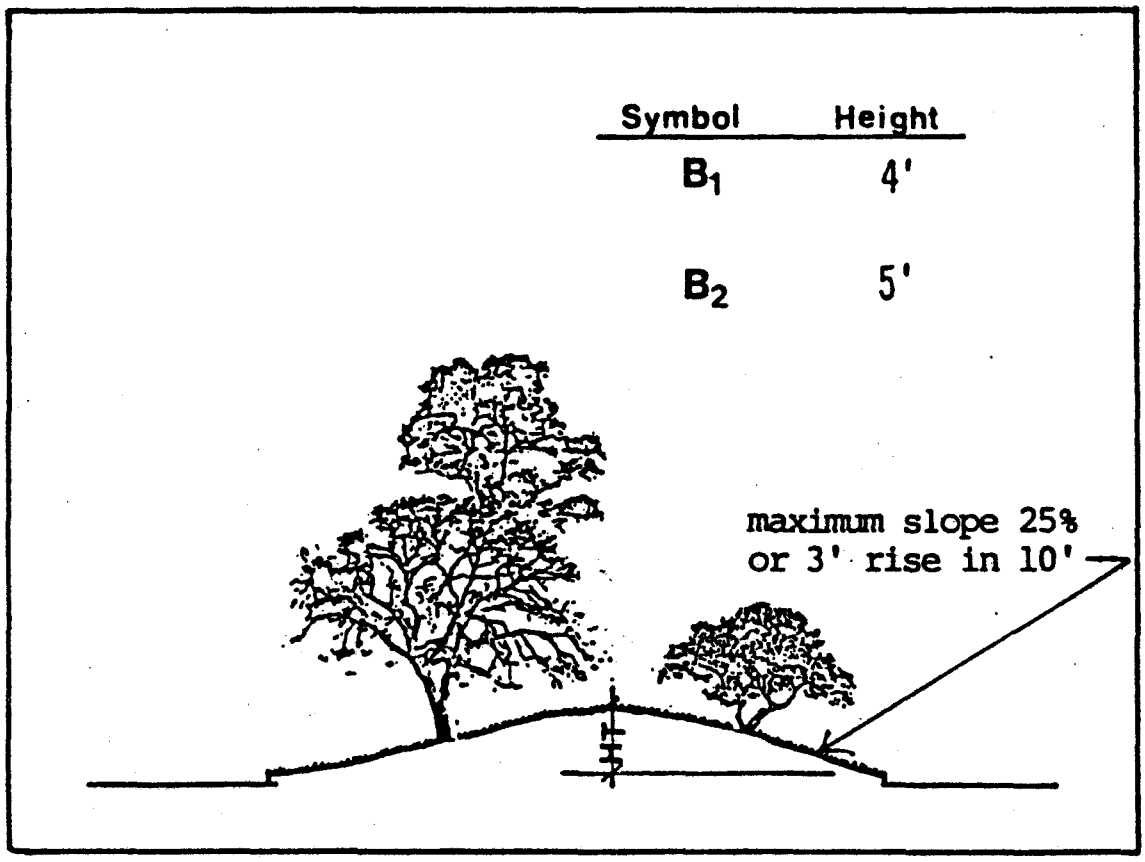


Typical Concrete Block



DRAWING 12

BERMS



DRAWING 13

SECTION V

NATIVE TREES AND SHRUBS

NATIVE TREES AND SHRUBS IN BUFFER YARDS

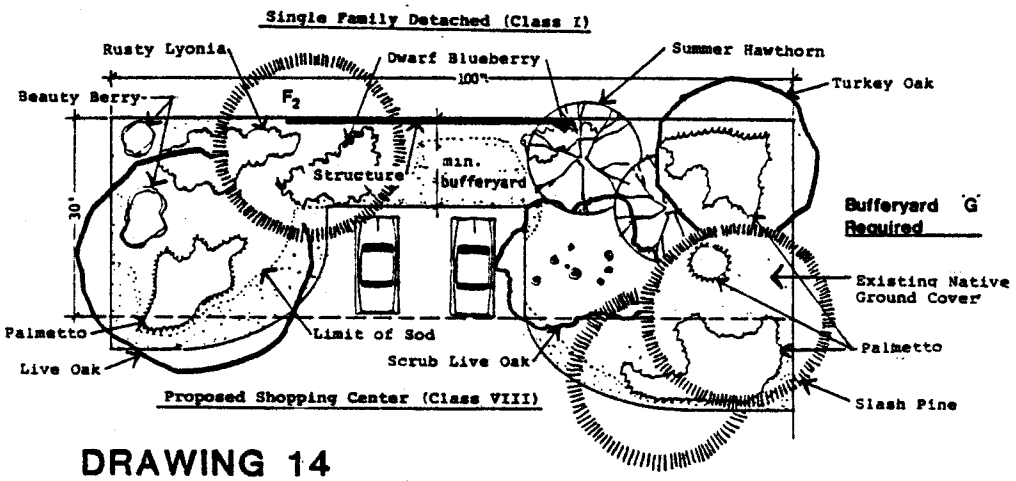
You are strongly encouraged by the Ordinance to preserve native trees, shrubs and ground covers in buffer yards. Where it is possible, you are encouraged to do this by leaving "stands" of trees and shrubs and not disturbing the ground covers, vines, grasses and the soil within the stand. If you can accomplish this end, the Ordinance allows you to vary the width and location of the buffer yard.

The rule is that you may vary the width and location of the buffer yard, so long as the land area is the same as the standard buffer yard, and the plant material supplies the minimum landscaping. If there are too few plants, you may have to add some to fulfill the buffer yard requirement. And, if the buffer yard is very narrow in places, or void of plant material, you may have to add a fence of wall to complete the buffer. The buffer may never be narrower than the narrowest buffer yard option available from the buffer yard drawings.

A natural buffer, which is how we refer to this kind of buffer yard, may also be used for other development purposes, such as, a limited amount of off-street parking, a dumpster pad location, stormwater retention areas (which is covered in more detail in the next Section of these guidelings), and recreation facilities, like a picnic table or a swing set. The area used for retention and recreation would not be deducted from the calculation of land area within the buffer yard.

Drawing 14, on the lower portion of this page, is an example of the possibilities that could develop in conjunction with a proposed Shopping Center, a Class VIII land use, next to single family home, a Class I land use. The stand of native trees and underlying shrubs is in two parts and is wider that the standard thirty foot (30') buffer yard. The calculation of land area results in the center portion of what would be the buffer yard being available for use as off-street parking. The buffer yard provided between the two stands of native plants is supplemented with plants and a fence, and has a minimum width of fifteen feet (15'), which is the narrowest "G" buffer yard permitted in Drawing 8.

