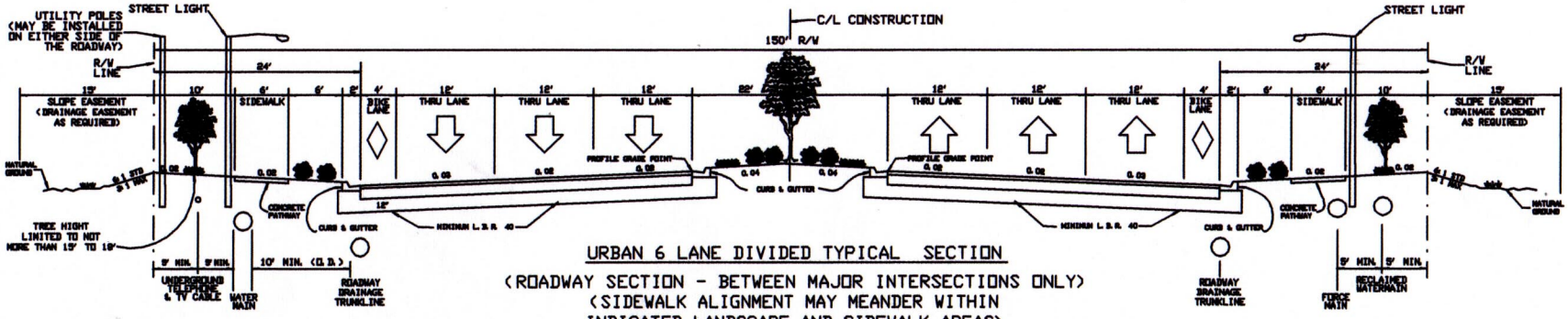
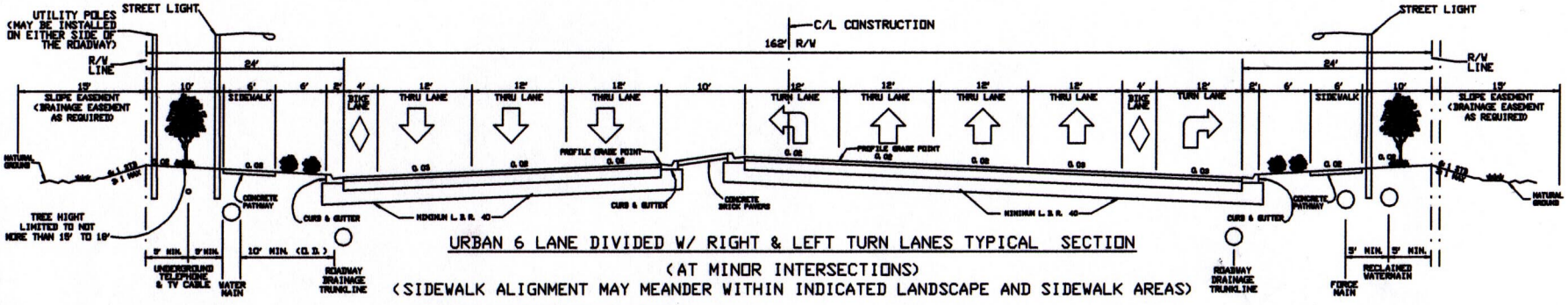


URBAN 6 LANE DIVIDED TYPICAL SECTION

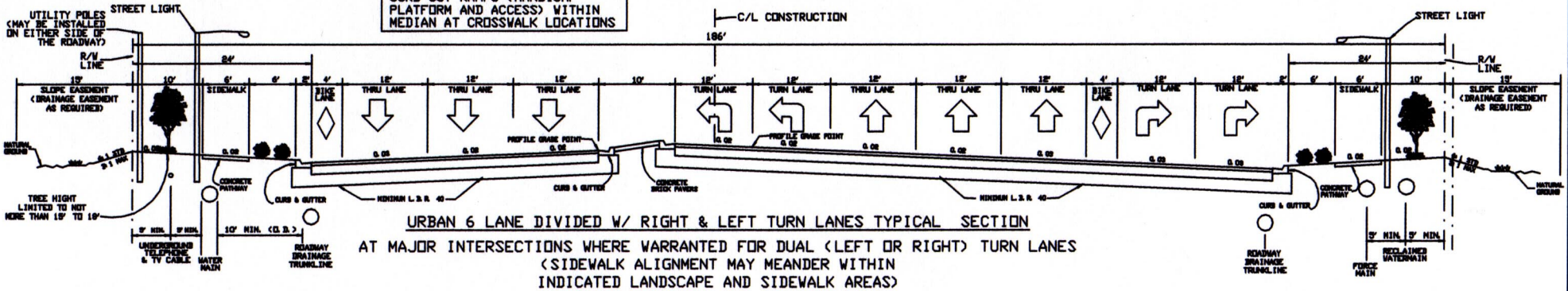
(ROADWAY SECTION - BETWEEN MAJOR INTERSECTIONS ONLY)
(SIDEWALK ALIGNMENT MAY MEANDER WITHIN INDICATED LANDSCAPE AND SIDEWALK AREAS)



URBAN 6 LANE DIVIDED W/ RIGHT & LEFT TURN LANES TYPICAL SECTION

(AT MINOR INTERSECTIONS)
(SIDEWALK ALIGNMENT MAY MEANDER WITHIN INDICATED LANDSCAPE AND SIDEWALK AREAS)

NOTE:
CURB CUT RAMPS (HANDICAP PLATFORM AND ACCESS) WITHIN MEDIAN AT CROSSWALK LOCATIONS



URBAN 6 LANE DIVIDED W/ RIGHT & LEFT TURN LANES TYPICAL SECTION

AT MAJOR INTERSECTIONS WHERE WARRANTED FOR DUAL (LEFT OR RIGHT) TURN LANES
(SIDEWALK ALIGNMENT MAY MEANDER WITHIN INDICATED LANDSCAPE AND SIDEWALK AREAS)

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BOARD OF COUNTY COMMISSIONERS
COLLIER COUNTY, FLORIDA
PUBLIC WORKS ENGINEERING DEPARTMENT
3301 TAMIAMI TRAIL EAST, BUILDING "D"
NAPLES, FLORIDA 34112 (941) 774-8192

ROADWAY ELEMENTS
TASK FORCE

TITLE
TYPICAL SECTION
SIX LANE DIVIDED URBAN ROADWAY

SHEET
3
OF 86

EXECUTIVE SUMMARY

INTRODUCTION

Collier County, the City of Naples, and private enterprise have combined resources to create and maintain an outstanding streetscape program throughout Collier County. This public/private partnership has developed a "signature" for Naples and Collier County over the past decade.

PURPOSE

In 1992, the Board of Directors of Collier/Naplescape 90's agreed to organize and help fund development of a comprehensive strategy for landscape and maintenance of the arterial street network in Collier County. This effort has been joined by many private persons, practitioners, and entities whose goal has been to create a common design theme and means for implementation of a comprehensive network of arterial streets.

APPROACH

This approach for accomplishment of purpose has been a pro-active one by Collier/Naplescape 90's, working with Collier County Government. In 1992, C/N 90's retained a private consultant to draft an outline for an overall plan. That work was accomplished at no charge to the community.

The approach envisioned coupling professional talent with a strong sense of civic involvement. For the initial three years of master plan development, two separate Technical Advisory Committees have met, reviewed, and commented on drafts of various plan components. In addition, County and City staff have contributed their time and expertise where needed.

Finally, it has been recognized from inception of the SSMP project that, in order to be meaningful, the plan would require adoption by government, and ultimately to become law. Therefore this document, is recommended to become its own Section in the Collier County Land Development Code, and, to be similarly adopted by the City of Naples.

PROCESS

Development of the SSMP has been a 3-step process over the past three years as follows:

1. *Data Gathering*

   All relevant information was collected, assembled and organized for creation of a comprehensive plan. State, County and City design standards were assembled along with major roadway development schedules. An approval process was also established and implemented. This consisted of identification of all potential constituencies and several meetings throughout Collier County. These meetings provided the public view point as an essential ingredient to the plan.

In general, it was discovered that the participating public wanted:

- Landscaping of Major streets;
- A comprehensive understanding of costs involved; both capital and maintenance;
- A schedule for improvements;
- Cost effective landscape solutions; and
- Parity: a balance of landscape programs throughout the County.

A major product from the Data Gathering Phase was establishment of the Urban Area Streetscape Network. Using the Metropolitan Planning Organizations (MPO) 15-Year Plan as a guide, a network of divided highways was established as the boundary for the SSMP in urbanized Collier County. A shorter action plan relating to Collier County's 5-Year Highway Improvement Plan was also identified as the near term landscape implementation schedule.

II. Character Analysis

All design projects require a program. "What shall we do and what shall it accomplish" are primary questions asked and answered as part of this phase of the SSMP.

Two important concepts were established to guide answers to these questions as follows:

Concept I: Contextual Relevancy.
Quoting from the text: "Streets pass through various regions, hence, they do not have a character themselves, but rather the region does. The street should reflect and interpret the region, not vice-versa."

Concept II: Character Zones.
The streetscape network is comprehensive in urban Collier County necessitating a macro vs micro approach toward programming. Therefore, a "zonal" method towards identification of design requirements was established. Various streetscape zones were determined by combining several factors: a.) natural character; b.) existing land use; c.) existing zoning; and d.) Collier County Comprehensive Plan.

Seven Character Zones for streetscape design were identified as a result of combining the above land use features of Collier County (see figure E.1)

Character Zones:

- Activity Center Zone - These are related to the existing and proposed major urban areas, essentially a ½ mile square around major street intersections.
- Urban Residential Zone - These are transitional landscape areas which combine features of both Activity Center and Residential Zones.
- Residential Zone - These zones occur primarily as frontages to Collier County's numerous planned communities and established subdivisions.

- Agricultural Zone - These refer to those areas currently developed for a variety of agricultural purposes. Over time, these may convert to one of the above categories.

- Utility Zone - These zones are not extensive in size and always occur as a specialized segment of another zone classification. Therefore, they have specialized requirements.

- Conservation Zone - These zones are those which are dominated by natural, protected landscapes along the frontage street.

- Gateway Zone - These are the major entry and exit points to urbanized Collier County on the streetscape network. There are seven of these: five on Interstate 75; two on the north and one on the south side of the County.

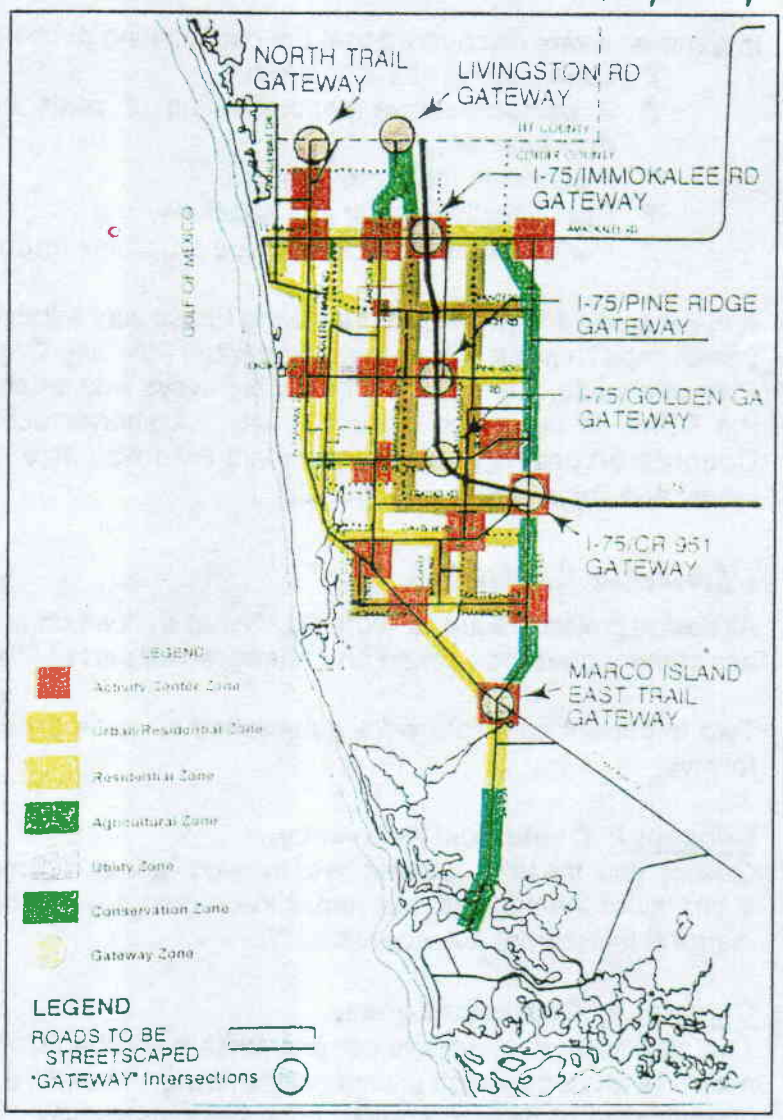


figure E 1 Identified character zones for streetscape design

All of the above character zones have been mapped, quantified, and qualified by descriptive commentary as a part of this section of the SSMP. Further, each individual street within the streetscape system has been given a verbal interpretation of its potential landscape which responds to its location within a character zone.

III. Master Plan Implementation

The above data and programming are implemented by a 5-Step process as outlined in the body of the SSMP as follows:

- **Schematic Design**
  This portion of Programming (Section 2.0) gives generalized design commentary accompanied by a plan and section view of each activity zone as described above.

- **Planting Recommendations**
General guidelines have been provided which respond to three sources: the plantings as shown in schematic design, local landscape professional knowledge, and maintenance experience of City, County and State agencies. An overriding consideration has been given to a reduction of irrigation dependency. Therefore, three of the seven character zones are recommended to be composed of xeriphytic and/or native Florida plant materials.

  Water, soils, fertilizer, pesticide, and design recommendations are made in this section. Most importantly, a plant species list is recommended by Character Zone and Florida Native status.

- **Irrigation Recommendations**
Water requirements for median plantings are a major determinant of planting design and maintenance. Therefore, plantings and water delivery methods require close collaboration.

  As a general goal, all plant systems will be designed for available water, and all plantings will be designed to require as little water as possible to sustain them. A preferred ultimate goal is no irrigation at all. Completely naturally sustainable plantings could occur; especially in the Agricultural and Conservation Landscape Zones as described in Section 2.0.

  1.) Drip versus Spray Irrigation. State of Florida rights-of-way will allow no spray irrigation as a result of perceived potential liability problems.

  Therefore, in State rights-of-way, either subsurface, occasional manual, or no irrigation will be provided. Cost effective techniques for drip irrigation are being developed, especially for shrub and tree plantings.

  Collier County and City of Naples rights-of-way may prefer to also utilize controlled spray irrigation techniques. This is especially due to reduced construction costs, and the ability to support manicured lawn components of streetscape plantings.

  2.) Irrigation Specifications and Details. Irrigation requirements within the context of the SSMP are performance driven rather than specific in their orientation. This will provide for liberal accommodation of techniques of construction and materials as they change over time.

  3.) Water Source. The ultimate goal of water source is reclaimed water following tertiary treatment at municipal waste water plants. State and Federal water quality and treatment methods shall be followed for safe exposure to the public. However, there will be occasions when the need for public landscape will preceed the availability of reuse water. Nothing in this section shall prohibit the use of potable water as an interim source.

- **Five and Fifteen Year Implementation Schedules.**
  Subject to available funds, the SSMP shows both a five and fifteen year schedule for implementation of the streetscape network. Maintenance schedules are also included as a cumulative requirement following implementation. In order to complete landscape work for 120 miles of roadway within a 15-year time frame, 8 miles of streets would require landscape installation per year. In the past 10 years, approximately 20 miles of roads have been landscaped resulting in an average of 2 miles per year, or one quarter the rate needed to complete the streetscape master plan in a 15 year time frame.

  Therefore, it is recommended that the Board of County Commissioners update a streetscape schedule consistent with community priorities and available funding.

- **Finally,** the SSMP provides references for further research and specific relevant sources for help (*Help!*) on streetscape projects in Collier County.

Naplescape '90's

Collier County's Streetscape Master Plan

COLLIER COUNTY, FLORIDA

January 1, 1997

prepared by

Collier/Naplescape 90's
and
George Botner ASLA

2.0 PROGRAMMING and DESIGN

2.1 PROGRAM RATIONALE

All design work starts with a program of what it wishes to accomplish in both broad and specific terms. In the case of the SSMP, the most important program element is the establishment of a design "theme" which is more broadly referred to as "character". Therefore, the SSMP addresses the issue of Program in the context of identifying and establishing landscape design character for Collier County's urban area roadways.

2.1.1 Goals The following major goals were established in order to provide a system of Landscape Character of major roadways:

- **2.1.2.1** Be responsive to existing conditions and also accommodate future growth;
- **2.1.2.2** Recognize both civic and design issues while at the same time being site specific, memorable, and implementable;
- **2.1.2.3** Minimize problems inherent in streetscape work and maximize opportunities for public enjoyment of its public right of way use;
- **2.1.2.4** Establish the opportunity to create design guidelines which are easily implementable;
- **2.1.2.5** Relate to the community and its standard of life; and,
- **2.1.2.6** Be comprehensive in its use of relevant data (Sec. 1.5).

2.2 ESTABLISHMENT of DESIGN DIRECTION for PUBLIC INPUT

The ultimate goal of the Streetscape Master Plan is to be adopted and implemented by the City of Naples and Collier County governments. In order to achieve this goal, it has been necessary to obtain wide spread community support. Consensus building, as an approach toward establishment of community support was accomplished through an interactive review process. Therefore, the following generalized design concepts were developed as a means of generating discussion and input.

2.2.1 Concept I: Contextual Relevancy Streets pass through various regions, hence, they do not have a character themselves, but rather, the region does. The street should reflect and interpret the region, not vice-versa.

However, it should be remembered that in some cases the street is expressive of the entire region, and becomes an embodiment of regional character. Pennsylvania Avenue (the Nation's #1 Main Street) in Washington D.C. and the Blue Ridge Parkway through the Great Smokey Mountains, are notable examples. In addition to establishment of regional character, these streets also interpret and reflect their immediate surroundings.

For example, Goodlette Road and Golden Gate Parkway, which have been the subject of an earlier study, have been assigned a "parkway" character which is superimposed over all regions through which these streets pass.

2.2.2 Concept II: Character Zones

Since the SSMP network of streets is comprehensive, the entire network should be perceived as being related not only to its particular location, but also perceived as a part of a comprehensive urban area streetscape system.

For this reason, a "zonal" approach to character definition was established. Each street will be assigned a character zone which relates to natural and man made environmental concerns. These zones are defined by a number of criteria, including their regional identity. The establishment of zones will provide for creating streetscape solutions that respond to the immediate area while also establishing design continuity throughout the streetscape system.

2.3 ESTABLISHMENT OF DESIGN CHARACTER

After review of both existing conditions and policies of the Collier County Master Plan, specific streetscape design characteristics emerged. These characteristics can be grouped by their natural and man made features into "zones." In this sense, the "Design Character" of a street create definitions of landscape zones.

2.4 CHARACTER DEFINITION

Proposed landscaping should be inspired by existing, positive site characteristics. The character of a street or place is defined by the following features:

2.4.1 Existing and Proposed Land Uses. (figure 2-0)

Land uses adjacent to streetscape network corridors help to determine the intensity and character of proposed landscaping. In general, more urban land uses can support more formal landscape treatments since architecture tends to be more geometric in character (figure 2-1). It can be argued that one seeks relief from architectural intensity in urban areas by use of a soft, naturalistic landscape. And, a more geometric or structured landscape may seem out of character when placed adjacent to suburban and rural land uses.

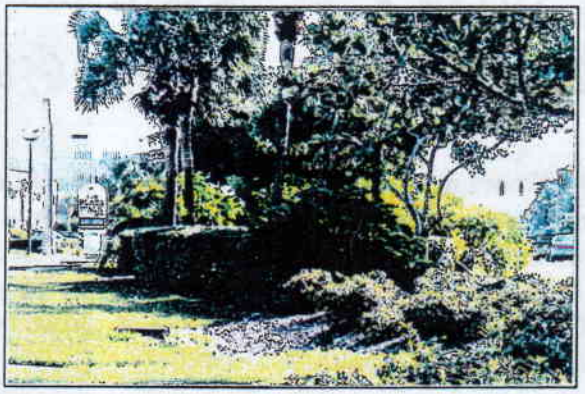


figure 2-1 Formal landscape in urban land use areas

2.4.2 Vegetation.

Existing native vegetation, adjacent to rights of way, shall be preserved and enhanced to achieve the goals for the Streetscape Master Plan (figure 2-2). This approach reduces the amount of landscaping required to achieve the objectives of the Master Plan which strives to "fit" the landscape into it's setting. Wetland stands of

figure 2-2 Preserve and enhance existing native vegetation

cypress trees, and sandhill vegetation associations dominated by pine and saw palmetto are two primary types of native vegetation. Mature stands of exotic species including Melaleuca, Australian pine and Brazilian pepper are also prevalent. Native plant material is encouraged while the use of exotic plant material is discouraged in the SSMP.

Where possible, the streetscape shall replicate adjacent existing native vegetation within the right of way. The SSMP encourages removal of adjacent exotic vegetation and to discourage its use along roadways, consistent with State and County regulations.

Heavily vegetated edges shall be preserved to create, or maintain a "parkway" character. Much of existing portions of Golden Gate Parkway and Santa Barbara Boulevard have this potential, among others.

Finally, visually significant stands of native vegetation shall be enhanced and preserved to open views from streets. They are a valuable character resource that would be difficult and expensive to replace.

2.4.3 Natural Features / Unique Features. Both natural and unique features including open prairies, wetland bogs and slews, agricultural fields, waterways, and forests all give a strong sense of special character which shall be preserved.

Unique features include cultural elements that are not present in nature. They can be perceived as bad or good. Powerlines, switching stations, land fills, and highly industrialized areas are elements that may otherwise have a negative impact on the landscape. Historic or interesting architecture and man-made waterways can become positive features. Streetscape landscape can assist in buffering or accentuating views of these elements.

2.4.4 Views. Views are critical to establishing the character of a landscape. As mentioned above, views of adjacent features can be enhanced or diminished by the use of proper landscape treatments. Views of landscape elements within the right of way can be identified by analyzing "line of sight" and "view period".

"Line of Sight" determines what, in the motorist's view, is most noticeable, and therefore most important for consideration in landscaping. In general, the motorist's line of sight occurs in an angle from straight ahead to an oblique angle slightly off to one side. By identifying critical sight lines and views, landscaping can be placed in appropriate locations.

As roadways bend, or when a motorist is stopped at a "T" intersection, views become concentrated straight ahead. These locations are especially important to establishment of landscape character.

"View Period" refers to the length of time the traveling motorist has to perceive his/her surroundings. Great levels of landscape detail in the form of small, intricate planting beds are lost to the motorist on high-speed highways. High Speed highways require bold, and dramatic landscape expression to capture attention. At intersections and where travel speeds are slower, landscaping can be more formal and intricate. Therefore, roadway speed becomes important to understanding relevant landscape character.

2.4.5 Topography. The most important aspect of topography in southwest Florida is its flatness. As a result views carry great distances. Therefore, accentuation by landscape can be significant. Any vertical elevation such as a bridge, or highway overpass creates dramatic view opportunities in an otherwise flat landscape.

2.4.6 Minimize problems and maximize opportunities. Most people can agree on what is a good or a bad view; what traffic situations are safe or dangerous; and what unique features need to be buffered (disguised from view), or enhanced. Natural land forms and features create the best opportunities for enhancement, while land fills, weed infested ditches and utility lines create the most commonly occurring problems to be minimized. The newcomer, or casual observer, of the Collier County landscape may interpret this experience as a monoculture with little diversity. However, there is a subtle diversity, in comparison with regions of the country that have a wider temperature range and accentuated topography. This region has vegetation that spans climatic zones between subtropical and tropical. There is a predominate cover of slash pine / palmetto and oaks, punctuated by enclaves of wetlands, both freshwater and saline.

Since wetlands are protected by State, County and Water Management district regulations, they provide opportunities for conservation throughout the region, including within public rights-of-way. Native vegetation stands, be they upland or wetland, represent the best, and least expensive methods of right-of-way enhancement. Preservation where these opportunities occur and relocation of them in adjacent public right's-of-way create a contextually appropriate design solutions for some streetscape network segments. These are opportunities that should be maximized.

Collier County also has it's share of problems to be minimized or mitigated through landscape design. Envisioned as a tropical "paradise", the existing condition and native landscape of Collier County creates great challenges. In conflict with the perceptual notion of "tropics", it is interesting that no habited portion of Collier County lies within this climatic zone. A tropical landscape has been established to create an image of a tropical paradise. While this practice accommodates a marketing objective, there are costs to consider since maintenance of any "imported" landscape is always more costly than that which occurs naturally .

Another common problem to over come throughout the County is a the unsightly network of drainage ditches and culverts, most of which occur within the view of the streetscape network. Several new communities, which have control over their drainage systems, deal with the problem at inception: buried drainage pipes connect various lakes which in turn, connect to out-fall structures.

Public right-of-ways are especially impacted visually since open ditches represent the primary form of storm water run-off conveyance. Open drainage ditches would be acceptable except for the following reasons:

- They are costly to maintain in a weed-free condition.
- They are full to over flowing with runoff during the rainy season.
- They are empty during the dry season.

In all cases, drainage ditches are open to public view within our right-of-way. Mitigation of unpleasing views would be achieved by either screening drain ditches from view or to enhance them as naturalistic aquatic landscapes.

As an example, the "Grey Oaks" community has incorporated the required Airport Road drainage ditch into its' community water amenity (figure 2-3).

figure 2-3

Collier County has many aesthetically pleasing commercial enclaves. The County also has several strip developments that may be benefitted by architectural guidelines. The Streetscape can help improve strip commercial aesthetics by screening views, providing continuity by use of repetitive landscape forms, and thus creating a visual order. In many cases, adequate space is lacking or difficult to use for landscape plantings due to the presence of sidewalks, utilities, and other structures which will require judicious use of landscape materials to achieve the above design objectives.

2.4.7 Remain Responsive to Collier County Comprehensive Plan

In response to State of Florida mandate (Ch 163, FL Statutes) Collier County maintains a comprehensive plan to guide development. This plan identifies several generalized land use categories through which the streetscape network traverses.

