GRAY-CALHOUN & ASSOCIATES
GC

TRANSPORTATION ENGINEERING AND PLANNING
Atlanta • Tampa

November 12, 2002

Via Fax (727) 789-9139
HARD COPY TO FOLLOW

Ms. Bernadette Massaro
Management and Associates, Inc.
1050A Eastlake Woodlands Parkway
Oldsmar, Florida 34677

RE: Eastlake Woodlands Community
Signing and Pavement Marking Inventory

Dear Ms. Massaro:

Gray-Calhoun & Associates, Inc. (GCA) is pleased to provide you with this brief proposal to provide traffic engineering services related to the Eastlake Woodlands subdivision located along the east side of East Lake Road north of Tampa Road in Pinellas County, Florida. The study will address existing traffic control signs and pavement markings along several roadways within the gated community. The services to be performed include:

- Data Collection – GCA will obtain a copy of a scaled area map of Eastlake Woodlands provided by Management and Associates, Inc. (the client). This map will be used to locate the pertinent signs and pavement markings within a specified area established by the client. GCA will make the necessary field observations along approximately 11 miles of roadway (as indicated by the client) to obtain the existing traffic control signs and pavement markings. As a part of this observation, field measurement and photographs may be taken for those signs that do not comply with the requirements set forth by the Federal Highway Administrations *Manual on Uniform Traffic Control Devices*, latest edition.

- Analysis – Upon completion of the field inventory, GCA will prepare a map, which identifies the number, type, condition and placement of the signs observed. In addition, the map will also indicate the type, size and color of the pavement markings in the area (if any).

- Report Preparation – GCA will document the findings in a letter report that will include the inventory map as well as existing photographs (if taken). The letter report will be signed and sealed by a registered professional engineer in the State of Florida that has traffic engineering experience.

GCA's fee for the above-defined services is $2,125. This cost assumes only one report submission to both the client and/or government agency (i.e. Pinellas County Public Works). Also, the fee does not include any meetings. Should GCA be requested to attend any meetings or provide any services above

2909 Bay to Bay Boulevard ▪ Suite 208 ▪ Tampa, FL 33629 ▪ (813) 831-8870 ▪ Fax: (813) 831-9375 ▪ www.graycalhoun.com

and beyond the aforementioned scope of work, these additional services could be provided on an hourly basis at the following hourly rates:

Principal Engineer	$140.00
Senior Transportation Engineer	$110.00
Transportation Engineer	$ 75.00
Senior Technician	$ 65.00
Technician	$ 60.00
Clerical	$ 40.00

Upon receipt of a signed contract, GCA could complete the study and provide a "draft" letter report within five (5) business days. If you have any questions or desire additional information, please do not hesitate in contacting me.

Sincerely,

GRAY-CALHOUN & ASSOCIATES, INC.

Robert W. Fulp, PE
Senior Transportation Engineer

GCA17\C:\My Documents\Rob Fulp\Proposals\eastlakewoodlands_letpro.doc

TRAFFIC CONTROL DEVICES ANALYSIS

EAST LAKE WOODLANDS COMMUNITY
OLDSMAR, FLORIDA

Prepared for

MANAGEMENT AND ASSOCIATES
1050A East Lake Woodlands Parkway
Oldsmar, Florida 34677

Prepared by

GRAY-CALHOUN & ASSOCIATES, INC.
2909 Bay to Bay Boulevard
Suite 208
Tampa, Florida 33629