Saving Existing Vegetation



DRAWING 14

SECTION VI

STORMWATER RETENTION

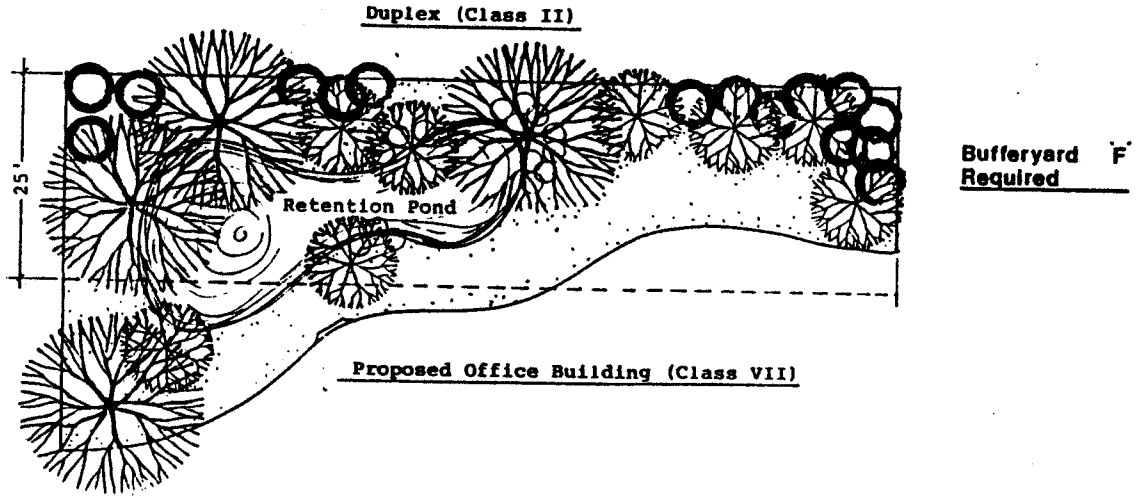
STORMWATER RETENTION IN BUFFER YARDS

Buffer Yards are not intended to serve only the purpose of buffering. As pointed out in the previous Section of these guidelines, stormwater retention areas may be incorporated into natural buffers and to buffer yards that are completely planted with new landscaping.

Generally, **the rule is that the retention area does not lessen the requirement for plant materials nor the need for a fence, wall, of berm if the buffer yard selected includes one.** Additional fencing will be permitted where it is deemed necessary for safety purposes. It is the intent of this provision to permit a retention area to be located as engineering considerations may dictate, and to accomplish the purpose of installation of the required buffer yard.

Stormwater retention areas may be present in a natural buffer, which is defined in the previous Section. The rules that apply to the identification, location, and supplementation of a natural buffer apply equally to the natural buffer when a retention area is within its boundaries. Additional fencing for safety purposes may be added.

Drawing 15, below illustrates a possible solution to the location of a stormwater retention area in a buffer "F" buffer yard.



Bufferyard as Retention Area

DRAWING 15 EXAMPLE BUFFERYARDS

STORMWATER RETENTION IN PARKING LOTS

For large canopy trees the minimum planting area shall be 190 square feet, and for small canopy trees the minimum planting area shall be 120 square feet, when the trees are planted in a parking lot.

The planting areas for canopy trees in parking lots may be used for the retention of stormwater runoff. When so used the following design criteria shall be adhered to:

a. The depth of the retention area shall be no deeper that nine inches (9");

b. Canopy trees planted in retention areas shall be of appropriate species for areas that may remain wet;

c. Canopy trees planted in retention areas shall be planted no closer to the edge of such retention area than five feet (5'); and

d. There shall be no curb around such retention areas to obstruct the flow of stormwater into the retention area. Wheel stops shall be provided where parking abuts the retention area.

SECTION VII

PROTECTION

Regulations for the preservation and protection of existing trees and plants during construction:

1. Protection Zone

   a. Trees to be preserved shall be protected from construction damage by the erection of protective barriers.

   b. The barriers will protect understory vegetation and root systems. The protection zone shall extend to the drip line for the Pine trees. All other trees shall have the barrier erected to enclose two-thirds (2/3) of the area of the drip line to a maximum distance of no more than fifteen (15) feet from the tree trunk.

   c. The protective barriers should be made of two (2) inches by four (4) inches or larger wood material. Post should extend at least four (4) feet above ground level. Other material of comparable strength may be substituted for the wooden materials.

   See Figure 1.

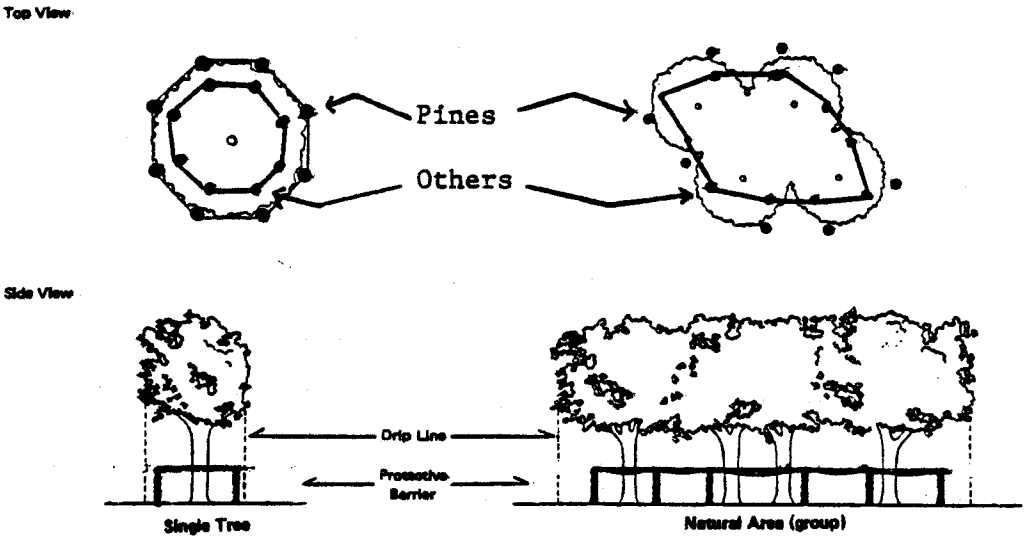


Figure 1. Protective Barrier Placement at Drip Line.

d. Understory vegetation should be retained and maintained to provide existing landscaping that is adapted to the natural area. Hand tools are best used to work inside protective zones.