These land use categories, while too general to give specific direction to streetscape design, do create a pattern of development suitable for defining character zones. The following use designations represent the major land uses in Collier County which are appropriate for guidance of streetscape development.

2.4.7.1 Urban. These are areas that should contain the greatest residential densities and commercial growth. They are in or close to areas projected to receive support facilities and services.

2.4.7.2 Urban-mixed Use District. This district provides for accommodation of a number of compatible urban land uses including a wide range of residential types with certain commercial and industrial uses.

- Urban Residential Subdistrict - The purpose of this district is to allow the greatest residential densities where few natural constraints occur and maximum concentrations of support infrastructure are expected to occur.

- Urban Residential Fringe Subdistrict - This is a transition zone between the Urban District(s) and Agricultural/Rural District(s). Residential densities of up to 1.5 du/acre are allowed.

- Urban Coastal Fringe - This is a transitional zone between Urban and designated Conservation areas. It generally occurs between U.S. 41 and the Gulf. Residential densities within this District are limited to 4 du/acre.

- Industrial Subdistrict - This allows for the full range of industrial land uses as described in the Collier County Zoning Code for Industrial and Light Industrial zoning districts.

- Commercial Subdistrict - This district occurs in existing Urban Mixed Use districts. Uses include those that already exist or as permitted by zoning.

2.4.7.3 Urban - Commercial District. This district is located within mixed use activity centers which occur at major designated arterial street intersections. A second subdistrict, of limited application in the Streetscape Master Plan, is the PUD Neighborhood Commercial Subdistrict, which is a part of comprehensively planned new communities.

- Activity Center Subdistrict - These are mixed use districts which are anticipated to accommodate most new urban growth. They occur at designated intersections throughout Collier County. While a mix of Urban uses is encouraged, most proposed projects have been Commercial, especially Retail Centers. It is anticipated that these activity centers will help alleviate sprawl or strip commercial development and to create focal points of activity within the County. They represent the best opportunity for urban design expression outside of existing towns and shopping areas.

- Three Activity Centers occur at interchange locations on I-75. These have specific shapes depending on an approved geometry of commercial - residential land use at each interchange. The remainder of the activity centers are all the same size - 160 acres, which are ½ mile on a side with the center of the activity center coinciding with the center of the intersection.

2.4.7.4 Urban - Industrial District. This district permits industrial uses that include light manufacturing, processing, storage and warehousing, distribution centers and other uses as described in the Zoning Ordinance for Industrial & Light Industrial Zoning Classifications.

2.4.7.5 Agricultural/rural Designation. In accordance with the Collier County Growth Management Plan, the Agricultural/Rural Designation are "those areas which are remote from the existing development pattern, lack public facilities and services, are environmentally sensitive, or are in agricultural production." If this zone appears within the context of the Streetscape Network, a xeriscape landscape treatment should be provided since irrigation may be limited. Functional attributes of landscape, such as buffering and view direction may be appropriate and desirable in these zones.

- According to the Comprehensive Plan, Urbanization is not promoted and a limited selection of land uses other than low density residential and agricultural will be permitted. Therefore, if landscape is installed in these areas, it would be protected from change by future growth.

- Mixed Use District - This district allows for some residential in a predominately agricultural area. Commercial is also allowed, up to a maximum of 2.5 acres.

- Rural-Industrial District - This district is reserved for Industrial and Light Industrial uses as described in the Collier County Land Development Code (LDC). The boundaries of these districts may change depending upon demand for more industrial uses. Industrial use areas have a negative impact on the streetscape appearance. When industrial areas are positioned as frontage uses on arterial streets which service the entire County, streetscape design becomes even more important and necessary. Screening of views and softening of appearance are two prime applications of landscape design in industrial districts.

- Rural-Settlement Area District - this is a specific area designation located in the former North Golden Gate Subdivision and is governed by a specific PUD ordinance. It does not front on current streetscape network streets.

2.4.7.6 Estates Designation. This is an area currently subdivided into semi-rural lots, averaging 2.5 acres in size. It is rural in nature and future increases in densities would be discouraged.

2.4.7.7 Conservation Designation. The purpose of this district is to conserve and maintain natural resources of the County. All attempts will be made to maintain ecological and physical characteristics of the native landscape in these areas. While roadways may be considered highly disruptive to these natural landscapes, a responsive technique for streetscape design may be available. It is possible that roadway impact to the natural landscape may be mitigated by providing native or naturalistic landscapes within these public rights-of-way.

2.4.8 Recognize Existing Character.

Naples and Collier County are unique in comparison with any other regions of the United States. Not only is this area's geomorphology, climate, and vegetation unique, so are its politics and cultural background. While it may not be necessary to become overly comprehensive in an understanding of this place in order to prepare landscape guidelines for streetscape, it is necessary to have a general understanding of the forces at work which impact the character of the streetscape.

An important assumption must be made to identify design character zones: Existing and proposed character of the natural and cultural environment should be reflected in and guide landscape development. This approach toward streetscape design provides the basics for the following objectives:

2.4.8.1 Design must be cost conscious to implement and maintain;

2.4.8.2 The design solutions should be the easiest to understand and therefore able to gain consensus; and,

2.4.8.3 Design solutions shall best represent this area's unique natural and cultural heritage.

2.4.8.4 Design apprehension - The above approach may not result in a landscape that visitors come to expect. Unfortunately, but realistically, native plantings are not necessarily perceived as tropical. The Master Plan should carefully balance expectations with reality to create a landscape that has something for everyone. Conscious decisions need to be made regarding how much of a foreign landscape needs to be maintained to meet expectations of tourists and visitors.

2.5 STREETSCAPE DESIGN

2.5.1 Character Zones Defined

Character Zones are segments of roadways that are defined by their natural and man-made environment (see Sec. 2.4 Character Definition). The following zones were established after review of County planning documents, site visitation and site analysis:

- Activity Center Zones
- Residential Zones
- Utility Zones
- Gateway Zones
- Urban/Residential Zones
- Agricultural Zones
- Conservation Zones

The following outlines what landscape type/style would be appropriate for each character zone.

2.5.2 Activity Center Zone

The name for this zone originates from the Collier County Comprehensive Plan. It refers to 16 areas in Collier County where mixed use commercial and multifamily residential is planned to occur. In general, these are quarter-mile distances from the intersections of major identified streets. These are areas that are expected to have the greatest concentrations of infrastructure, traffic, people and building construction. Since street paving widths tend to be wider and driveways intersecting major streets are increased, there tends to be fewer landscape median opportunities. It is desirable to have greater landscape space available to help mitigate the impact of these most dense urban conditions, however, there is less available space. Therefore, the edges of rights-of-way become especially important as potential landscape areas.

2.5.2.1 Character Landscape character in urban conditions can either be informal, curvilinear (to counter act hard architectural form and line), or it can be geometrically similar (figures 2-4 and 2-5). This is the one zone where formal landscapes would be fitting. Similar species of palms and trees may be in groupings which are the same size and

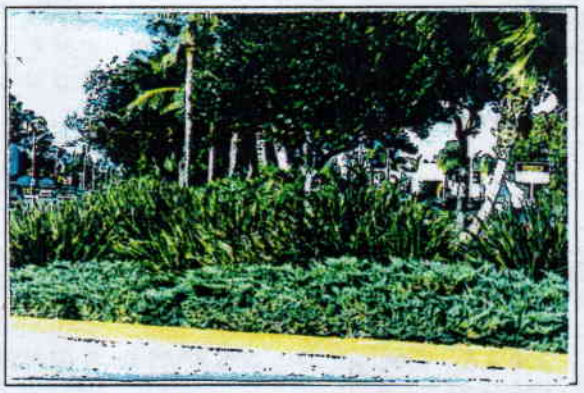


figure 2-4 Curvilinear landscape

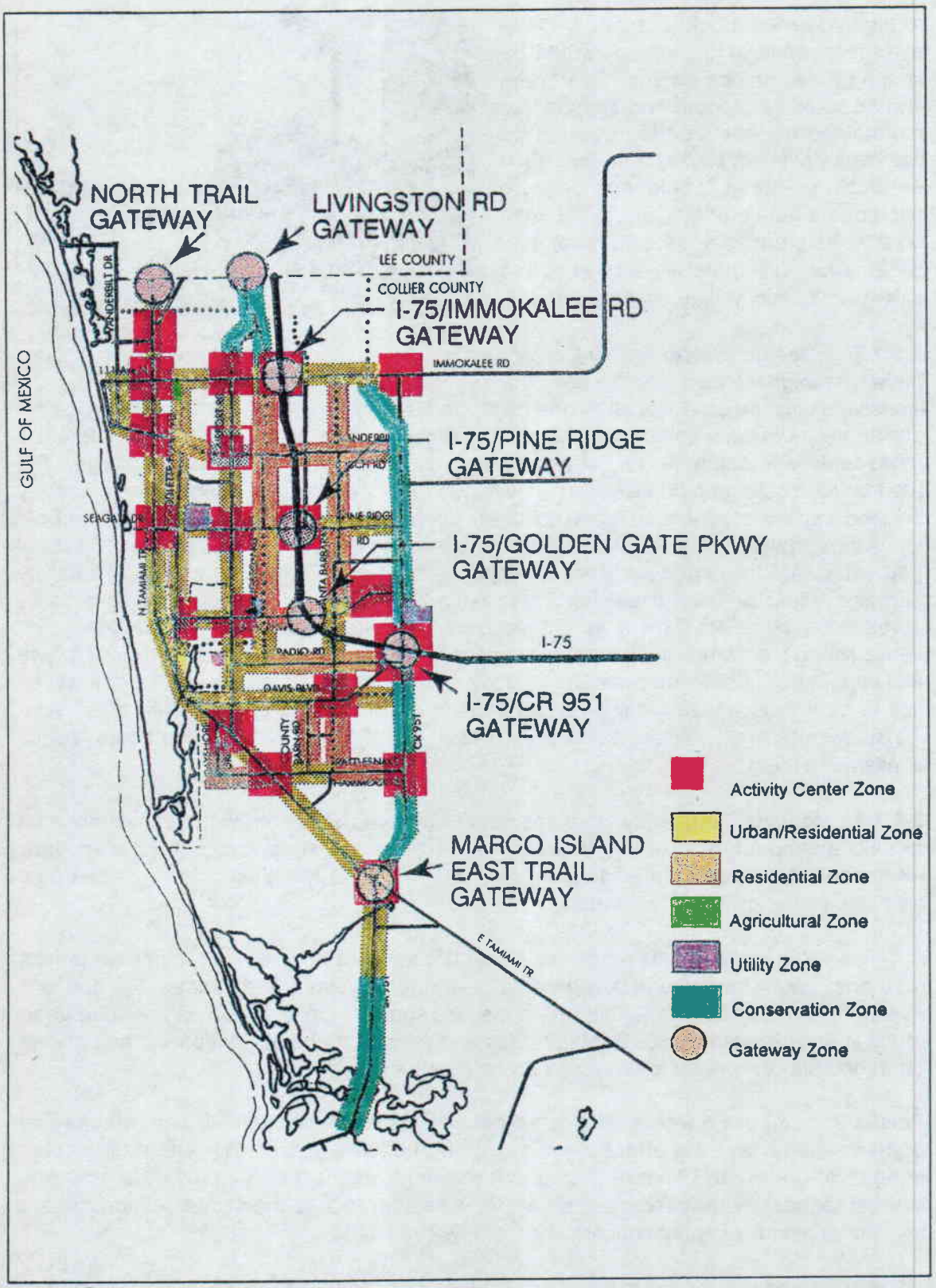


figure 2.5.1 Character Zones

regularly spaced apart. Planting beds of evergreen or flowering shrubs could be shaped in geometric patterns. Evergreen shrubs could be planted and shaped into maintained hedges. Beds need not be completely planted; paving materials such as brick or stone would not only be appropriate but could link with pedestrian crosswalks creating a "safe zone" at mid-street. And, such materials are easier and safer to maintain in high traffic situations.

figure 2-5 Geometric landscape

2.5.2.2 Design Since Activity Centers have the highest intensity of use, the landscape must be careful to allow adequate site distance at intersections and provide for opportunities to view adjacent signage, architecture, pedestrians and traffic. Since the landscape will compete for attention with architecture, traffic, and signage, the predominate color should be green. It will thus have the greatest opportunity to convey the landscape character in an urban condition. It should also consist of repetitive and bold forms thus providing a sense of urban design continuity in potentially chaotic architectural and vehicular surroundings. Keep it simple, keep it bold, and keep it green in activity center median and roadside plantings. Also, keep it tough. Avoid use of delicate herbaceous perenials except as ground covers. Instead, plant woody materials with dense strong branching structures that are capable of withstanding greater intensity of use and impact from traffic, pedestrians, and wind blown debris. Care should also be taken not to over plant these smaller, urban beds in an effort to overcome their small size. Resultant plantings will appear awkward and out of place with the horizontal space available to them.

2.5.2.3 Medians Frequently, medians tend to become very narrow to nonexistent as a result of a need for multiple turn lanes at intersections and shopping center parking lots. As a result of diminished median planting areas to help soften these high impact areas, roadside plantings are encouraged.

A variety of plant materials emphasizing both color and texture are recommended for medians. Significant use of a "signature" tree and/or palm are recommended due to a need for masses of planting within limited planting spaces. Color should be provided year-round in accent planting beds. Major trees and palms can be tightly spaced and placed on geometric centers for a controlled and elegant effect.

This is the only zone where manicured hedges placed in bold simple patterns may be appropriate. A layering affect of various ground covers and shrubs, alternating color, shades of green, and texture throughout the entire plant bed will provide drama and interest to these heavily exposed areas. As one approaches major intersections where tree materials may impact critical motorist view sight lines.

There should be very limited to no use of lawn grasses in this zone. Not only would lawn be difficult and dangerous to maintain, it would diminish the ability to use more significant landscape material. Therefore, shrubs and/or groundcovers are recommended for all

planting areas of two feet in horizontal dimension or greater. The use of mulch, either organic (wood chips) or inorganic (rocks, gravel, sand) is recommended only in mature planted areas where the dimension of residual mulch beds would be less than two feet in width.

2.5.2.4 Roadsides Roadside plantings should be encouraged to the extent planting space may be available. Linear beds of shrubs/groundcovers with an overstory of a canopy tree or palms on regular spacings will:

- mitigate visual impact of high trafficked areas,
- provide order to frequently architecturally chaotic surroundings,
- help to screen views of adjacent parking lots from roadways, and
- provide edge definition to roadways that have a soft rather than harsh character consistent with the image of Naples and Collier County.

Recommended plant material species, soils, and cultural practices for Activity Center Zones are provided in Section 4.0, Planting Specifications.

2.5.2.5 Non-Planted Areas This SSMP also recognizes that significant opportunities for non-planted landscape features are needed in the form of:

- Pedestrian sidewalks, including textured cross walks, preferably with "safe" zones in medians. Decorative paving for sidewalks are encouraged.

- Lighting, both for vehicular use areas, and at a "human scale" for pedestrians. Human scale lighting along sidewalks may consist of bollard lighting (42" mounting height) and/or decorative overhead lighting (mounting height of 8'-0" to 12'0").

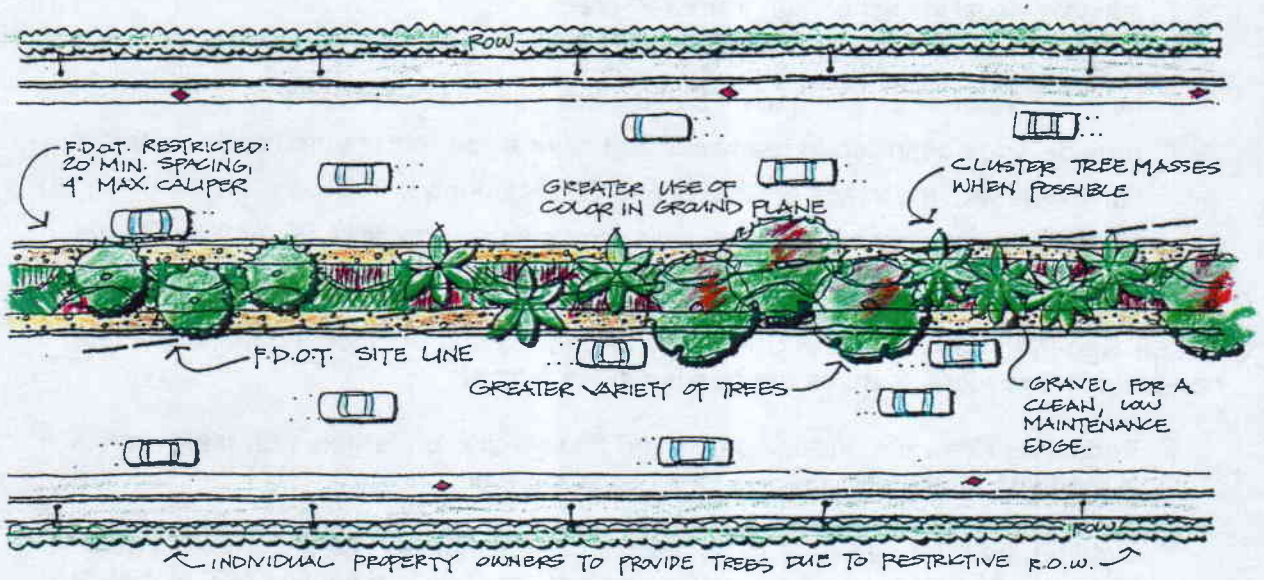
- Street Furnishings. Benches, trash cans, bike racks, kiosks, trellis, and pedestrian shelters would all be appropriate in edges of Activity Center streets. All should be of a consistent design theme and meet all applicable local building code requirements.

- Fencing / Walls. Fencing is discouraged along the edges of Activity Center rights of way unless of a highly decorative nature and at a height of no more than four (4) feet if located two (2) feet or less from back of sidewalk. Decorative walls of no greater than four (4) feet in height may be appropriate, especially if they do not provide a hazard to motorists, and provide continuity of an architectural theme throughout the Activity Center. In no case shall either fences or walls be located flush with sidewalk edges, regardless of height.

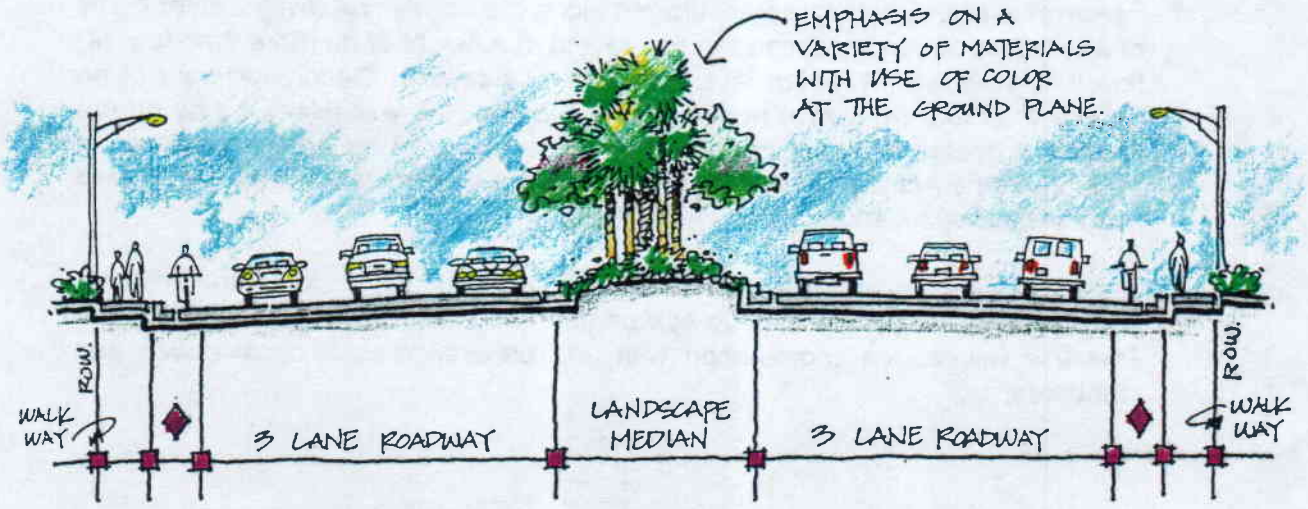
- Graphics. Signage consistent with a common architectural theme of the adjacent Activity Center use areas may be appropriate for location within rights of way. This use will require coordination with and adherence to all local codes and standards.

* Other features. Many urban areas benefit from creation of a "festival" character within their streetscapes. The SSMP encourages a coordinated design theme which may include use of banners, decorative poles, lighting or other special features which may connote a festival market place environment. Any and all such features require County, City, State approval and must be coordinated throughout the Activity Center right of way area.

2.5.2.6 ACTIVITY CENTER ZONE - Schematic Plan



2.5.2.7 ACTIVITY CENTER ZONE - Schematic Cross Section



2.5.3 Urban/Residential Zone

This is a mixed use zone that permits limited urban development in a primarily residential context. It is a transition zone between Activity Centers and Residential Use Areas.

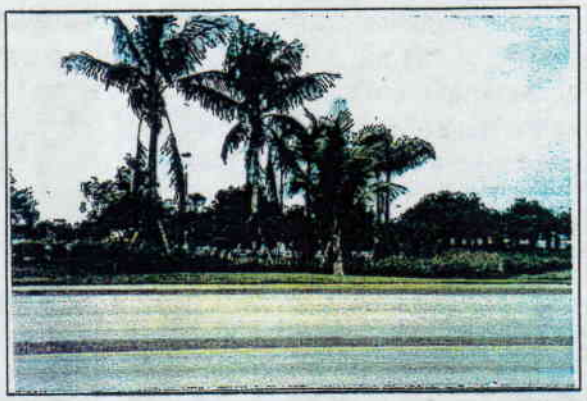


figure 2-6 Bold, simple forms at intersections

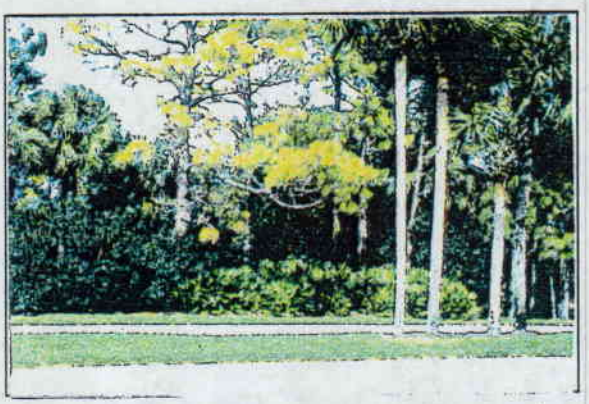


figure 2-7 Naturalistic treatment between intersections

2.5.3.1 Character The overall landscape design character is a soft, free flowing organization of shrub beds, groundcovers and lawn (figures 2-6 and 2-7). The overstory consists predominantly of native hardwood canopy trees. Accent areas of palms and/or flowering trees are encouraged, especially at intersections.

One should strive for a minimum of 60 percent canopy closure at maturity within medians and 50 percent median coverage by use of shrubs and ground covers, lawn and mulch beds may encompass the remainder of landscape bed coverage where no mulch bed exceeds two feet in width.

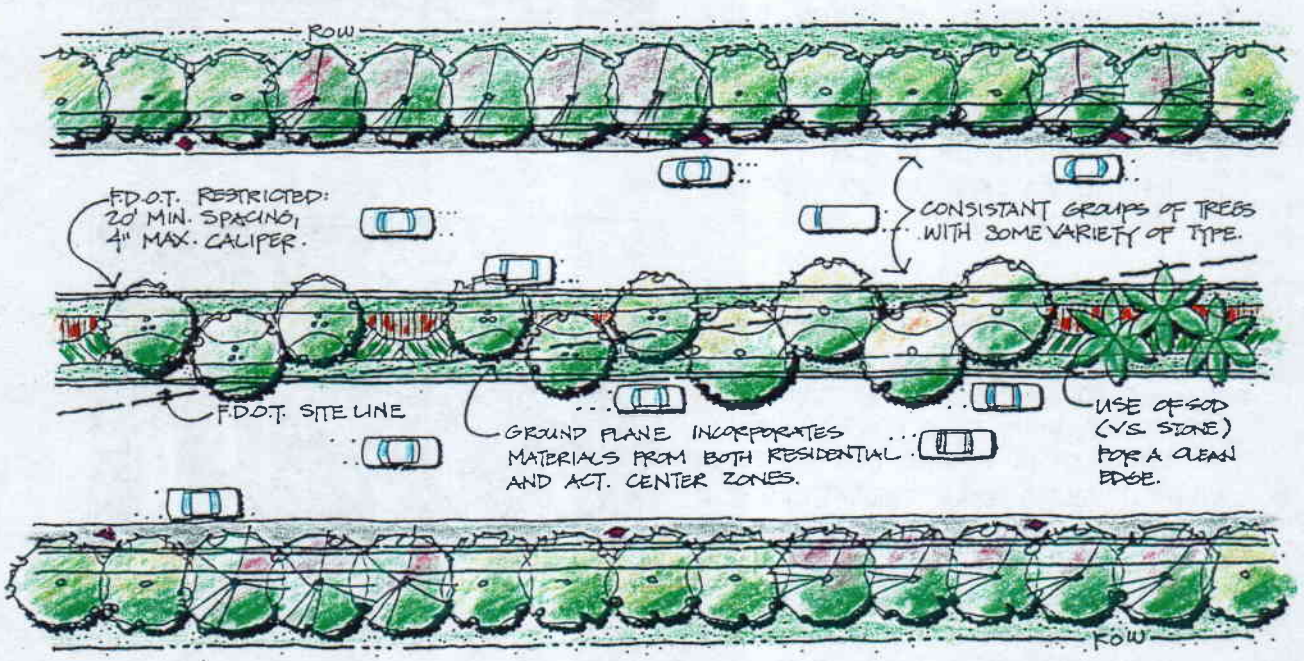
2.5.3.2 Medians The dimension of medians tends to increase in width as a transition from Activity Center (Urban) to Residential Zones. There should be a diminishing use of both a formal geometry of plant bed layout and use of shrub material which would require a formal clipped appearance.

Ground planes should undulate providing for visual relief and a greater opportunity to showcase plantings. Grades should never exceed 3:1 slopes. Isolated depressions, unless drained by use of catch basin, are discouraged. As demonstrated in the plant lists in Section 3.0, greater use of Florida native plant material is encouraged. And, correspondingly, there should be less dependence upon use of water in irrigation systems.

