



Speed and Cut Through Traffic Analysis Oak Forest Drive The Villages District 3

Sumter County, Florida

Final Report

June 2008

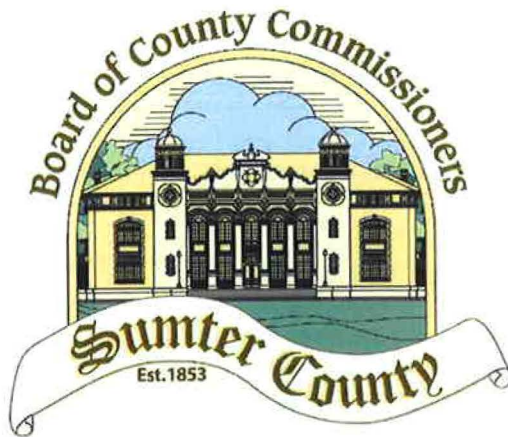
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PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Wade Trim, Inc., and that I have supervised the preparation and approve the findings, opinions, conclusions, and technical advice hereby reported for:

PROJECT: OAK FOREST DRIVE, THE VILLAGES DISTRICT 3

REPORT: SPEED AND CUT THROUGH TRAFFIC ANALYSIS

DATE: JUNE 17, 2008

CLIENT: SUMTER COUNTY

This report includes an abstract with a recommendations section, introduction, , existing conditions, traffic analysis, and speed analysis. I acknowledge that these procedures and references used to develop the results contained in this report are standards to the professional practice of transportation engineering and planning as applied through professional judgment and experience.

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DATE: June 17, 2008

DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of The Villages District 3, Sumter County, or the Florida Department of Transportation.

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INTRODUCTION

Residents of The Villages District 3 in Sumter County that reside along Oak Forest Drive between Talley Ridge Drive and Southern Trace are concerned with the amount of the traffic that travels this section of Oak Forest Drive. The perception is that much of the traffic currently traveling along this section of Oak Forest Drive is cut through traffic that should be Buena Vista Boulevard which parallels Oak Forest Drive approximate 250 feet to the west. Additionally, the residents are concerned with the speeds of the vehicles traveling Oak Forest Drive.

Sumter County has been working with The Villages to address the concerns of the residents. During several meetings, several potential solutions have been developed and the pro and cons of each have been identified. In order to determine the best solution, Sumter County officials decided that an engineering study needed to be completed to identify the specific issues so that a solution that best addresses the issues could be developed and implemented. A vicinity map of the area under study is shown in Figure 1.



Figure 1 Vicinity Map

Purpose and Scope

The purpose of this report is to document the traffic patterns and speeds along Oak Forest Drive between Talley Ridge Drive and Southern Trace in The Villages in the northeastern corner of Sumter County.

The analysis examines the following conditions:

- Existing Conditions: 2008 traffic volumes and speeds.
- Cut Through Traffic Conditions: the amount of traffic on Oak Forest Drive that is traveling along the entire length between Talley Ridge Drive and Southern Trace.
- Mitigation Measures: a discussion of the actual issues and the potential solutions.

A comparison of the issues and the impacts of the potential solutions will determine the best course of action to mitigate the traffic concerns.

METHODOLOGY

The analysis involved the collection and review of geometric, traffic control, traffic volume, and traffic speed data for Oak Forest Drive and intersections surrounding the study area. This data served as basis for the analyses that were conducted to determine the traffic issues and the potential mitigation measures. The information collected, and the evaluation procedures used to conduct the analyses, are described in this section.

Data Collection

Data collection included a field review of the location, machine collection of directional traffic volumes and speeds, and a field survey of traffic to determine the amount of traffic cutting through on Oak Forest Drive. The Machine Counts were collect on Monday, Tuesday and Wednesday in the month of June at the following locations.