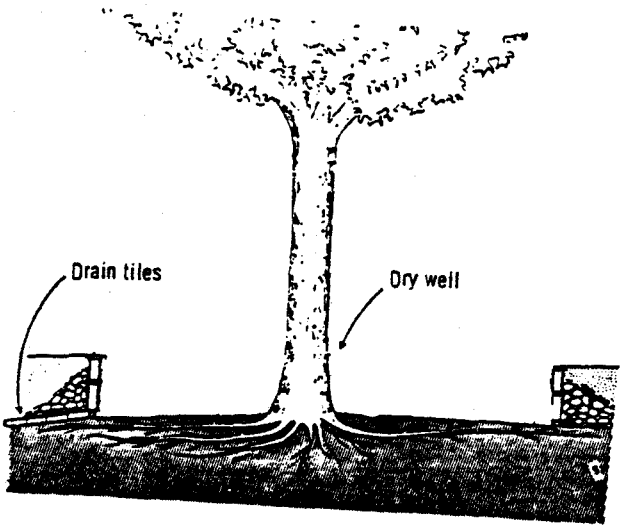
e. Equipment should be kept from inside protective barriers due to soil compaction, root damage, and understory vegetation loss.

2. Grade Change

a. No fill shall be placed within protection zone.

b. Tree wells may be used to keep fill dirt from protection zones. Drains may be required to keep water from standing in tree wells.

See Figure 2.



3. Excavations

a. Caution should be used when digging around tree roots. Trenches should be routed around tree root systems by at least fifteen (15) feet from the stem.

b. When it is impossible to route trenches around tree root systems then the tunneling method must be used. See Figure 4.

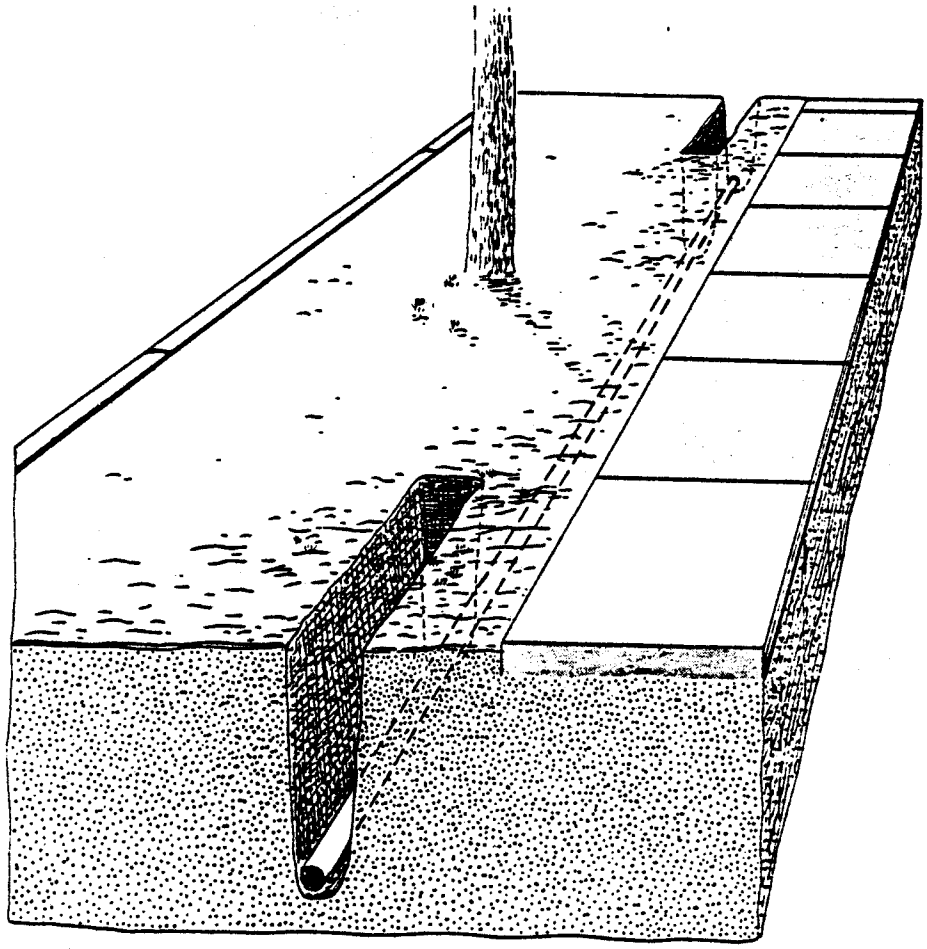


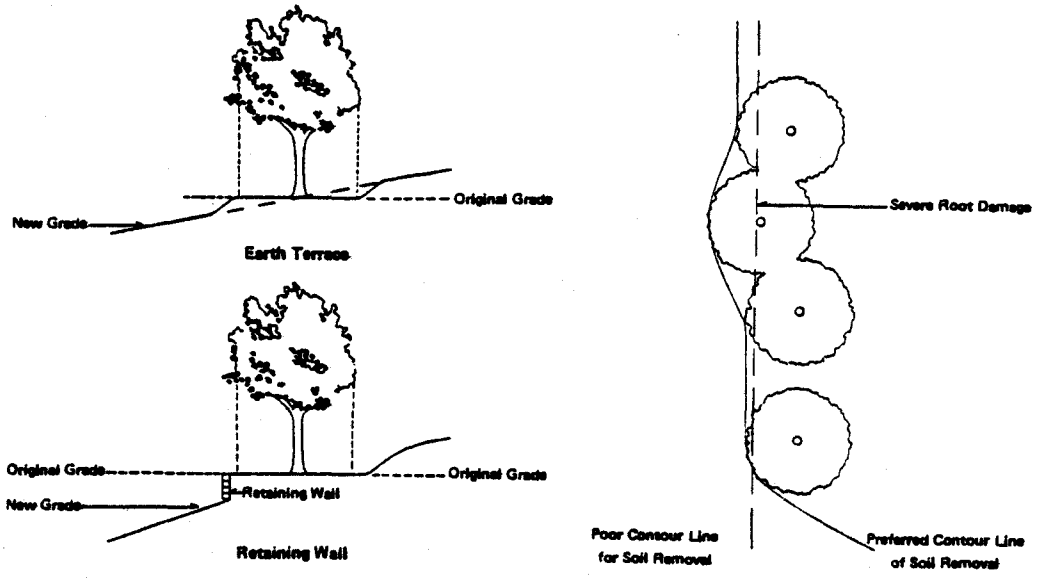
FIGURE 4
Trenching for utility pipes and cables can be stopped when major tree roots are encountered; a hole is then tunneled below the major portion of the roots to connect trenches on opposite sides of a tree.

c. A power driven auger is the preferred method but driven or water jet tunnels may be acceptable. The tunnel should be at least twenty-eight (28) inches deep.

c. If the grade is being reduced, a retaining wall may be used to retain the soil on the sides while the area under the tree remains unchanged.

See Figure 3.

Figure 3. Cross Section of Earth Terrace and Retaining Wall.



SECTION VIII

EXEMPTIONS

EXEMPTIONS

The Landscape Ordinance and Guidelines do no regulate every development in the City, nor do they require every new development within the City to comply with the Ordinance. Certain development activities are exempt from the Ordinance, and certain areas, the Central Business District in particular, are already developed in such a way as to preclude the application of certain provisions of the Ordinance.