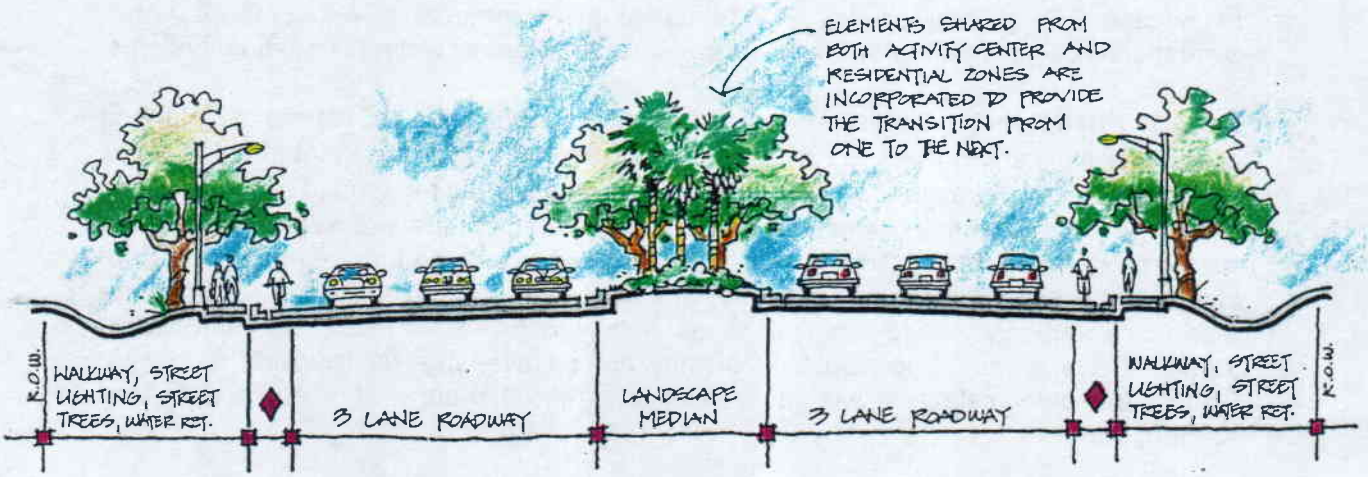
2.5.3.3 Roadsides These areas provide for additional but not mandatory planting opportunities of canopy trees, shrubs and groundcovers. The predominant planting areas will consist of lawn grasses. Canopy trees and palms should be spaced regularly but in groupings of no fewer than seven specimens each. Accent clusters of trees and/or palms should be provided at the corners of major intersections to provide further interest to street tree plantings and to serve as "gate posts" for important street crossings. Care should be taken to coordinate canopy tree plantings with plantings which occur in immediately adjacent use areas. Irrigation may or may not be available for roadside plantings. Coordinate plant selection with availability of artificial means of water supply and distribution.

2.5.3.4 Non-Planted Areas In most cases Urban/Residential areas will have a sidewalk, usually immediately adjacent to back of street curb or a few feet away in the most urban sections of this transitional zone. Lighting occurs as tall D.O.T. standard "pole and arm" for illumination of the adjacent roadway and sidewalk. Ideally, sidewalks should have a meandering alignment to provide for a soft appearance and to provide for interesting plant bed configurations.

2.5.3.5 URBAN/RESIDENTIAL ZONE - Schematic Plan



2.5.3.6 URBAN/RESIDENTIAL ZONE - Schematic Cross Section



2.5.4 Residential Zone This zone occurs within the Urban/Residential Land Use Area of the Collier County Comprehensive Plan and is entirely residential. It is frequently fronted by large planned unit developments (PUD) which provide landscape buffers along roadways with limited to no views to residential dwellings within the community (figure 2-8).

2.5.4.1 Character This is a very "soft" landscape zone in character. Often, street edges are already landscaped with plantings or plantings and perimeter wall combinations. Wide, open medians are usually available, some containing drainage swales. Interruptions usually only occur at PUD main entrances.

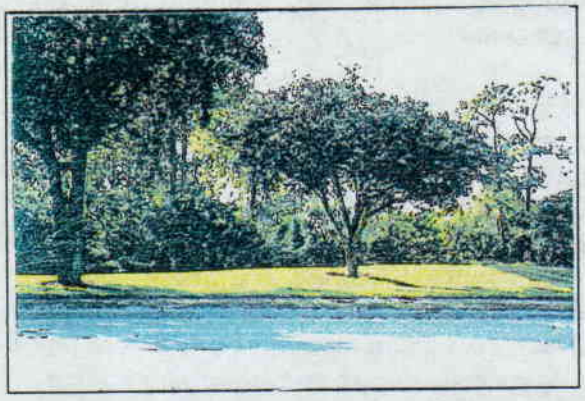


figure 2-8 Landscape buffer between road and PUD

Landscape need not fill the available planting area, but shall occur as drifts of plant beds in an undulating lawn or other less maintenance prone material. Where possible, native plant materials in rather large groupings shall be encouraged. Slash pine, Live oak and Sabal palm are predominate tree species, while Buttonwood, Cocoplum, Sea grape, Wax myrtle and Saw palmetto are shrub species that would be consistent within this zone.

Accent plantings in the medians at major PUD intersections should be encouraged, even if they depart from the native plant materials which are planted elsewhere. These plantings may reflect the species and design character of the adjacent major entry landscapes thus providing design continuity throughout the entire intersection (figure 2-9).

figure 2-9 Provide landscape continuity throughout the intersection

2.5.4.2 Design A soft, spacious, naturalistic character should not be difficult or costly to maintain. Large medians shall be predominately planted in lawn grass. A drought tolerant Bahia variety shall be selected and irrigated only as necessary during the "dry" season or during periods of drought. A selection of native trees and shrubs shall be naturally drought resistant. Occasional large beds of flowering perennial shrubs shall be encouraged, perhaps every quarter mile or so, to provide color, interest and seasonal change.

2.5.4.3 Medians In addition to the above description, medians may need to be phased landscapes which accommodate eventual road widening. Wide medians of 4-lane divided roadways shall retain edges in an expendable but soft green landscape. Low cost ground covers or drought tolerant lawn grasses would be appropriate. Wide expanses of mulch (organic and/or inorganic) are to be avoided.

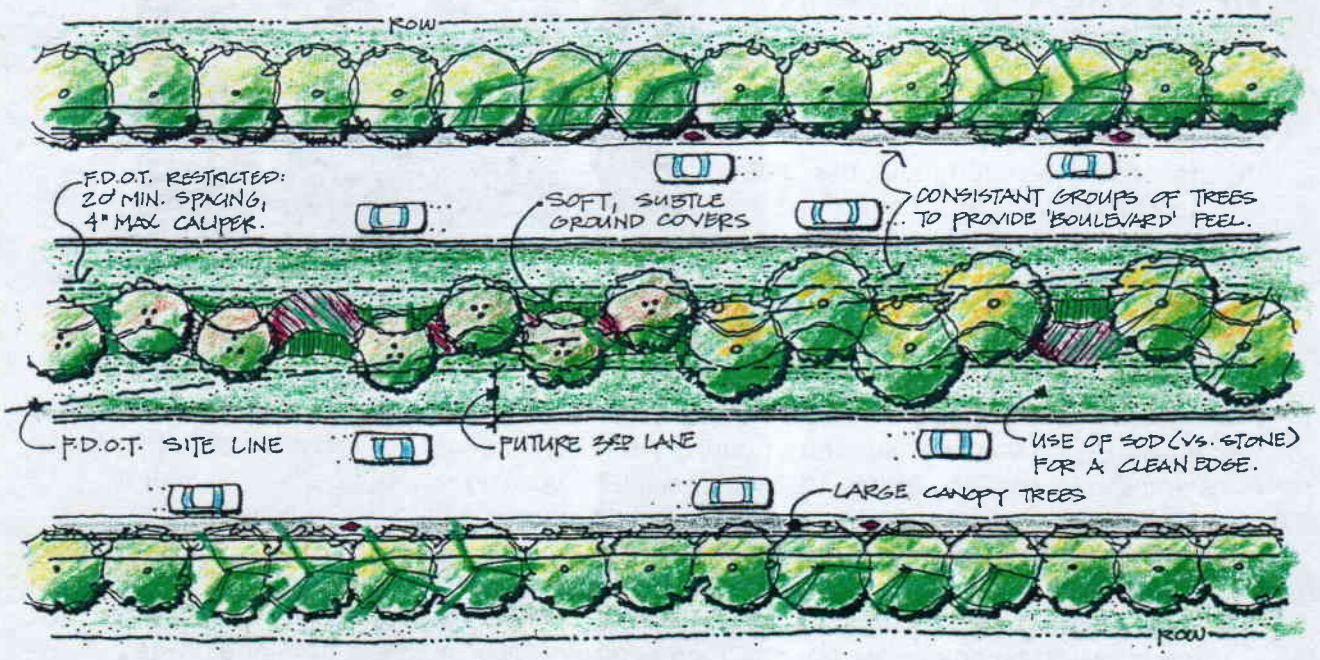
2.5.4.4 Roadsides Many Residential Zone landscapes have large Planned Unit Developments as frontage properties. Subdivisions and large single family home properties are also present. In many cases, it is possible, indeed desirable, to allow these adjacent uses to become the "edge" condition of public rights of way. If those edge conditions consist of walls or other hard architectural elements, additional tree material and groundcovers which employ the use of Florida native plant materials may be necessary.

As previously described, additional plantings should be arranged in informal masses where no single species grouping consists of less than a dozen members. This would be consistent with the grand scale of this landscape.

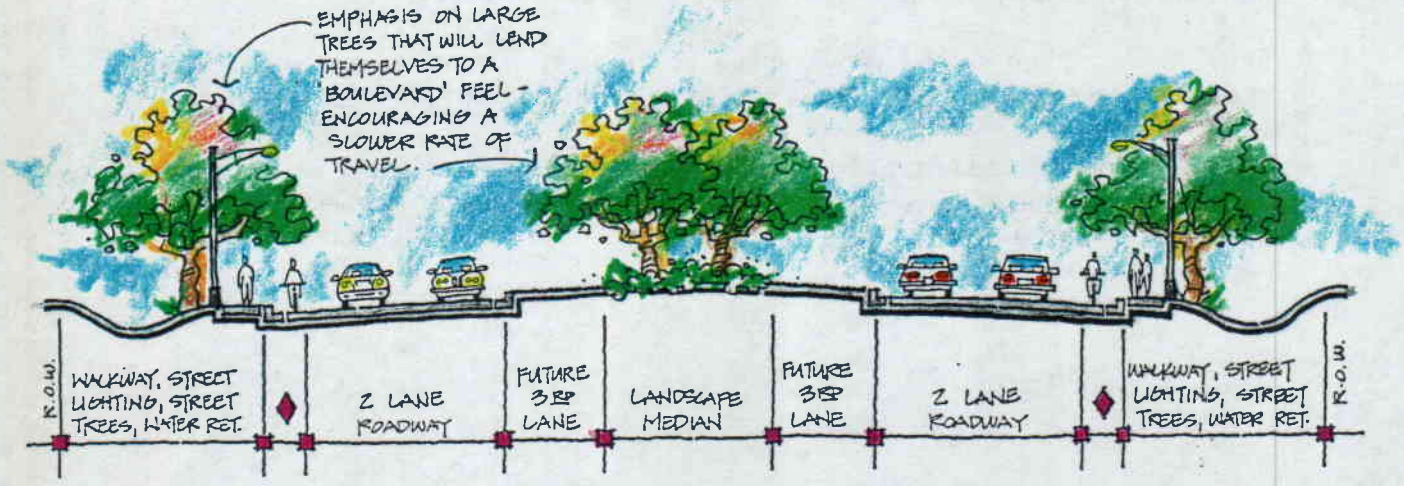
2.5.4.5 Non-Planted Areas In Residential Zones, non-planted areas consist primarily of sidewalks, bikeways and street lighting. If space permits, sidewalks should have a pleasing, soft horizontal alignment. Radii of less than 50 feet should be avoided, except at cross walks and intersections where horizontal dimensions become constrained. Try to layout sidewalks like street alignments: always with a definable curve and tangent. Avoid erratic, convoluted and excessively serpentine walk alignments.

2.5.4.6 Lighting Light poles shall not occur within paved pedestrian areas except at intersections, and only if absolutely necessary.

2.5.4.7 RESIDENTIAL ZONE - Schematic Plan



2.5.4.8 RESIDENTIAL ZONE - Schematic Cross Section



2.5.5 *Agricultural Zone* Farm fields, pasture land, and native undeveloped pinelands create the adjacent land use within the Agricultural Zones for streetscape. In the Urban Area of Collier County, the Agricultural Zone has been transitional. Remaining agricultural areas will likely become another use classification, most frequently Residential. Therefore, decisions about when and if to plant medians should be made on a case by case basis. Interim plantings are recommended and should be coordinated with future roadway development.

2.5.5.1 Medians Agricultural Zones usually do not have curb and gutter, are expansive in size (40'+ width) and frequently contain drainage swales. They are generally inhospitable planting conditions for all but the most hardy of plant materials.

Large stands of Live oak, Slash pine, Saw palmetto, Wax myrtle, and Sabal palms should be the basic native palette of plant materials. No permanent irrigation systems should be installed unless privately funded and maintained. Soils may require amendment to remove road bed materials and replacement with native topsoil in planting areas.

Never force any controlled geometry to plantings of tree materials in Agricultural Zone medians. The native fringe areas of adjacent agricultural pasture and farm lands should serve as a useful guide to character of planting beds and tree massings. Only drought tolerant grasses should be used. Manicured mulch beds would be inconsistent with the character of this zone and should be avoided.

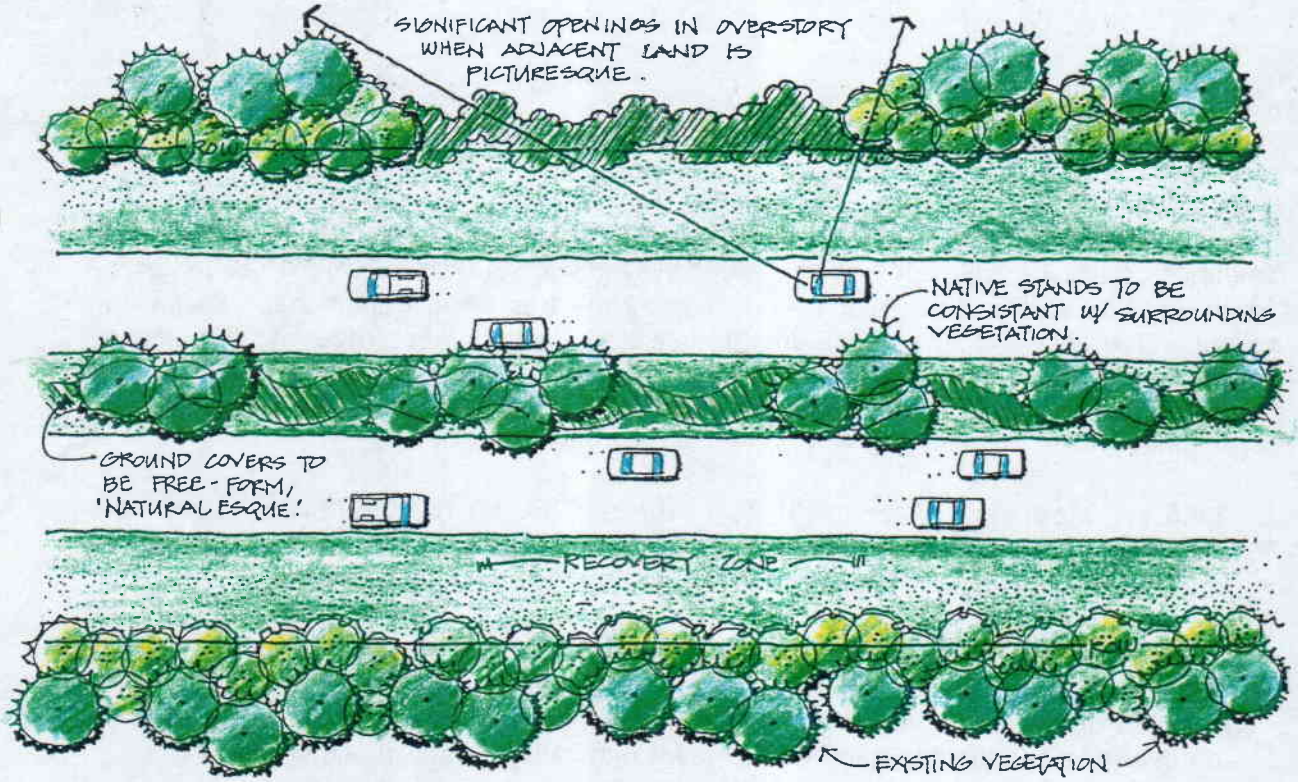
Maintenance should consist of manual watering irrigation for 3 - 5 months. Following this establishment period, only occasional mowing (bi-monthly) should be required.

2.5.5.2 Roadsides The edges of Agricultural Zones present opportunities for significant mass plantings of native tree materials as a continuation of and linkage to median landscapes. Informal groupings of trees along with drifts of native shrub materials can help frame views of adjacent pasture lands from the highway.

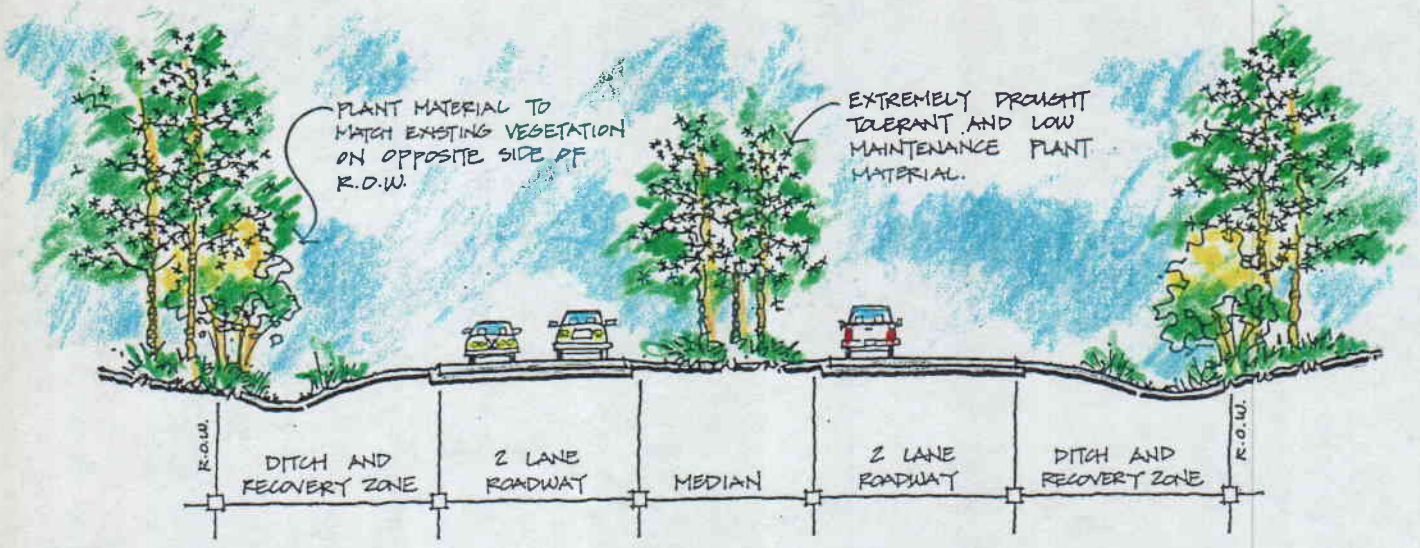
Only xeriphitic plant material requiring little or no irrigation, other than grow-in support, should be planted. Only Bahia grass should be planted for this reason.

2.5.5.3 Non-Planted Areas There will be little to no areas along roadsides that will not be planted. Given the transitional nature of this landscape zone, sidewalks may not be appropriate. If present, the alignment of walks should have a slowly undulating character, well back from edge of the adjacent roadway.

2.5.5.4 AGRICULTURAL ZONE - Schematic Plan



2.5.5.5 AGRICULTURAL ZONE - Schematic Cross Section



2.5.6 Utility Zone This zone occurs in areas of predominately industrial activity or adjacent to landfills, quarry, or utility plant locations (figure 2-10). The resulting intensity of use of these areas makes landscaped medians in the public right-of-way more, rather than less important.

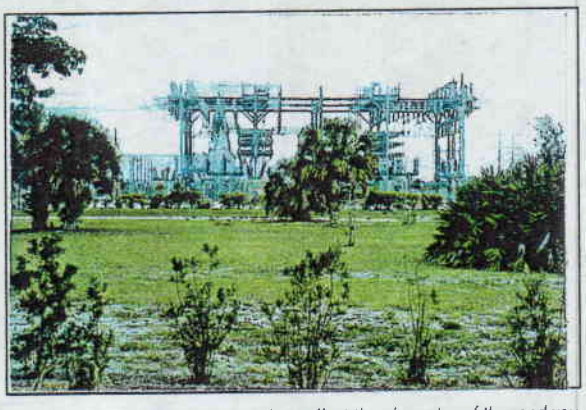


figure 2-10 Utility locations affect the character of the roadway

2.5.6.1 Character Utility zones are most often of short duration. We would therefore promote a streetscape planting that is consistent with the adjacent zones in order to blend utility zones with their neighbors.

This is also a zone that shall receive edge landscape treatment as may be needed to create a visual buffer to adjacent land use activity.

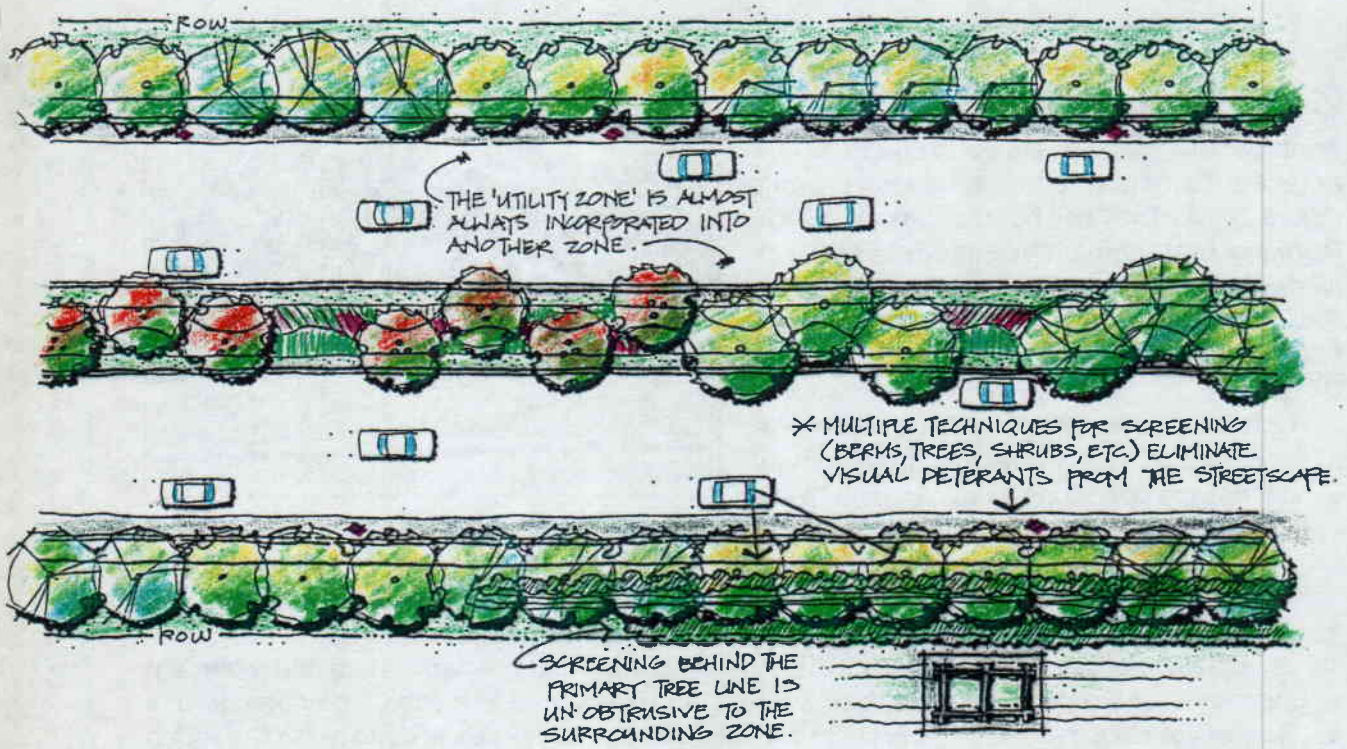
2.5.6.2 Design Landscapes should be drought tolerant, easy to maintain and consistent with adjacent zones. The most important function of landscape in the Utility Zone is to create a pleasant experience as one moves through it to an adjacent zone.

2.5.6.3 Medians Design of medians should reflect and be a continuation of design guidelines provided for other, adjacent landscape zones. In order to create additional buffering, it may be advisable to increase intensity (size and quantity) of plantings for a linear distance of 1.5 times frontage of the actual utility.

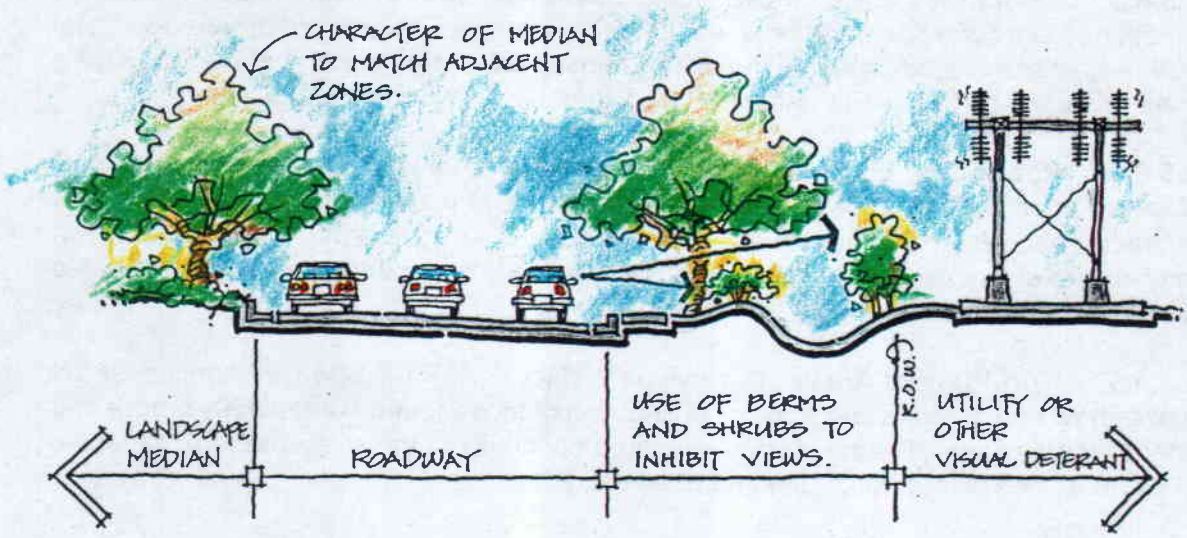
2.5.6.4 Roadsides Edges of roadways fronting on utility land uses should be heavily planted, approaching 100% opacity at maturity. These plantings must be of the same character and material usage as the adjacent zones. Avoid use of plant material which may tend to draw attention to itself; but rather attempt to blend in these visually impacted areas with their surroundings.

