TOWN OF CUTLER BAY

STREET TREE MASTERPLAN

Cutler Bay
FLORIDA
ESTABLISHED 2005

TOWN OF CUTLER BAY
STREET TREE MASTER PLAN

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ROSENBERG
GARDNER
DESIGN

LAND PLANNING
LANDSCAPE ARCHITECTURE
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MARLIN
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THE PLAN

This Street Tree Master Plan (The Plan) has been developed to guide the proper addition of trees along the rights-of-way (ROW). The Plan addresses the following components:

- Community Dialogue
- Benefits of Tree Plantings
- Inventory and Assessment of Existing Street Trees
- The Projected Planting Requirements
- Budgeting and Phasing for Planting and Maintenance
- Guidelines for Placement of Street Trees
- Protection and Maintenance of Street Trees
- Approaches to Design of Street Tree Plantings

Did you know?

- **The Town of Cutler Bay, both this year and last year had budgets of $150,000 for new street tree plantings**
- **There are 3,216 communities that are currently a Tree City USA**
- **There are 503 communities that received a Growth Award**
- **Over 120 million people live in a Tree City USA**

TREE CITY USA

Since the incorporation of the Town of Cutler Bay in 2005, community leaders have sought to enhance the quality of life for its citizens. An element of the Town's Strategic Plan — (5. Community Identity, Unity and Pride) - emphasizes the development and implementation of a Town Beautification Program. The Town's Comprehensive Development Master Plan also calls for enhancing the aesthetics of the community and encouraging pedestrian activity. **A significant component in implementing these goals is providing adequate tree canopy.**

A goal of the Town's leaders is to become designated as a **"Tree City USA."** This program is supported by the USDA Forest Service Urban and Community Forestry Program. To qualify for Tree City USA, a town or city must meet four standards established by The Arbor Day Foundation and the National Association of State Foresters.

* A Tree Board or Department
* A Tree Care Ordinance
* A Community Forestry Program with an Annual Budget of at least $2 per capita
* An Arbor Day Observance and proclamation.

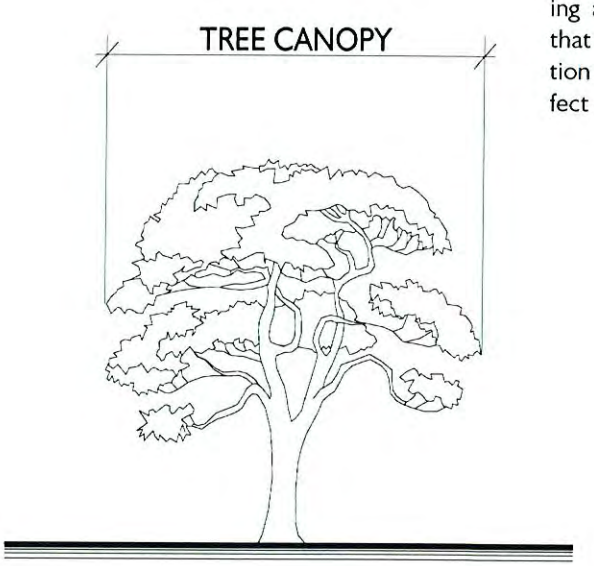
These standards were established to ensure that every qualifying community would have a viable tree management plan and program. The Town's population is approximately 41,000. At $2 per capita, the minimum required budget would be $82,000, so we are well in excess of that requirement.

Optimal urban tree canopy coverage is considered to be 40-45 percent of the area of a community, especially in warm climates such as ours. This coverage includes a combination of the public spaces and private property. Street trees can comprise the primary contribution to achieving that canopy coverage. Trees that shade sidewalks and roadways are most valuable in developing a walk-able community.

Miami-Dade County's Landscape Ordinance (Chapter 18) enacted in 1995, requires landscaping on private property and street ROW's that, when mature, will come close to meeting the optimal canopy coverage.

In an almost fully-developed community like Cutler Bay, much of the Town was developed before the Ordinance took affect. **The opportunity to require tree planting on existing developed private property is gone.**

A major opportunity in providing new canopy are areas along streets. Any new canopy can most effectively come from planting along the streets. It is here that the Town has clear jurisdiction and hence the power to effect change.



COMMUNITY DIALOGUE

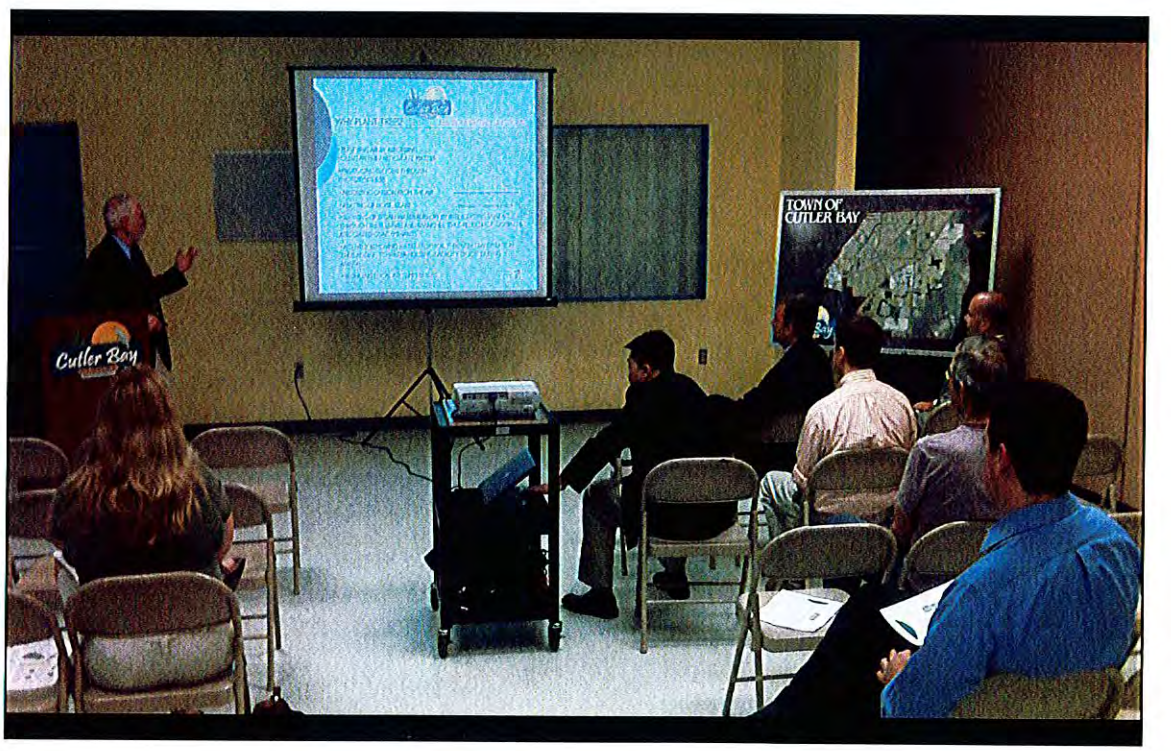
The Plan incorporates input from citizens, Town leaders and staff. Miami-Dade County's **"A Greenprint For Our Future: Street Tree Master Plan"** served as a guideline in the preparation of The Plan. The goals of enhancing pedestrian and bicycle connection usage was envisioned in the **Old Cutler Road Charrettes** and **Cutler Ridge Charrettes.**

Charrettes are an integral part of The Plan because they express the desires of the citizens for the development of special community areas.