The following paragraphs spell out what is exempt and how you will know what areas of the Central Business District do not have to comply with the Ordinance. **Existing development that is not modified, expanded, altered, redeveloped, or for which the use, or character of the use is not changed, are exempt from the provisions of the Ordinance and the Landscape Guidelines.** Unless any other development or land use is specifically exempt, the Ordinance applies in full.

a. **Canopy exemptions:**

1. Single-family and duplexes, regardless of the density per acre, are exempt from the canopy requirements of the Ordinance.

2. Buildings are not counted as "impervious surface" for the purposes of calculating the areas that must be shaded with canopy trees.

3. Swimming pools and the area specifically designed to be the "deck or pool apron" are exempt from the canopy requirements of the Ordinance. The exempt area will normally be considered that paved area abutting the pool and within a fence, wall, or other enclosure designed to provide safety and security for the pool area.

4. Docks, piers, seawalls, boardwalks, and other improvements designed to serve pedestrians near the water or in the use of boats are exempt from the canopy requirement of the Ordinance. Paved areas abutting a seawall, dock, or pier are exempt to a maximum width of ten feet (10').

5. Paved surfaces within the supporting cables of a radio, television, or microwave tower, or a cable television satellite receiver are exempt from the canopy requirement.

b. Land areas in the Central Business District (CBD) that are exempt from requirements of the Ordinance are identified on the map on the next page of these guidelines. There are two patterns, which indicate those areas that are entirely exempt from the Ordinance and those that are only exempt from the buffer yard requirement (and therefore, must provide canopy). **Generally, land developed with buildings that have no setbacks from the property lines are exempt from all requirements, while parking lots in the CBD and land developed with ample setbacks require canopy when development activity amkes them suject to the Ordinance.**

SECTION IX

IRRIGATION

Revised June 9, 1988

IRRIGATION REQUIREMENTS

General.

For purposes of these guidelines, "permanent irrigation system" shall be defined as: an assembly of component parts, above ground, underground or surface-mounted, supplied with water under pressure through a system of permanentyly placed irrigation piping, installed with and for the controlled distribution and conservation of water for irrigating any type of landscape vegetation in any location within the City.

Water conservation methods are generally basic in nature but require that attention be paid to the irrigation system, its operation and maintenance. These conservation methods are not served when water is allowed to run down streets or sidewalks during the irrigation process. A system that is turned on in the morning and allowed to operate all day is completely wasteful of a most precious resource since most soil conditions will not absorb a continuous application of water.

For greater efficiency all systems should be operated only at night or during early morning hours. Systems that are operated during the heat of the day are totally ineffective as the evapotranspiration rate is so high that the plant materials receive no benefit. This same principle applies to windy days when an effective spray pattern cannot be achieved. Systems operated just prior to sundown provide a condition under which molds and other disease can be developed on all vegetation.

Drip irrigation systems are extremely effective in selected areas for water conservation. These systems are generally effective in planter beds, parking islands and boulevard medians, large areas of ground cover and similar planting areas. These systems require special consideration since they cannot be operated on the same zone as other types of sprinkler heads because they drip water on the basis of gallons per hour as opposed to gallons per minute. These systems do require some monitoring to assure that emitters and flow tubes are clean and undamaged.

Automatic rain shut off devices should be considered as a method of conserving water. These devices allow continuation of the irrigation process during short, intermittent showers but will shut down an irrigation system or prevent it from coming on if a predetermined amount of rain falls.

The only Water Supply for the system design other than potable or community water supply shall be an irrigation well or an

approved on site lake or pond. The owner is responsible for the water supply and its protection.

Design Elements and Criteria.

Irrigation systems installed within the City shall be designed in a manner which will use sound water conservation principles and techniques and will include the following:

1. The system shall be designed so as not to water any impervious surfaces, i.e. sidewalks, streets, driveways or patios. With a finished design plan to show all manufactured components of the working system and site features relevant to proper installation.

2. Automatic controls should be a part of the total irrigation system and set with a watering schedule that will not exceed a precipitation rate of 1½" to 2" per week.

3. The system should be regulated and operated in such a manner as to prohibit any surface runoff from excessive watering.

4. Sprinkler selection shall be compatible with site conditions, water source and water quality. The system should be designed to not exceed a spacing of 55% of the specified radius of any given head (i.e.,30' radius head should be spaced no farther than every 16.5') and be based on established industry practices and plant water requirements.

5. In turf or areas of low ground cover the system should use underground pop-up sprinklers.

6. The system should contain separate watering zones based on the types of sprinkler heads used and areas to be watered. For example turf zones should not be on the same zone as shrubs or planters, as turf requires more water. Likewise heads should not be mixed i.e., spray heads and impacts, impacts and rotors, sprays and bubblers due to the effectiveness and amounts of water that are used by each type of head.

7. Main line and circuit line pipe shall conform to acceptable ASAE hydraulic standards in regard to friction pressure loss and velocity of flow. The design water velocity in a pipeline, when operating at system capacity, should not exceed 5 ft/s unless special considerations are given to the control of surge or water hammer and adequate protection from these pressures is provided.

8. Pressure reducing valves shall be placed on lines where sprinkler heads are installed with higher than factory specified pressures. Sprinkler heads operated on higher than recommended pressure usually mist and are ineffective.

9. A backflow prevention device shall be installed on all irrigation systems connected to potable water sources as per City code and State law.

10. Cross Connections:

a) Because of the danger of contaminating potable water supplies, the design and installation of irrigation systems and yard sprinkler systems which incorporate connections to alternate potable and nonpotable water supplies are not recommended and are discouraged unless absolutely necessary.

b) Schedule 40 pipe between the water meter and backflow preventor is required.

c) Where an irrigation or yard sprinkler system is designed to have alternate water supplies, a potable and nonpotable water supply, an installer shall comply with one of the following:

(i) provide for a complete absence of pipe between the two water supplies (i.e., air gap);
(ii) make no connection of the two water supplies to each other; and
(iii) make impossible the simultaneous connection of both water supplies to the irrigation system or yard sprinkler.

d) Any type of injector system requires a reduced pressure backflow preventor.

11. Installation:

a) Pipe installation - The manufacture's specifications covering installation of its material underground shall be followed. This shall apply to thrust blocking, handling, storage, minimum depth of cover, and testing.

i) Piping under constant pressure must be Schedule 40.

b) Depth - Minimum depth of cover over all piping shall be 6" or three times the nominal pipe size or a sufficient depth to accommodate valves and other equipment, whichever is greater. All work shall be performed in accordance with established industry standards for all materials and methods employed.

i) Backfill - The compaction of backfill shall be sufficient to eliminate any settlement of the trench or pipe.