December 2002

Professional Engineer: Robert W. Fulp, PE
Florida PE #44674
12/11/02

TRAFFIC CONTROL DEVICES ANALYSIS

EAST LAKE WOODLANDS COMMUNITY
OLDSMAR, FLORIDA

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

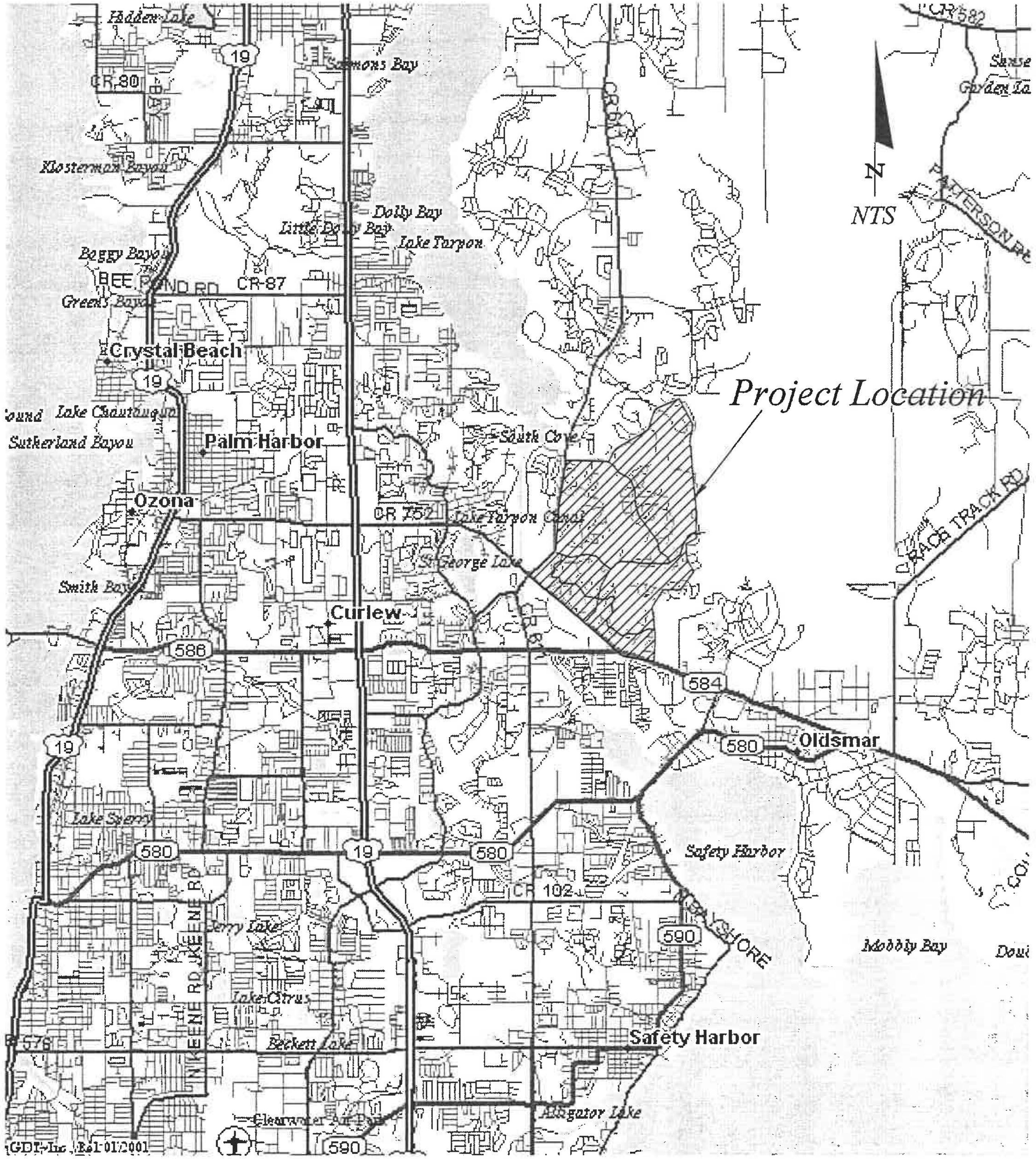
1.0 INTRODUCTION

In order for the Pinellas County Sheriffs Department to enforce the motor vehicular laws within a gated community, Florida Statutes now require that traffic control devices, such as signs, pavement markings, and speed bumps or speed tables, etc… conform to the criteria set forth by the appropriate governmental agencies. Therefore, Pinellas County Public Works Department (Traffic Engineering Division) has requested that the homeowners association for the East Lake Woodlands community provide documentation which shows that traffic control devices along the major roadways comply with federal, state and local requirements. East Lake Woodlands is a gated subdivision located in the northeast quadrant of East Lake Road and Tampa Road (CR 752) in Oldsmar, Florida. Figure 1 illustrates the project location.

Management and Associates, a community association for the East Lake Woodlands homeowners, contracted Gray-Calhoun & Associates, Inc. (GCA) to review the existing regulatory and warning signs, pavement markings, and any other traffic control device along specific roadways within the community. This report, which documents the findings of the inventory and identifies additional traffic control devices for future installation, will be presented to Pinellas County Public Works Department for processing.

2.0 DATA COLLECTION

On Monday, September 9 and Thursday, September 12, 2002, GCA conducted a field review of the existing signs and pavement markings along the following roadways: East Lake Woodlands Parkway, Woodlands Parkway, Sunflower Drive, Woodlands Boulevard and Woodlands Drive. The field review consisted of driving the aforementioned roadways and noting each regulatory and warning sign as well as pavement markings within the study area. The East Lake Woodlands community contains numerous side streets that intersect the major roadways. The review did not consider the side streets. Only those signs that intersect the major roadways plus the major roadways were considered in the data collection effort. As a part of the review process, the type, size, condition and placement of the signs and pavement markings were identified. Figure 2 illustrates the type and general location of the signs observed. Note that the



Prepared by :

GRAY-CALHOUN & ASSOCIATES
2909 BAY TO BAY BOULEVARD
SUITE 208
TAMPA, FLORIDA 33629
PHONE (813) 831-8870
FAX (813) 831-9375

Project Title:	EAST LAKE WOODLANDS COMMUNITY TRAFFIC CONTROL DEVICES ANALYSIS
Drawing Title:	Figure 1: Project Location

Drawn by	ZYU
Project No.	2022000
Date	12/09/02
Page	2

Legend:

XX-X (Green) - Existing Sign (OK)

XX-X (Pink) - Sign Missing

● - Stop sign (R-1) needs to be replaced (too low)

▲ - Stop Sign (R-1) needs to be replaced (incorrect material)

XX-X (Blue) - Other signs need to be replaced (too low or too small)

N

NTS

GRAY-CALHOUN & ASSOCIATES	2909 BAY TO BAY BOULEVARD SUITE 208 TAMPA, FLORIDA 33629 PHONE (813) 831-8870 FAX (813) 831-9375
PROJECT TITLE:	EAST LAKE WOODLANDS COMMUNITY TRAFFIC CONTROL DEVICES ANALYSIS
DRAWING TITLE:	Figure 2: Sign Inventory and Analysis
Drawn by	ZYU
Project No.	2022000
Date	12/09/02
Page	3

GCAII \\Gca13\Data Files\2022000\map.dgn

signs have been oriented on the map as the motorist would view them while driving. Table 1 provides a legend that identifies the designation of each sign observed. The sign designations illustrated on Figure 2 are either in accordance with the US Department of Transportation's (USDOT) *Manual on Uniform Traffic Control Devices* (MUTCD), the Florida Department of Transportation's (FDOT) *Roadway and Traffic Design Standards*, or Pinellas County criteria. Figure 3 illustrates some types of existing pavement markings that were observed. This figure also identifies the locations of existing speed bumps and speed tables (or speed waves).

Photographs were taken to document the existing conditions. Photos S-1 through S-15 document some existing signs, while Photos P-16 through P-22 document the pavement markings observed. Appendix A contains the photographs. The following is a brief explanation of each photograph.

Photo S-1 shows a stop sign (R1-1) made from wood. Regulatory and warning signs should be reflective, but wood material does not produce this effect. In addition, this sign is placed too low to the ground.

Photo S-2 shows a "no outlet" warning sign (14-2) made from wood. This sign is also placed too low to the ground.

Photo S-3 presents a stop sign positioned too low to the ground.

Photo S-4 reflects the use of a supplemental "3-way" sign (R1-3) for multi-way stops.

Photo S-5 documents the proper use of a two-way directional warning sign (W1-7) with the additional reflective yellow warning signs (OM1-3).

Photo S-6 shows a W1-7 and OM1-3 sign that needs to be either replaced or reset.

Photo S-7 reflects the use of one-way directional warning signs (W1-6) and OM1-3.