During public meetings with citizens and several meetings with Town staff, the elements of the Street Tree Master Plan were presented and discussed. Items presented and discussed at the meetings included:

- Benefits of Street Trees
- Inventory of Existing Trees and the Methodology used to Determine Number of New Trees Required
- Shade Trees vs. Palms
- Approaches to Design of Street Tree Plantings
- Qualities to Look for in Selecting Tree Species

A consensus of the public in attendance agreed that a street tree program is needed, that shade trees be the favored planting, and that the Town enact Ordinances to protect trees and require enhanced landscaping in new developments.

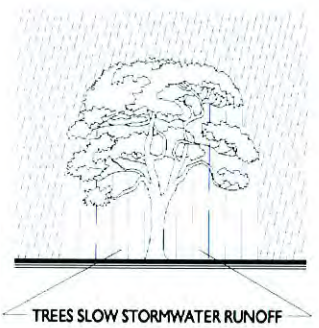


Community Workshop held on August 11, 2008

BENEFITS OF TREES

Adequate tree canopy is proven to be vitally beneficial to the well being of a community - economically, socially and environmentally.

The **economic benefits** of street tree plantings are documented in many studies nationally. **Neighborhoods with good tree coverage increase property values from 5 to 15 percent.** In our own backyard, communities such as Coconut Grove, Coral Gables, Pinecrest and Miami Shores are heralded for their tree canopy and their property values reflect that.



TREES SLOW STORMWATER RUNOFF

Sociological benefits of trees include:

- Reduced stress from calming traffic when planted in swales and medians near street edges
- improving the aesthetic appearance of neighborhoods
- providing a beneficial emotional and physical connection with nature
- providing habitat and food for wildlife
- creating a setting conducive to walking and cycling. Most of Cutler Bay's neighborhoods are blessed with sidewalks that provide connectivity to move safely from home to school or shopping. Trees in street swales provide a sense of separation between the sidewalks and traffic. This, and the cooling shade of the tree canopy will encourage people to leave the confines of their air-conditioned homes, thus -

In addition to their measurable economic & social benefits, trees provide important environmental benefits such as:

- purifying air by absorbing pollutants and particulate matter
- producing oxygen through photosynthesis
- absorbing carbon from the air
- abating noise & glare
- slowing storm water run-off by intercepting rainfall through their leaves and branches, thus reducing flooding
- actively removing water from soil through transpiration, thus adding to water holding capacity of soil during rainfall
- reducing local air temperature. The average temperature in urbanized areas is usually 5-10 degrees warmer than surrounding countryside because of the "heat island" effect created by dark paved surfaces such as roads, parking, and rooftops, and relatively fewer trees
- Ambient temperatures under tree canopies can be 5-10 degrees cooler than areas exposed to direct sunlight
- provides food and habitat for wildlife. Objective C-7 of the Town's Comprehensive Development Master Plan speaks to this function

All of these benefits make neighborhoods more livable and safer.

YOUR STREET SHOULD BE THE BEGINNING POINT OF A SEAMLESS SYSTEM OF SAFE, COMFORTABLE TRAVEL (PEDESTRIAN AND CYCLING) TO SCHOOLS, PARKS, AND OTHER PUBLIC GATHERING PLACES.

To generate the benefits provided by trees, the majority of plantings must be shade trees that develop large-spreading canopies. For that reason, all of the landscape ordinances in South Florida communities emphasize the use of shade trees rather than palms.

Shade Trees

vs

Palm Trees

INVENTORY AND ASSESSMENT OF EXISTING STREET TREES

To quantify the need for new street tree plantings, an inventory and assessment of the quality of existing trees was undertaken.

INVENTORY METHODOLOGY

A visual analysis of aerial photographs was performed. Ground level inspection of selected areas was undertaken to verify the aerial's information.

The percentage of street tree canopy coverage was visually estimated on a block by block basis versus the 100% potential of trees that could properly be planted. Three (3) categories of existing street tree canopy density were established.

67 - 100% coverage
34 - 66% coverage
0 - 33% coverage

NOTE: Full credit is given to newly planted trees that are expected to mature into larger canopies.

FINDINGS

West of Old Cutler Road, most development occurred prior to the enactment of the County's Landscape Ordinance which required street tree planting. Thus, existing street tree canopy in the majority of the local streets is generally very sparse. A few collector roads that are owned and landscaped by the County provide good canopy coverage.

The area east of Old Cutler Road are neighborhoods developed as part of planned communities in Saga Bay and Lakes By The Bay. The master developers of these communities landscaped the collector roads and the developers of each neighborhood installed street trees along most of the local streets.

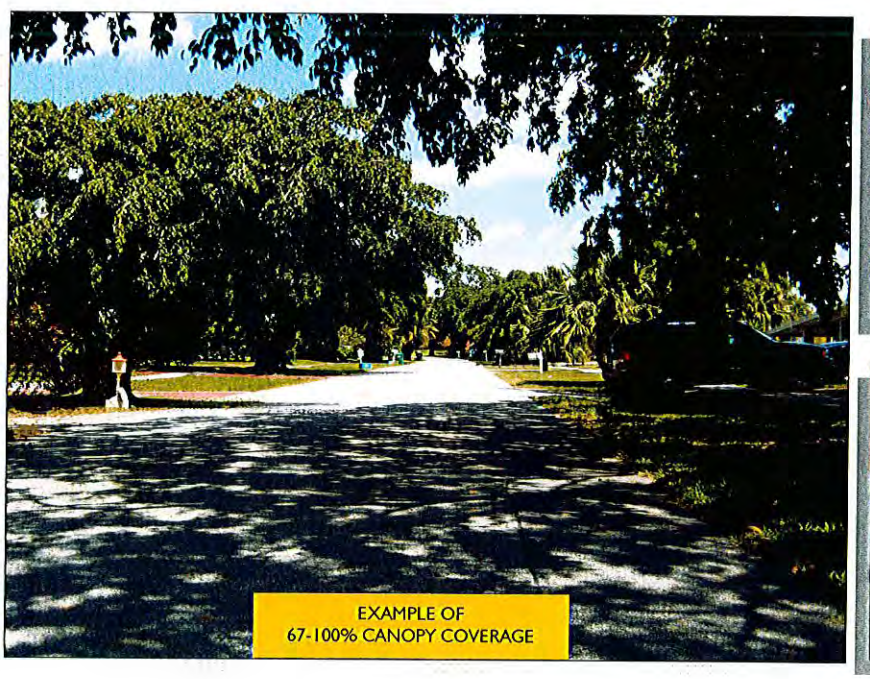
Simpson Stopper Tree

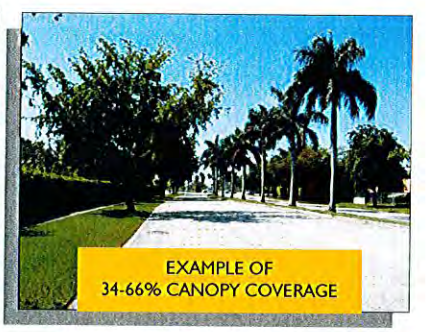
The maintenance of the landscaping of the major collector roads in these communities is the responsibility of master homeowners associations.