2.5.6.5 Non-Planted Areas Impervious surfaces (walks, bikeways), lighting, street furnishings, and graphics should be a continuation of those found immediately before and after the Utility Zone. The intent is to maintain a continuity of the streetscape experience, in so far as possible, through the impacted utility area.

2.5.6.6 UTILITY ZONE - Schematic Plan



2.5.6.7 UTILITY ZONE - Schematic Cross Section



2.5.7 Conservation Zone These are areas where roadways pass through or are adjacent to natural areas or passive parks (figure 2-11). They can be as extensive as the Rookery Bay segment of State Road 951, or more limited as the Rattlesnake Hammock Slew as it crosses Rattlesnake Hammock Road.

figure 2-11 Natural areas exist throughout the project area

2.5.7.1 Character More extensive systems may provide the most natural landscape opportunities available. These natural areas should be reflected in median plantings if possible. In this way, the roadway will more effectively blend with the natural environment and become a part of it rather than dominate. Large natural areas may be replicated to some degree in available median space. Drifts of buttonwood may be planted where the adjacent preserve consists of salt or brackish wetland, for example. Care should be taken to use species of plant materials that occur in the natural areas but which will survive in the much different soils found in highway medians. Soil and hydrological conditions may need to be amended in actual planting bed locations. The remainder of the median can be left in drought tolerant grass without supplementary irrigation.

Smaller natural areas (shorter than ¼ mile frontage) may be treated in one of two ways. First, they may be treated as an extension of landscaping of the adjacent zone, using similar plantings as found before and after the natural area. Second, they may be planted as an extension of the natural area into the median. This would give the impression of the natural area passing through the street, rather than vice-versa. It would also provide an interesting accent to adjacent landscape zones.

2.5.7.2 Design The primary objective of design for this landscape is to replicate nature within the right-of-way rather than exclude it. Whether this is done in small areas (¼ mile or less) should be determined on a case by case basis. An assessment should also be made as to the costs of maintenance and the likelihood of survival, especially of wetland species.

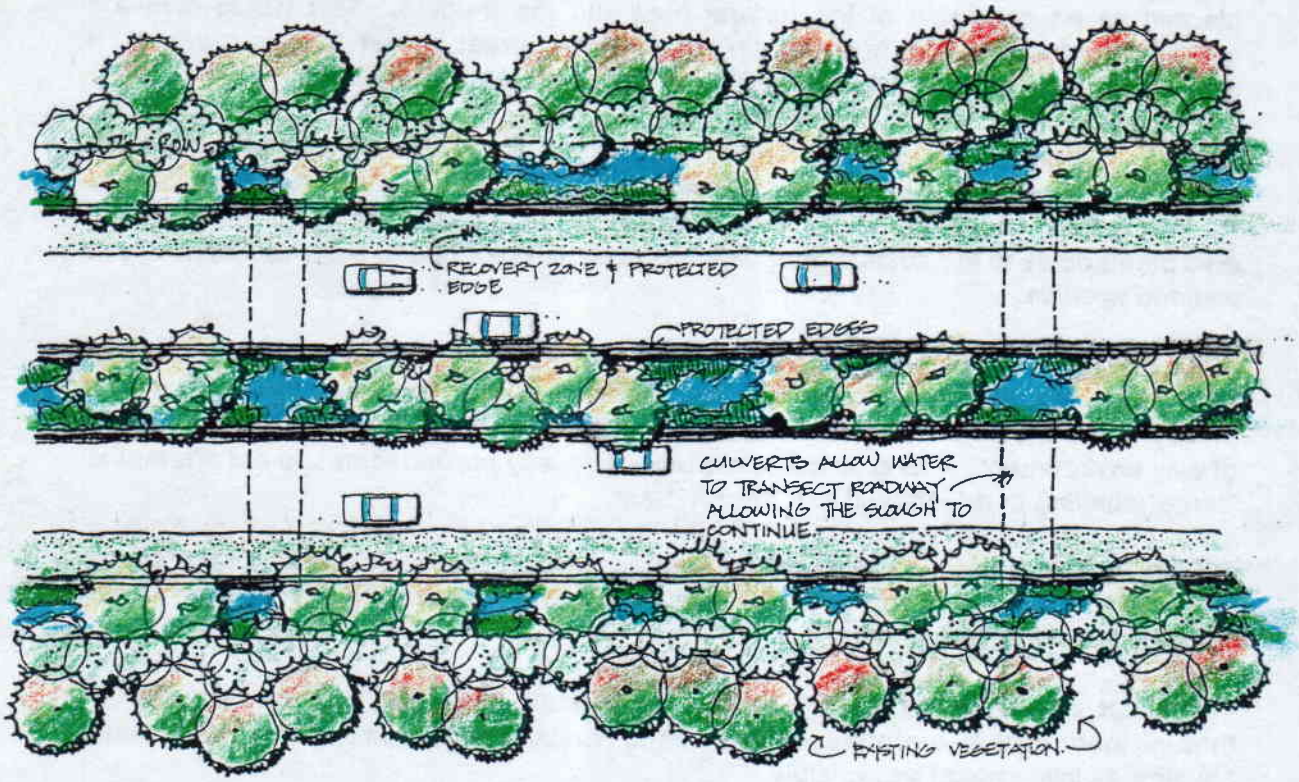
2.5.7.3 Medians As illustration 2.5.6.3 F shows, median spaces provide opportunities for planting natural landscapes as a continuation of these existing areas through the right of way. Care should be taken to ensure survivability of natural planting systems in a right of way environment. If long term maintenance is overly burdensome, do not attempt to "force" planting in an inhospitable environment.

2.5.7.4 Roadsides Existing native plantings should be allowed to approach edges of roadways as close as possible, respecting required set backs of plantings from edges of pavement for safety purposes.

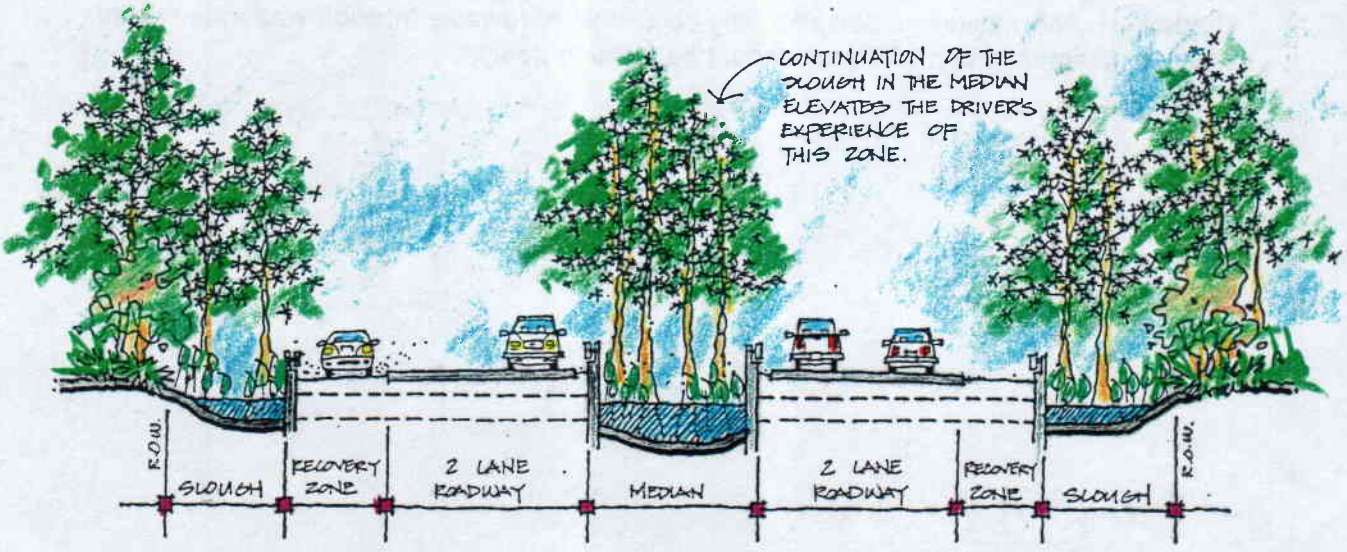
In concept, preserve areas should be allowed to visually dominate roadway construction through them. Roads, therefore, become metaphorical "bridges" through natural systems causing as little impact as possible.

2.5.7.5 Non-Planted Areas There will likely be few if any non-planted components of the design for conservation areas. This is due to the overriding concern for preservation and continuity of Conservation Zones through rights of way. In the case of wetland Conservation Zones, for example, if sidewalks require continuity through this zone, it may be necessary to minimize impact by locating walks immediately adjacent to roadways. Alternatively, sidewalks may occur as boardwalks through wetlands. In this case, a minimum width of 6 feet should be used in design.

2.5.7.6 CONSERVATION ZONE - Schematic Plan



2.5.7.7 CONSERVATION ZONE - Schematic Cross Section



2.5.8 Gateway Zone

Gateway Zones occur within a quarter-mile of gateway intersections as located on the Streetscape Network (figure 1.4.4 F). The main purpose of Gateway Zones are to signify arrival and serve as an entry feature at major access points to the Streetscape Network. The Streetscape Master Plan has identified seven gateways:

- Marco Island East Trail Gateway
- I-75 / CR951 Gateway
- I-75 / Pine Ridge Gateway
- I-75 / Golden Gate Parkway Gateway
- North Trail Gateway
- I-75 / Immokalee Road Gateway
- Livingston Road Gateway

2.5.8.1 Character Each Gateway is unique. Therefore, attempts to standardize landscape character should be resisted. If the Gateway occurs within an Activity Center a more urban expression is more appropriate. Use of walls, water features, formal plantings maybe appropriate.

This approach may not be appropriate at the North Trail and Livingston Road Gateways which occur in adjacent residential or agricultural zones. These Gateways should make one feel like he or she is entering a park by bringing masses of vegetation in informal drifts up to the edge of the roadway (figure 2-12). Signage and lighting should supplement plantings of shade trees, palms and shrubs. Character Zone designations must also be respected.

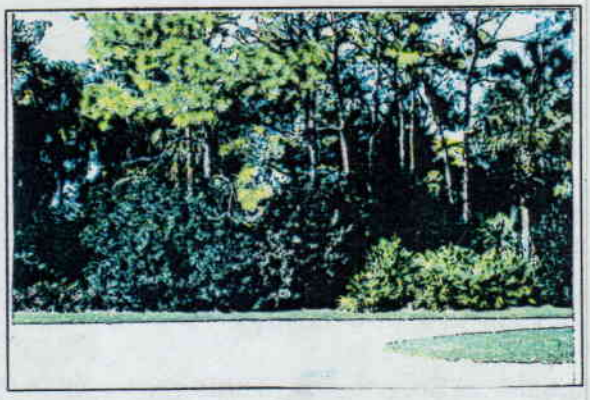


figure 2-12 Landscape treatment adjacent to residential

2.5.8.2 Design Gateway landscapes are the most important features in the Streetscape Network. They set the stage for arrival and are the last thing one sees upon departure. Therefore, an increased level of landscape and resulting maintenance is anticipated. All but one of these Gateways occurs within state road controlled intersections or streets. Therefore, design will need to be coordinated with the State of Florida Department of Transportation.

2.5.8.3 Medians Median planting opportunities exist in three of the seven gateways. For the most part, these median areas should be clear in the foreground (as seen upon entry), with a backdrop of vegetation to frame and accent the entrance. Each entrance requires its own specific median design but continuity in character and appearance for all seven gateway medians should prevail. Color in perennial shrubs such as Thryalis and Bougainvillea are appropriate. Discretionary use of beds of annuals, replaced at least semi-annually would also be appropriate in these areas.

2.5.8.4 Theme Tree An entrance or framing tree is prescribed for all seven entrances to Collier County. This is the major structure tree(s) to be used as the form-giver to landscape entrance features. Three trees are suitable, and are to be used together:

Slash pine, Live oak and Sabal palms. One method of planting which respects height, character, and color of these three indigenous, ubiquitous, and drought tolerant species would be to use the Pine in mass plantings as a backdrop to Oaks in the foreground and Sabals in informal groupings as accents of no fewer than seven specimens each.

2.5.8.5 Roadsides Gateways require plantings, especially theme trees as described above, to approach the edge of pavement as closely as possible. Therefore, along with median plantings, roadside plantings create a partial sense of closure thus emphasizing an entrance to a new, special, and unique locale.

The same predominate theme trees should be used to provide structure for these entrances. They should also be augmented by use of flowering trees, masses of mature shrubs, colorful groundcovers, and discriminate use of flowering annuals as may be determined for each gateway.

Lawn grasses may be either St. Augustine "Floritam" or Bahia, depending upon irrigation availability of each entry.

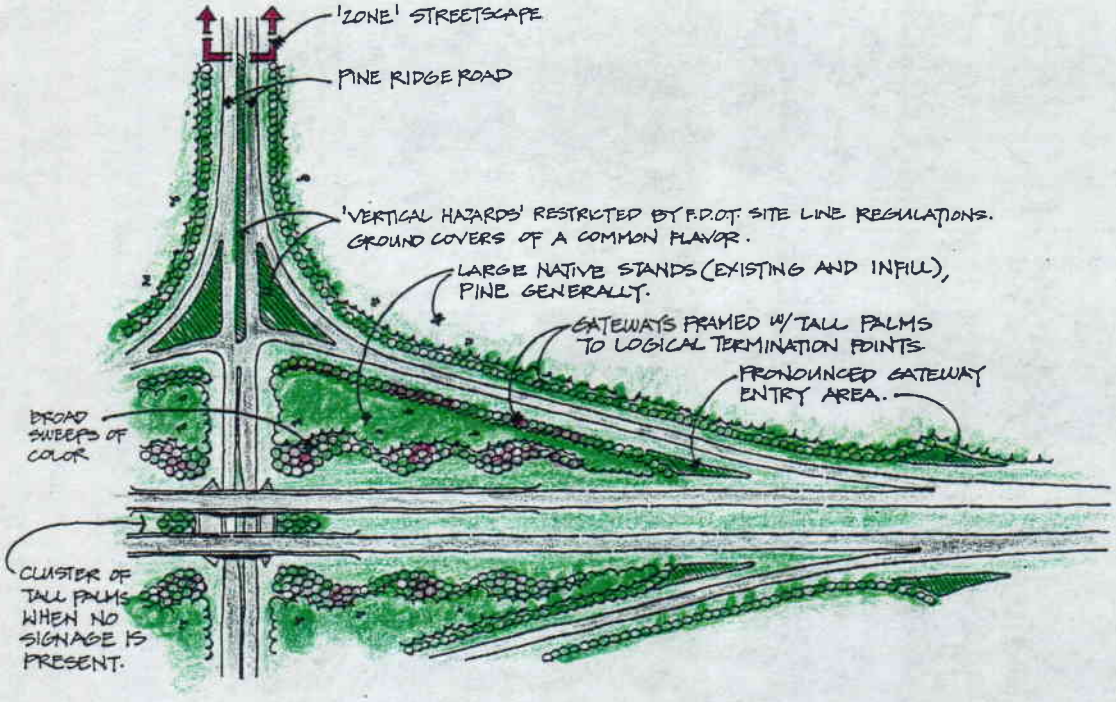
2.5.8.6 Non-Planted Areas Pavements within available landscape area of gateways, other than sidewalks and bikeways are not promoted. Water features, rocks, sculptures, decorative walls, and the like, would be inappropriate fenestration for the natural and indigenous character of this region.

Not withstanding the above, graphics and associated lighting should be provided. Collier County will control a proprietary graphic image to be displayed at gateways. Similarity of this graphic image may be manifested in a variety of forms, but shall convey the same impression at all gateways.

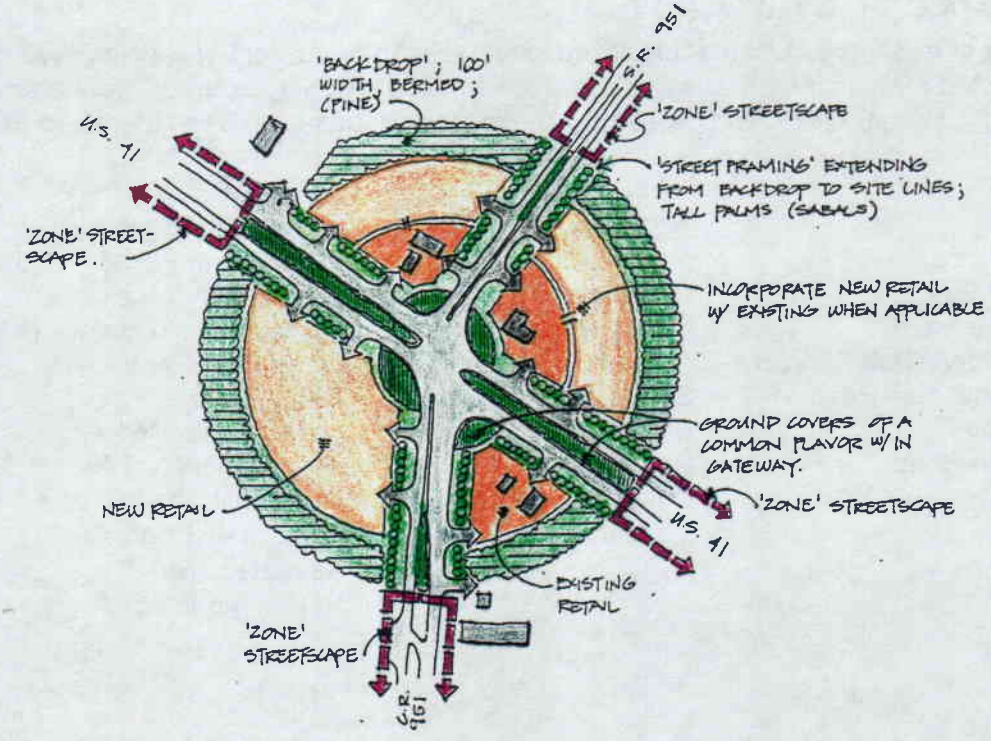
2.5.8.7 Schematics Three representative gateway landscape plans are provided as a guide for ultimate implementation by others. In order to insure county-wide continuity, it is recommended that Collier County control both design and construction of all gateways on a schedule consistent with public need and roadway construction schedules.

- The Interstate Gateway Zone as shown below references the several "gateways" to collier county from Interstate 75 (2.5.8.8)
- The Multiple Direction Gateway Zone primarily refers to the condition at CR / SR 951and East Tamiami Trail. This intersection provides both an opportunity for entry to Collier County and Marco Island (2.5.8.9).
- The Single Direction Gateway Zone presently exists at the North Tamiami Trail entrance to Collier County from Lee County. Future road construction will provide additional opportunities for implementation of this gateway concept (2.5.8.10).

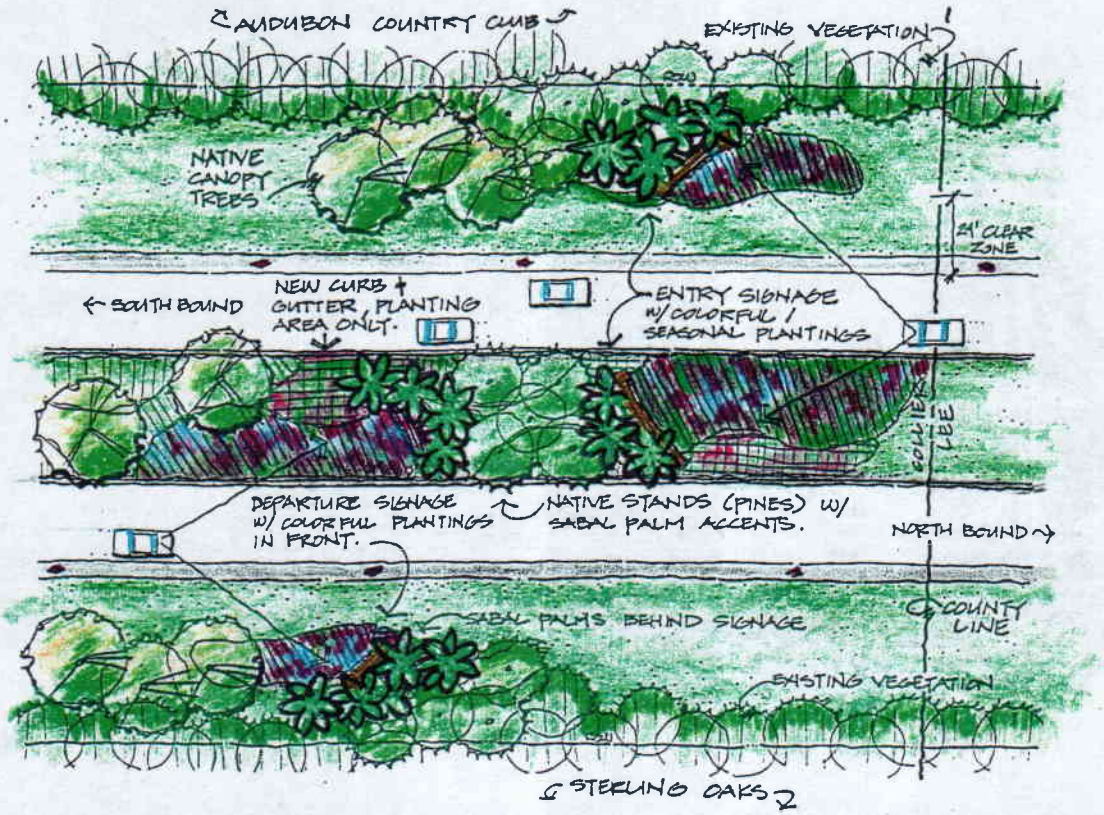
2.5.8.8 INTERSTATE GATEWAY ZONE - Schematic Plan



2.5.8.9 MULTIPLE DIRECTION GATEWAY ZONE - Schematic Plan



2.5.8.10 SINGLE DIRECTION GATEWAY ZONE - Schematic Plan



2.6 STREET BY STREET

An analysis of existing conditions, proposed land uses, and new right of way improvements was conducted for identified roads within the project study area in order to locate character zones along individual streets and gateways. The following roads have been identified as part of the SSMP.

Gateways
Marco Is / East Trail
I-75 / CR 951
I-75 / Pine Ridge
I-75 / Golden Gate Parkway
I-75 / Immokalee Road
North Trail
Livingston Road

North-South Streets
North Tamiami Trail
Goodlette-Frank Road
Airport Road
Livingston Road
Santa Barbara Road
CR 951 / SR 951
Bayshore Drive
County Barn Road
Vanderbilt Drive

East-West Streets
East Tamiami Trail
Thomasson Drive
Rattlesnake Hammock Road
Davis Boulevard
Radio Road
Golden Gate Parkway
Pine Ridge Road
Vanderbilt Beach Road
Immokalee Road
Seagate Drive
111th Avenue North

2.6.1 Opportunities and Constraints

An Opportunities and Constraints map was developed to identify areas that have natural or man-made features that the streetscape design should enhance, or build upon and conditions (power substation, storage areas, etc.) that should be mitigated (see figure 2.6.1.1 F). One major asset that is found throughout most of the study areas is the amount of natural vegetation that exists due to the amount of undeveloped land. This provides the opportunity to build upon existing vegetation rather than creating a landscape. In the more developed areas, the roadway provides an opportunity to bring continuity to the overall appearance of the immediate community as a result of available planting space at edges of rights-of-ways (see figure 2.6.1.1 F).

2.6.2 Gateways

The intersections that have been identified as gateways into Collier County and Naples have distinct characteristics that separate them from one another. The following is a description of each gateway and their design opportunities.

- **North Trail Gateway**

  The North Trail Gateway, located on the Collier County line on US 41, is comprised of Planned Unit Developments (PUD) on both sides of the gateway (Audubon and Sterling Oaks). The landscaping should reinforce the residential character of the surrounding community. The landscape style should build on and enhance what has been established by the PUD's. The median is fairly wide and provides ample room for trees and understory plantings of shrubs and groundcover. This is a major gateway into the county and the design should reinforce its importance. Specialized graphics (signage) and lighting would be appropriate and should be coordinated with all gateways (see drawing 2.5.8.10).

- **Marco Island / East Trail Gateway**

  This is the primary gateway from the south. It is located at the intersection of US 41 and SR/CR 951. Like the North Trail Gateway, this is a primary entrance into the county. The primary land use is Urban Coastal Fringe and the gateway is classified as an Activity center. The configuration of the intersection and the location of the existing tree line provides long views into the study area. A recent highway project has placed new light poles on both sides of the highway, this providing a strong vertical repeating design element. The landscape character for this gateway should reinforce the natural vegetation found in the immediate area. The style should be bold/simple curvilinear forms with accent plantings at the intersection. Dual signage should be provided as part of entry statements for both Marco Island and Naples/Collier County (see drawing 2.5.8.9).