REGULATORY AND WARNING SIGNS

MUTCD CODE	SIGN LEGEND	MUTCD CODE	SIGN LEGEND	MUTCD CODE	SIGN LEGEND
R1-1	STOP	W1-1R		W8-1	BUMP
R1-3 (3 way)	3-WAY	W1-2		W13-1(15)	15 M.P.H.
R1-3 (4 way)	4-WAY	W1-5		W13-1(20)	20 M.P.H.
R2-1 (15)	SPEED LIMIT 15	W1-6R		W14-2	NO OUTLET
R2-1 (20)	SPEED LIMIT 20	W1-6L		W15-1	
R2-1 (30)	SPEED LIMIT 30	W1-7		OM1-1	
R3-5L	ONLY	W2-2		OM1-3	
R3-5R	ONLY	W3-1a		FTP39	*
R4-7		W5-1	ROAD NARROWS	"CAUTION SPEED WAVE AHEAD" SIGN	** CAUTION SPEED WAVE AHEAD
W1-1L		W6-3		"SPEED WAVE" SIGN	** SPEED WAVE

Note: * --- *FDOT special sign*

** --- *County special sign*

Prepared by :

GRAY-CALHOUN & ASSOCIATES

2909 BAY TO BAY BOULEVARD
SUITE 208
TAMPA, FLORIDA 33629
PHONE (813) 831-8870
FAX (813) 831-9375

Project Title:	EAST LAKE WOODLANDS COMMUNITY TRAFFIC CONTROL DEVICES ANALYSIS	Drawn by	ZYU
		Project No.	2022000
Drawing Title:	Table 1: Regulatory and Warning Signs Code and Legend	Date	12/09/02
		Page	5

Legend:

- Roadway segment with undesignated bike lane
- Roadway segment with double yellow center line
- Roadway segment with single yellow center line
- Roadway segment without center line
- Speed Bump Locations
- Speed Wave Location
- Existing pavement message

N

NTS

GRAY-CALHOUN GC & ASSOCIATES	2909 BAY TO BAY BOULEVARD SUITE 208 TAMPA, FLORIDA 33629 PHONE (813) 831-8870 FAX (813) 831-9375
PROJECT TITLE:	EAST LAKE WOODLANDS COMMUNITY TRAFFIC CONTROL DEVICES ANALYSIS
DRAWING TITLE:	Figure 3: Pavement Marking Inventory and Analysis
Drawn by	ZYU
Project No.	2022000
Date	12/09/02
Page	6

GCAIT \\Gcai3\Data Files\2022000\map.dgn

Photo S-8 shows a bump sign (W8-1).

Photo S-9 presents the use of a golf cart crossing ahead sign (FTP-39).

Photo S-10 documents the use of a wooden golf cart crossing sign. This is an example of a non-standard sign.

Photo S-11 reveals the use of a sign that warns motorist of the upcoming speed table (or wave). This sign is not found in the MUTCD or the FDOT Standard Indexes; however, Pinellas County approves of this traffic control device.

Photo S-12 illustrates the use of a "speed wave" sign. Again, this sign is not identified in any federal or state publications.

Photo S-13 reflects the use of an intersection warning sign (W2-2), which is installed too low to the ground.

Photo S-14 shows a speed limit sign (R2-1) that is installed too low to the ground.

Photo S-15 shows a R2-1 sign that is too small. The minimum size for a speed limit sign is 24-inches by 30-inches.

Photo P-16 reflects the use of a four-inch solid single yellow centerline. The correct pavement marking should be a six-inch solid double yellow centerline with Class "B" bi-directional amber (yellow) reflective pavement markers (RPMs). The RPMs spaced every 40 feet delineate the center of the roadway and add visibility for the motorist when driving at night.

Photo P-17 documents the correct use of centerline pavement markings where "passing" other vehicles are prohibited. Bi-directional amber RPMs, however, should be installed.

Photo P-18 illustrates the use of channelized pavement markings to separate opposing traffic around a median. Again, six-inch double yellow centerlines should be used with RPMs. A W6-3 warning sign is shown in the background.

Photo P-19 illustrates the poor use of a pavement message. Both the stop-bar and word "stop" should be painted reflective white. The old yellow "stop" message should be obliterated.

Photo P-20 reveals that the speed bump should be repainted a reflective yellow color. The background shows a non-standard wooden sign cautioning motorists about the golf cart crossing ahead.

Photo P-21 illustrates the use of pavement markings for a right-turn lane. Bi-directional colorless/red RPMs should be installed along the six-inch solid white lane line at a spacing of 20 feet.

Photo P-22 documents the use of a speed table or (wave). The pavement markings appear to be adequate at this location.

3.0 ANALYSIS

Once the signs and pavement markings were inventoried, an analysis was conducted to determine whether the existing traffic control devices meet the criteria set forth by the USDOT, the FDOT and/or Pinellas County. In addition, the analysis considered whether additional traffic control devices may be warranted. Pinellas County adheres to the MUTCD guidelines established by the federal government for the installation of traffic control devices. In addition, the County provides their own design criteria for the installation of speed bumps and speed waves used as traffic calming measures for residential neighborhoods. This criteria also includes signs and pavement markings for the specific traffic control device.

The signs were inspected to ensure that the appropriate size, shape, color, placement (both vertical and horizontal), material used (aluminum vs. wood) and retro-reflectivity (reflects a light

source) meet the criteria outlined in the MUTCD. Likewise, the pavement markings were reviewed to ensure that size, color and placement conform to the established guidelines. It should be noted that no physical measurements were made in the field during the review process. The analysis was based on a visual inspection of the signs and pavement markings.

4.0 SUMMARY OF FINDINGS

Based on the analysis, several signs were either inappropriately placed, missing altogether, incorrectly used or warranted a new sign. The following is an example of the inconsistencies observed when reviewing the signs.

- Wood material, instead of reflective aluminum sheeting, was used for the installation of many stop signs (R1-1) located along the side streets that connect with either East Lake Woodlands Parkway or Woodlands Drive.
- Along Woodlands Boulevard, Woodlands Drive and South Woodlands Drive, some of the stop signs (R1-1) were placed lower than the required height as established by FDOT. The vertical clearance must be seven feet from the bottom of the sign panel to the top of the ground. Appendix B contains FDOT Standard Index # 17302, which provides details for the placement of regulatory and warning signs.
- At several intersecting side streets, stop signs (R1-1) were missing. A few of the identified locations are Deer Path Road at East Lake Woodlands Parkway (northwest area of the subdivision), and the two driveways for Lakeshore Loop at South Woodlands Drive (southeast area).
- Several three-way stop intersections were observed within this community. Some of the stop signs (R1-1) were missing the supplemental "3-way" sign (R1-3). According to field reviews, four 3-way stop supplemental signs were missing at three locations. One such location is Whisper Wind Lane at East Lake Woodlands Parkway.
- T-intersections in rural areas require special traffic control signs to warn motorist of a street termination. The two direction warning sign (W1-7) and 9-button reflective yellow sign (OM1-3) or reflective yellow sign (OM1-1) should be used to warn drivers, especially at night, that the street has been terminated. Two examples where these signs should be

installed are South Woodlands Drive at Sunflower Drive, and East Lake Woodlands Parkway at Sunflower Drive. Appendix B contains FDOT Standard Index # 17349, which provides details for installing signs at a terminated street.