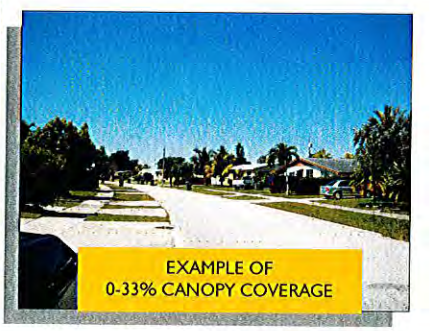
Individual neighborhood associations maintain local streets and common areas. Virtually all of the streets are fully landscaped (in the 67-100% category).

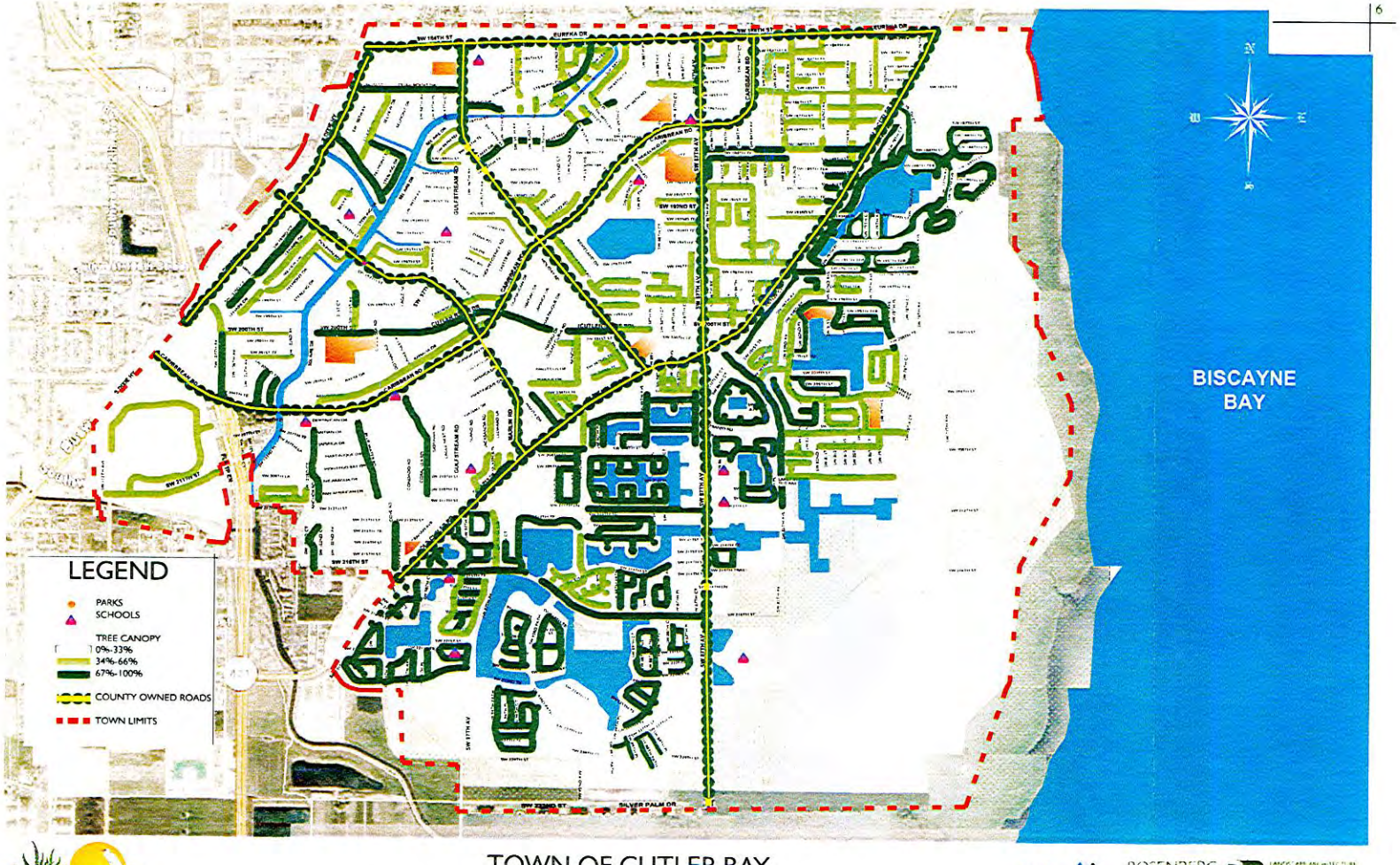
However, because of lack of space in swales or very narrow spaces between parking spaces in some townhouse and zero-lot line communities, there may actually be very little opportunity for tree canopy coverage. If most of the limited available space is planted with trees, then that area was included in the 67 -100% coverage category. In some places where skinny palms are planted on wide swales, shade trees should replace them to increase desired shade and traffic calming.

A map was prepared which graphically shows the existing distribution of street trees throughout the Town. (See page 6).









TOWN OF CUTLER BAY
EXISTING STREET TREE CANOPY MAP

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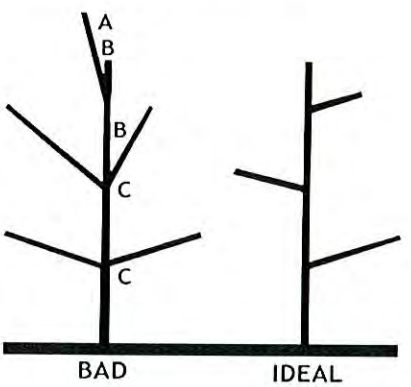
ROSENBERG GARDNER DESIGN

QUALITY OF EXISTING TREES

Many of the existing trees, found in the swales, are not of good quality. The factors that adversely affect Cutler Bay shade trees include their initial structural form, method of planting, circling roots, damage from storms, damage from weed eaters, vehicles, and improper pruning.

The structural form of most of the existing trees do not meet the recently revised Grades and Standards for Nursery Plants, Department of Agriculture and Consumer Services Florida Grade #1. Miami-Dade County's Landscape Code and those of all other agencies, require trees to meet the Florida #1 standards.

The standard for structural form mimics the growth habit of trees growing close together in a forest, reaching upward for the light. These trees form a strong dominant central trunk, with branches growing out horizontally from the central trunk. This growth habit tends to develop superior structural strength, providing the best resistance to wind damage. When trees are grown in a nursery, spaced apart, trees will tend to send out multiple branches (co-dominant trunks) because sunlight can reach all sides of the canopy. Until the standards we published, most nurseries did not perform the pruning necessary to create trees with dominant central leaders.



DOMINANT CENTRAL TRUNK

Faults: (A) side branch taller than main leader; (B) narrow crotch; (C) co-dominant branches.

Until the standards were published, most nurseries did not perform the pruning necessary to create trees with dominant central leaders.

The method of planting the tree will affect the health of a tree. For example, burying root balls too deep - a common error- can cause a tree to slowly decline in health over many years.

Circling roots that wrap around the tree close to the trunk, cause a tree to become unstable because the roots can't spread out and support the tree. The circling occurs when trees are kept in small containers for too long a time, prior to planting.