- **I-75 / CR 951 Gateway**

  This is the eastern gateway to the county. This Activity center is comprised of fast food, gas stations, and motels at the intersection, with underdeveloped vegetated land beyond. Presently, there is not a dominant landscape associated with development parcels in which the design could follow. The remaining natural landscape beyond the intersection is a major asset for this gateway. The majority of visitors will arrive from I-75 which is just north of CR 951 and Radio Road. They approach the gateway by passing under the I-75

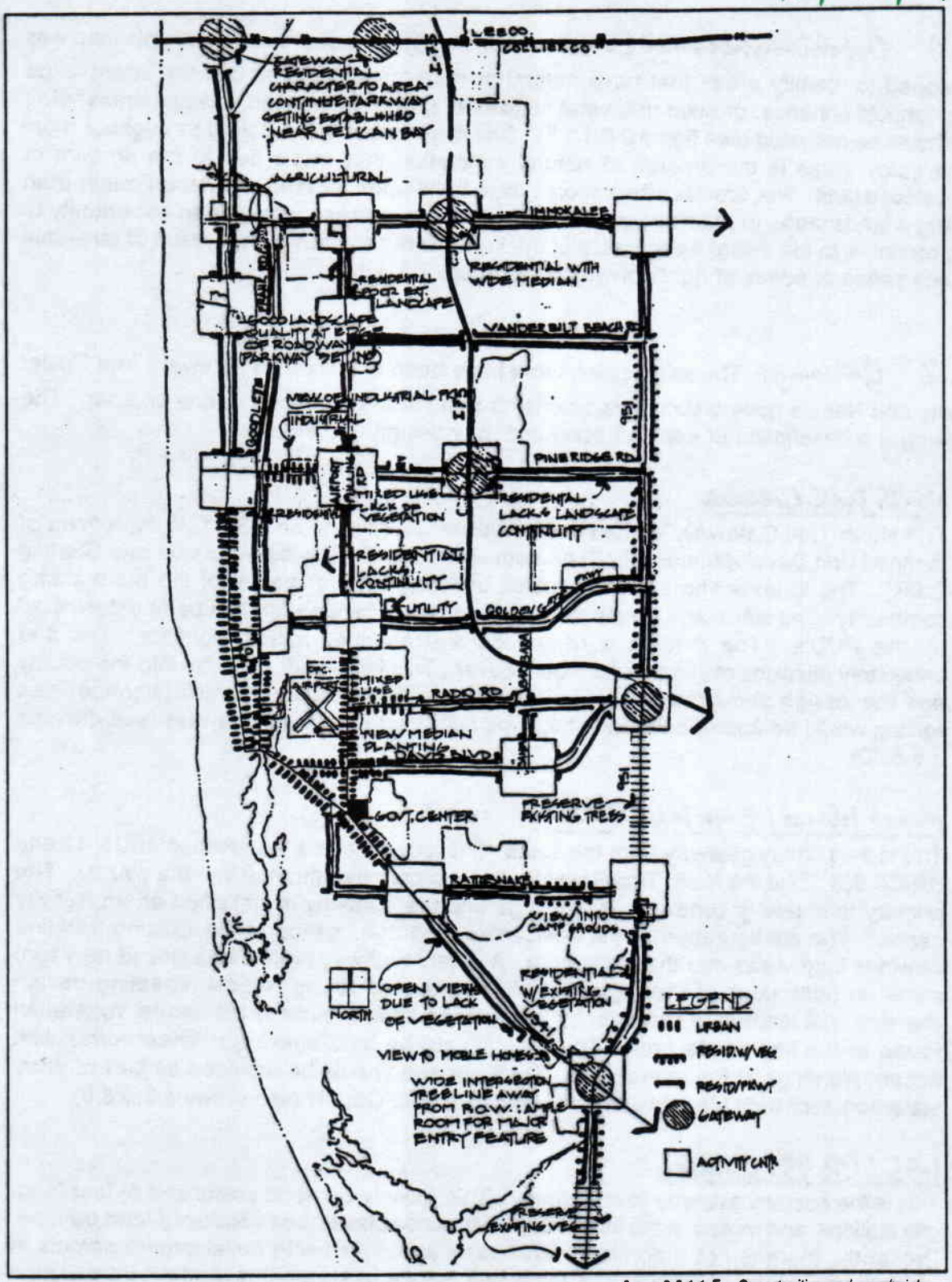


figure 2.6.1.1 F Opportunities and constraints

overpass. The bridge which frames the view of the gateway, acts as a gateway "door" into the area. Because of the type of development and lack of landscaping, the streetscape could be more controlled in its design and layout (see drawing 2.5.8.8).

- I-75 / Golden Gate Parkway Gateway

  There is presently no direct access from I-75 onto Golden Gate Parkway, although one is proposed. The overpass acts as a visual gateway into Collier County. An extensive streetscape study has been completed for Golden Gate Parkway. Any additional landscaping shall follow the design standards set forth in that document (see drawing 2.5.8.8).

- I-75 / Pine Ridge Gateway

  This gateway is designated as an Activity center on the Collier County future land use map. The gateway is comprised of small commercial uses, Naples Plaza on the west, and residential development (The Vineyards, Livingston Woods, and Golden Gate) on the other three sides of the interchange. There is some natural vegetation remaining on all four sides of the interchange (see drawing 2.5.8.8).

  This streetscape shall be comprised of informal landscape patterns that reinforce the remaining natural vegetation. The edge of the ROW should supplement the median landscape and help establish a cohesive landscape design throughout the gateway. In addition, existing and new development should be encouraged to reinforce this area as a gateway by providing additional landscaping along edges of private property.

- I-75 / Immokalee Road Gateway

  Immokalee Road has experienced a considerable amount of new construction which has created a more urban residential character. Presently the gateway is undeveloped with large stands of trees and understory vegetation. This gateway shall preserve the natural vegetation, as much as possible, to create a setting similar to the one found at the edge of the right of way on US 41 near Pelican Bay. Because the gateway is undeveloped, a comprehensive landscape design could be promoted and achieved (see drawing 2.5.8.8).

- Livingston Road Gateway

  This is a potential future gateway into the county. The proposed residential development (Livingston Road Country Club) and the natural vegetation suggests that this gateway shall be informal / naturalistic in its design character (see drawing 2.5.8.10).

2.6.3 Street by Street Each roadway has a unique set of conditions, man-made and natural, that establishes the character for the community. The following is a brief description of each street and the landscape character zone that should be applied. See figure 2.6.3.1 F - Character Zones for the exact location of each character zone along individual roadway.

- ## North Tamiami Trail (US 41)

This road is characterized by PUD's along both sides of the roadway with shopping centers and mixed use development at or near major intersections. The northern portion of US 41 from the county line to Pine Ridge Road is predominantly residential (PUD's) with well landscaped entrances. The PUD's have used landscape plantings and/or berms to screen views into their property. This approach has created a well landscaped edge to the roadway. In most cases the median has been landscaped in controlled or bold curvilinear patterns. Any additional landscaping should reinforce the landscape character already established in this area. The character zones identified for this area range from urban residential to activity zones at major intersections. From Pine Ridge Road south, the density of development is higher and the number of commercial/mixed uses increases. The landscape along the edge of the highway is more formal with clipped hedges in geometric patterns. The design style shall incorporate the following elements:

- Plant landscape material in controlled patterns.
- Use flowering shrubs and understory plantings that produce color at intersection.
- Plant material to be similar to landscape plantings at PUD's.
- Coordinate color schemes with adjacent PUD entrance designs.

- ## Goodlette-Frank Road

Goodlette-Frank Road is primarily a residential street with views of golf courses and residential development. North of Pine Ridge Road, large stands of trees remain. The Collier County Future Land Use Map identifies the corridor as an urban residential area with an Activity Center where Goodlette-Frank Road intersects Golden Gate Parkway. The recent construction of a northern portion of Goodlette-Frank Road provided new well landscaped medians. The landscape character for Goodlette-Frank Road should build upon the landscaping within the medians. The design shall create a parkway setting for this residential community. The design style should incorporate the following elements:

- Use curvilinear planting patterns.
- Use bold, simple forms.
- Plant material should be similar to landscape plantings at edge of roadway
- Carry design onto side streets where applicable to provide continuity.
- Encourage new landscaping where long runs of fencing occur to soften impact and to bring development in-line with the rest of the community.

- ## Livingston Road

Livingston Road will be a new road traversing through urban residential and residential zones. This is an opportunity to develop a continuous landscape design solution throughout the length of the roadway. The design should be residential in character with street tree plantings and curvilinear drifts of shrubs and groundcover. The design style shall incorporate the following design elements:

- Plant a dominant species of street tree along the roadway to establish continuity.
- Understory plantings of shrubs shall be informal curvilinear patterns to screen views into residential lots and to provide interest.
- At intersections, provide color and accent plantings that complement the surrounding landscape.
- Encourage new landscape onto side streets to provide additional continuity.

Santa Barbara Boulevard

Land use along Santa Barbara Boulevard consist of a mix of urban residential and residential with small commercial uses at the intersection with Radio Road and Golden Gate Parkway. The design shall utilize existing natural vegetation to produce a setting similar to Golden Gate Parkway. The design style shall incorporate the following design elements:

- Use bold, simple planting patterns.
- Arrange plantings in curvilinear forms.
- Frame views of golf courses with trees and understory plantings.
- Direct views toward Golden Gate Community Park and away from I-75.

CR 951 / SR 951

CR 951 is a mix of urban residential, residential, urban residential fringe and activity centers at major intersections. The large amount of undeveloped land and conservation areas on the east side provides an almost continuous natural setting. New construction of a residential community on the west side (Lely) has preserved stands of trees between the roadway and its development, providing continuity along the corridor. This section of roadway shall preserve and enhance the natural ecosystem, as much as possible, creating a conservation zone. Use of native large stands of trees and understory is encouraged.

North of 1-75 the character is more residential with large stands of natural vegetation. The residential development on the east side is at a greater distance from the roadway due to the canal, a parallel collector road, and preserved stands of trees. On the west side of CR 951 there are views of the Golden Gate Golf Course and natural stands of trees. The landscape along this portion of CR 951 should create a natural like setting. To do so, the landscape treatment shall utilize the following design elements:

- Use native plant material only.
- Use naturalized drifts of shrubs, grasses and ground cover within the median.
- Plant trees in clusters using species found in adjacent ecosystems.
- Provide shrub massing along shoreline of canal.

SR 951 is comprised of urban coastal fringe and conservation areas. The intent of the landscape design shall mimic the surrounding ecosystem by preserving as much natural plant material as possible and by restricting landscape design to native plants associated with this ecosystem. The design shall be simple and appear natural in its style and form. Entrances to commercial or residential communities present opportunities to accent an otherwise natural system of plantings on medians and adjacent roadsides by use of other ornamental plant materials on a limited basis.

- ***Bayshore Drive***

Bayshore Drive is located in the urban coastal fringe land use area. It is made up of well established residential communities with small commercial uses at the main intersections. The medians are narrower and have been planted with palm trees which are similar to the residential landscape at the edge of the street. Understory plantings of shrubs are usually clipped into formal hedges to help screen views into parking lots and residential units. The landscaping along Bayshore Drive shall continue the street tree plantings and augment them with understory plantings. The design can create a uniform tree lined residential street. The landscape shall incorporate the following design elements:

- Continue palm trees along entire length of Bayshore Drive.
- Understory plantings shall be straightforward in their design due to narrow planting spaces.
- Add color and accents at intersections and entrances to major residential developments.

- ***County Barn Road***

The northern portion of County Barn Road has considerable natural vegetation along its right of way. In the southern portion of the roadway some of the vegetation has been removed. The overall character of this urban residential community is naturalistic. The design shall re-establish the lost native vegetation and preserve the remaining forest edge. Exotic plants shall be removed and discouraged from use in the future. The landscape design should consist of the following elements:

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- Use native plants associated with the existing ecosystem.
- Tree plantings shall be in clusters.
- Understory plantings shall be in naturalized drifts.
- Use informal naturalistic planting patterns.

- ***Vanderbilt Drive***

This street is urban residential with views of water, boating and established residential neighborhoods. The landscape treatment shall borrow from its surroundings as much as possible. Careful attention shall be paid to views of the water and boating activities to prevent landscaping from obstructing views. The landscape need not be more than a simple planting with an emphasis on street trees through the residential areas, and shrubs and accent plantings along open areas. A landscape theme consisting of similar plantings, signage and lighting could be developed along this corridor and eventually repeated elsewhere in the Vanderbilt community.

- ## East Tamiami Trail

The southeastern portion of this roadway is a mix of urban coastal fringe and urban residential with activity centers at major intersections. The density of development increases as one travels northward. Open views of mobile home parks and development with little to no landscaping are of major concern. Large PUD's located on the west side of the roadway provide views of golf, water, and landscape buffers and should provide the basis for future landscape design. The landscape character for the East Tamiami Trail shall reinforce the urban residential character by using curvilinear planting patterns, and large clusters of trees in the median and along the sides of the rights of way. From Rattlesnake Hammock Road northward, the landscape can become more bold and controlled using large drifts of understory plantings with flowering trees and accent plantings at major intersections. Additional street trees and understory plantings shall be used along the approach to the Collier County Government Center. The design character for East Tamiami Trail should incorporate the following design elements:

- Use curvilinear planting patterns.
- Use native species in the southeastern portion of the roadway.
- Use accent plantings of flowering trees and shrubs at intersections.
- From Rattlesnake Hammock Road north, use more of a controlled planting pattern with accent colors at intersections.

- ## Thomasson Drive

Thomasson Drive is an urban residential community with a small commercial center (Bayshore Corners) where the street intersects with Bayshore Drive. The character is that of a residential street with natural vegetation on the south side. The landscape design shall use native plants associated with the surrounding ecosystem. The style should create a park like setting for the residential community. The landscape shall be carried onto side streets to provide continuity and to create a sense of community.

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- ## Rattlesnake Hammock Road

This roadway is characterized by activity centers at the east and west ends of the roadway with urban residential in between. Near CR 951, where little to no development has occurred, large stands of native vegetation exist. As one travels west, the character of the roadway changes to a residential community with perimeter fencing, landscaping and some native stands of trees. The landscape can provide continuity and a sense of a community by repeating planting patterns and a consistent use of plant material. The landscape shall address the edge condition to soften the impact of views of fences and residential units. The landscape design shall incorporate the following design elements:

- Plant shrubs masses along edge of right of way to provide additional privacy for residential units.
- Use native plant material.
- Use plant material in informal naturalistic patterns with accent plantings at major access points.

- ## Davis Boulevard

Traveling west from CR 951, Davis Boulevard is comprised of Planned Urban Developments with small commercial uses interspersed. As one approaches Airport Pulling Road, the intensity of development increases and more mixed/commercial uses occur. The landscape shall be more curvilinear and less controlled from CR 951 to Foxtail Boulevard and more controlled from Foxtail Boulevard to Tamiami Trail. The design should provide screening of parking lots and service areas. The landscape shall incorporate the following design elements:

- Provide controlled plantings in simple bold forms.
- Trees shall be planted in controlled patterns in the more urban areas.
- From CR 951 to Foxtail Boulevard use more informal patterns in large informal drafts.
- Cluster trees in the residential areas.
- Use accent plantings that are similar to plant material used at entrances to PUD's.

- ## Airport Pulling Road

Airport Pulling Road is a major commercial mixed use corridor with urban residential uses to the north. Landscape projects in the median have established a strong design character at the southern (south of Golden Gate Parkway) end of this road. Because of the amount of development in the southern portion of the roadway, additional landscaping shall be encouraged along the edges of the right of way and carried down side streets to soften the impact of development and provide continuity to the area. The northern segment of Airport Road shall reflect both the Activity Center and Residential Characters respectively:

- Use bold planting patterns with accent plantings at Activity Centers.
- Screen/soften views into parking lots and service areas at Activity Centers with additional plantings on the edge of right of way.
- North of Golden Gate Parkway, the planting shall be less controlled and more informal in its style, except at the Pine Ridge & Immokalee Road intersections.
- In the residential areas, use bold, simple patterns with clusters of trees (native species).
- Use plant material that is similar to the landscape palette used at PUD's to provide continuity.

- ## Radio Road

Radio Road goes from residential uses on the east to commercial mixed uses at the intersection with Airport Pulling Road. The character of the roadway is a mixture of small native stands of trees with semiformal landscapes along the edges of PUD's. This creates a suburban feel to the corridor. The landscape shall provide continuity through repeating landscape forms and plant material. The type of plant material used shall relate to the

landscape plantings associated with PUD's, but be of a natural character throughout to create continuity. The landscape could be more formal in its appearance from Briarwood Boulevard to Airport Pulling Road to respond to the commercial mixed uses found along this portion of the roadway.

- *Golden Gate Parkway*

  A corridor management study was completed by Collier County for this parkway. Recommendations shall be carried out throughout the corridor. To help blend the parkway setting established in this study, individual developments and public streets adjacent to the parkway shall be encouraged to adopt similar landscape designs. This approach would eliminate the linear appearance to the parkway and will help unify the communities located along it edge.

- *Pine Ridge Road*

  From CR 951 to Livingston Road, the character of the roadway is predominately residential. From Livingston Road to Tamiami Trail, the density of development increases with commercial, residential and industrial land uses occurring along the right of way. The median narrows as one approaches US 41 and there is little landscape between the road and adjacent development. Long runs of fencing associated with residential development shall be softened with frontage plantings. The character proposed for Pine Ridge Road shall be semiformal using bold curvilinear patterns with clusters of trees on the western portion of Pine Ridge Road. The eastern segment (Airport Road to I-75) shall be more naturalistic in character, utilizing native plant species in informal patterns.

- *Vanderbilt Beach Road*

  Vanderbilt Beach Road is a mixture of urban residential and residential with commercial activities at the Intersections of US 41 and Airport Pulling Road. There is a considerable amount of native vegetation with well landscaped entrances to residential communities. The design shall build upon the existing character of Vanderbilt Beach Road by using similar landscape material in naturalistic patterns. Near US 41, the landscape shall become more bold and pronounced by using large planting patterns with accent plantings at intersections.

- *Immokalee Road*

  Immokalee Road has a considerable amount of existing native vegetation along the right of way. Activity centers occur at every major intersection. The landscape treatment shall be similar in its character to that proposed for Golden Gate Parkway. Soft but controlled plantings using predominately native species of plants at the west end could progressively give way to entirely naturalistic plantings at the east end (CR 951).

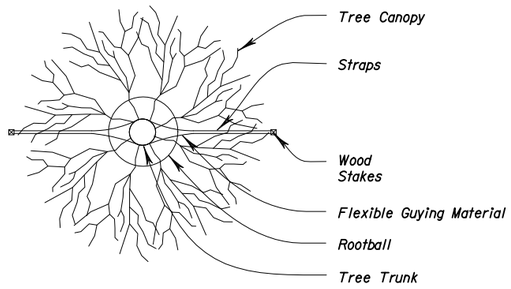
- *Seagate Drive*

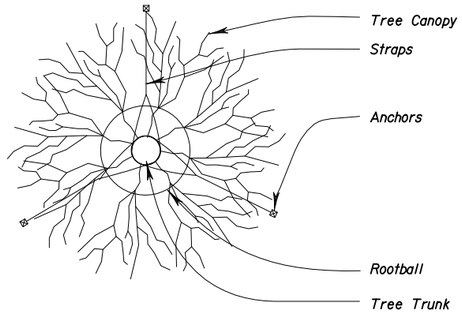
  The present landscape character is that of a formal landscaped boulevard. Any new landscaping along Seagate Drive shall continue the landscape style already established. The landscape character shall be carried onto the side streets to create a stronger sense of community and to provide continuity between the separate neighborhood communities. The landscape shall incorporate the following design elements:

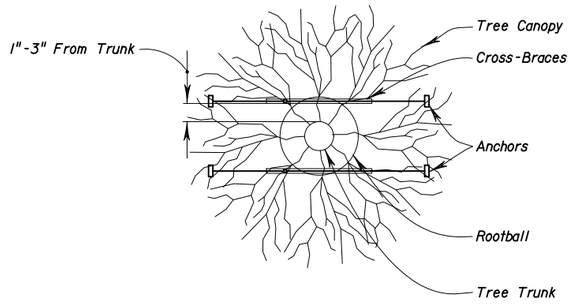
- Use the same plant material as already established in the median and along the right of way.
- Use plant material in simple controlled patterns with accent plantings at intersections.

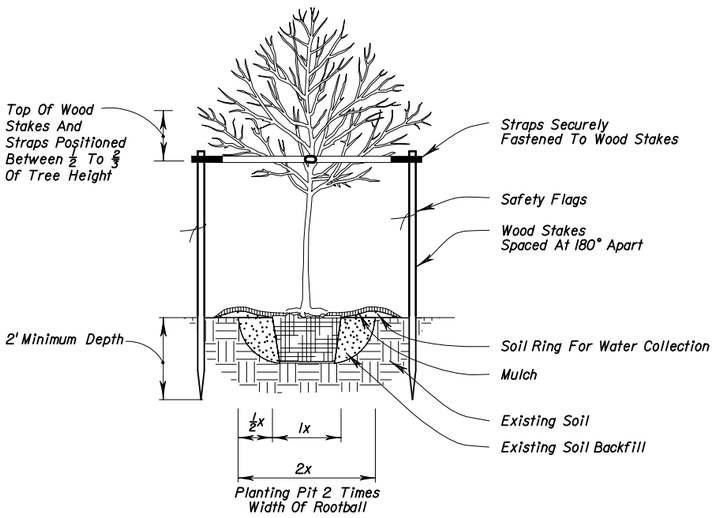
- **111th Avenue North**

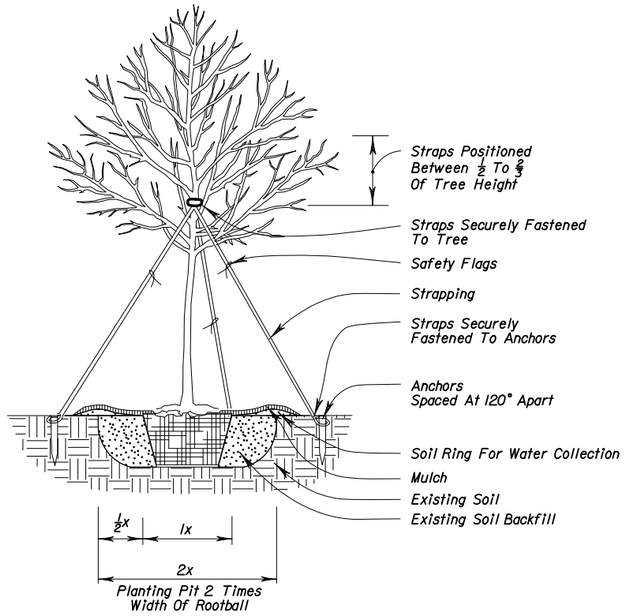
  111th Avenue North is comprised of a commercial shopping center at the intersection of US 41, urban residential on the south, with a public park and school on the north. The amount of existing native vegetation provides the basis for developing a park like setting to this community. Plant material shall emphasize native species in naturalistic planting patterns.

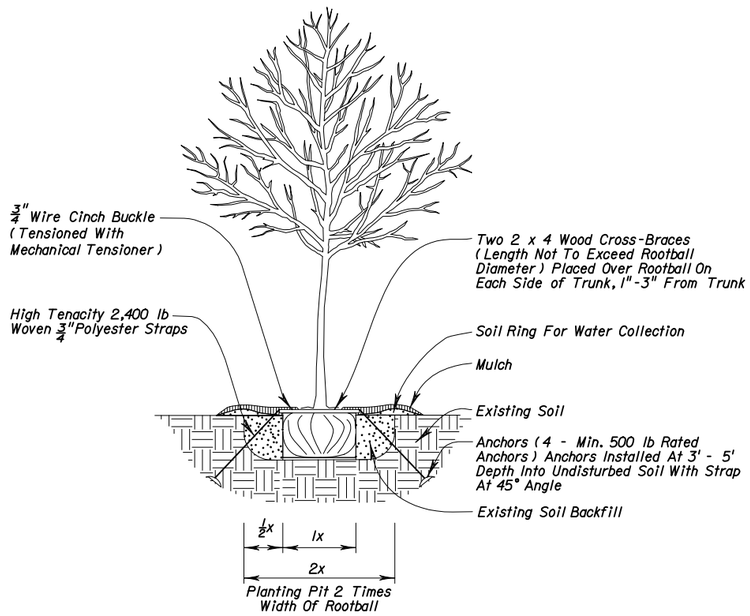












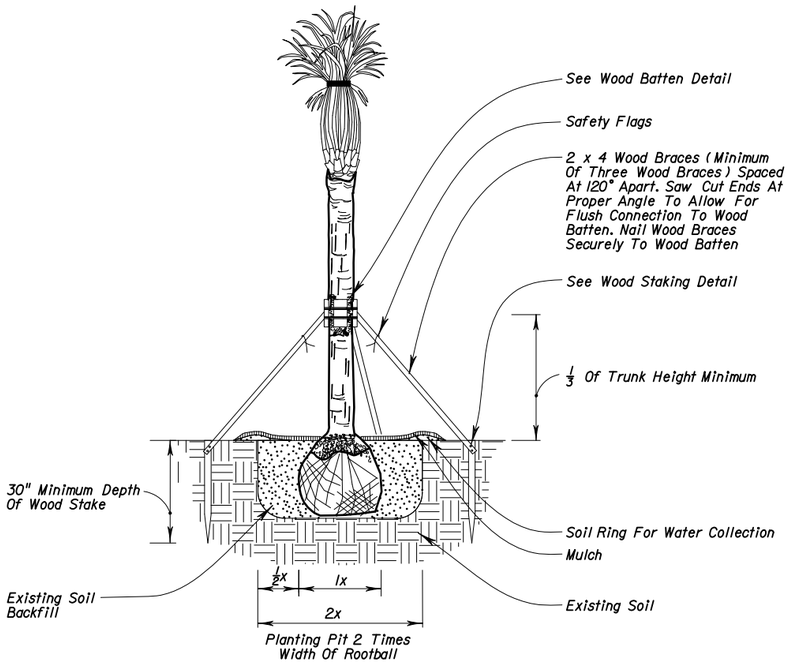
1" - 3 1/2" Caliper Tree Planting

4" and Larger Caliper Tree Planting

1" - 3 1/2" Caliper Tree Planting With Underground Bracing

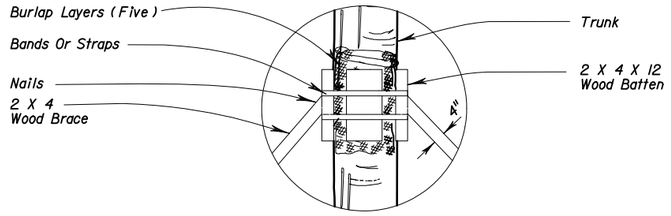
General Notes:

1. All dimensions 6" and less are exaggerated for illustrative purposes only.
2. Plant containers shall be removed prior to planting. If plants are not container grown, remove a minimum of the top 1/3 of burlap, fabric, or wire mesh. Never lift or handle the tree by the trunk.
3. The uppermost root on all trees shall be covered by less than 1" of soil. Use hand tools to carefully remove all excess soil. The top of root ball shall be set 1"-2" above finish grade and set plumb to the horizon. If planting pit is too deep, remove the tree and firmly pack additional soil in the bottom of the planting pit to raise the rootball. After positioning the tree in the planting pit, slice through rootballs with 3 or 4 vertical slices (top to bottom) equally distributed around the tree.
4. Backfill shall be loosened existing soil. Remove rocks, sticks, or other deleterious material greater than 1" in any direction prior to backfilling. Water and tamp to remove air pockets. If existing soils contain excessive sand, clay, or other material not conducive to proper plant growth, contact Engineer prior to planting.
5. Soil rings shall be constructed of existing soil at the outer edge of the planting pit, with a height of 3" and gently sloping sides. Do not pile soil on top of rootball.
6. Mulch shall be a 3" deep layer placed to the edge of the trunk flare, around the base of shrub, or solidly around groundcover. Never pile mulch against the tree trunk.
7. Straps shall be minimum 1" wide nylon or polypropylene. All wood stakes or anchors shall be located beyond the edge of soil ring and located below finished grade, unless otherwise specified.
8. Sabal Palms may be hurricane cut. All other palms must have fronds tied with biodegradable twine. Palm trunks shall have no burn marks, scars, or sanding.
9. All dimensions provided for wood materials are nominal.
10. When a permanent, subsurface, or drip irrigation system is provided, a soil ring is not required. Mulch to edge of planting pit.
11. Alternate tree bracing and guying systems approved by the Engineer may be used in lieu of the tree bracing and guying methods detailed on the index. Alternate tree protection systems approved by the Engineer may be used in lieu of the tree protection barricade detailed on the index.
12. Remove aboveground guying systems at the end of the establishment period.