APPENDIX A

KEY: SOILS: H = Hydric
M = Mesic
Z = Xeric

LIGHT INTENSITY: L = Low Light
P = Partial Shade
F = Full Sun

FLOWER SEASON: Sp = Spring F = Fall
S = Summer W = Winter

Ground cover species on this list have general height characteristics of between 6 and 24 inches above ground.

GROUND COVERS AND VINES

SPECIES	SOILS	LIGHT	FLOWER COLOR	& SEASON
Aristida spp. Wiregrass	Z	F	-	
Asparagus sprengeri Sprengeri Fern	M	P-F	-	
Bacopa caroliniana Water Hyssop	H	F	Blue	S
Chrysopsis floridana Florida Astor	Z	F	Yellow	S-F
Conradina canascens Conradina	Z	F	Lavender	Sp
Coreopsis leavenworthii Tickseed	H-M	P-F	Yellow	S
Cuphea hyssopifolia Florida Heather	M	P-F	White/ Lavender	Sp S-F
Dychoriste oblongifolia Twinflower	M-Z	P-F	-	
Gamolepsis chrysanthemoides Daisy Bush	M	F	Yellow	S
Gelsemium sempervirens Carolina Yellow Jasmine	H-M	L-P-F	Yellow	W
Hemerocallis spp. Daylily	M	P-F	Varied	S

ii) Backfill Material - Shall be clean soil or sand free from large stones or other unsuitable material, i.e. vegetation or acidic materials.

c) Piping shall be thoroughly flushed and tested before the installation of sprinkler equipment.

d) Automatic control valves installed underground shall be installed with a valve box. Valves shall be installed in accordance with the manufactures' recommendations and with enough clearance for proper operation and maintenance. Manual control valves shall be installed, with access for proper use, maintenance and repair.

e) Where pipes are installed under roads sleeves must be installed. Any damage to improvements on public right-of-way must be repaired prior to final approval and signed off by the City Engineering Department.

f) Control lines shall be at least the minimum size recommended by the automatic equipment manufacturer and shall be ULS listed for underground direct burial use. All connections and splices shall be by an approved method for underground use. Allowance shall be made for thermal contraction of the control lines. Control tubing shall be flushed prior to connection to the valve and/or automatic controller. Control wire shall have minimum cover of 6" and a 12" loop at the valve to facilitate servicing.

i) The automatic controller shall be mounted in a manner recommended by the manufacturer and at the location called for on the plans as approved by the Owner. The Owner shall provide electrical power to the controller location in accordance with the manufacturers specifications unless noted otherwise on the plans.

ii) All electrical wire and components shall comply with the Winter Haven Electrical Code.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Trees of Central Florida
2. Guide to Southern Trees
3. Xeriscape Plant Guide (South Florida Water Management District)
4. Plants for the South - A Guide for Landscape Design
5. A Tree Planting Guide (TECO)
6. Common Exotic Trees of South Florida
7. Introducing Native Florida Shrubs for Landscaping (Article from Procedings Florida State Horticulture Society by William F. and Nancy J. Bissett)
8. Performance Zoning by Kendig
9. Tree Protection Manual for Builders and Developers (Division of Forestry)
10. Site Planning and Tree Protection for the New Home (Florida Cooperative Extension Service)
11. Arboriculture by Harris
12. Zoning News, Sept 1986
13. The Paved Ground Surface Areas Landscape Ordinance of Orange County, Florida Nov 1974
14. Hillsborough County Land Alteration and Landscape Ordinance

SPECIES	SOILS	LIGHT	FLOWER COLOR & SEASON
Hyrdolea corymbosum Skyflower	H-M	L-P-F	Blue S
Iris savannarum Prairie Iris	H-M	F	Blue Sp
Juncus effusus Soft Rush	H-M	L-P-F	-
Juniperus conferta `Compacta' Dwarf Shore Juniper	M-Z	F	-
Juniperus horizontalis `Wiltoni' Blue Rug Juniper	M-Z	F	-
Juniperus squamata `Expansa' Parsoni Juniper	M-Z	F	-
Lantan montevidensis Weeping Lantana	M	P-F	Blue S
Liriope Muscar Lily Turf	M	L-P	-
Liriope Muscari `Evergreen Giant' Evergreen Giant Liriope	M	L-P	-
Liriope Muscari `Variegata' Variegated Lily Turf	M	L-P	-
Liriope spicata Creeping Lily Turf	M	L-P	-
Lhicania michauxii Gopher Apple	M-Z	P-F	-
Moraea iridioides White African Iris	M	P-F	White Sp-S-F
Nolina brittonia Nolina	M-Z	P-F	White S
Ophiopogon japinicus Mondo Grass	M	L-P	-
Ophiopogon japonicus nana Dwarf Mondo Grass	M	L-P	-

SPECIES	SOILS	LIGHT	FLOWER COLOR & SEASON
Parthenocissus quinquefolia Virginia Creeper	M	L-P-F	(foliage) Red F
Piloblephis rigida Pennyroyal	M-Z	F	Blue Sp-S
Pityopsis graminifolia Golden Aster	M-Z	F	Yellow S-F
Pontederia cordata Pickerel Weed	H	P-F	Blue Sp-S
Portulaca oleracea Purslane	M	F	Varied S
Psychotria nervosa Wild Coffee	M	L-P	White Sp
Ruellia caroliniensis Ruellia	M-Z	L-P-F	Blue Sp-S-F
Sisyrinchium atlanticum Blue-Eyed Grass	M	F	Blue Sp-S
Spartina bakeri Sand Cordgrass	M	F	-
Trachelospermum jasminoides Confederate Jasmine	M	P-F	White S
Trachelospermum minima Dwarf Confederate Jasmine	M	P-F	White S
Tulbaghia violacea Society Garlic	M-Z	F	Sp Lavender S-F
Vinca minor Periwinkle	M	P-F	Varied Sp-S
Viola affinia Florida Violet	H-M	L-P	Blue Sp
Wedelia trilobata Wedelia	H-M	L-P-F	Yellow Sp-S
Yucca filamentosa Bear Grass	M-Z	H	-

APPENDIX B

STREET CLASSIFICATIONS

MAJOR ARTERIALS:

U.S. 92	FROM BASS CIRCLE TO U.S. 17 NORTH
HAVENDALE BLVD. (S.R. 544)	FROM 29TH STREET, NW TO U.S. 17
AVENUE T, NW (S.R. 544)	FROM U.S. 17 TO FIRST STREET NORTH
U.S. 17	FROM THE SOUTHERN TO THE NORTHERN CITY LIMITS
FIRST STREET	FROM CYPRESS GARDENS BLVD. (S.R. 540) TO AVENUE T, NW
CENTRAL AVENUE (S.R. 542)	FROM FIRST STREET TO BUCKEYE LOOP ROAD
LAKE HOWARD DRIVE, NW	FROM AVENUE G, NW TO AVENUE D, NW
AVENUE G, NW (S.R. 542)	FROM 29TH STREET, NW TO LAKE HOWARD DR.
CYPRESS GARDENS BLVD.	FROM U.S. 17 TO CITY LIMITS (EAST OF 10TH STREET, SE)
RECKER HIGHWAY (S.R. 655)	FROM 24TH STREET, SW TO CITY LIMITS (NORTH OF GASPARILLA PASS)
CRYSTAL BEACH RD. (S.R. 540)	FROM OLD NINE FOOT ROAD TO RECKER HWY.