- Oak Forest Drive approximately 600 feet north of Southern Trace
- Oak Forest Drive approximately 400 feet south of Talley Ridge Drive

Additionally, a traffic survey was taken at each end of Oak Forest Drive. The survey was completed utilizing digital cameras at each survey station to record the traffic utilizing Oak Forest Drive. The photos taken at each station were compared to identify traffic that was traveling along Oak Forest Drive between Talley Ridge Drive and Southern Trace. The digital photos were utilized to collect this data due to the high number of golf carts traveling along the project corridor. The traffic surveys were completed on Thursday, June 5, 2008 at the following locations:

- Oak Forest Drive just north of Southern Trace
- Oak Forest Drive just south of Talley Ridge

Analysis Procedures

The traffic and speed analysis included methodology for trip traffic data collection and a modified license plate survey based on the Institute of Transportation Engineers (ITE) standard practices. The number of vehicles identified as cutting through on Oak Forest Drive between Talley Ridge Drive and Southern Trace were compared to the total number of vehicles using the same section of Oak Forest Drive during the same time period. This yielded a percentage of traffic that is using Oak Forest Drive as a through street.

ANALYSIS

The cut through traffic and speed study included a review of the study area, traffic data collection, a cut through traffic survey, a determination of the season traffic adjustment factor, determination of the percentage of cut through traffic, and evaluation of the potential mitigation measures. The traffic data was adjusted for the peak season via a seasonal traffic adjustment factor.

Existing Conditions

Road System

Buena Vista Boulevard is a four lane divided roadway that functions as an arterial roadway within the study area. The posted speed limit along Buena Vista Boulevard is 35 mph. A two way golf cart path parallels Buena Vista Boulevard on the west side of the roadway.

Oak Forest Drive is a two lane residential collector and access street within the study area. At the intersections with Talley Ridge Drive and Southern Trace, Oak Forest Drive is stop controlled. The posted speed limit on Oak Forest Drive is 25 mph.

Talley Ridge Drive is a residential collector street with in the study area. At the intersection with Buena Vista Boulevard, Talley Ridge Drive is stop controlled. The posted speed limit along Talley Ridge Drive is 25 mph.

Southern Trace is a residential collector street with in the study area. At the intersection with Buena Vista Boulevard, Oak Forest Drive is under traffic signal control. The posted speed limit along Talley Ridge Drive is 25 mph.

Traffic Volumes

The traffic study began with an examination of the weekday traffic volumes and speed information. The peak hour of traffic flow was found to occur between 1 PM and 2 PM. The June, 2008 twenty-four hour, two-way traffic volumes (passenger car equivalents which include golf carts) in the site vicinity are as follows:

Oak Forest Drive just south of Talley Ridge		
Northbound		1,278 vehicles per day
Southbound		1,362 vehicles per day
Total		2,641 vehicles per day
Oak Forest Drive just north of Southern Trace		
Northbound		1,435 vehicles per day
Southbound		1,321 vehicles per day
Total		2,756 vehicles per day
Buena Vista Boulevard between Talley Ridge Drive and Southern Trace		
Northbound		6,593 vehicles per day
Southbound		7,070 vehicles per day
Total		13,663 vehicles per day

Traffic counts along Buena Vista Boulevard take in January of 2008 were obtained from Sumter County. This data was used along with the June 2008 traffic volumes to develop a seasonal adjustment factor. The January 2008 traffic volumes for Buena Vista Boulevard as shown below:

Buena Vista Boulevard Northbound	8,644 vehicles per day
Buena Vista Boulevard Southbound	8,714 vehicles per day
Buena Vista Boulevard Total	17,358 vehicles per day

Speed Analysis

The machine traffic counters we set on Oak Forest Drive in such a manner that speed data would be collected. The speed data was collected from 11:30 AM on Sunday, June 1, 2008 to 1:00 PM on Thursday, June 5, 2008. The software (Trax Pro) used to download and view the traffic data provided summarized speed data. The speed data for Oak Forest Drive is listed tables below.

Table 1 Speed Data on Oak Forest Drive Just South of Talley Ridge Drive

Speed Characteristic	Northbound	Southbound
15 th Percentile	16 mph	12 mph
50 th Percentile	21 mph	18 mph
85 th Percentile	25 mph	22 mph
95 th Percentile	28 mph	25 mph
Mean Speed (Average)	20 mph	17 mph
Total Vehicles in Sample	5408	5162

Table 2 Speed Data on Oak Forest Drive Just North of Southern Trace

Speed Characteristic	Northbound	Southbound
15 th Percentile	16 mph	17 mph
50 th Percentile	20 mph	22 mph
85 th Percentile	25 mph	27 mph
95 th Percentile	28 mph	30 mph
Mean Speed (Average)	20 mph	22 mph
Total Vehicles in Sample	5799	5389

When conducting speed studies, the 85th percentile speed is generally considered the speed at which the speed limit should be set. The 85th percentile speed is the speed at which 85% of the traffic is traveling at or below. Based on the speed data presented above, there is not a speeding issue along Oak Forest Boulevard.