- Prior to approaching a golf cart crossing, speed bumps are used to control the speeds of vehicles in the area. Appropriate signs, such as the speed bump sign (W8-1) and the golf cart crossing sign (FTP-39), have been installed at each crossing; however, some adjustments to these signs should be made. The W8-1 sign should be relocated at least 100 feet from the speed bump and this sign should be installed with an advisory speed limit sign (W13-1) of 20 miles per hour. In addition, the FTP-39 sign should be placed between the W8-1 sign and the speed bump. Based on the field review, a W8-1 sign was missing along Woodlands Drive near the Preserve subdivision.
- The supplemental advisory speed signs (W13-1) attached to the "Speed Wave" sign should be relocated to the "Caution Speed Wave Ahead" warning sign to give motorists more time to reduce the speed prior to crossing the traffic control device.
- Due to the loss in retro-reflectivity or the ability to reflect light back to the motorist at night, many signs, especially located along Woodlands Parkway, Woodlands Drive and South Woodlands Drive, should be replaced. From field reviews, the observer was unable to detect the age of those signs because they were not "stamped" with the date of installment.
- Along East Lake Woodlands Parkway south of Whisper Wind Lane, a R3-5R (Right Turn Only) sign should be installed. This sign will notify southbound motorists that they must turn right.

Figure 2 identifies those locations where the regulatory and warning signs are substandard and should be replaced. In addition, this figure identifies those locations where new signs should be installed.

In most cases, pavement markings (striping and reflective pavement markers) are not required for local subdivision roads, where the speeds are typically slow and the volume of traffic is low. Unusual circumstances will dictate whether or not the pavement markings are required. The East Lake Woodlands community is a very large development in a rural setting. Pavement markings were used to delineate the path of a vehicle around the curvilinear roads, as well as to define golf

cart crossings, bike paths and other traffic control devices, like the speed bumps and tables. Existing pavement markings should be updated to the latest design standards because they do not meet the current MUTCD design criteria. The following are a few examples of some inconsistencies with the pavement markings.

- Due to the curvilinear nature of the major roads, opposing traffic should be separated by six-inch solid double yellow centerlines (not four- or six-inch single yellow lines). The solid double-yellow lines signify that passing other vehicles is prohibited. Appendix B contains FDOT Standard Index # 17352, which illustrates the use of this type of pavement marking.
- Class "B" bi-directional amber (yellow) reflective pavement markers (RPMs) should be used in conjunction with the yellow centerline pavement striping (See Appendix B for details.)
- The word "STOP" should be painted white (not yellow) at those previously identified locations.
- The speed bumps should be re-painted reflective yellow.

Figure 3 identifies those locations where the pavement markings are substandard and should be replaced.

5.0 RECOMMENDATIONS

According to the results of the inventory, there are numerous locations where both regulatory and warning signs as well as pavement markings require modifications or upgrades. In order to comply with federal, state and local statutes requiring that traffic control devices meet the most current design criteria, Management and Associates should replace, remove or install the signs and pavement markings previously identified in Section 4.0 of this report.

It shall be the individual homeowners associations responsibility to replace those regulatory signs (e.g. stop signs) that do not conform to the specifications outlined by federal, state or county requirements. Each homeowner's association president will be notified by registered mail that it will be up to their own association to correct the deficiencies.

The pavement markings will be corrected and/or added in the spring of 2003, when the asphalt resurfacing treatment is completed.

6.0 PROPOSED TRAFFIC CONTROL DEVICES

According to the East Lake Woodlands Homeowners Association, additional traffic control devices are proposed for specific areas throughout the community. On Monday, November 11, 2002, a meeting was held with the roadway maintenance supervisor for the homeowners association (Mr. Norm Gilsdorf), to discuss the issue of installing additional regulatory signs and speed tables (waves). The purpose behind adding the additional traffic control devices was to potentially reduce the number of traffic incidences experienced in certain areas as well as to slow motorist down throughout the neighborhood. Mr. Gilsdorf identified several locations, which tend to experience operational problems. Those specific locations are as follows:

(1) East Lake Woodlands Parkway at Woodlands Boulevard near Turner Estates
(2) Hollyhill Road at Woodlands Parkway
(3) Woodlands Drive at East Lake Woodlands Parkway
(4) Eric Road at East Lake Woodlands Parkway
(5) Woodlands Boulevard between the gate and Deerpath Drive
(6) East Lake Woodlands Parkway near the existing speed wave
(7) East Lake Woodlands Parkway north of Eric Road

With regards to locations 1, 2 and 3 above, Mr. Gilsdorf has suggested that additional stop signs (R1-1) be installed to create a three-way or four-way stop controlled intersection. In order to observe traffic operations at those specific locations, GCA conducted a field review between the hours of 8:00 AM and 10:00 AM on Monday, December 2, 2002. Although the review was inconclusive because a formal traffic study was not conducted to determine whether or not a three-way or four-way stop controlled intersection was warranted, it did appear that the additional traffic control devices would be beneficial in the long run. First of all, motorist would be more cautious when approaching the intersections and secondly, motorist would tend to slow down. Furthermore, the homeowners association has received several complaints by

homeowners expressing how dangerous the intersections are during certain periods of the day. Thus, it would appear that the homeowners would not oppose the installation of the new regulatory signs.

In order to reduce the travel speeds at the main entrances to the community and along those long stretches of roadway, specifically Woodlands Boulevard and East Lake Woodlands Parkway, the homeowners association recommends installing additional speed tables (or waves). Currently, one existing speed wave exists along East Lake Woodlands Parkway between Warwick Drive and Enclave Drive in the northeast section of the community. According to Mr. Gilsdorf, this type of traffic control device has been a good deterrent in slowing motorist down. Both pedestrians and bicyclists utilize the major roadways throughout the course of a day. Adding additional speed waves will only increase the motorists' awareness that travel speeds most be reduced. This incentive could possibly prevent a traffic incident from occurring between a vehicle and a pedestrian, bicyclist or another vehicle.

Two new locations (Woodlands Parkway between the gate and Deerpath Drive, and East Lake Woodlands Parkway between Eric Road and Woodlands Drive) are being proposed for the installation of speed waves. It is the homeowners associations desire to install at least two speed waves at each of these two locations. In addition, the homeowners association would like to install one more speed wave near the existing one located along East Lake Woodlands Parkway south of Warwick Drive.