MINOR ARTERIALS:

AVENUE T, NW	FROM FIRST STREET TO BUCKEYE LOOP ROAD
BUCKEYE LOOP ROAD	FROM DUNDEE RD. (S.R. 542) TO AVE. T, NW
6TH STREET, SE	FROM CENTRAL AVE. TO CYPRESS GARDENS BLVD.
AVENUE K, SW AND SE	FROM 7TH STREET,SW TO 6TH STREET, SE
6TH STREET, SW	FROM AVENUE A, SW TO AVENUE M, SW
7TH STREET, SW	FROM AVENUE K, SW TO AVENUE R, SW
AVENUE C, SW	FROM 3RD STREET (U.S. 17) TO FIRST ST.
LAKE HOWARD DRIVE, NW & SW	FROM AVENUE G, NW TO AVENUE D, NW (ROUTE IS SOUTH AROUND THE LAKE)
21ST STREET, SW	FROM LAKE HOWARD DRIVE, SW TO RECKER HWY
POPE AVENUE	FROM LAKE HOWARD DRIVE TO U.S. 17

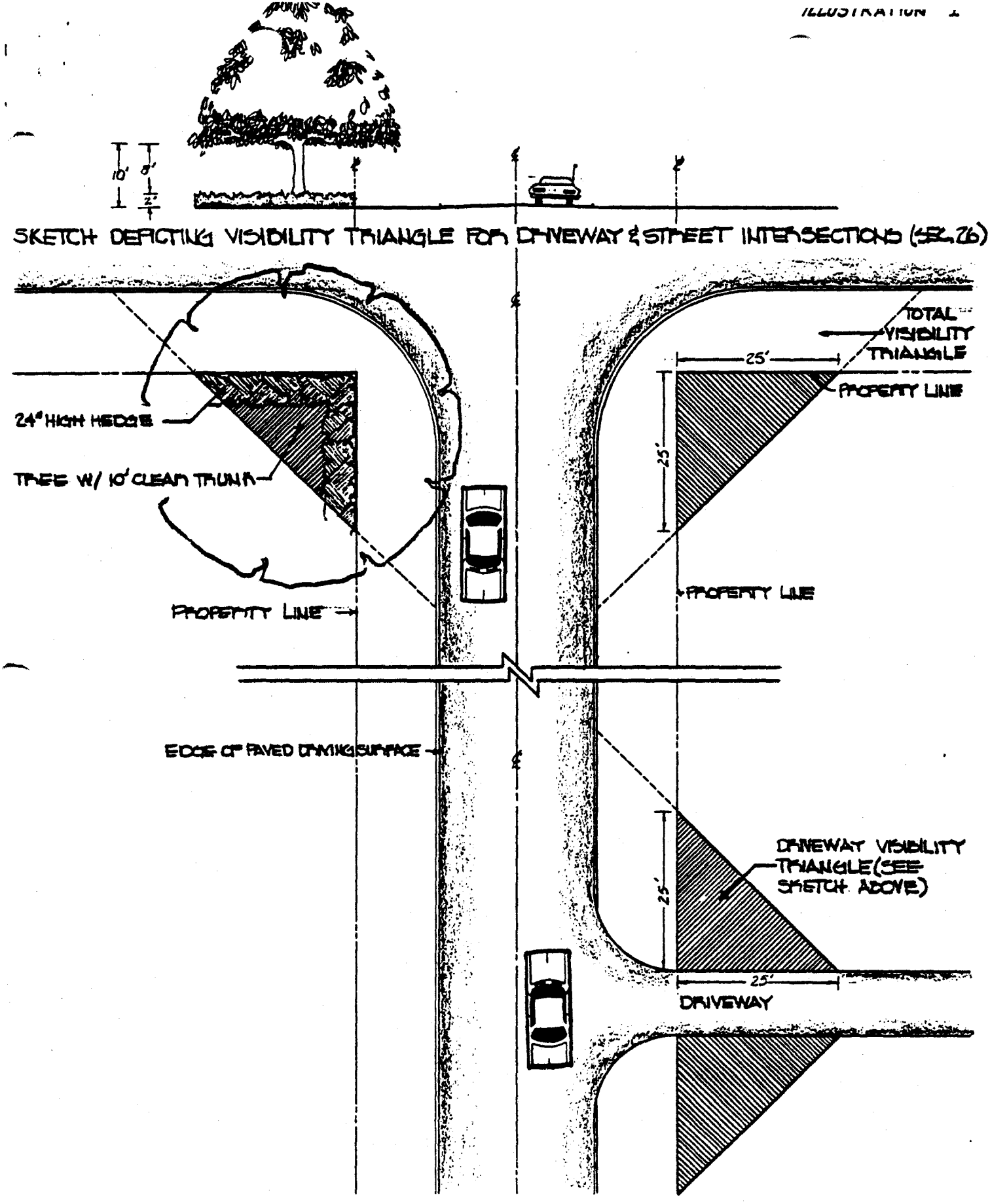
COLLECTOR, NON-RESIDENTIAL:

AVENUE M, NW	FROM U.S. 17 TO LAKE SILVER DRIVE
LAKE SILVER DRIVE (NORTH)	FROM AVENUE M, NW TO FIRST STREET, N.
AVENUE I, NW	FROM U.S. 17 TO LAKE SILVER DRIVE
LAKE SILVER DRIVE (SOUTH)	FROM AVENUE I, NW TO FIRST STREET, N.
2ND STREET, NW	FROM LAKE SILVER DRIVE (SOUTH) TO AVENUE D, NW
3RD STREET, NW	FROM LAKE SILVER DRIVE (SOUTH) TO AVENUE D, NW
21ST STREET, NW	FROM HAVENDALE BLVD. TO U.S. 92
AVENUE L, NW	FROM U.S. 17 TO 7TH STREET, NW
AVENUE A, SE	FROM FIRST STREET TO LAKE ELBERT DRIVE
AVENUE C, SE	FROM FIRST STREET TO 6TH STREET, SE
AVENUE G, SW & SE	FROM 7TH STREET, SW TO 2ND STREET, SE
AVENUE O, SW & SE	FROM 7TH STREET, SW TO 3RD STREET, SE
AVENUE C, SW	FROM FARNOL TO U.S. 17
7TH STREET, SW	FROM LAKE HOWARD DRIVE TO AVENUE G, SW
AVENUE B, NW	
CENTRAL AVENUE	
AVENUE A, SW	