Seasonal Adjustments

The traffic volumes collected in June of 2008 do not reflect the peak season traffic volumes in The Villages. The Villages is a community that has a significant seasonal population and as such the traffic volumes are significantly higher during the peak season. The peak season is

typically the winter months when a large population from the northern areas is in Florida to enjoy the much milder winter climate. To determine the peak season traffic volumes on Oak Forest Drive, a seasonal adjustment factor was calculated from the January and June 2008 traffic volumes on Buena Vista Boulevard. The seasonal adjustment factor is calculated below.

$$\begin{aligned} \text{Seasonal Adjustment Factor} &= \text{January Traffic Volume} / \text{June Traffic Volume} \\ &= 17,358/13,663 = 1.27 \end{aligned}$$

This seasonal factor was applied to the June 2008 traffic volumes on Oak Forest Boulevard to obtain the 2008 peak season traffic volumes on Oak Forest Boulevard. The estimated peak season traffic volumes are shown in the table below:

Table 3 Seasonally Adjusted Estimated Traffic Volumes on Oak Forest Drive

Location	Northbound	Southbound	Total
South of Talley Ridge	1,623	1,730	3,353
North of Southern Trace	1,822	1,678	3,500

Cut-Through Traffic Analysis

In order to determine the amount of cut-through traffic on Oak Forest Drive between Talley Ridge Drive and Southern Trace, a modified license plate survey was conducted. The license plate survey had to be modified due to the large number of golf cart traffic that is presently using Oak Forest Drive. To record the golf cart traffic as well as the automobile traffic, digital photos were taken of each vehicle traveling along Oak Forest Drive. A survey station was set up at both ends of the study area along Oak Forest Drive. Each person utilized a digital camera to photograph all vehicles traveling along Oak Forest Drive between Talley Ridge Drive and Southern Trace.

Survey Data

The modified license plate survey was conducted on Thursday, June 5, 2008 from 11:30 AM to 1:00 PM. During the study period, there were 378 photos taken at the north survey station and 366 photos taken at the south survey station which is a sufficiently large sample size to determine the amount of cut-through traffic on Oak Forest Drive. Of the 378 vehicles photographed at the north survey station, 243 or 64% were golf carts. Of the 366 vehicles photographed at the south survey station, 234 or 64% were golf carts.

Survey Analysis

The photographs taken at the north survey station were compared to the photographs taken at the south survey station to identify vehicles that traveled through both survey stations. The vehicles that traveled through both survey stations are the vehicles that are using Oak Forest Boulevard as a cut-through route. A sample of the comparison photos are shown in Figures 2 through 5.

The results of the photo comparison indicated that 114 vehicles northbound and 114 vehicles southbound during the study period were utilizing Oak Forest Boulevard as a cut-through route which equates to approximately 60% of the traffic on Oak Forest Boulevard is cut-through traffic.



Figure 2 Northbound at South Survey Station



Figure 3 Northbound at North Survey Station



Figure 4 Southbound at North Survey Station



Figure 5 Southbound at South Survey Station

DISCUSSION

Oak Forest Drive carries approximately 2700 vehicles per day during the off peak season and approximately 3400 vehicles per day during the peak season. This volume of traffic is at the upper level of acceptable traffic volumes on a residential collector street. Of more concern is that 60% of the traffic on Oak Forest Drive is cut-through traffic that could utilize other routes including Buena Vista Boulevard and the golf cart path that runs along the west side of Buena Vista Boulevard. This percentage is extremely high and some sort of mitigation measure should be implemented to discourage cut through traffic.

The speed study that was conducted as part of this analysis indicates that there is not a speeding issue along Oak Forest Drive. The 85th percentile speeds are at the posted speed limit with one exception and that 85th percentile speed is only 2 mph over the posted speed limit. Additionally, only 1.2% of the vehicles were traveling between 5 mph and 10 mph over the speed limit and only 0.1% of the vehicles were traveling more than 10 mph above the speed limit.