After reviewing these proposed locations, GCA makes the following recommendations:

(1) Along Woodlands Boulevard between the guardhouse and Deerpath Drive, one speed wave should be installed. The second speed wave should be located between Deerpath Drive and East Lake Woodlands Parkway. The minimum distance between these traffic control devices should be at least 300 feet, but preferably 500 feet apart.

(2) Along East Lake Woodlands Parkway, two speed waves separated by a distance of at least 300 feet should be located between Eric Road and Woodlands Drive north of the guardhouse.

(3) Along East Lake Woodlands Parkway south of Warwick Drive, a new speed wave should be considered south of the existing location. Due to the close proximity of Warwick Drive to the north as well as the curvilinear nature of the roadway, it appears that the best location for a new speed wave would be approximately 300-500 feet south of the existing location.

All speed waves will be constructed in strict accordance with the County's specifications.

In addition to installing the speed waves, additional warning signs advising motorist of the approaching traffic control devices should also be installed.

Figure 4 illustrates the proposed traffic control devices as recommended by the East Lake Woodlands homeowners association.

Again, it should noted that no formal traffic studies have been conducted by Gray-Calhoun & Associates, Inc. to verify whether or not these proposed traffic control devices are in fact warranted.

Legend:

Speed Wave

Sign A — CAUTION SPEED WAVE AHEAD / 20 M.P.H.

Sign B — SPEED WAVE

N

NTS

Add new sign R1-3 (3-way)

R1-1 & R1-3 (3-way)

Add new sign R1-3 (4-way)

R1-1 & R1-3 (4-way)

Add new sign R1-3 (4-way)

R1-1 & R1-3 (4-way)

Add new sign R1-3 (4-way)

GRAY-CALHOUN & ASSOCIATES
GC
2909 BAY TO BAY BOULEVARD
SUITE 208
TAMPA, FLORIDA 33629
PHONE (813) 831-8870
FAX (813) 831-9375

PROJECT TITLE:	EAST LAKE WOODLANDS COMMUNITY TRAFFIC CONTROL DEVICES ANALYSIS
DRAWING TITLE:	Figure 4: Proposed Traffic Control Devices

Drawn by	ZYU
Project No.	2022000
Date	12/09/02
Page	15

GCATT \\Gcal3\Data Files\2022000\map.dgn

APPENDIX A
PHOTOGRAPHS

PHOTO S-1

PHOTO S-2

PHOTO S-3

PHOTO S-4

PHOTO S-5

PHOTO S-6

PHOTO S-7

PHOTO S-8

PHOTO S-9

PHOTO S-10

PHOTO S-11

PHOTO S-12

PHOTO S-13

PHOTO S-14

PHOTO S-15

PHOTO P-16

PHOTO P-17

PHOTO P-18

PHOTO P-19

PHOTO P-20

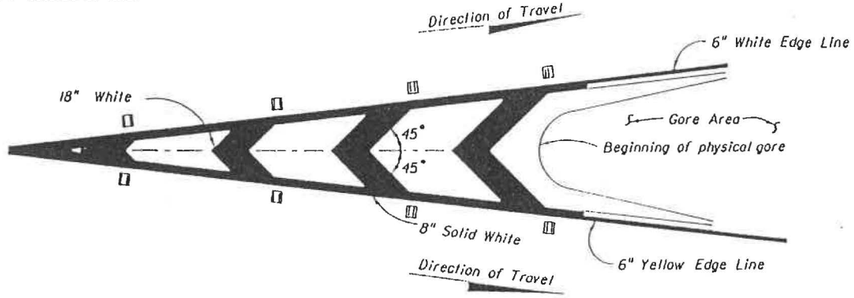
PHOTO P-21

PHOTO P-22

APPENDIX B
FDOT STANDARD INDEXES

NOTE

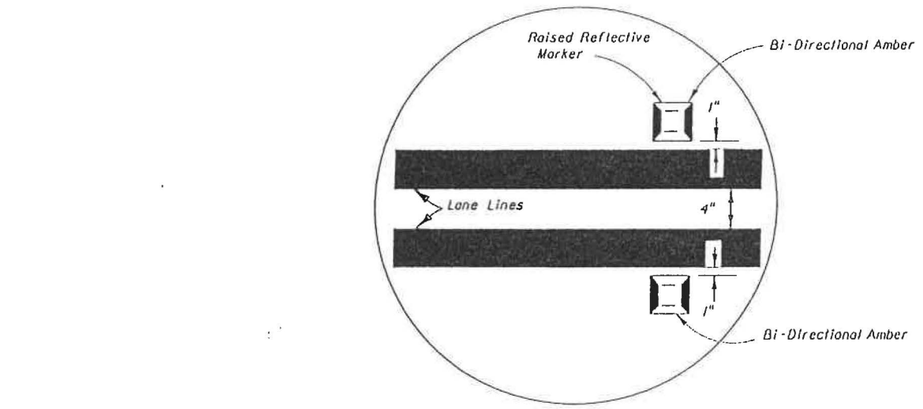
Raised pavement markers shall be set 1" outside of line.

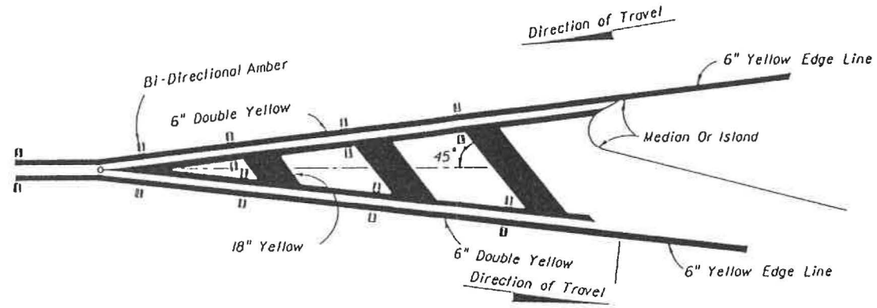


RPM PLACEMENT FOR TRAFFIC CHANNELIZATION AT GORE
(TRAFFIC FLOWS IN SAME DIRECTION)

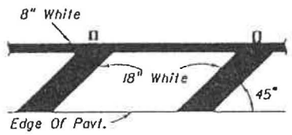
NOTE

Raised pavement markers (Bi-Directional Colorless/Red) should be used in all gores of this type





RPM PLACEMENT FOR TRAFFIC SEPARATION
(TRAFFIC FLOWS IN OPPOSITE DIRECTION)



PLACEMENT OF RPMS ON SHOULDER MARKINGS

Shoulder Markings For Left Side Of Roadway Shall Be Yellow.