Damage due to storms/hurricanes usually affects the structural quality of trees. Broken branches, and damage to the root system if they are blown partially over, can also weaken trees and allow pests and diseases.

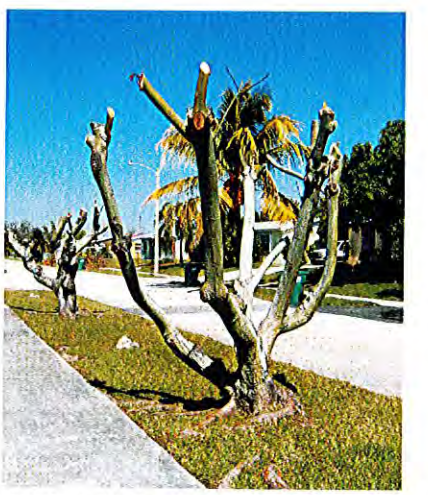
Circling Roots

Weed eaters and vehicles bumping into trees are a common problem.. Weed eaters that cut into a tree trunk at its base, adversely affect the ability of food and water to pass between the roots and the canopy. This is a major factor affecting tree health.

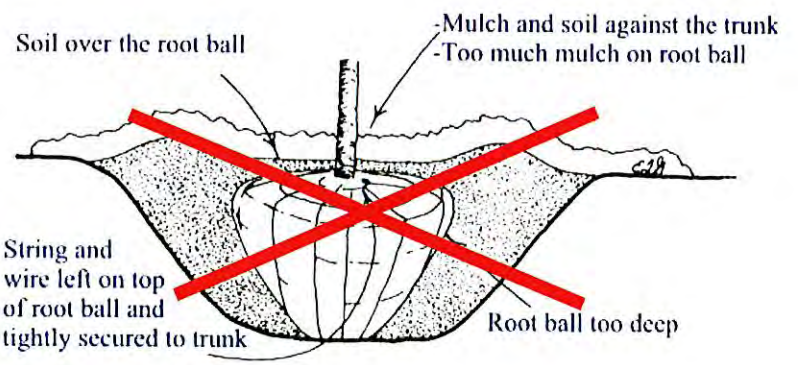
Improper pruning such as "hatracking" adversely affects the structure, health and aesthetic value of a tree and can make it more susceptible to hurricane damage.

To repair damage from storms and improper pruning, corrective pruning over several years would be required.

In the older neighborhoods west of Old Cutler Road, some of the existing trees are undesirable species such as Ficus exotica. These should be replaced over time as new trees mature to take their place along the street.



Hat-Racked Tree



Improper Planting Depth Detail

PROJECTED PLANTING REQUIREMENTS

CALCULATIONS TO DETERMINE NUMBER OF TREES REQUIRED TO REACH DESIRED TREE CANOPY COVERAGE

PERCENTAGE OF CANOPY COVERAGE (%)		LINEAR FEET* OF STREETS		LINEAR FEET EXIST. CANOPY
0 - 33% (16% average)	x	208,855	=	33,417
34 - 66% (55% average)	x	137,936	=	75,867
67 - 100% (84% average)	x	196,712	=	165,238
TOTAL LF OF STREETS		543,503	TOTAL LF EXIST. CANOPY	274,522

Total LF of streets 543,503 minus Total LF streets w/exist. canopy 274,522 = LF streets requiring canopy 268,981.

Total LF streets requiring canopy = 268,981
Divided by trees planted at 40 feet on center** = 6,724 trees (Approximate quantity of trees required to obtain 100% coverage are along available swale areas)

* Both sides of a street must be planted so these numbers are doubled.

** This average spacing was determined by actually designing the placement of trees along a typical block of single-family homes. Deducting the space taken by driveways, street corners and utilities such as light posts and fire hydrants, the number of trees that could properly be planted on a block, measured street intersection to intersection came to one per 40 linear foot. Actual spacing of trees can vary between 20 to 40' on center.

Some streets, because of their design, have limited opportunity for tree planting. In some zero-lot line and townhouse communities, space for planting trees along the streets is very challenging. On some arterial streets, pavement stretches across the entire ROW, allowing no swale area on the sides, and limited space in medians to plant trees. If streets already had trees in the few spaces available, they were included in the 67-100% category.

On streets planted primarily with small-canopied palm trees, which will never produce the desired shade canopy, little credit was given. Thus, even if the palms were planted on a continual line along the street, that street would be noted in the 0 - 33% category. Larger-canopied palms such as Royal Palms and Coconuts were given more credit.

FACTORS LIMITING THE POTENTIAL TO PLANT STREET TREES

On some streets, trees cannot be planted at all. Two primary limiting factors are, 1) lack of physical space and 2) conflicting overhead utilities and/or underground utilities.

No swale available to add trees

Some collector streets have little or no space to install a tree because the Right of Way (ROW) is totally paved to the outside edges of the ROW. In a few cases, a median exists that provides an opportunity for planting. Major overhead electric lines run on one side of the ROW of some of these streets, severely limiting the types of trees that can be used, even if space is available. Fortunately, over 98% of overhead utilities are in rear yard easements. Thus, this limiting factor applies in very few places throughout the Town's ROWs.

Skinny Palms on center median

BUDGETING AND PHASING FOR PLANTING AND MAINTENANCE

NUMBER OF TREES NEEDED

The approximate number of shade trees that would be required to create mostly continuous shade along the public streets owned by the Town is over 6,700. This assumes the use of medium to large-growing shade trees that will achieve canopy spreads of 25 to 40 feet. Where palm trees are used, they would have to be planted on at least a 2 to 1 basis to give adequate canopy. Even at that, their canopy contribution would be over 50% less than shade trees. At a potential rate of 250 trees per year, it will take 27 years to complete the street planting projects.

ALL SOUTH FLORIDA LANDSCAPE CODES FAVOR SHADE TREES OVER PALMS, TO DEVELOP DESIRED COVERAGE.

BUDGETING FOR INSTALLATION

The large number of trees cannot feasibly be planted at one time, although the Town, in the past two fiscal years, has budgeted for planting of 270 trees per year, most at 14'-16' tall. The 14'-16' foot height is the largest size in which the most commonly used desirable species of trees are available in decent quantities. It is also a size which is large enough to be seen by drivers and stand up to bumping mowers, kids, etc. To expand the number of species available for selection and somewhat reduce the cost per tree, 8 - 10 foot tall trees can be considered.

The Town's staff and elected officials will have to determine the funds available in a budget year, and which areas should take priority.