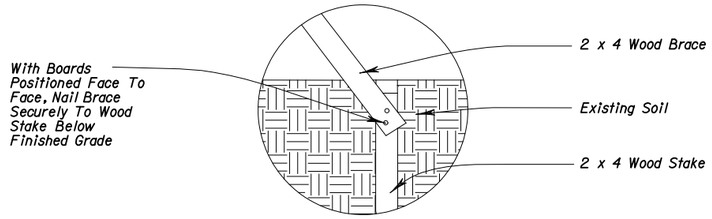


NOTE: For All Other Palms, Use Detail Provided By Landscape Architect In Contract Plans.

Cabbage Palm Planting For Up To 24' Clear Trunk

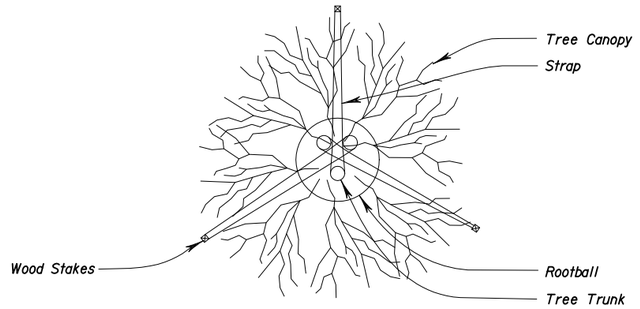


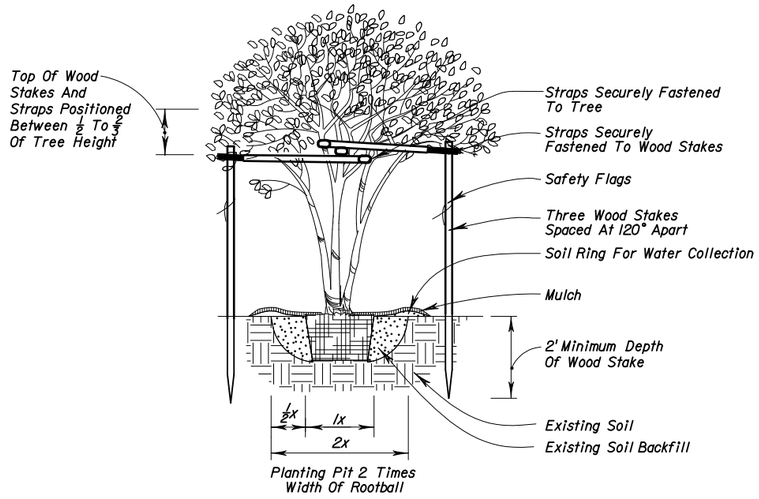
Wood Batten Detail



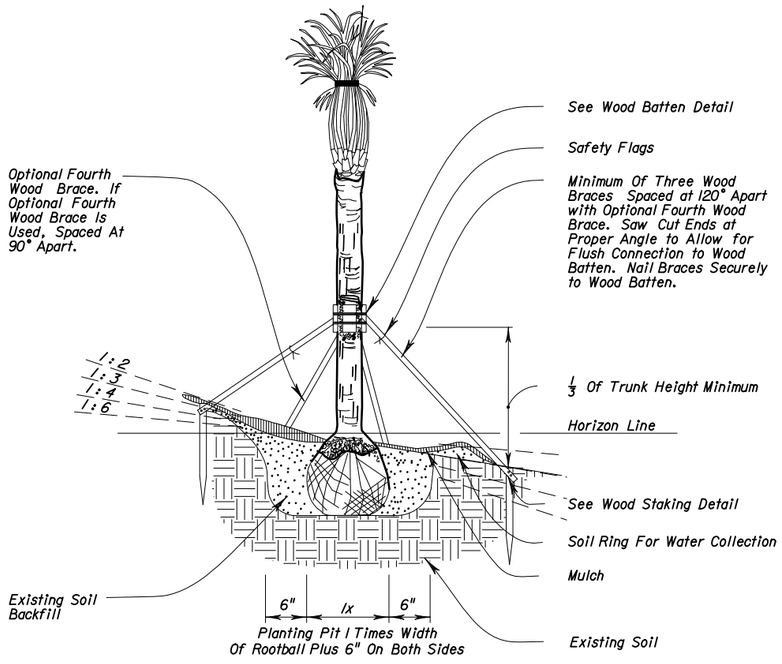
NOTE: Stake Into Firm, Existing Soil.

Wood Staking Detail



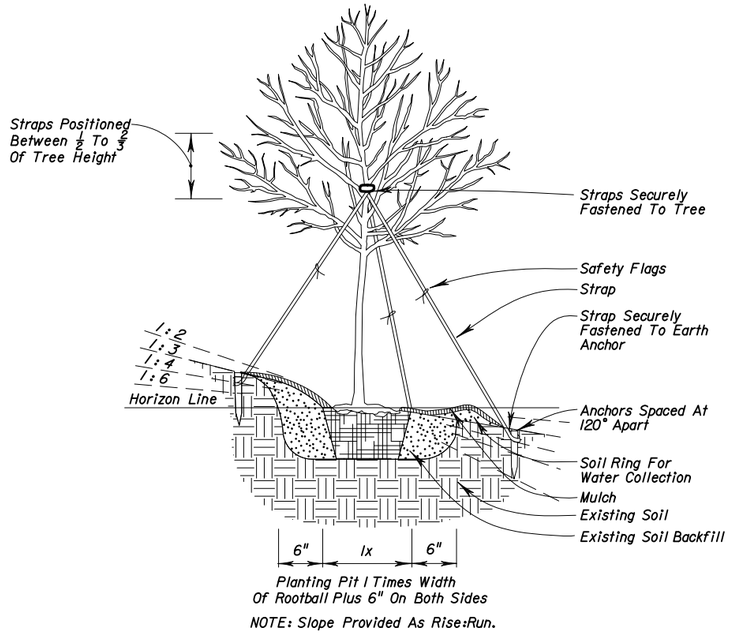


Multi-Trunk Tree Planting



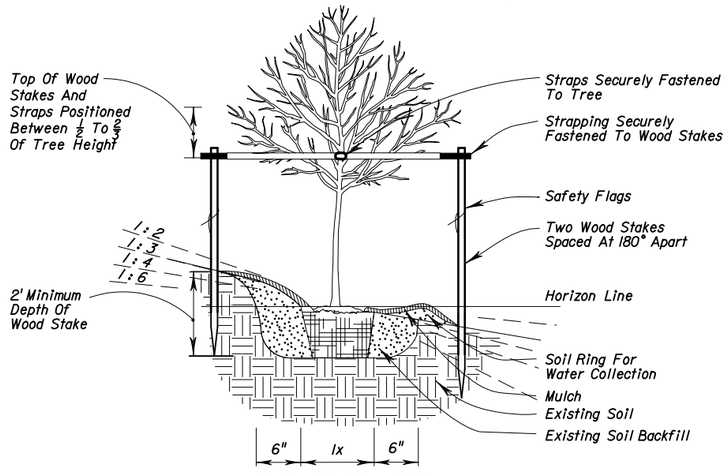
NOTES: Slope Provided As Rise:Run. For All Other Palms, Use Detail Provided By Landscape Architect In Contract Plans.

Cabbage Palm Planting On Slope For Up To 24' Clear Trunk



NOTE: Slope Provided As Rise:Run.

4" and Larger Caliper Tree Planting On Slope



NOTE: Slope Provided As Rise:Run.

1" - 3½" Caliper Tree Planting On Slope

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LANDSCAPE INSTALLATION

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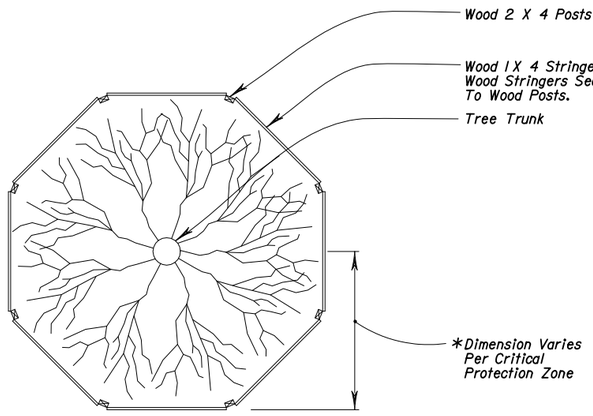
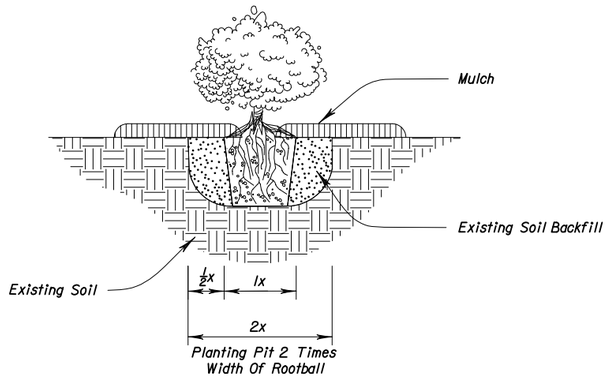
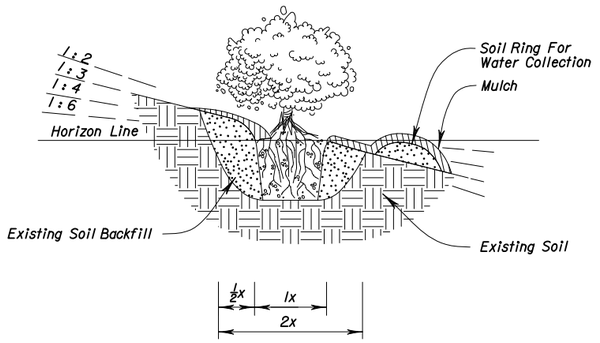


NOTE: For Groups Of Trees, Place Barricades Between Trees And Construction Activity.

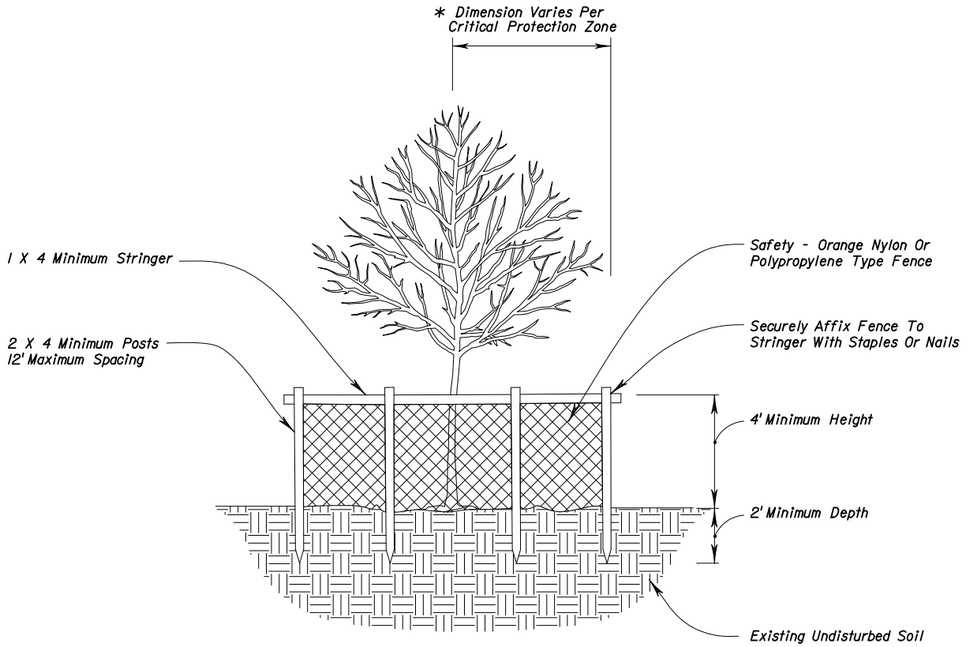


Ground Cover/Shrub Planting



NOTE: Slope Provided As Rise:Run.

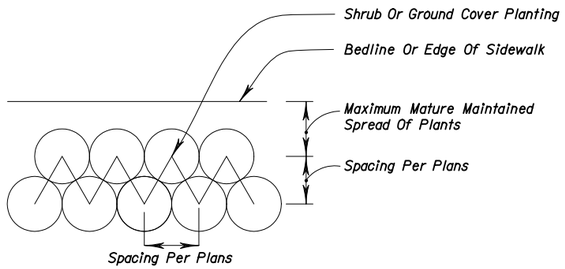
Ground Cover/Shrub Planting On Slope



NOTES: Critical Protection Zone: The Area Surrounding A Tree Within A Circle Described By A Radius Of One Foot For Each Inch Of The Tree Trunk Diameter At 54" Above Finished Grade. For Groups Of Trees, Place Barricades Between Trees And Construction Activity.

* Tree Protection Barricades Shall Be Located To Protect A Minimum Of 75% Of The Critical Protection Zone.

Tree Protection Barricade



Ground Cover/Shrub Layout Detail

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	2008 FDOT Design Standards	Last Revision 07/01/07 / Sheet No. 3 of 3
	LANDSCAPE INSTALLATION	Index No. 544

GENERAL NOTES

1. Details apply to both rural and urban intersections under stop sign control or flashing beacon control. For full signal controlled intersections see Design Note No 4.

2. Sight distance (d) applies to normal and skewed intersections (intersecting angles between 60° and 120°), and where vertical and/or horizontal curves are present. Sight distance (d) is measured along the major roadway from the center of the entrance lane of the minor roadway to the center of the near approach lane (right or left) of the major roadway. Distances d_L and d_r are measured from the centerline of the entrance lane of the minor roadway to a point on the edge of the near side outer traffic lane on the major roadway. Distance d_m is measured from the centerline of the entrance lane of the minor roadway to a point on the median clear zone limit or horizontal clearance limit for the far side roadway of the major roadway.

3. a. The limits of clear sight define a corridor throughout which a clear sight window must be preserved. See WINDOW DETAIL, Sheet 6.

   b. Clear sight must be provided between vehicles at intersection stop locations, and vehicles on the major roadway within dimension 'd'.

   c. Since observations are made in both directions along the line of sight, the reference datum between roadways is 3'-6" above respective pavements.

4. Barrier systems within intersection sight corridors, where penetration into the sight window might occur, shall be located to provide the least adverse affect practical.

5. The corridor defined by the limits of clear sight is a restricted planting area. Drivers of vehicles on the intersecting roadway and vehicles on the major roadway must be able to see each other clearly throughout the limits of 'd' and 'd_a'. If in the Engineers judgement, landscaping interferes with the line of sight corridor prescribed by these standards the Engineer may rearrange, relocate or eliminate plantings. Plants within the restricted areas are limited to selections as follows:

   Ground Cover & Trunked Plants (Separate or Combined):

   Ground Covers - Plant selection of low growing vegetation which at maturity does not attain a height greater than 18" below the sight line datum. For ground cover in combination with trees and palms; the following heights below the sight line datum will apply: 24" for trees and palms ≤ 11" dia.; and, 18" for sabal palms > 11" ≤ 18" dia. (dia. -within Sight Window).

   Trunked Plants - Plant selection of a mature trunk diameter 4" or less measured at 6" above the ground. Canopy or high borne foliage shall never be lower than 5' above the sight line datum. These selections shall be spaced no closer than 20'.

   Trees:

   Trees can be used with lawn; pavers; pavement; gravel, bark or wood chip beds; ground covers or other Department approved material. The clear sight window must be in conformance with the 'WINDOW DETAIL' modified to attain the height requirements listed in 'Ground Covers' above. Tree size and spacing shall conform to the following tabular values:

Description	Speed (mph)													
	30		35		40		45		50		55		60	
	(Inches)													
Diameter (Within Limits Of Sight Window)	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18
	(Feet)													
Minimum Spacing (c. to c. Of Trunk)	22	91	27	108	33	126	40	146	45	165	52	173	60	193

Sizes and spacings are based on the following conditions:

(a) A single line of trees in the median parallel to but not necessarily colinear with the centerline,

(b) A straight approaching mainline, within skew limits as described in No. 2 above.

(c) 1. Trees and palms ≤ 11" in diameter casting a vertical 6' wide shadow band on a vehicle entering at stop bar location when viewed by mainline driver beginning at distance 'd'; see SHADOW DIAGRAM, Sheet 6.

2. Sabal palms with diameters > 11" to ≤ 18" spaced at intervals providing a 2 second full view of entering vehicle at stop bar location when viewed by mainline driver beginning at distance 'd'; see PERCEPTION DIAGRAM, Sheet 6.

(d) Trees with diameters ≤ 11" intermixed with trees with diameters > 11" ≤ 18" are to be spaced based on trees with diameters > 11" ≤ 18".

For any other conditions the tree sizes, spacings and locations shall be detailed in the plans; see Design Note No. 5.

DESIGN NOTES

1. The information shown on this index is intended solely for the purpose of clear sight development and maintenance at intersecting highways, roads and streets, and is not intended to be used to establish roadway and roadside safety except as related to clear sight corridors. An analysis of sight distance shall be documented for all intersections.

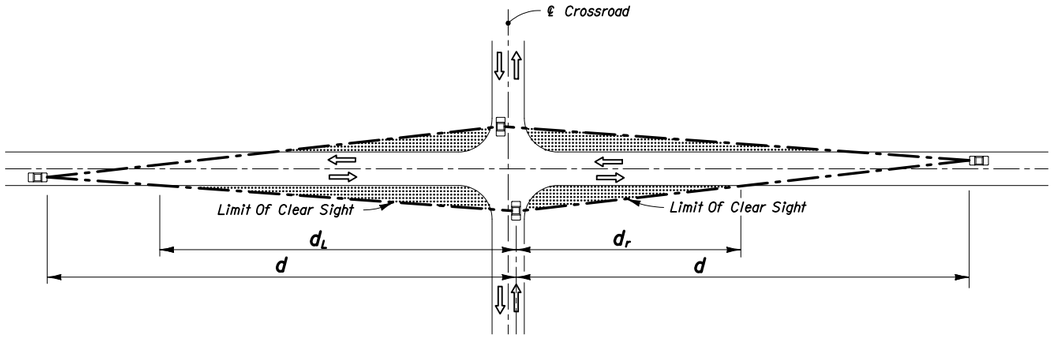
2. Details are based on the AASHTO 'A Policy On Geometric Design Of Highways And Streets, 2001', CHAPTER 9, INTERSECTION SIGHT DISTANCE, CASES B and F, and Department practices for channelized median openings (left turns from major roadways).

3. The minimum driver eye setback of 14.5' from the edge of the traveled way may be adjusted on any intersection leg only when justified by a documented, site specific field study of vehicle stopping position and driver eye position.

4. For SIGNALIZED INTERSECTIONS sight distances should be developed based on AASHTO 'Case D- Intersections With Traffic Signal Control'. 'At signalized intersections, the first vehicle stopped on one approach should be visible to the driver of the first vehicle stopped on each of the other approaches. Left-turning vehicles should have sufficient sight distance to select gaps in oncoming traffic and complete left turns. Apart from these sight conditions, there are generally no other approach or departure sight triangles needed for signalized intersections.
   However, if the traffic signal is to be placed on two-way flashing operation (i.e. flashing yellow on the major-road approaches and flashing red on the minor-road approaches) under off-peak or nighttime conditions, then the appropriate departure sight triangles for Case B, both to the left and to the right, should be provided for the minor-road approaches. In addition, if right turns on a red signal are to be permitted from any approach, then the appropriate departure sight triangle to the left for Case B2 should be provided to accommodate right turns from that approach.'

5. Where curvature, superelevation, adverse split profiles or other conditions preclude the use of standard tree sizes and spacing, proof of view and shadowing restraints must be documented and the size and location of trees in medians detailed in the plans.

6. Intersection sight distance values are provided for Passenger Vehicles, SU Vehicles and Combination Vehicles. Intersection sight distance based on the Passenger Vehicle is suitable for most intersections. Where substantial volumes of heavy vehicles enter the major-road, such as from ramp terminals with stop control or roadways serving truck terminals, the use of tabulated values for SU Vehicles or Combination Vehicles should be considered.



PICTORIAL

2 LANE UNDIVIDED

Design Speed	d	d_L	d_r
30	335	240	150
35	390	275	175
40	445	315	200
45	500	350	225
50	555	390	250
55	610	430	275
60	665	470	300
65	720	510	325

Passenger Vehicle

Design Speed	d	d_L	d_r
30	420	295	190
35	490	345	220
40	560	395	250
45	630	445	280
50	700	495	310
55	770	545	345
60	840	595	375
65	910	645	405

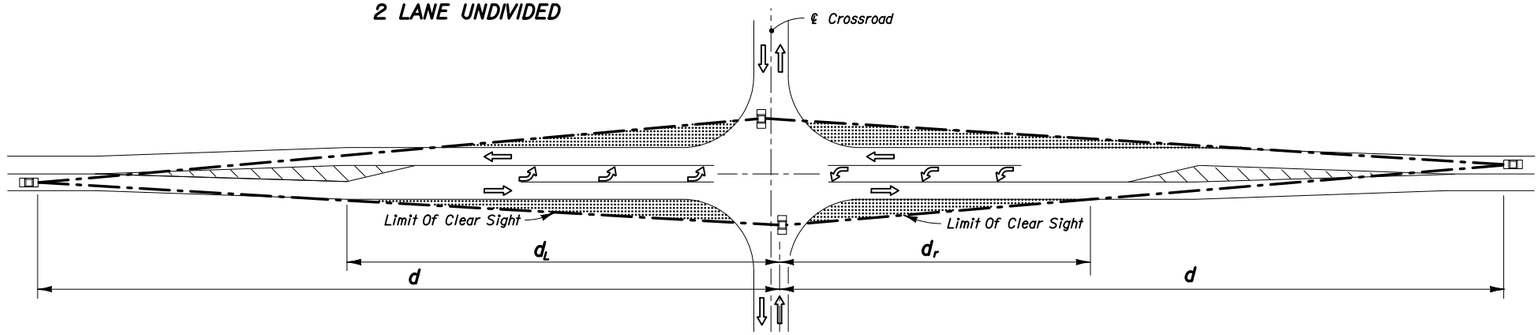
SU Vehicle

Design Speed	d	d_L	d_r
30	510	360	225
35	595	420	265
40	680	480	305
45	765	540	340
50	845	600	375
55	930	660	415
60	1015	720	450
65	1100	780	490

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L , d_r) (FEET)

2 LANE UNDIVIDED



PICTORIAL

2 LANE 2 WAY • FLARED FOR OPPOSING LEFT TURN CENTERED ON ALIGNMENT

Design Speed	d	d_L	d_r
30	355	195	135
35	415	225	155
40	475	260	180
45	530	290	200
50	590	325	220
55	650	355	245
60	710	390	265
65	765	420	290

Passenger Vehicle

Design Speed	d	d_L	d_r
30	450	250	170
35	525	290	200
40	600	330	225
45	675	370	255
50	750	410	285
55	825	450	310
60	900	490	340
65	975	530	370

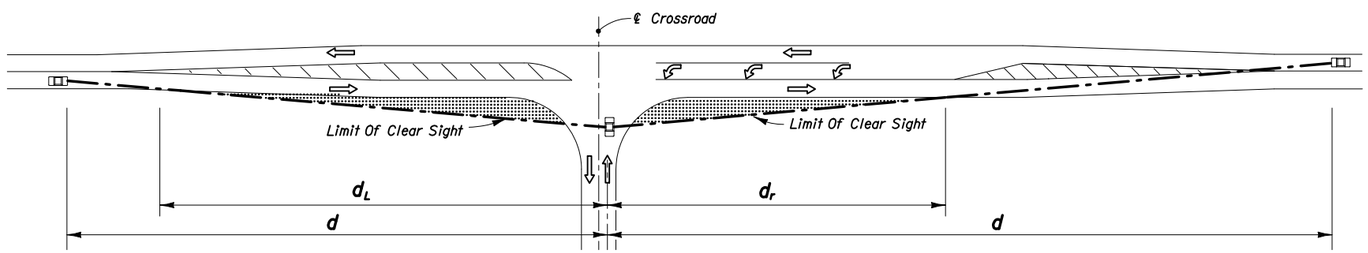
SU Vehicle

Design Speed	d	d_L	d_r
30	540	295	205
35	630	345	240
40	720	395	270
45	810	445	305
50	900	495	340
55	990	540	375
60	1080	590	405
65	1170	640	440

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L , d_r) (FEET)

2 LANE 2 WAY • FLARED FOR LEFT TURNS



PICTORIAL

2 LANE 2 WAY • FLARED FOR SINGLE SIDE LEFT TURN CENTERED ON ALIGNMENT

LEGEND

Areas Free Of Sight Obstructions

NOTE: See Sheet 6 for intersecting roadway origin of clear sight and quadrant corner clips.