For Placement Of RPMS On Ramps See Index 17345.

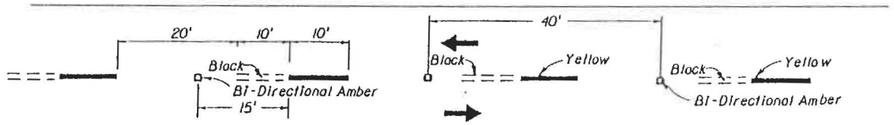
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC DESIGN

TYPICAL PLACEMENT OF REFLECTIVE PAVEMENT MARKERS

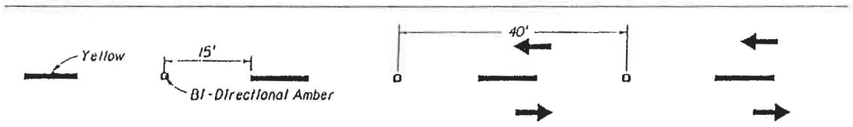
	Names	Dates
Designed By		10-75
Drawn By		
Checked By		10-75

Approved By: Clark O. Scott
State Traffic Plans Engineer

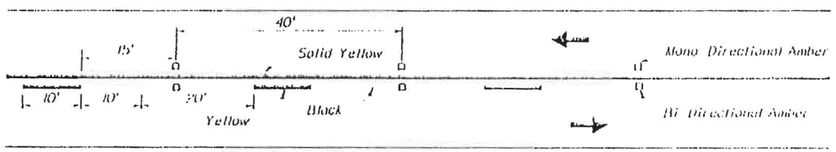
Revision	Sheet No.	Index No.
00	2 of 2	17352



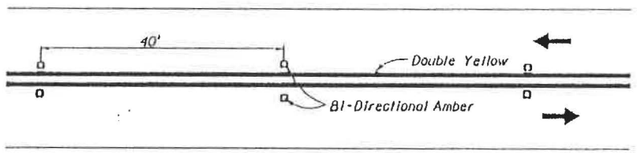
ALTERNATING SKIP LINE



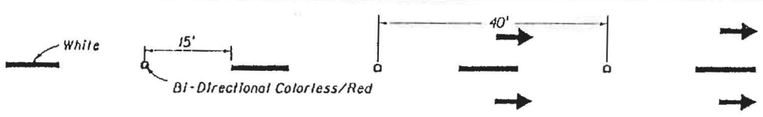
SKIP LINE



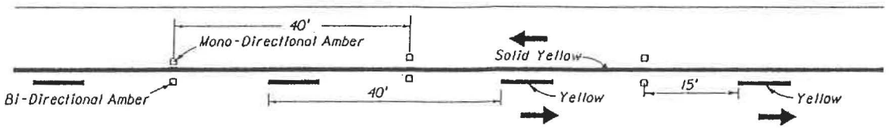
SOLID LINE WITH ALTERNATING SKIP



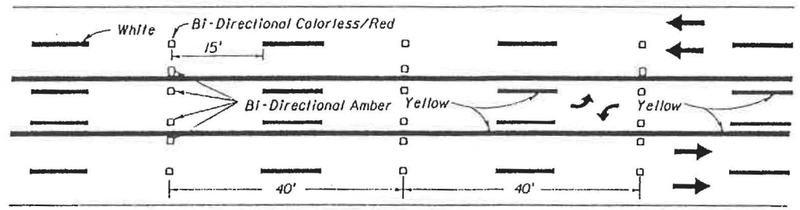
DOUBLE SOLID LINE



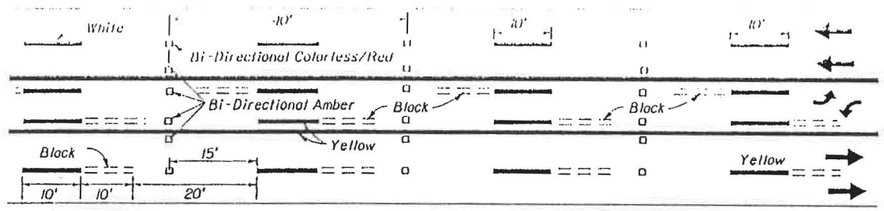
MULTI-LANE



SOLID LINE WITH SKIP



SKIP LINE WITH TWO WAY LEFT TURN LANE



ALTERNATING SKIP LINE WITH TWO WAY LEFT TURN LANE

1. Reflective Pavement Markers shall be spaced at 40' on all skip lane lines and skip center lines. This spacing may be reduced to 20' if specifically called for in the plans.
2. The spacing on solid lines and solid/skip combination lines shall be 40'.
3. All R.P.M.s shall be offset 1" from solid lines.
4. These spacings may be reduced for sharp curves if required.
5. All R.P.M.s shall be class "B".

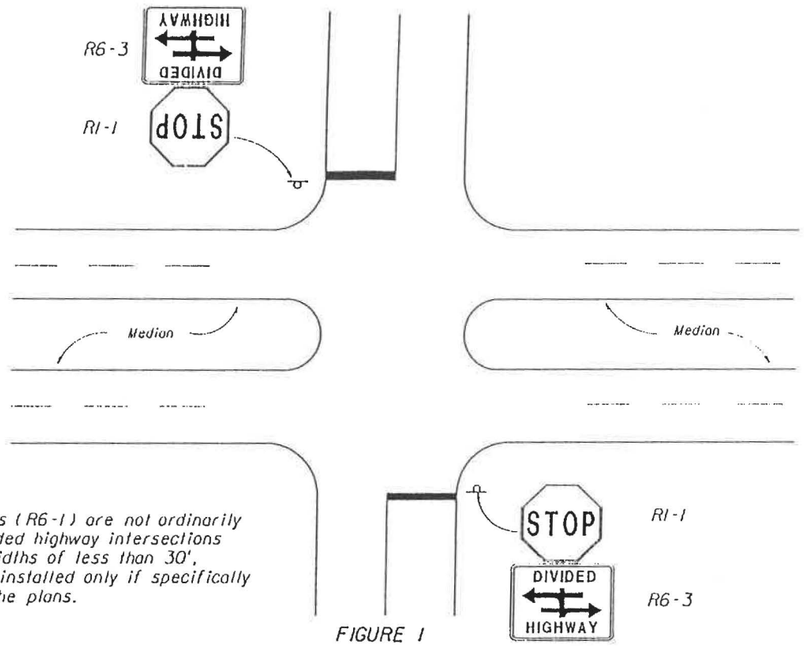
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC DESIGN

TYPICAL PLACEMENT OF REFLECTIVE PAVEMENT MARKERS

	Names	Dates
Designed By		10-87
Drawn By		
Checked By		10-87

Approved By
State Traffic Plans Engineer

Revision	Sheet No.	Index No.
00	1 of 2	17352



ONE WAY signs (R6-1) are not ordinarily needed at divided highway intersections with median widths of less than 30', and should be installed only if specifically called for in the plans.