PRIORITIZING PLANTING

Factors to consider include:

- areas with least existing canopy
- arterial and main collector roads serving the majority of citizens. The County has already planted along most of these streets, though parts of Marlin Road in particular, need filling in streets leading to and surrounding schools, parks, and Other public gathering spaces
- local collectors into which more than one local street connect

STRATEGIES FOR FUNDING INSTALLATION

Other than allocating general funds, other possibilities for funding can include:

- State & Federal grants
- local tree and conservation organizations
- bond issue
- donations from local plant nurseries
- business organizations
- garden clubs and neighborhood associations

GUIDELINES FOR PLACEMENT OF STREET TREES

SIZE/SPACING OF TREE

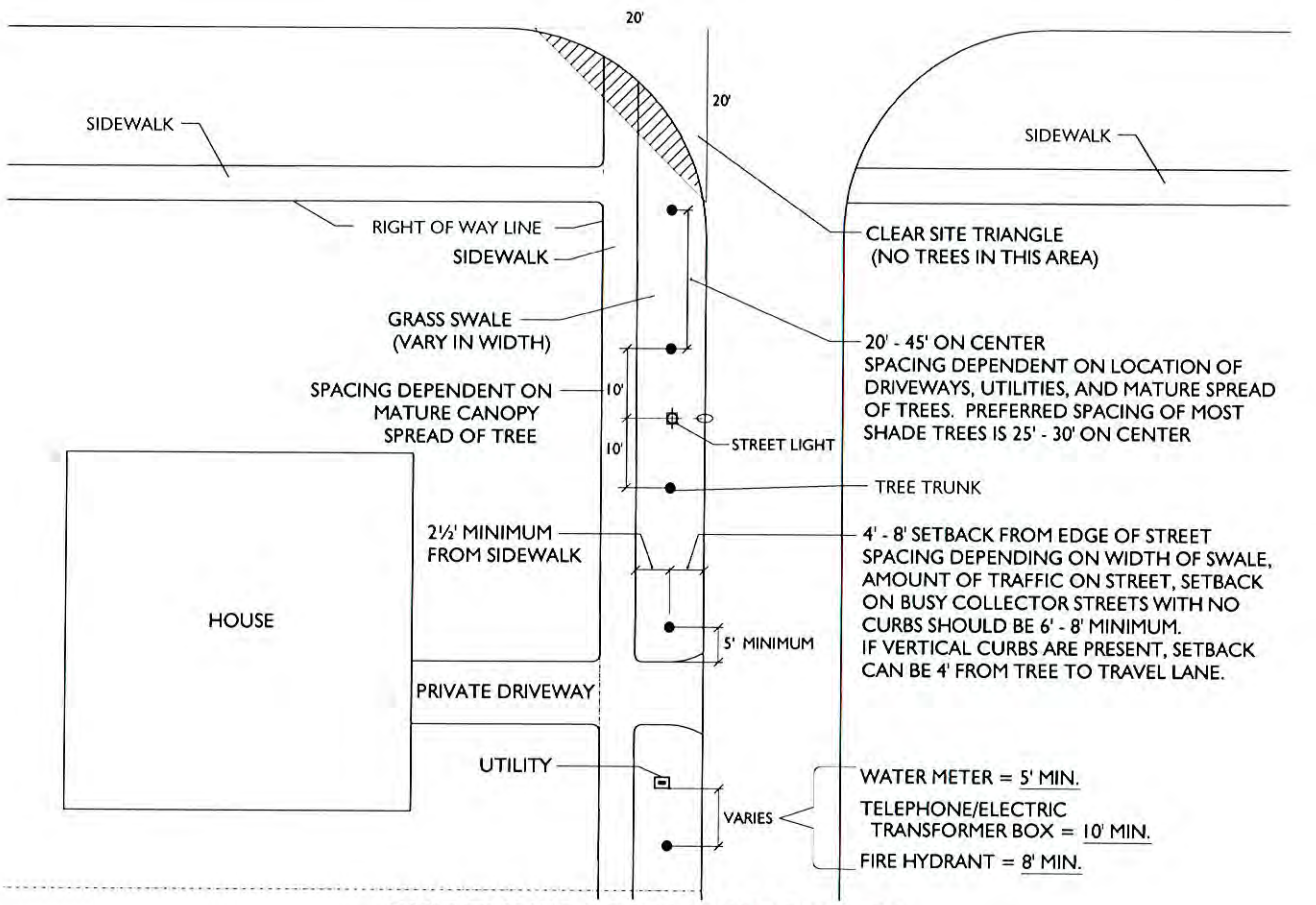
Miami-Dade County and most municipalities throughout South Florida require street trees to be a minimum of 12 feet tall at time of planting (some municipalities require 14 feet tall). Trees to be planted under power lines and certain desirable smaller-growing native trees can be planted at 8 feet tall and with closer spacing. If palms are used, they must be large-canopied species such as Royal Palms, Coconut Palms or large Date Palms. Most ordinances require an average spacing of 35 feet on center for shade trees and 25 foot spacing for palms. The quantity is usually calculated by taking the entire length of the street (including driveways) and dividing by 35 or 25.

DETERMINING PROPER SPACING AND PLACEMENT

Because the Town is essentially built-out, the street tree requirements in the very few areas left to develop can be guided by the County's Landscape Code until such time that the Town chooses to develop its own Ordinance. For street trees that the Town will plant in existing neighborhoods a better method of determining the best spacing is to respond to the actual ground conditions. Consider space taken by driveways, utilities, etc. and place the trees as evenly as possible along the street with a maximum spacing of 40 - 45 feet, and minimum of 20 - 25 feet depending upon the mature size of the species used. Palms should be spaced 12 - 25 feet on center depending on the species.

OTHER FACTORS INCLUDE:

- safe sight distance at street corners and driveway/sidewalk intersections
- distance from light poles. Allow for growth of canopy depending on species used (10 - 20 feet)
- distance from water meters, utility boxes (i.e. FPL, Bell South) - 5 feet minimum
- from fire hydrant - 8 - 10 feet
- from edge of travel lane without curbs:
  8 feet on busy collector streets
  4 - 6 feet on local streets, depending on swale width
  Where vertical curbs exist, trees can be planted within 4 feet from face of curb.
- from sidewalk - 2 ½ - 3 feet min.
- from overhead electric - follow FPL guidelines. Fortunately almost no overhead wires are found along street fronts in Cutler Bay. Residents must use the same FPL Guidelines when deciding what trees to plant in their rear yards where most of the overhead lines are found.



GUIDELINES FOR SPACING TREES

N.T.S.

PROTECTION MAINTENANCE OF STREET TREES

The initial monetary investment to plant trees and guarantee their establishment will be substantial. The several years that it takes for trees to mature and provide the desired economic, environmental and sociological effects are another form of investment that dollars can't provide. THEREFORE, THE PROTECTION AND PROPER MAINTENANCE OF TREES IS PARAMOUNT. The Town should consult with a properly trained ISA-certified Arborist to supervise the pruning of trees and act as the code enforcement officer for tree issues. This person can provide training to town staff, with the Public Works and Code Compliance Department to monitor tree health, pruning, procedures and Code Compliance.

TREE PROTECTION

Miami-Dade County, under the administration of the Department of Environmental Protection (DERM) requires a tree removal permit. It prohibits the unauthorized removal or transplanting of trees on both public and private property, and establishes criteria to mitigate for trees that are removed. It, along with the County's Landscape Code , also addresses guidelines for pruning of trees and penalties for improper pruning.

Improper pruning is a prime threat to the health, stability and aesthetic appearance of a tree, as well as the shade value provided.

These Ordinances are currently applied in the Town. The Town may want to review these ordinances and amend them to relate more directly to the Town's needs. Vigilant code enforcement is vital to make the rules count.

GUIDELINES FOR THE PROPER PLANTING OF TREES

The Town intends to develop an ordinance that establishes guidelines for the selection of tree species, proper spacing and location, permitting procedure for property owners to plant trees, during it's Land Development Code re-write.