2008 FDOT Design Standards

SIGHT DISTANCE AT INTERSECTIONS

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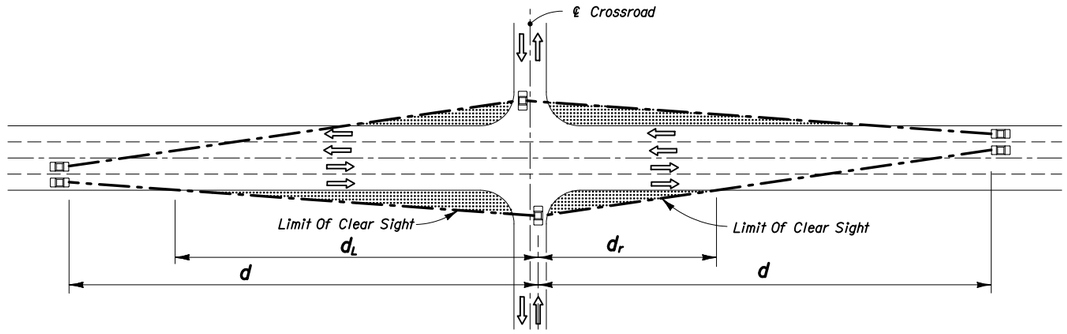


PICTORIAL

4 LANE UNDIVIDED

Design Speed	d	d_L	d_r
30	355	250	115
35	415	295	135
40	475	335	155
45	530	375	175
50	590	415	195
55	650	460	210
60	705	500	230
65	765	540	250

Passenger Vehicle

Design Speed	d	d_L	d_r
30	450	320	150
35	525	370	170
40	600	425	195
45	675	475	220
50	750	530	245
55	825	585	270
60	900	635	295
65	975	690	320

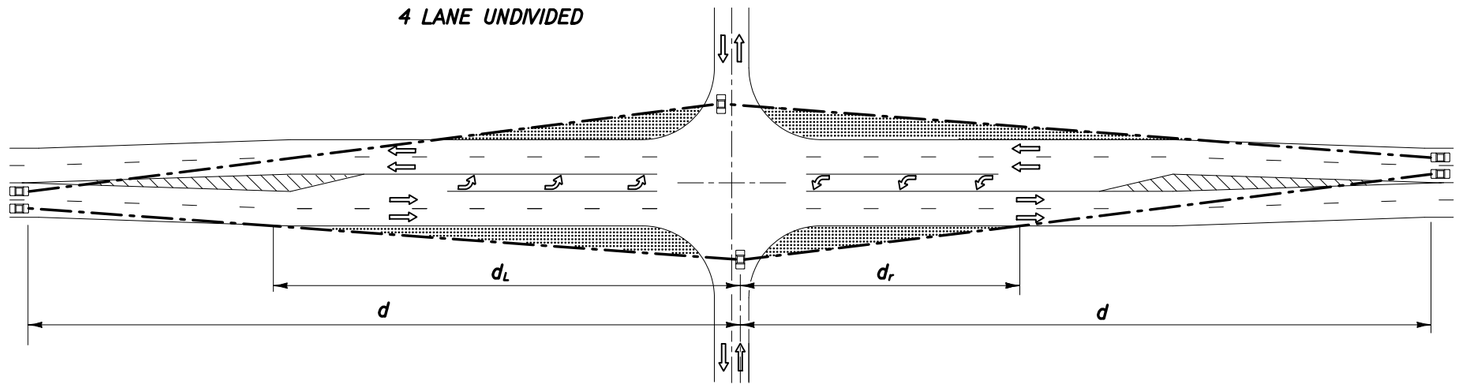
SU Vehicle

Design Speed	d	d_L	d_r
30	540	380	175
35	630	445	205
40	720	510	235
45	810	570	265
50	900	635	295
55	990	700	320
60	1080	765	350
65	1170	825	380

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_r) (FEET)

4 LANE UNDIVIDED



PICTORIAL

4 LANE UNDIVIDED FLARED - SYMMETRICAL

Design Speed	d	d_L	d_r
30	375	205	120
35	440	240	145
40	500	275	165
45	565	310	185
50	625	340	205
55	690	375	225
60	750	410	245
65	815	445	265

Passenger Vehicle

Design Speed	d	d_L	d_r
30	480	220	155
35	560	255	180
40	640	290	210
45	720	330	235
50	800	365	260
55	880	400	285
60	960	440	310
65	1040	480	340

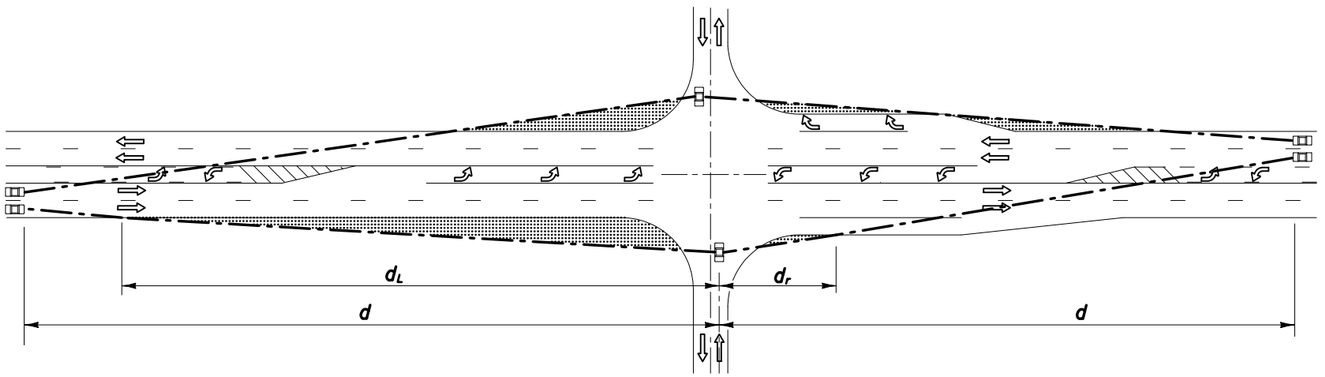
SU Vehicle

Design Speed	d	d_L	d_r
30	570	310	185
35	665	365	215
40	760	415	250
45	855	470	280
50	950	520	310
55	1045	570	340
60	1140	625	370
65	1235	675	400

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_r) (FEET)

4 LANE UNDIVIDED FLARED - SYMMETRICAL



PICTORIAL

4 LANE UNDIVIDED WITH OPTIONAL LANE

Design Speed	d	d_L	d_r
30	375	265	95
35	440	310	115
40	500	355	130
45	565	400	145
50	625	440	160
55	690	490	172
60	750	530	195
65	815	575	210

Passenger Vehicle

Design Speed	d	d_L	d_r
30	480	340	125
35	560	395	145
40	640	450	165
45	720	510	185
50	800	565	205
55	880	620	225
60	960	680	245
65	1040	735	265

SU Vehicle

Design Speed	d	d_L	d_r
30	570	405	145
35	665	470	170
40	760	540	195
45	855	605	220
50	950	670	245
55	1045	740	270
60	1140	805	295
65	1235	875	320

Combination Vehicle

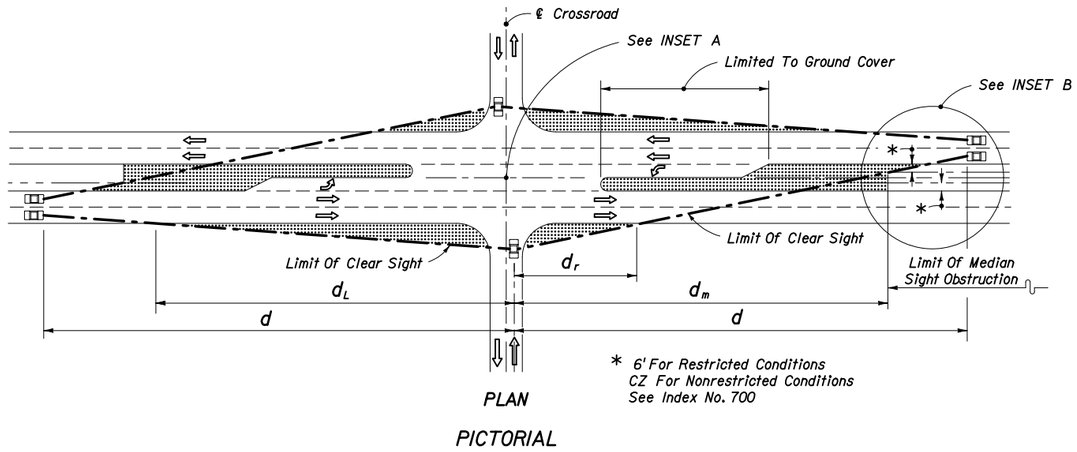
SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_r) (FEET)

4 LANE UNDIVIDED WITH OPTIONAL LANE

LEGEND

Areas Free Of Sight Obstructions

NOTE: See Sheet 6 for intersecting roadway origin of clear sight and quadrant corner clips.



PLAN

PICTORIAL

LEGEND

Areas Free Of Sight Obstructions

MEDIAN 22' OR LESS				
Design Speed	d	d_L	d_r	d_m
30	390	280	90	320
35	460	330	100	380
40	520	370	110	430
45	590	420	130	480
50	650	460	140	530
55	720	510	160	590
60	780	550	170	640
65	850	600	190	700

25'-64' MEDIAN				
Design Speed	d	d_L	d_v	d_{vL}
30	290	210	330	230
35	330	230	390	280
40	380	270	440	310
45	430	300	500	350
50	480	340	550	390
55	530	370	610	430
60	570	400	660	470
65	620	440	720	510

PASSENGER VEHICLE (P)

MEDIAN 35' OR LESS				
Design Speed	d	d_L	d_r	d_m
30	540	380	100	460
35	630	450	110	530
40	720	510	130	610
45	810	570	150	690
50	900	640	160	760
55	990	700	180	840
60	1080	760	200	920
65	1170	830	210	990

40'-64' MEDIAN				
Design Speed	d	d_L	d_v	d_{vL}
30	370	260	420	300
35	440	310	490	350
40	500	350	560	400
45	560	400	630	450
50	620	440	700	500
55	690	490	770	540
60	750	530	840	590
65	810	570	910	640

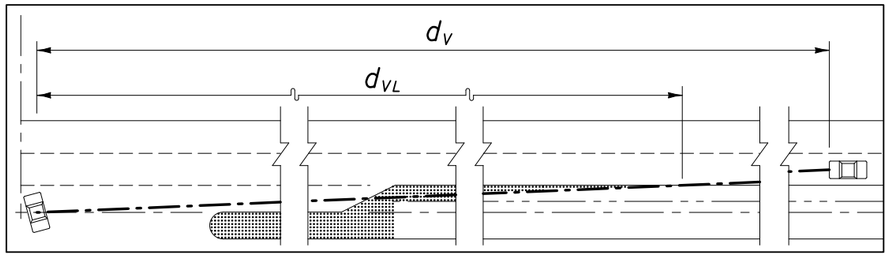
SINGLE-UNIT TRUCK (SU)

MEDIAN 30' OR LESS				
Design Speed	d	d_L	d_r	d_m
30	620	440	120	520
35	720	510	140	600
40	820	580	160	690
45	930	660	180	780
50	1030	730	200	860
55	1130	800	220	950
60	1240	880	240	1040
65	1340	950	260	1120

35'-50' MEDIAN				
Design Speed	d	d_L	d_r	d_m
30	670	470	100	580
35	780	550	120	680
40	890	630	140	780
45	1000	710	150	870
50	1110	790	170	970
55	1220	860	190	1070
60	1330	940	200	1160
65	1440	1020	220	1260

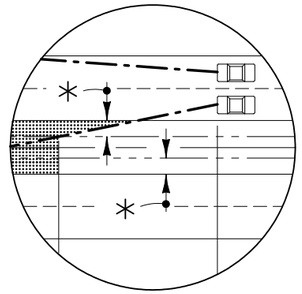
64' MEDIAN				
Design Speed	d	d_L	d_v	d_{vL}
30	460	330	510	360
35	540	380	590	420
40	620	440	680	480
45	690	490	760	540
50	770	540	850	600
55	850	600	930	660
60	920	650	1020	720
65	1000	710	1100	780

INTERMEDIATE SEMI-TRAILERS (WB-40 & WB-50)



Where The Median Is Sufficiently Wide For The Design Vehicle To Pause In The Median (Vehicle Length Plus 6' Min.) The Clear Line Of Sight To The Right (d_V) Is Measured From The Vehicle Pause Location, i.e., Not From The Cross Road Stop Position; Distances d_r & d_m Do Not Apply.

INSET A



INSET B

Vehicle Type	Vehicle Length (Ft.)
Passenger (P)	19
Single Unit (SU)	30
Large School Bus	40
WB-40	45.5
WB-50	55

NOTES FOR 4-LANE DIVIDED ROADWAY

1. See Sheet 6 for origin of clear sight line on the minor road.
2. Values shown in the tables are the governing (controlling) sight distances calculated based on 'AASHTO Case B - Intersection with Stop Control on the Minor Road.'

SIGHT DISTANCES (d) & (d_V) AND RELATED DISTANCES (d_L, d_r, d_m & d_{VL}) (FEET)

4 LANE DIVIDED ROADWAY

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SIGHT DISTANCE AT INTERSECTIONS

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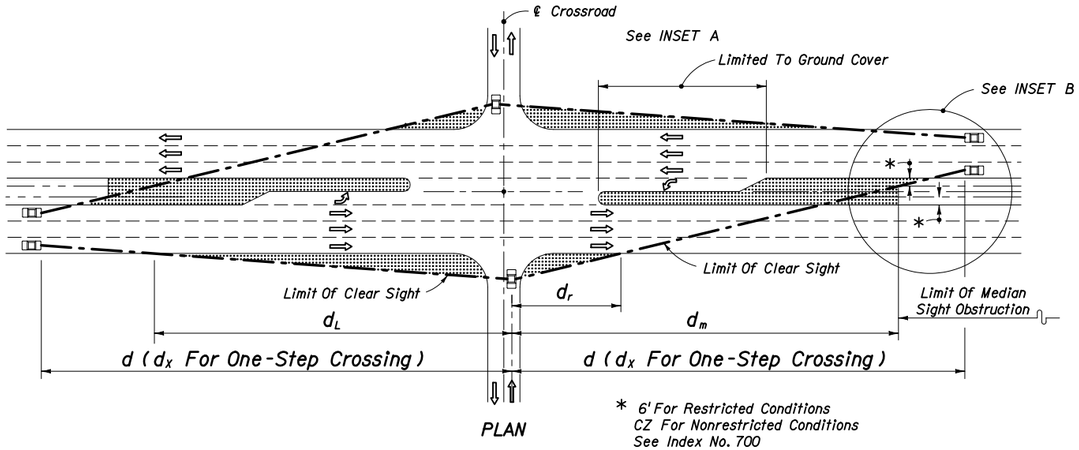


PLAN

PICTORIAL

LEGEND

Areas Free Of Sight Obstructions

MEDIAN 22' OR LESS				
Design Speed	d_X	d_L	d_r	d_m
30	410	290	80	350
35	480	340	90	410
40	550	390	100	470
45	620	440	110	530
50	690	490	130	580
55	760	540	140	640
60	830	590	150	700
65	900	640	170	760

25'-64' MEDIAN				
Design Speed	d	d_L	d_v	d_{vL}
30	310	220	330	230
35	360	250	390	280
40	410	290	440	310
45	460	330	500	350
50	510	360	550	390
55	570	400	610	430
60	620	440	660	470
65	670	470	720	510

PASSENGER VEHICLE (P)

MEDIAN 35' OR LESS				
Design Speed	d_X	d_L	d_r	d_m
30	590	420	90	510
35	690	490	110	600
40	780	550	120	680
45	880	620	140	760
50	980	690	160	850
55	1080	760	170	940
60	1170	830	190	1020
65	1270	900	200	1100

40'-64' MEDIAN				
Design Speed	d	d_L	d_v	d_{vL}
30	410	290	420	300
35	470	330	490	350
40	540	380	560	400
45	610	430	630	450
50	680	480	700	500
55	740	520	770	540
60	810	570	840	590
65	880	620	910	640

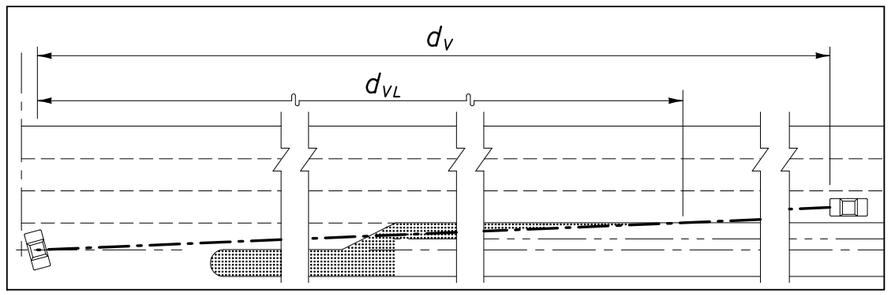
SINGLE-UNIT TRUCK (SU)

MEDIAN 30' OR LESS				
Design Speed	d_X	d_L	d_r	d_m
30	670	470	110	580
35	780	550	130	670
40	890	630	150	770
45	1000	710	170	860
50	1110	790	190	960
55	1220	860	200	1050
60	1330	940	220	1150
65	1440	1020	240	1240

35'-50' MEDIAN				
Design Speed	d_X	d_L	d_r	d_m
30	720	510	100	640
35	830	590	110	740
40	950	670	130	840
45	1070	760	150	950
50	1190	840	160	1060
55	1310	930	180	1160
60	1430	1010	190	1270
65	1550	1100	210	1380

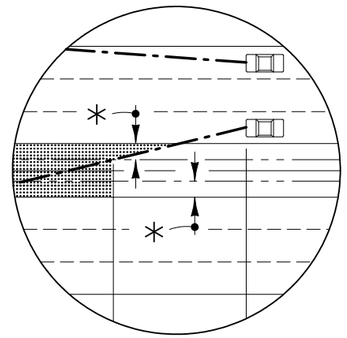
64' MEDIAN				
Design Speed	d	d_L	d_v	d_{vL}
30	490	350	510	360
35	580	410	590	420
40	660	470	680	480
45	740	520	760	540
50	820	580	850	600
55	910	640	930	660
60	990	700	1020	720
65	1070	760	1100	780

INTERMEDIATE SEMI-TRAILERS (WB-40 & WB-50)



Where The Median Is Sufficiently Wide For The Design Vehicle To Pause In The Median (Vehicle Length Plus 6' Min.) The Clear Line Of Sight To The Right (d_V) Is Measured From The Vehicle Pause Location, i.e., Not From The Cross Road Stop Position; Distances d_r & d_m Do Not Apply.

INSET A



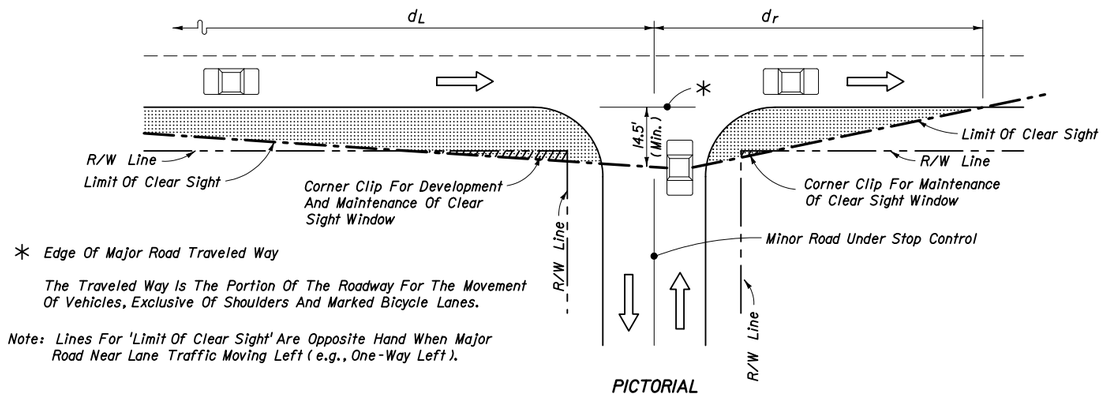
INSET B

NOTES FOR 4-LANE DIVIDED ROADWAY

1. See Sheet 6 for origin of clear sight line on the minor road.
2. Values shown in the tables are the governing (controlling) sight distances calculated based on 'AASHTO Case B - Intersection with Stop Control on the Minor Road.'

SIGHT DISTANCES (d), (d_V) & (d_X) AND RELATED DISTANCES (d_L, d_r, d_m & d_{VL}) (FEET)

6 LANE DIVIDED



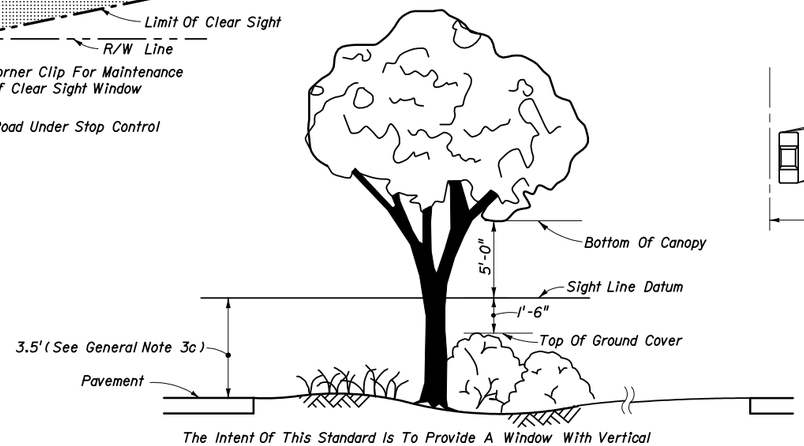
* Edge Of Major Road Traveled Way

The Traveled Way Is The Portion Of The Roadway For The Movement Of Vehicles, Exclusive Of Shoulders And Marked Bicycle Lanes.

Note: Lines For 'Limit Of Clear Sight' Are Opposite Hand When Major Road Near Lane Traffic Moving Left (e.g., One-Way Left).

PICTORIAL

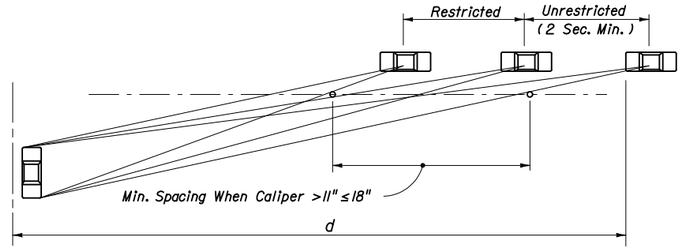
ORIGIN OF CLEAR SIGHT LINE ON MINOR ROAD



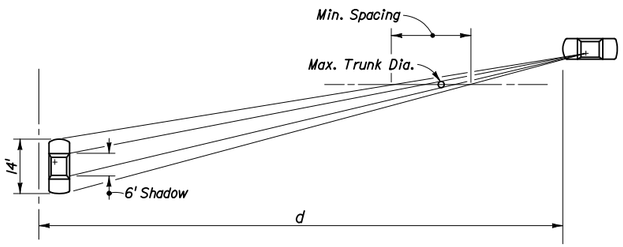
The Intent Of This Standard Is To Provide A Window With Vertical Limits Of Not Less Than 5' Above And 1'-6" Below The Sight Line Datum, And Horizontal Limits Defined By The Limits Of Clear Sight.

PICTORIAL

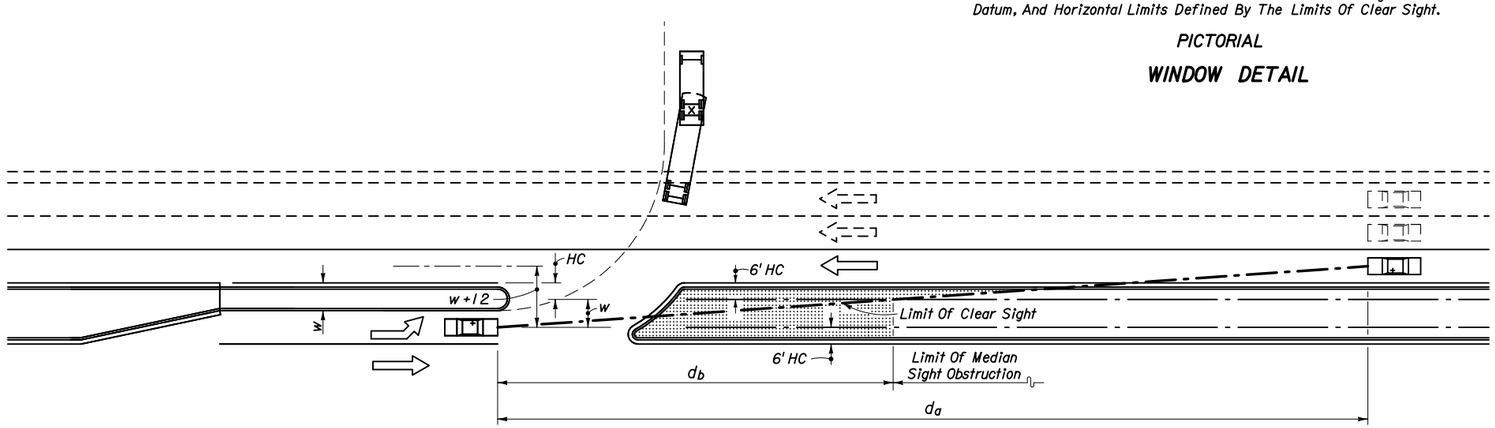
WINDOW DETAIL



PERCEPTION DIAGRAM SETTING SABAL PALM (STATE TREE) SPACING



SHADOW DIAGRAM



PICTORIAL

LEGEND

Areas Free Of Sight Obstructions

Design Speed MPH	d_a (Feet)								
	1 Lane Crossed			2 Lanes Crossed			3 Lanes Crossed		
	P	SU	Comb.	P	SU	Comb.	P	SU	Comb.
30	245	285	330	265	320	360	285	350	390
35	285	335	385	310	370	420	335	405	460
40	325	380	440	355	425	480	380	465	525
45	365	430	495	395	475	540	430	520	590
☆ See Note.									