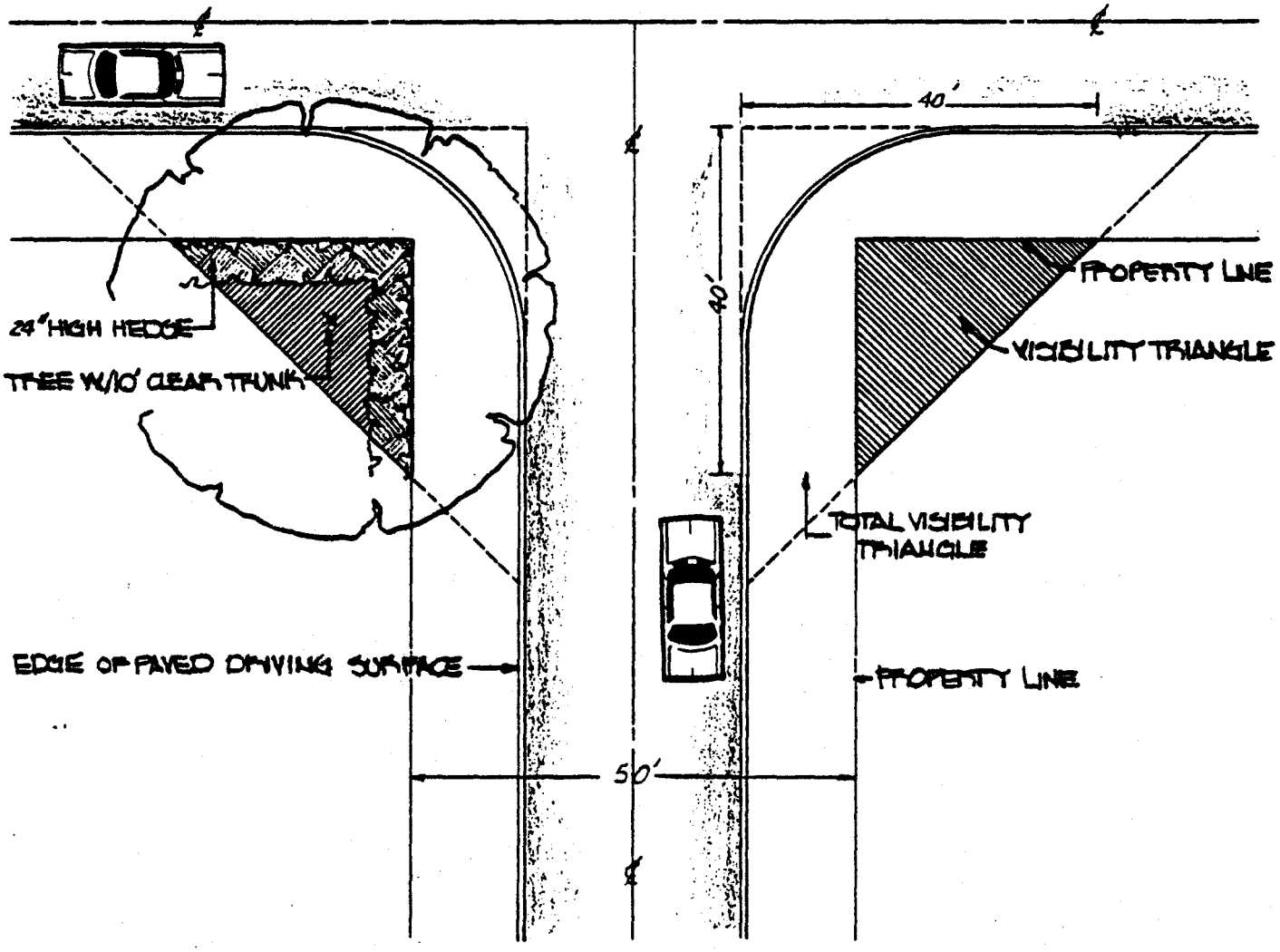
COLLECTOR VACANT:

BUCKEYE ROAD	FROM FUNNY TING DRIVE TO BUCKEYE CIRCLE
AVENUE O, NE	FROM FAIRFAX STREET TO 9TH COURT, NE
LAKE MAUDE DRIVE	FROM AVENUE O, NE TO AVENUE N, NE
OLD LUCERNE PARKE ROAD	FROM S.R. 544 TO S.R. 544