During preceding months prior to this study, Sumter County officials and residents have been working together to come up with a solution to address the residents concerns of speeds and cut-through traffic. Since cut-through traffic is the primary concern, the subsequent discussion will only focus on potential mitigation measures that will address this issue. After reviewing the potential mitigation measures, we have identified the following as potential measures that will address the cut-through traffic issue.

Reduce existing speed limit from 25 mph to 15 mph. This potential solution will have little impact to reducing through traffic. Additionally, reducing the speed limit will create a speeding problem on a street that currently does not have a speeding problem.

Construct Roadway Closure on Oak Forest Drive at Melville Loop. This mitigation measure will completely eliminate the cut-through traffic along Oak Forest Drive. However, the residents that live along Oak Forest Drive would have to divert around the closure as well and there would not be enough space to construct areas to turn around at the closures. Additionally, this could potentially impact emergency response times to the residents that access from Oak Forest Drive.

Install "No Through Traffic" Signs. This mitigation measure would probably reduce the cut-through traffic slightly as some motorists would obey the signing. In order to gain a significant reduction in cut-through, selective enforcement would be necessary and trying to determine which traffic is cut-through versus local traffic would be very difficult for the law enforcement officers.

One Way Oak Forest Drive. This mitigation measure would reduce the cut-through traffic by half. However, the residents would experience increased travel distances either when leaving the neighborhood or re-entering the neighborhood. The direction of one way travel does not matter since the amount of cut-through traffic is equal in both directions.

Placement of "Multi-way Stop" Signage. This solution will probably have very little impact on reducing the cut-through traffic on Oak Forest Drive. There is a high probability that the intersections would not meet the Multi-way stop controller warrants and the intersections would, therefore, not be in compliance with the Manual of Uniform Traffic Control Devices. Additionally,

installation of the multi-way stop control locations could promote speeding between the intersections.

Close all Dedicated Roadways in the Vicinity of Oak Forest Drive between Southern Trace and Talley Ridge Drive. This option will remove all of the cut-through traffic from Oak Forest Drive. However, there will be a large expense to the residents for the installation of gates and the maintenance of the roadways.

There is a golf cart path that parallels Oak Forest Drive on the west side of Buena Vista Boulevard. This golf cart path is approximately 200 feet east of Oak Forest Drive. Discussions with some of the residents indicate that reason the golf cart path gets very little use is that it is too narrow and very rough. Consideration should be given to improving this golf cart path as a means of removing some of the cut-through traffic from Oak Forest Drive. Since 64% of the traffic is golf cart traffic, there is a good chance that improving the golf cart path will reduce some of the cut-through traffic on Oak Forest Boulevard. This solution could also be implemented with one of the other mitigation measures such as installing the "No Through Traffic" signs or making Oak Forest Boulevard one-way.

Based on the potential mitigation measures and the discussions above, our recommendation is to take a tiered approach to resolve the cut-through traffic issue. The tiered approach would be to try the less expensive and invasive solutions first moving toward the more expensive and invasive solutions if the lesser solutions did not work. The order to try would be as follows.

1. Install "No Through Traffic" Signs along with signs directing traffic to Buena Vista Boulevard. This is an inexpensive solution that can be implemented immediately. This mitigation measure will probably remove some of the through traffic from Oak Forest Boulevard as some drivers will obey the signing. If the desired result is not achieved, then proceed to option 2.
2. One Way Oak Forest Boulevard in either direction as preferred by the residents. Since the cut-through traffic is the same in both directions, making Oak Forest Drive one way in either direction will remove half of the cut through traffic. If the residents find they do not like this solution once it is implemented, then proceed to option 3.
3. Close Oak Forest Drive at Melville Loop just to the south of the northern intersection. This will divide Oak Forest in half while leaving a way around the closure, via Melville Loop, emergency vehicles. If the residents find they do not like this solution once it is implemented, then proceed to option 4.
4. Close all Dedicated Roadways in the Vicinity of Oak Forest Drive between Southern Trace and Talley Ridge Drive. This solution will remove all of the cut-through traffic from Oak Forest Boulevard, however, there will be a large expense put on the residents for installing the gates and maintaining the roadways.