MAINTENANCE OF STREET TREES

The Town has assumed responsibility to install new trees on all public ROW's within the Town limits, including County-owned roads and those collector streets maintained by Homeowners Associations. Any tree planting on County-owned roads will require approval and permits from the County. On streets owned and maintained by Homeowners Associations, tree species and locations will be designed with input from the relevant Association. The Town will maintain street trees on all public roads.

Funds for on-going maintenance have been established as part of the Town's Public Works operating budget. Assuming that proper species are planted, no supplemental watering or fertilizing would be needed once trees are established. Ideally, the establishment period should extend for two (2) years after planting, to include watering during dry periods and fertilizing 2 - 3 times per year. Pest control would be a minimal requirement, unless a now-unknown pest or disease is introduced.

Selective pruning of shade trees and frond removal of palms will be the major effort required. Pruning is necessary both to correct structural deficiencies in existing trees, and maintain the proper growth habit on newly planted trees. Most shade trees require pruning about once every three (3) years to remove dead and crossing branches, maintain dominant leaders, and selectively thin the branches to allow winds to blow through. This helps make the trees more wind/ hurricane-resistant.

An estimated cost for pruning is about $100 per tree. A reserve fund should be established to carry on major corrective pruning after a hurricane and for replacement of some trees that will inevitably be destroyed.

APPROACHES TO DESIGN OF STREET TREE PLANTING

There are three (3) basic design approaches to planting street trees: Uniform, Random, Blended

The **Uniform** approach features the planting of a single species of tree for a street, as evenly spaced as possible, as conditioned by driveways and utilities locations. This design is the one most applied in planned communities where street trees are planted concurrently with the development of the community. Examples of this are found in Coral Gables, Miami Lakes, Miami Shores, and even the newer section of Cutler Bay east of Old Cutler Road.

This design creates an organized, tailored look along the street. The use of trees in this manner can help create a unifying effect where buildings with varying architectural styles and sizes are arranged along the street. This approach is easiest to implement, requiring less planning. Installers can more efficiently gather the trees at fewer suppliers during a planting cycle.

UNIFORM DESIGN

- **ONE SPECIES ALONG BLOCK**
- **UNIFORM SPACING**
- **USED IN CORAL GABLES, MIAMI LAKES, & MIAMI SHORES**

APPROACHES TO DESIGN OF STREET TREE PLANTING

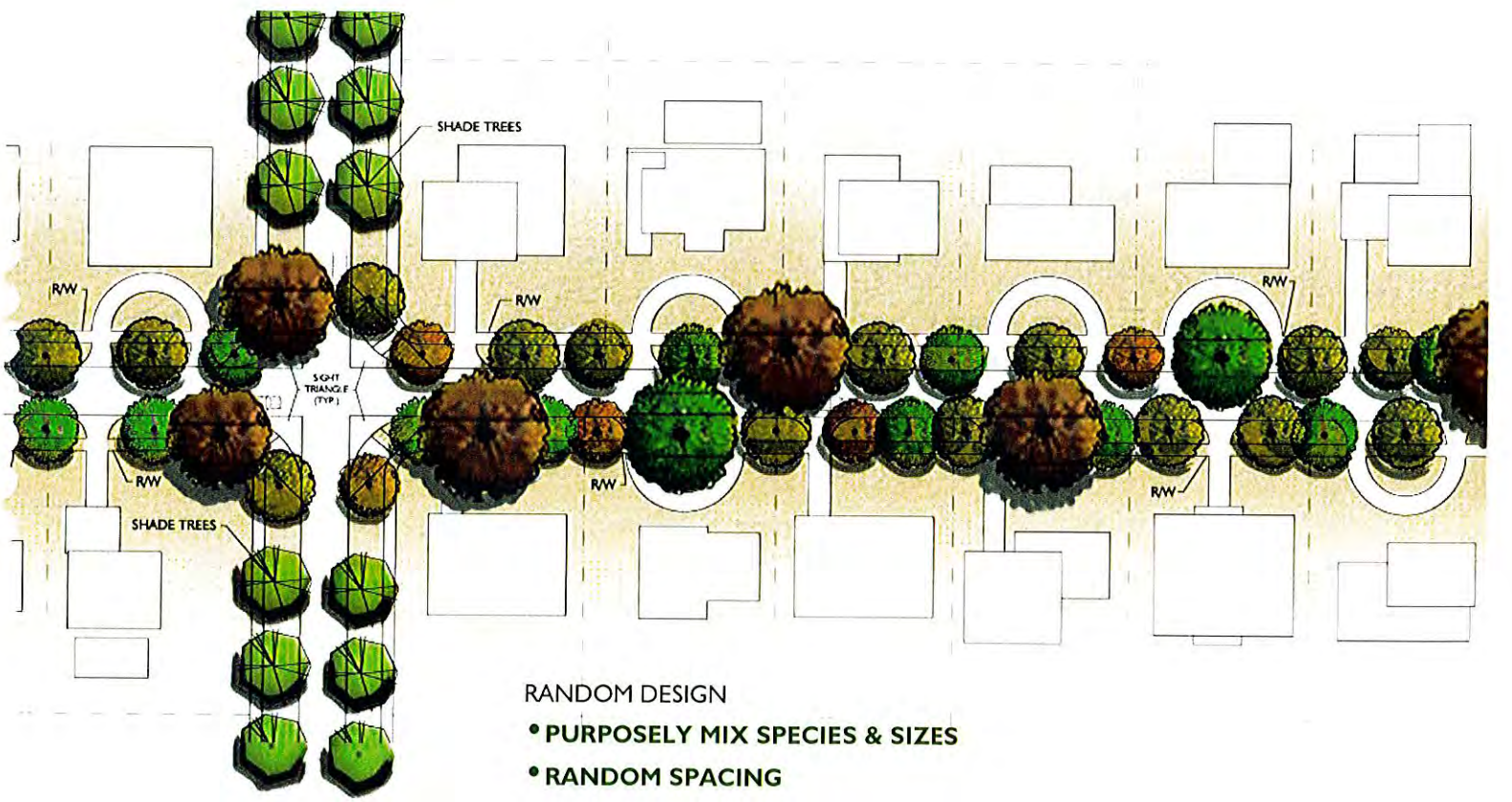
Conversely, the **Random** approach to planting trees produces the opposite effect. Here, several species of trees, often with varying mature sizes, are intermixed along the street. This type of planting often occurs in neighborhoods, 1) that were developed over time and, 2) those where a developer was not required and chose not to plant trees. Trees are randomly planted by homeowners, selecting species that they favored. Examples are Coconut Grove and Village of Pinecrest, older sections of Cutler Bay, and many older subdivisions throughout Miami-Dade County, are examples of the latter.

Mostly by chance, the number of trees planted can vary substantially. Some streets such as in Coconut Grove, are almost "jungle-like" in density of canopy. Other streets, such as along many of the streets in the older sections of Cutler Bay, have from 60% canopy to none at all.

On those streets that do have some existing trees, that are primarily of one species, the Uniform approach to design can be implemented with additional planting of the same species. Where a mix of species already exists, as is the case on most streets in older sections of the Town, then the Random approach is the one that would naturally occur. Village of Pinecrest for example, decided to purposely use the Random approach to planting, even on street that did not have much existing tree canopy.