FIGURE 1

MEDIAN WIDTHS UNDER 30'

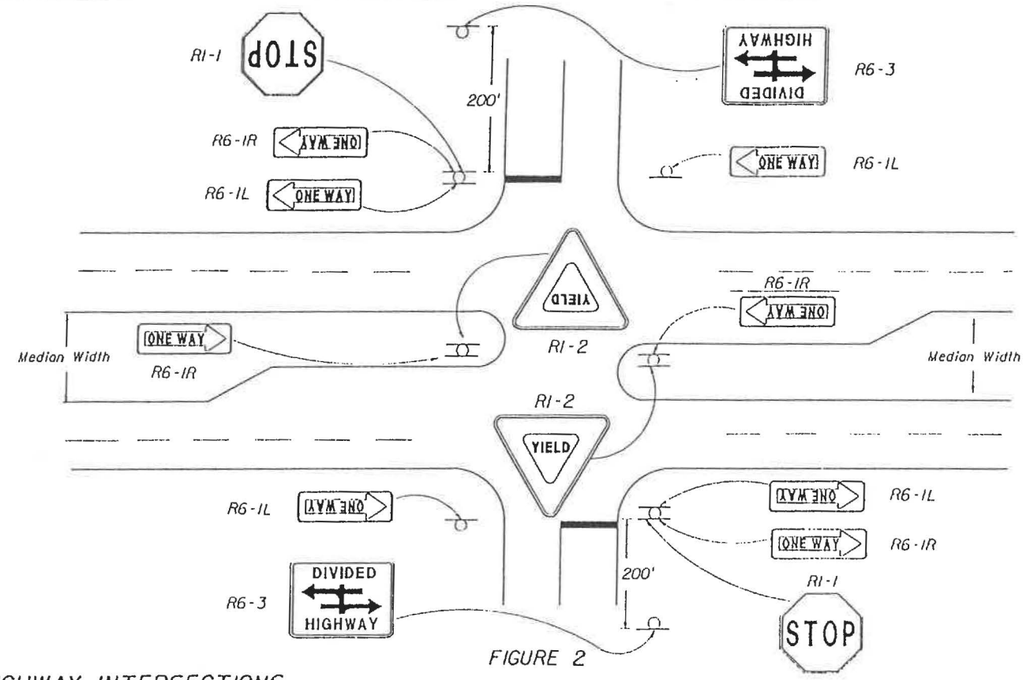
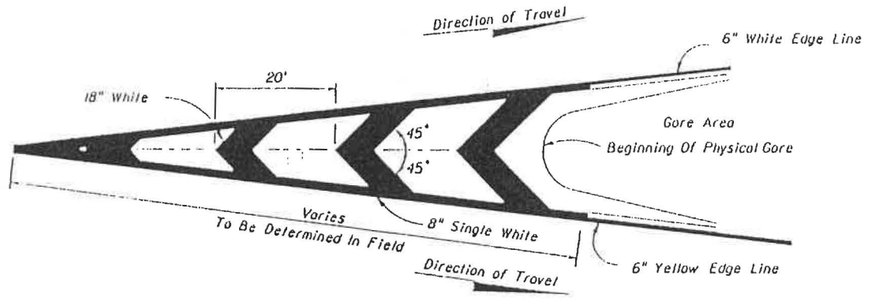


FIGURE 2

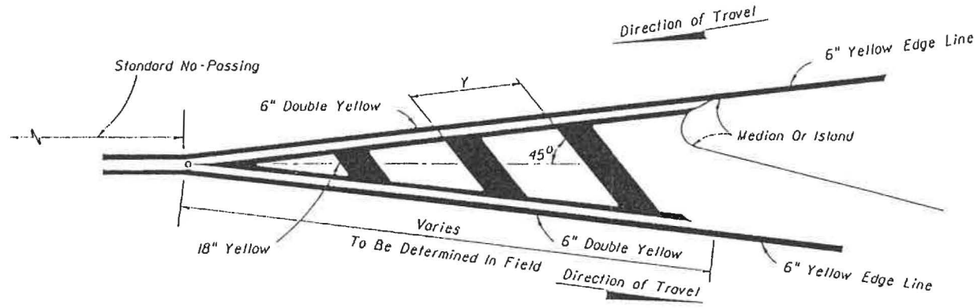
MEDIAN WIDTHS 30' AND GREATER

ONE-WAY SIGNS ON DIVIDED HIGHWAY INTERSECTIONS



PAVEMENT MARKINGS FOR TRAFFIC CHANNELIZATION AT GORE

(TRAFFIC FLOWS IN SAME DIRECTION)



PAVEMENT MARKING FOR TRAFFIC SEPARATION

(TRAFFIC FLOWS IN OPPOSING DIRECTIONS)

POSTED (DAY) SPEED LIMIT M.P.H.	"Y" ft
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC DESIGN

SPECIAL MARKING AREAS

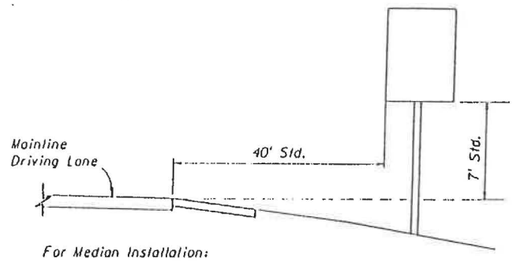
	Names	Dates
Designed By		8-78
Drawn By		
Checked By		8-78

Approved By: Clark A. Scott
State Traffic Plans Engineer

Revision	Sheet No	Index No
00	4 of 9	17346

CASE I

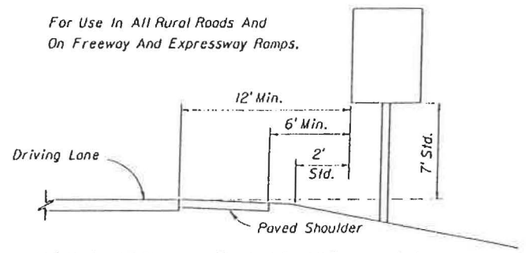
For use on Freeway and Expressway systems for signs on mainline.