☆ The d_a values in this table were established by the method referenced in Design Note 2, and are applicable to urban, predominantly curbed roadways with design speeds of 45 mph or less and meeting the restricted conditions defined in Index No. 700. For horizontal clearance (HC) of six feet (6'), the values for d_b may be determined by the equation $d_b = d_a (w/(w+12))$. For roadways with nonrestricted conditions, d_a and d_b should be based on the geometry for the left turn storage and on clear zone widths (See Index No. 700).

CHANNELIZED DIRECTIONAL MEDIAN OPENINGS

2008 FDOT Design Standards

SIGHT DISTANCE AT INTERSECTIONS

Last Revision	Sheet No.
04	6 of 6
Index No. 546	

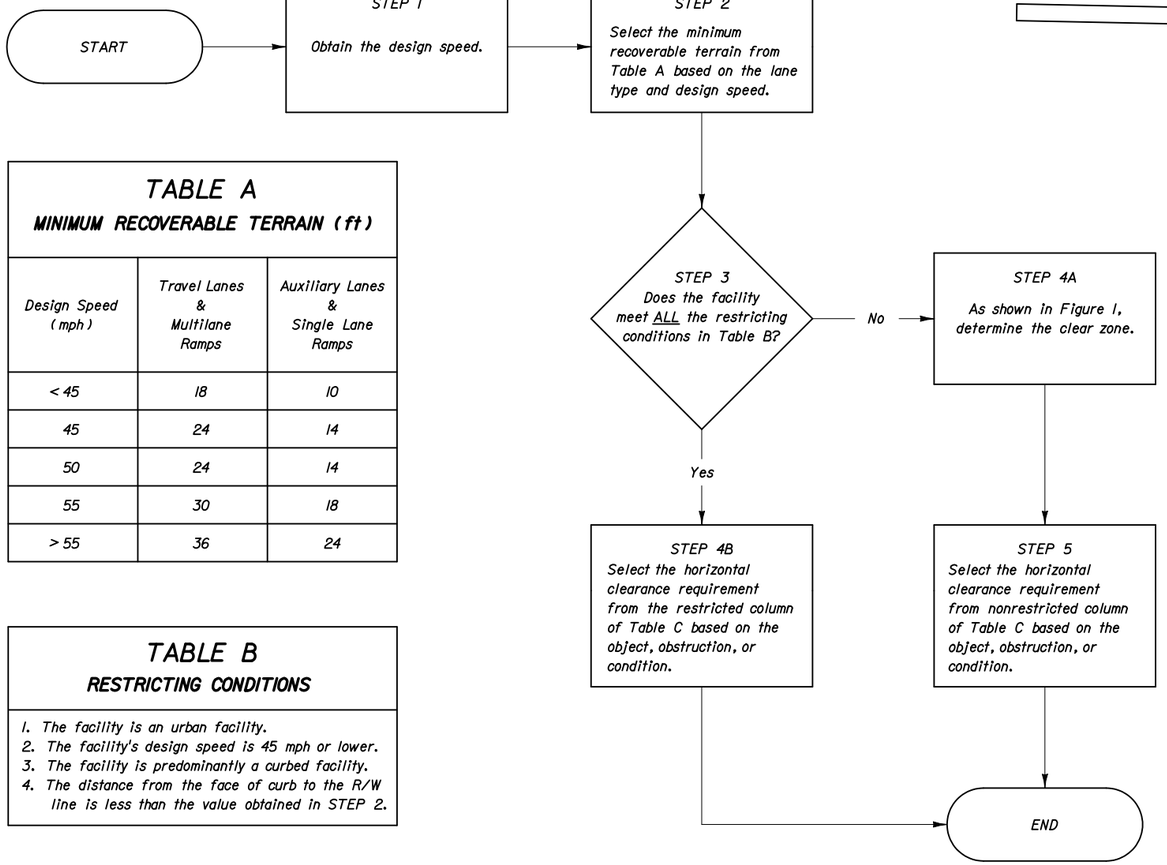
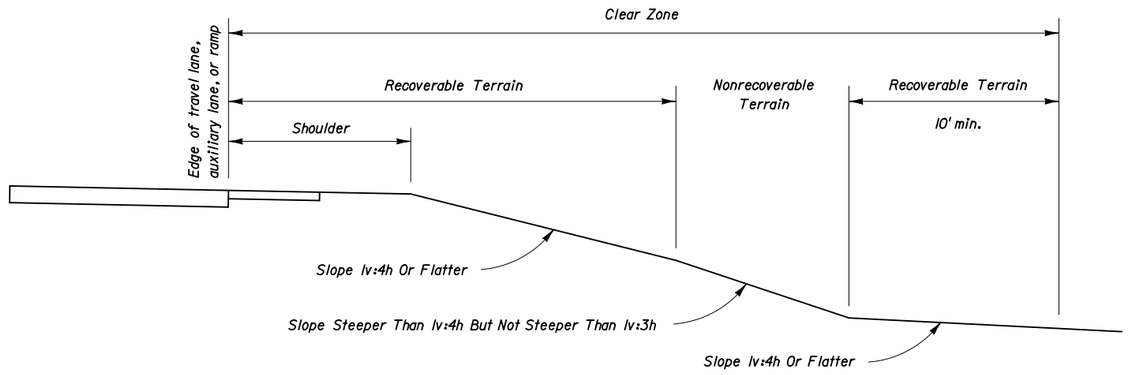


TABLE A
MINIMUM RECOVERABLE TERRAIN (ft)

Design Speed (mph)	Travel Lanes & Multilane Ramps	Auxiliary Lanes & Single Lane Ramps
< 45	18	10
45	24	14
50	24	14
55	30	18
> 55	36	24

TABLE B
RESTRICTING CONDITIONS

1. The facility is an urban facility.
2. The facility's design speed is 45 mph or lower.
3. The facility is predominantly a curbed facility.
4. The distance from the face of curb to the R/W line is less than the value obtained in STEP 2.



Clear Zone is the relatively flat unobstructed area that is to be provided for safe use by errant vehicles, and must be wide enough so that the sum of all the recoverable terrain within is equal to or greater than the value obtained in STEP 2. Recoverable terrain provided beyond nonrecoverable terrain must be a minimum of 10 feet. Areas beyond nontraversable and hazardous terrain cannot be used as recoverable or nonrecoverable terrain.

Roadside Terrain includes all surfaces along the roadway other than travel lanes, auxiliary lanes, and ramps. For the purpose of establishing clear zones and horizontal clearance requirements, roadside terrain is defined as recoverable, nonrecoverable, non-traversable, and hazardous as follows:

Recoverable when it is safely traversable and on a slope that is 1v:4h or flatter.
Nonrecoverable when it is safely traversable and on a slope that is steeper than 1v:4h but not steeper than 1v:3h.
Nontraversable when it is not safely traversable or on a slope that is steeper than 1v:3h.
Hazardous when a slope is steeper than 1v:3h and deeper than 6 feet as shown in Figure 2.

Horizontal Clearance Requirements are shown in Table C and are the required offsets to an object from a specified point on the roadway.

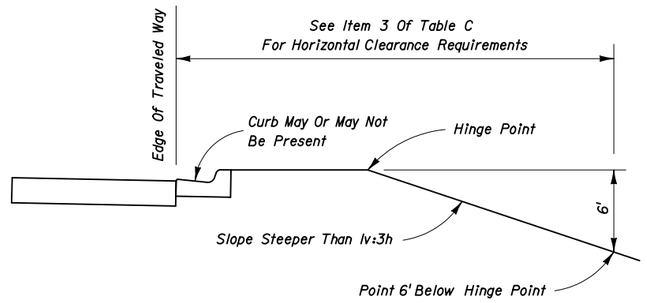
ROADSIDE TERRAIN

FIGURE 1

PROCESS FOR DETERMINING HORIZONTAL CLEARANCE REQUIREMENTS AND CLEAR ZONES

TABLE C

	Item No.	OBJECTS, OBSTRUCTIONS OR CONDITIONS	HORIZONTAL CLEARANCE REQUIREMENTS	
			Restricted	Nonrestricted
GENERAL	1	Above ground fixed hazards: All roadside objects, obstructions or conditions other than those listed below that exceed 4 inches in height and pose a hazard to errant vehicles and vehicle occupants.	Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb.	Locate outside the clear zone as close to the Right Of Way as practical.
ROADWAY	2	All FDOT approved guardrails, crash cushions, permanent or temporary concrete barriers, and guardrail end terminals.	Locate as shown in the Design Standards.	Locate as shown in the Design Standards.
	3	Drop-off hazards: Any point along a roadside slope steeper than 1v:3h that is deeper than 6 feet below the hinge point. See Figure 2.	Locate the point that is 6 feet below the hinge point no less than 22 feet from the traveled way.	Treat as roadside slopes in accordance with Design Standard 400.
	4	Mailboxes not shown in Design Standard 532.	Not to be used.	Not to be used.
	5	Mailboxes shown in Design Standard 532.	Locate in accordance with Design Standard 532.	Locate in accordance with Design Standard 532.
	6	Trees expected to become greater than 4 inches in diameter measured 6 inches above the ground.	Outside roadways: Locate no less than 4 feet from face of curb in accordance with Design Standard 546. Inside medians: Locate no less than 6 feet from the edge of traffic lane and in accordance with Design Standard 546.	Locate outside the clear zone as close to the Right Of Way as practical and in accordance with Design Standard 546.
	7	Trees not expected to become greater than 4 inches in diameter measured 6 inches above the ground.	Locate in accordance with Design Standard 546.	Locate in accordance with Design Standard 546.
	8	Canals behind guardrail.	Locate no less than 5 feet from the back of the guardrail post.	Locate no less than 5 feet from the back of the guardrail post.
	9	Canals without guardrail.	Locate as close to the Right Of Way as practical and not less than 40 feet from the traveled way.	Design speeds of 50 mph and greater: Locate as close to the Right Of Way as practical and not less than 60 feet from the traveled way. Design speeds less that 50 mph: Locate as close to the Right Of Way as practical and not less than 50 feet from the traveled way.
DRAINAGE	10	Culvert wing wall, endwall, retaining walls and flared end sections less than 6 feet deep.	Locate no less than 4 feet from face of curb.	Locate outside the clear zone.
	11	Culvert wing wall, endwall, retaining walls and flared end sections 6 feet and greater in depth.	Treat as drop-off hazard; See Item No. 3.	Treat as drop-off hazard; See Item No. 3.
	12	Mitered end sections.	Locate as shown in Design Standards 272 and 273.	Locate as shown in Design Standards.
TRAFFIC CONTROL DEVICES	13	Frangible sign supports.	Locate no less than 4 feet from face of curb and in accordance with Design Standard 17302.	Locate in accordance with Design Standard 17302.
	14	Overhead sign supports and other nonfrangible signs.	Locate no less than 4 feet from face of curb.	Locate outside the clear zone.
	15	Signal controller cabinets, signal poles, strain poles and mast arms.	Locate no less than 4 feet from face of curb and not in medians.	Locate outside the clear zone and not in medians.
LIGHTING	16	Conventional lighting (frangible and nonfrangible).	Locate no less than 4 feet from face of curb and not in medians.	Locate 20 feet from travel lanes or 14 feet from auxiliary lanes. Not in medians. May be clear zone width when the clear zone is less than 20 feet.
	17	Highmast lighting.	Not applicable.	Locate outside the clear zone.
STRUCTURES	18	Bridge piers and abutments: Above ground vertical structures.	Locate not less than 16 feet from edge of travel lane.	Locate outside the clear zone.
UTILITIES	19	Fire hydrants with bases no higher than 4 inches above the ground.	Locate not less than 2 feet from face of curb.	Locate as close to the Right Of Way as practical.
	20	Utility installations: All above ground fixed objects.	Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb and not in medians.	Locate outside the clear zone as close to the Right Of Way as practical and not in medians and not within limited access facilities. May be placed 4 feet behind the back of shields that have been justified for other reasons.
RAILROADS	21	Railroad crossing traffic control devices.	Locate in accordance with Design Standard 17882.	Locate in accordance with Design Standard 17882.



DROP-OFF HAZARDS

FIGURE 2

GENERAL NOTES

1. When sidewalks are present, an unobstructed sidewalk width of at least 4 feet must be provided.

2. When site specific conditions prohibit meeting the horizontal clearance requirements in TABLE C, the object, obstruction or condition must be mitigated, possibly by shielding. Otherwise, the Plans Preparation Manual, Volume 1, Chapters 2, 4, 21 and 25, or Chapters 5 and 9 of the Utility Accommodation Manual must be researched to determine viable alternatives. The minimum requirements in these manuals can only be reduced when a Design Variation or Design Exception has been approved in accordance with Chapter 23 of the Plans Preparation Manual, Volume 1 or a Utility Exception has been approved in accordance with Chapter 13 of the Utility Accommodation Manual.

2.11 Horizontal Clearances

Table 2.11.9 Clear Zone Widths

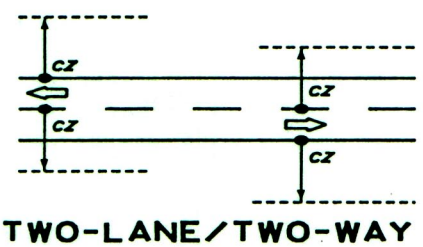
DESIGN SPEED (mph)	CLEAR ZONE WIDTH (FEET)			
	≥1500 AADT		<1500 AADT	
	TRAVEL LANES & MULTI-LANE RAMPS	AUXILIARY LANES & SINGLE LANE RAMPS	TRAVEL LANES & MULTI-LANE RAMPS	AUXILIARY LANES & SINGLE LANE RAMPS
< 45	18	10	16	10
45	24	14	20	14
50	24	14	20	14
55	30	18	24	14
> 55	36	24	30	18

Above clear zone widths are for side slopes of 1:4 or flatter. Applies to highways with flush shoulders only. May be in rural of urban locations.

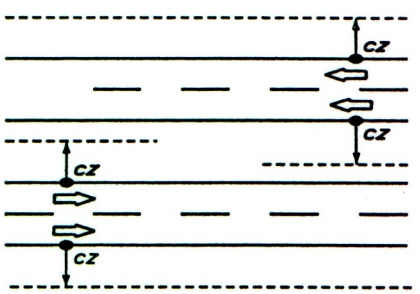
AADT=Mainline 20 years projected annual average daily traffic.

Where accident history indicates need, or where specific site investigation shows definitive accident potential, clear zone widths shall be adjusted on the outside of horizontal curves with flush shoulders in accordance with Table 2.11.10.

Clear zone widths are measured from the edge of the traveled way.



TWO-LANE/TWO-WAY



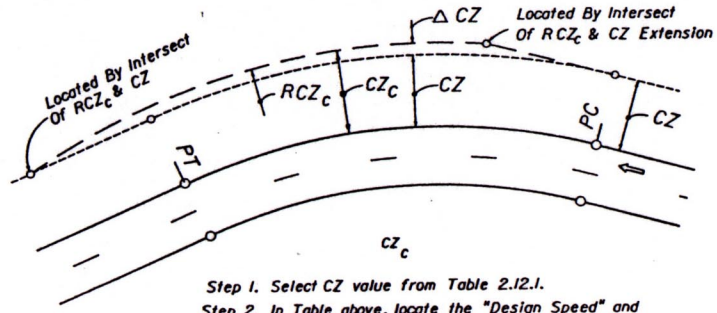
MULTI-LANE

MEASUREMENT OF CLEAR ZONE

TABLE 2.11.10 Clear Zone Widths For Curved Alignments On Highways With Flush Shoulders

TABLE I

D	CLEAR ZONE OF CURVED ALIGNMENT (CZ_c), FEET — DESIGN SPEED (Vmph) And Clear Zone (CZ, Feet)																													
	30			35			40			45			50			55				60				65				70			
Tangent	10	16	18	10	16	18	10	16	18	14	20	24	14	20	24	14	18	24	30	18	24	30	36	18	24	30	36	18	24	30	36
0° 15'	10	16	18	10	16	18	10	16	18	14	20	24	14	20	24	14	18	25	31	18	25	31	37	19	25	31	37	19	25	31	37
0° 30'	10	16	18	10	16	18	10	16	18	14	21	25	14	21	25	15	19	25	31	19	25	31	38	19	25	32	38	19	26	32	38
0° 45'	10	16	18	10	16	18	10	16	19	15	21	25	15	21	25	15	19	25	32	19	26	32	39	20	26	33	39	20	26	33	40
1° 00'	10	16	18	10	16	19	10	17	19	15	21	25	15	21	26	15	20	26	32	20	27	33	40	20	27	34	40	21	28	34	41
1° 30'	10	16	18	10	17	19	11	17	19	15	21	26	15	22	26	16	20	27	33	21	27	34	41	21	28	35	42	22	29	36	43
2° 00'	10	17	19	11	17	19	11	17	19	15	22	26	16	23	27	16	21	29	35	21	29	36	43	22	29	37	44	23	30	38	46
2° 30'	11	17	19	11	17	20	11	17	20	16	22	27	17	24	28	17	21	29	36	22	30	37	44	23	31	38	46	24	32	40	48
3° 00'	11	17	19	11	17	20	11	18	20	16	23	28	17	24	29	17	22	30	37	23	31	38	46	24	32	40	48	25	33	42	50
3° 30'	11	17	19	11	18	20	11	18	20	16	23	28	18	25	30	18	23	30	38	24	32	40	48	25	33	42	50	26	35	44	53
4° 00'	11	17	20	11	18	20	12	18	21	17	24	29	18	25	30	18	23	31	39	25	33	41	49	26	35	43	52				
4° 15'																								26	35	44	53				
5° 00'	11	18	20	11	18	21	12	19	21	17	25	30	18	26	31	19	25	33	41	26	35	44	52								
5° 15'																				27	36	44	53								
6° 00'	11	18	20	12	19	21	12	20	22	18	26	31	19	27	33	20	26	35	43												
6° 30'																21	27	36	44												
7° 00'	12	18	21	12	19	22	13	20	23	19	27	32	20	28	34																
8° 00'	12	19	21	12	20	22	13	21	23	19	28	33	21	30	36																
8° 15'													21	30	36																
9° 00'	12	19	21	13	20	23	13	21	24	20	29	34																			
10° 00'	12	19	22	13	20	23	14	22	25	21	29	35																			
10° 15'										21	30	35																			
11° 00'	12	20	22	13	21	24	14	22	25																						
12° 00'	13	20	23	14	21	24	15	23	26																						
13° 00'	13	20	23	14	22	25	15	24	27																						
13° 15'							15	24	27																						
14° 00'	13	21	23	14	22	25																									
16° 00'	13	21	24	14	22	25																									
17° 45'				15	24	27																									
18° 00'	14	22	25																												
20° 00'	14	22	25																												
22° 00'	14	23	26																												
24° 00'	15	24	27																												
24° 45'	15	24	27																												



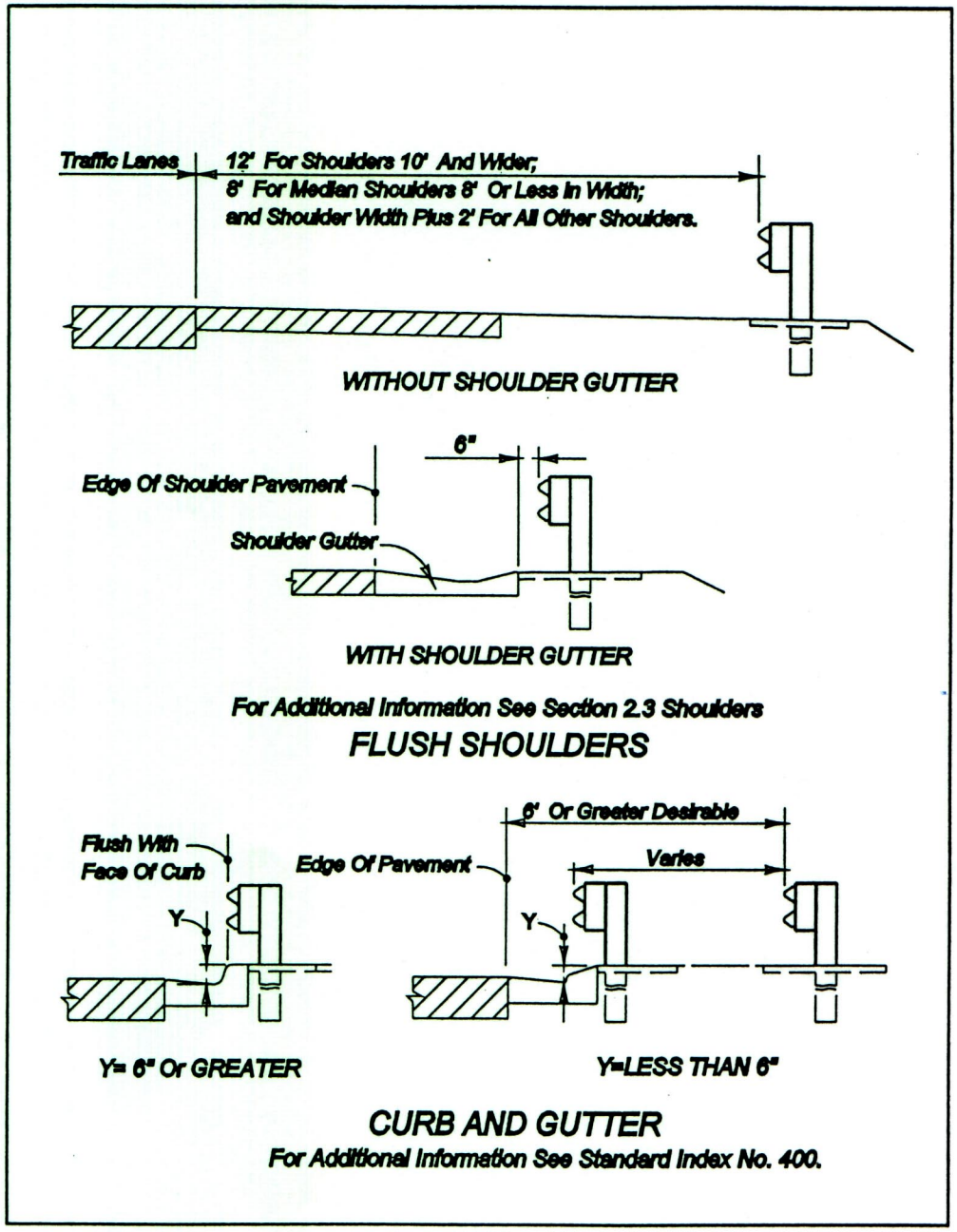
Step 1. Select CZ value from Table 2.12.1.

Step 2. In Table above, locate the "Design Speed" and "Tangent" CZ values that match the speed and CZ value from Step 1.

Step 3. Move down the radius column to the radius under consideration, then across the table to the column found under Step 2, to find the CZ_c value.

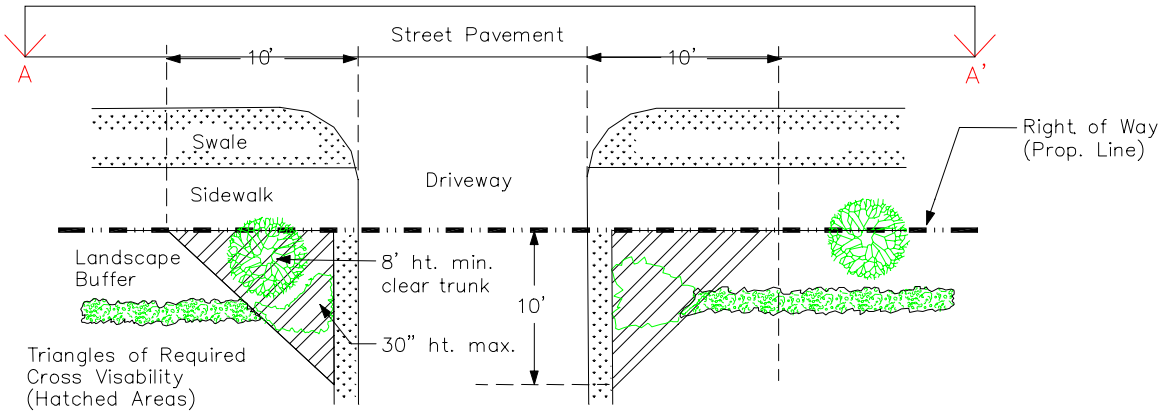
2.11 Horizontal Clearances

Figure 2.11.1 Clearance to Guardrail

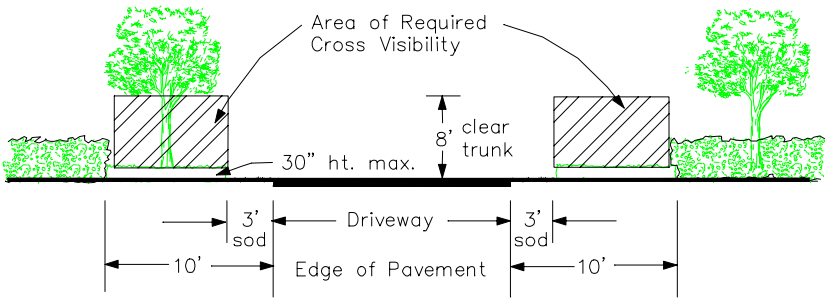


COLLIER COUNTY LAND DEVELOPMENT CODE

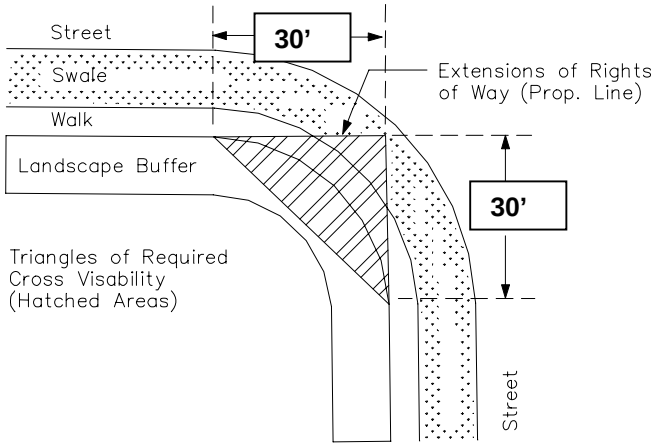
Section 4.06.01,D.1 Sight Distance Triangle Diagrams



PLAN : Intersection of Driveway and Street



CROSS SECTION A–A' : Intersection of Driveway and Street



PLAN : Street Intersection

FILE: VISIBILI2.DWG 3-29-00

Collier County Florida

Roadway Plant Material Cold Tolerance Map