The following reasons dictated their decision:

- There was concern that if a disease wiped out a particular species, that a street would not become void of canopy.
- Different species have varying degrees of resistance to hurricane winds. Again, they wanted to reduce the risk of major canopy loss.
- Since the architectural styles and sizes of homes varied, they wanted to embrace and accentuate the diversity (opposite of the "subdivision" look of many other communities.)
- Provides various habitats for wildlife.



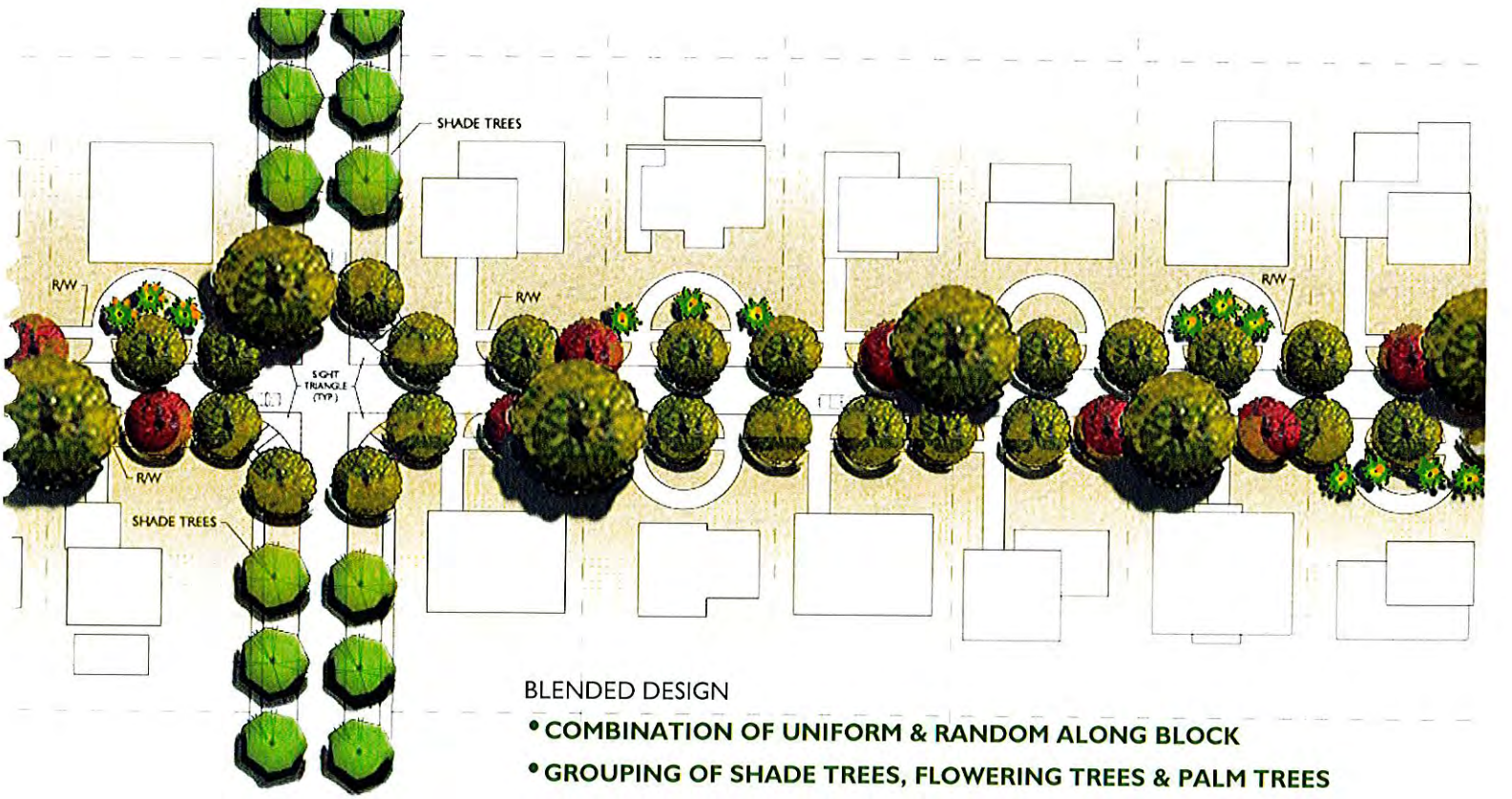
RANDOM DESIGN

- **PURPOSELY MIX SPECIES & SIZES**
- **RANDOM SPACING**
- **USED IN COCONUT GROVE & PINECREST**

APPROACHES TO DESIGN OF STREET TREE PLANTING

The **Blended** approach to planting, as the name implies, takes attributes of both the Uniform and Random designs. It selects a predominant species (approximately 60 - 70% of the total) to be planted along a street. At street corners, and at random locations along the street, one or more additional accent species would be introduced as well. The street corners in particular, might be flowering trees. The trees selected as accents could be smaller-growing species to fit smaller spaces between two closely-spaced driveways or where existing utilities interfere, or conversely, larger-growing species where a larger space is available.

This design approach has the advantage of providing a mostly "organized " look, yet introduces some diversity along a street to guard against a catastrophic loss of canopy from disease, and to add visual interest.



BLENDED DESIGN

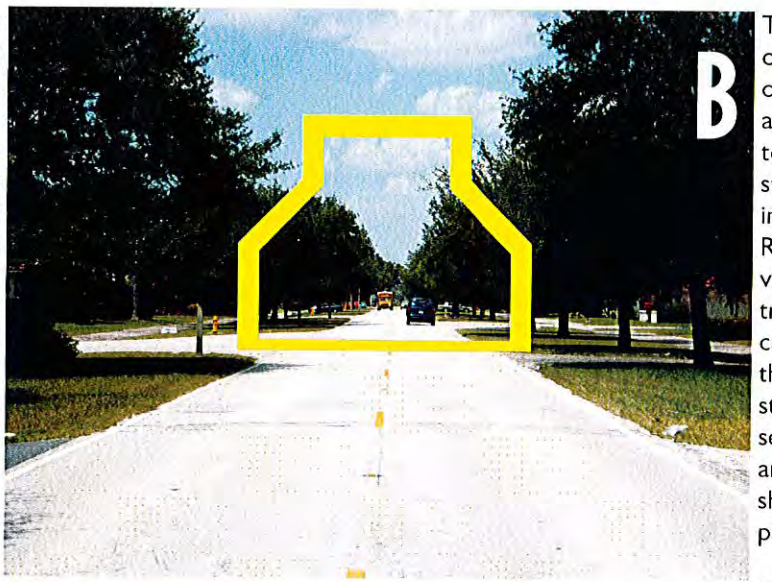
- **COMBINATION OF UNIFORM & RANDOM ALONG BLOCK**
- **GROUPING OF SHADE TREES, FLOWERING TREES & PALM TREES**
- **ONE PRODOMINANT SPECIES WITH ACCENT TREES**

TREES CREATE SPACES

Different species of trees, when grouped along a street, will create a specific type of space. The growth habit of the tree, its spacing along the street, and the width of the street ROW, all contribute to the sense of space created.