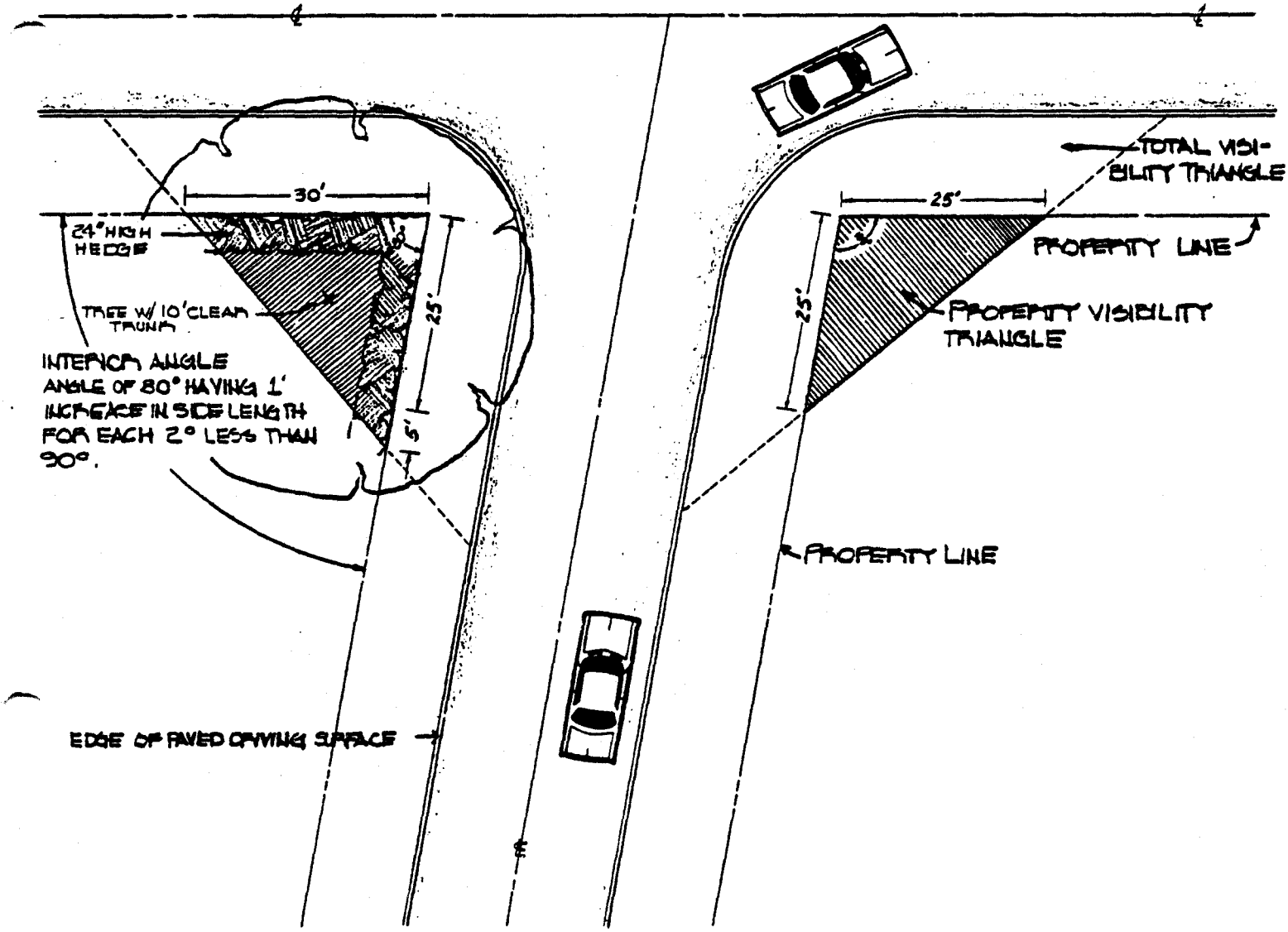
APPENDIX C



VISIBILITY TRIANGLE DIAGRAM



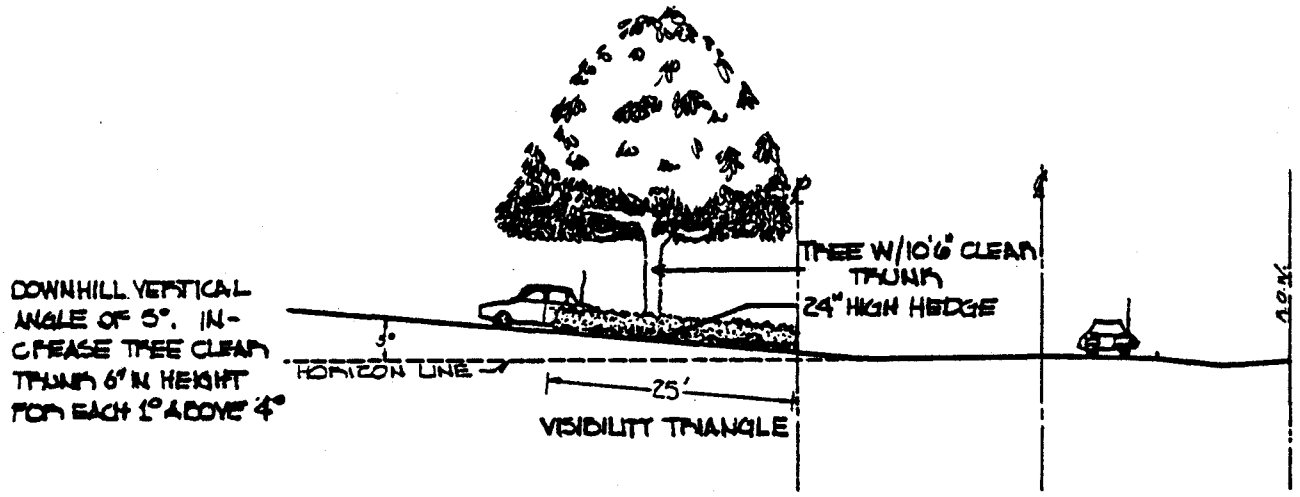
Alternate 1-A
VISIBILITY TRIANGLE DIAGRAM



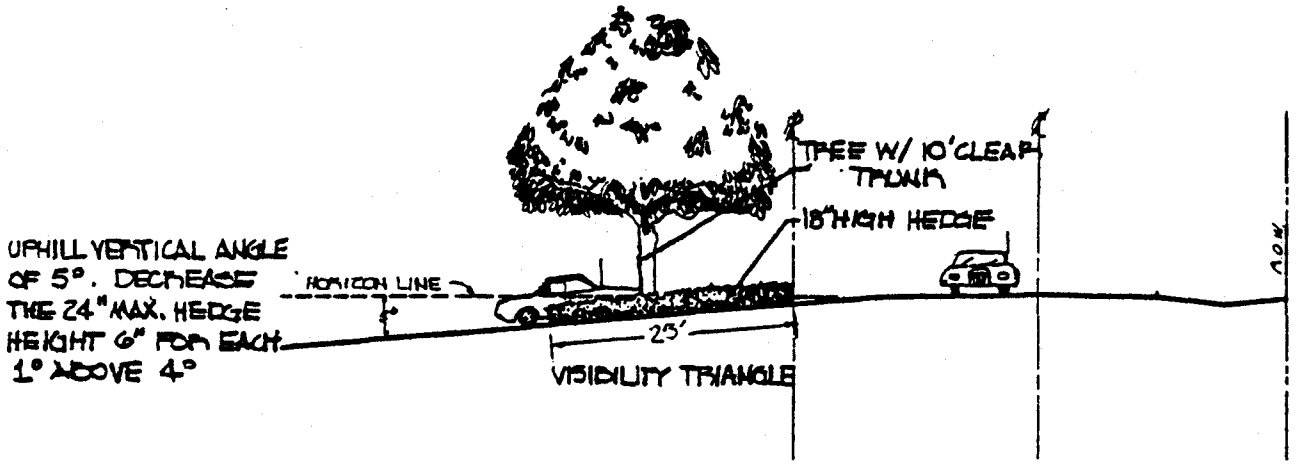
SCALE 1"=20'

VISIBILITY TRIANGLE DIAGRAM

with an interior angle of less than 90°



Downhill Vertical Alignment



Uphill Vertical Alignment

VISIBILITY TRIANGLE DIAGRAM

with a vertical alignment greater than 4°

DEGREE CONVERSION CHART

Degree	Rise Per		
	50 feet	100 feet	200 feet
1	.9	1.7.	3.4
2	1.8	3.5	7.0
3	2.6	5.2	10.4
4	3.5	7.0	14.0
5	4.4	8.7	17.4
6	5.3	10.5	21.0
7	6.1	12.2	24.4
8	7.0	13.9	27.8
9	7.8	15.6	31.2
10	8.7	17.4	34.8
11	9.6	19.1	38.2
12	10.4	20.8	41.6