For Median Installation:
If Median Width Does Not Allow Std. Offset From Both Roadways, Center Sign In Median.

CASE II

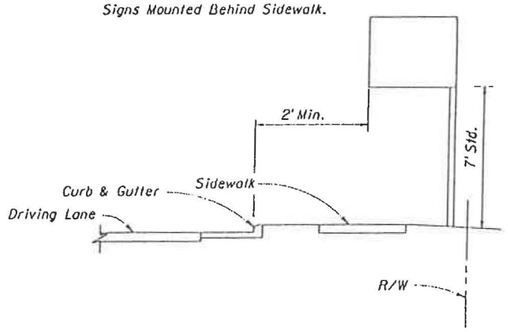
For Use In All Rural Roads And On Freeway And Expressway Ramps.



14' Horizontal Clearance Standard On All Freeway And Expressway Ramps
For Sections Without Paved Shoulder The 6' Min Does Not Apply.

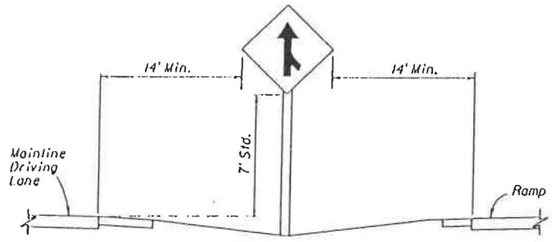
CASE III

For Use On All Roads With Signs Mounted Behind Sidewalk.



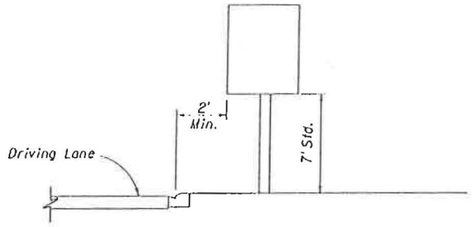
CASE IV (Merge Sign)

For Use On All Rural, Freeway And Expressway Systems.



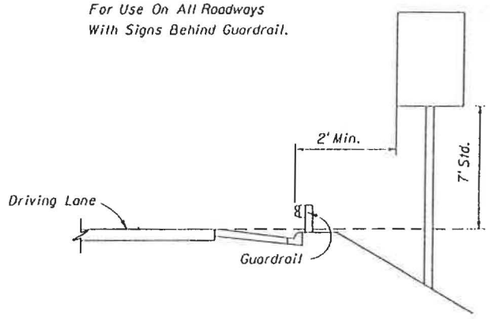
CASE V

For Use In Business Or Residential Areas Only.



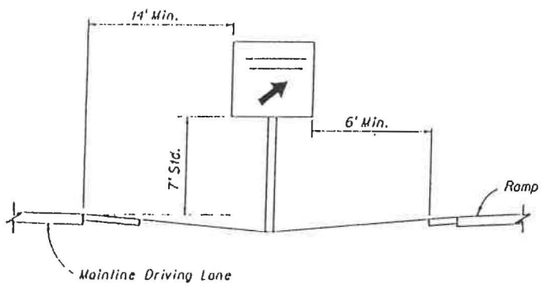
CASE VI

For Use On All Roadways With Signs Behind Guardrail.



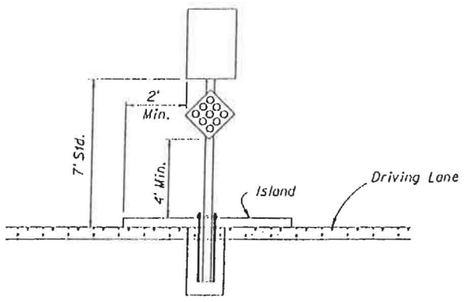
CASE VII (REST AREA & EXIT GORE SIGNS)

For Use On All Freeway And Expressway Systems



CASE VIII

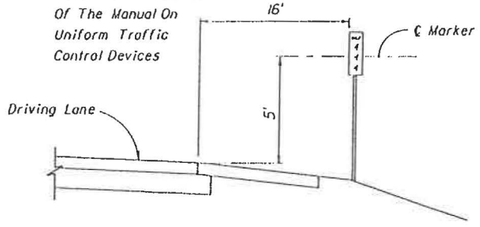
Sign On Island



Center Sign Column On Island

CASE IX (MILE POST MARKER)

For More Information Refer To Part 2D-46 Of The Manual On Uniform Traffic Control Devices

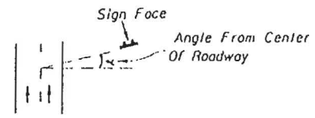


GENERAL NOTES:

1. The typical sections shown hereon serve as a guide for locating the traffic signs required under various roadside conditions. For size and details of sign construction and footing, refer to the appropriate standard index drawing for roadside sign.

2. It shall be the CONTRACTORS responsibility to verify the length of sign supports in the field prior to fabrication.

3. Roadside signs shall be installed at an angle of 1 to 4 degrees away from the traffic flow (see illustration). Shoulder mounted signs shall be rotated counterclockwise and median mounted signs rotated clockwise. Signs on curves shall be mounted as noted above from the perpendicular to the motorist lign of sight.



4. The setback for stop and yield signs may be reduced to 3' minimum from the driving lane if required for visibility in business or residential sections with no curb and speeds of 30 MPH or less.

5. The mounting heights are measured from the bottom of the sign panel to a horizontal line extended from the edge of the driving lane. If the standard heights cannot be met, the minimum heights are as follows:

Expressway & Freeway Systems	7'
Other Roadway Systems	
Rural	5'
Urban (including residential with parking and /or pedestrian activity)	7'

If a secondary sign is mounted below the major sign, the major sign shall be at least 8' and the secondary sign at least 5' for expressway & freeway systems and for other systems the height to the secondary sign shall be at least 4' for rural and 6' for urban sections.

6. Sign supports should never be placed in the bottom of ditches where erosion might affect the proper operation of the breakaway feature.

7. Sign supports shall not reduce the accessible route /continuous passage to less than 3' min. clear width as required by the Americans with Disabilities Act (ADA) Accessibility Guidelines.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC DESIGN

TYPICAL SECTIONS FOR PLACEMENT OF SINGLE & MULTI-COLUMN SIGNS

	Names	Dates
Designed By		1-03
Drawn By		
Checked By		

Approved By: Charles A. Scott, State Traffic Plans Engineer

Revision	Sheet No	Index No
00	1 of 1	17302