Trees with wide-spreading canopies can reach from side to side of a street to form a "tunnel-like" feeling, giving a sense of enclosure when planted close enough for their mature canopies to touch and overlap. (see photo A)

Selecting trees with less spreading habits will reveal the open sky along the street between the trees on opposite sides of the street. The spacing of these trees will affect the sense of enclosure. (see photo B)



Trees with a formal, compact growth habit or tall palms can create a "stately" look suited to major collector streets, or where buildings placed close to ROW edges won't provide adequate space for trees with spreading canopies. Here too, the spacing along the street will affect the sense of space and the amount of desirable shade provided. (see photo C)

All three design approaches are valid and can be used, depending on the existing street conditions. Adjacent and intersecting streets should feature different tree species. IDEALLY, EACH STREET SHOULD HAVE ITS OWN UNIQUE CHARACTER. THIS HELPS IN WAYFINDING, ASSURES DIVERSITY OF SPECIES, AND AVOIDS MONOTONY.

SELECTING STREET TREES

Deciding which trees to plant along any specific street is guided by several factors:

- Design approach (uniform, random blended).

The mix of existing trees on any block may dictate the possible design approach and species mix. NOTE: If existing trees are undesirable species, don't continue their use.

- Size of swale areas.

Swales vary in size from 8 feet wide to as much as 25 feet wide. Trees should have a minimum setback of 6 feet from non-curbed street edges, and should be a minimum of 2 feet and preferably more from sidewalks. Thus, on narrow swales, use smaller growing trees that don't develop large trunks and surface root flares. Conversely, on wider swales, especially collector roads where no houses front, larger growing tree species with surface root flares can be used.

- Overhead utilities.

Fortunately, very few areas of Cutler Bay have overhead utilities in the street swales. Where they do occur, use lower growing or very slow growing species that will require only infrequent topping to keep them clear of wires.

- Soil conditions

Most of Cutler Bay is located on the coastal rock ridge, with the underlying soil mostly rock/sand mix. Many of the newer neighborhoods east of Old Cutler Road are built in a compacted fill base that is generally denser than the natural soils of the rock ridge. Along the canal at the northwest corner of the Town was originally a slough (somewhat lower elevations than the surrounding rock ridge). Here, the underlying soil may contain marl, a clay-like soil which hold more moisture. Most of the trees on the recommended list will grow in all the soil types. A few should only be planted where marl soils are found.

QUALITIES TO LOOK FOR IN SELECTING TREE SPECIES

- Good resistance to hurricane damage – less apt. to blow over or break major limbs.
- Less invasive root systems.
- Less tendency to develop roots that grow above the swale surface, creating tripping hazards and difficulty mowing. Some very attractive species with other good qualities could be used on wider swales along collector streets where residents will not be parking cars or playing on the grass. No messy fruit, dripping sap, large slippery leaves. Again, some very attractive species could be used where cars and pedestrian traffic is minimal.
- Trees that provide food or nesting area for wildlife is an added bonus.
- Able to allow enough light
- penetration through to permit grass in the swales to grow. This relates to the density of the foliage, spacing of trees, and/or the height of the bottom of the canopy above the street level, to allow sun to shine under the canopy.

LOW MAINTENANCE REQUIREMENTS

- No supplemental watering needed after establishment.
- No fertilization needed after establishment
- Minimal pruning to maintain proper canopy form.
- Small leaves that 'disappear' into grass and don't need frequent raking

NOTE: Remember, all trees do drop leaves and fruit. Only "silk" trees can be assured not to produce litter.

- Availability of Trees
- Availability in sufficient quantities and at proper planting height. There are several dozen trees good for street tree use, but just a few that are readily available in South Florida nurseries in a suitable size for planting (8 feet minimum, 12 – 14 feet ideal). This situation has created a sameness to street plantings throughout South Florida. It may be worthwhile for the Town to encourage some local nurseries to grow some of the better species that are not now available by assuring the growers of the Town's intent to use these trees when they have reached optimal planting size.

Appendix I, List of Suitable Street Trees, includes species which can be found in South Florida nurseries, though, not always in sufficient quantities, and meet the desired characteristics for use as street trees. This list is by no means all inclusive, but includes those that we deem to be best overall.

Live Oak

NOTE: The size of the tree assumes its potential size in 30-40 years without any reduction pruning.

NATIVE	BOTANICAL NAME	COMMON NAME	CHARACTERISTICS								
			1	2	3	4	5	6	7	8	9
	Bombax ceiba	Silk Cotton Tree	X				X			X	
	Bucida buceras var.	Shady Lady Black Olive	X			X					
	Bulnesia arborea	Verawood		X			X				
N	Busera simaruba	Gumbo Limbo		X		X		X			X
	Caesalpinia grandillo	Bridalveil		X		X	X		X		
	Calophyllum brasiliense	Beautyleaf	X			X					X
N	Canella winterana	Wild Cinnamon			X				X		
	Cassia fistula	Golden Shower		X			X				
	Cassia javanica	Apple Blossom Shower	X			X	X			X	
	Chorisia speciosa	Floss Silk Tree	X				X			X	
N	Cordia sebestena	Orange Geiger Tree			X	X	X				X
	Delonix regia	Royal Poinciana	X			X	X			X	
N	Eugenia axillaris	White Stopper			X				X		X
N	Eugenia rhombea	Red Stopper			X				X		X
N	Ilex cassine	Dahoon Holly			X						X
N	Ilex glabra	Inkberry			X				X		X
N	Krugiodendron ferrum	Black Ironwood			X				X		X
	Lagerstroermia indica	Crape Myrtle (no leaves in winter)									
	(var. Muskogee, Natchez, Tuscarrora)				X	X	X				
	Lagerstroernia speciasa	Queen Crape Myrtle			X		X				
N	Lysiloma latisiliqua	Wild Tamarind		X		X					X
	Lysiloma sabicu	Sabicu		X		X			X		
	Manilakara roxburghiana	Mimusops			X				X		X
N	Myrcianthes fragrans	Simpson Stopper			X						X
	Norohnia emarginata	Madagascar Olive			X						X
	Pachira aquatica	Water Chestnut	X			X	X			X	
	Peltophorum pterocarpum	Yellow Poinciana	X			X	X				
	Pongamia pinnata	Pongam		X		X		X			
	Quercus virginiana	Live Oak	X			X					X
N	Sideroxylon salicifolium	Willow Bustic			X	X			X		
	Spathodea campanulata	African Tulip	X				X			X	
N	Swietenia mahagonii	West Indies Mahogany	X					X			X
	Tamarindus indica	Tamarind				X			X		X
N	Taxodium disticum	Bald Cypress (no leaves in winter)	X			X					X
PALMS	(should be used as accents, favor the use of shade trees)										
	Cocos nucifera var.	Green Malayan Coconut	X			X					
	Phoenix dactylifera	Medjool or Zahidi	X			X					
	Phoenix sylvestris	Wild Date Palm			X	X					
N	Roystonea regia	Royal Palm	X			X					
N	Sabal palmetto	Sabal Palm		X		X					X
	Veitchei montgomeriana	Montgomery Palm	X			X					

	CHARACTERISTICS
1	Large Trees - 35 - 50 ft. height and spread
2	Medium Tree - 25 - 35 ft. height and spread
3	Small Tree - up to 25 ft. (and/or very slow growing) &(good for use under power lines)
4	Expecially resistant to hurricane damage
5	Attractive flowers
6	Tendency to form surface roots
7	Not available in large quantities at this time but should be grown
8	Accent tree for large spaces
9	Provides food or habitat for wildlife