

Preliminary Engineering Report

For

Rolling Acres Road

GMB Project # 06-212.08

Prepared by:

*GMB Engineers & Planners
2602 East Livingston Street
Orlando, FL 32803*

*With Environmental
Assessment Completed By:*

*Glatting Jackson Kercher Anglin
120 North Orange Avenue
Orlando, FL 32801*

September 2009

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION	1
1.1 Purpose	1
1.2 Project Description	1
2.0 PROJECT NEED	4
2.1 Need for Improvement	4
2.2 Capacity	4
3.0 EXISTING CONDITIONS	5
3.1 Existing Roadway Characteristics	
3.1.1 Functional Classification	5
3.1.2 Typical Sections	5
3.1.3 Pedestrian and Bicycle Facilities	5
3.1.4 Right-of-way and Easements	6
3.1.5 Horizontal Alignment	6
3.1.6 Vertical Alignment	6
3.1.7 Drainage	6
3.1.7.1 Basins	8
3.1.7.2 Structures	9
3.1.8 Geotechnical Data	9
3.1.9 Accident Data	9
3.1.10 Intersections and Signalization	12
3.1.11 Lighting	12
3.1.12 Utilities	12
3.1.13 Pavement Conditions	13

4.0 TRAFFIC	14
4.1 Existing Conditions	14
4.1.1 Traffic Counts	14
4.1.2 Roadway Characteristics	15
4.1.3 Base Year Traffic Volumes	15
4.1.4 Existing Level of Service	19
4.1.5 Existing Intersection Conditions	19
4.1.6 Environmental Considerations	22
4.1.7 Multi-modal Considerations	22
4.2 Development of Future Traffic Conditions	22
4.2.1 Model Evaluation	22
4.2.2 Growth Rate Information	23
4.2.3 Design Year Forecast	25
4.3 Future Conditions – No Build	27
4.3.1 Roadway Analysis	27
4.3.2 Intersection Analysis	28
5.0 PROPOSED IMPROVEMENT AND DESIGN CRITERIA	30
5.1 Roadway Improvements	30
5.1.2 Four Lane Section	30
5.1.2 Access Management	30
5.1.3 Corridor Analysis	31
5.2 Typical Sections	32
5.2.1 Typical Section Alternatives	32
5.3 Design Controls	36
5.4 Florida Intrastate Highway System	36
5.5 Geometric Design Criteria	36
5.6 Drainage Design Criteria	39

6.0 FUTURE ANALYSIS – WITH PROPOSED CHANGES	41
6.1 Future Analysis – With Proposed Changes	41
6.1.1 Roadway Analysis	41
6.1.2 Intersection Analysis – YR 2030	41
7.0 ALTERNATIVE ANALYSIS	44
7.1 School Alternative Access Analysis	44
8.0 PRELIMINARY DESIGN ANALYSIS	45
8.1 Alignment and Right-of-Way Needs	45
8.2 Relocations	45
8.3 Construction Costs	45
8.4 Recycling Salvage Materials	46
8.5 User Benefits	46
8.6 Pedestrian Facilities	46
8.7 Safety	46
8.8 Environmental Impacts	46
8.9 Public Notification and Involvement	47

LIST OF FIGURES, EXHIBITS AND TABLES

FIGURES		PAGE
1	Site Location Map	3
2	Right of Way Map	7
3	Existing Geometry	17
4	Existing PM Peak Hour Traffic Volumes	18
5	Existing PM Peak Hour Intersection LOS	21
6	Forecasted Traffic Volume Projection	26
7	Future “no-build” PM Peak Hour Intersection LOS	29
8	Typical Section Alternative A	34
9	Typical Section Alternative B	35
10	Future w/proposed changes PM Peak Hour Intersection LOS	43

TABLES

3-1	High Crash Locations – Rolling Acres Road Intersections	10
3-2	Crash Types for High Crash Locations	11
4-1	Count Locations	15
4-2	YR 2009 Existing Traffic Counts	15
4-3	YR 2009 Roadway Capacity Analysis	19
4-4	Growth Rate Derivation	24
4-5	Forecasted Future Volume Projections	25
4-6	YR 2030 Roadway Capacity Analysis	28
5-1	Roadway Design Criteria	37
5-2	Stormwater Design Criteria	39
6-1	YR 2030 Roadway Capacity Analysis	41

APPENDIX

A	Collision Summary Sheets
B	Traffic Count Data
C	HCS Summary Sheets
D	Central Florida Regional Planning Model (CFRPMV410)
E	Growth Rate Information
F	Roadway Plans
G	Cost Estimate
H	Town of Lady Lake Land Development Regulations
I	US 27/441 Intersection Alternative Analysis
J	Environmental Analysis
K	Public Notification Notice
L	Citizen Comments/Hand Outs

1.0 INTRODUCTION

This Preliminary Engineering Report has been prepared following the guidelines established with the Town of Lady Lake, Lake County, and the Lake-Sumter Metropolitan Planning Organization. The scope of work was developed to comply with the general guidelines outlined in the Florida Department of Transportation's (FDOT) Project Development and Environment (PD&E) Manual.

1.1 PURPOSE

The purpose of this report is to evaluate the corridor needs and document the preliminary design options associated with the Rolling Acres Road. Rolling Acres Road is located in the Town of Lady Lake, Florida. The portion of the roadway being analyzed extends from 1,000 feet north of US 27/441 to 300 feet south of CR 466. The project site is generally depicted graphically in Figure 1. The report presents the evaluation necessary to determine the project need, document existing conditions within the study area, describe the evaluation of project improvements alternatives, and recommend a preferred design concept.

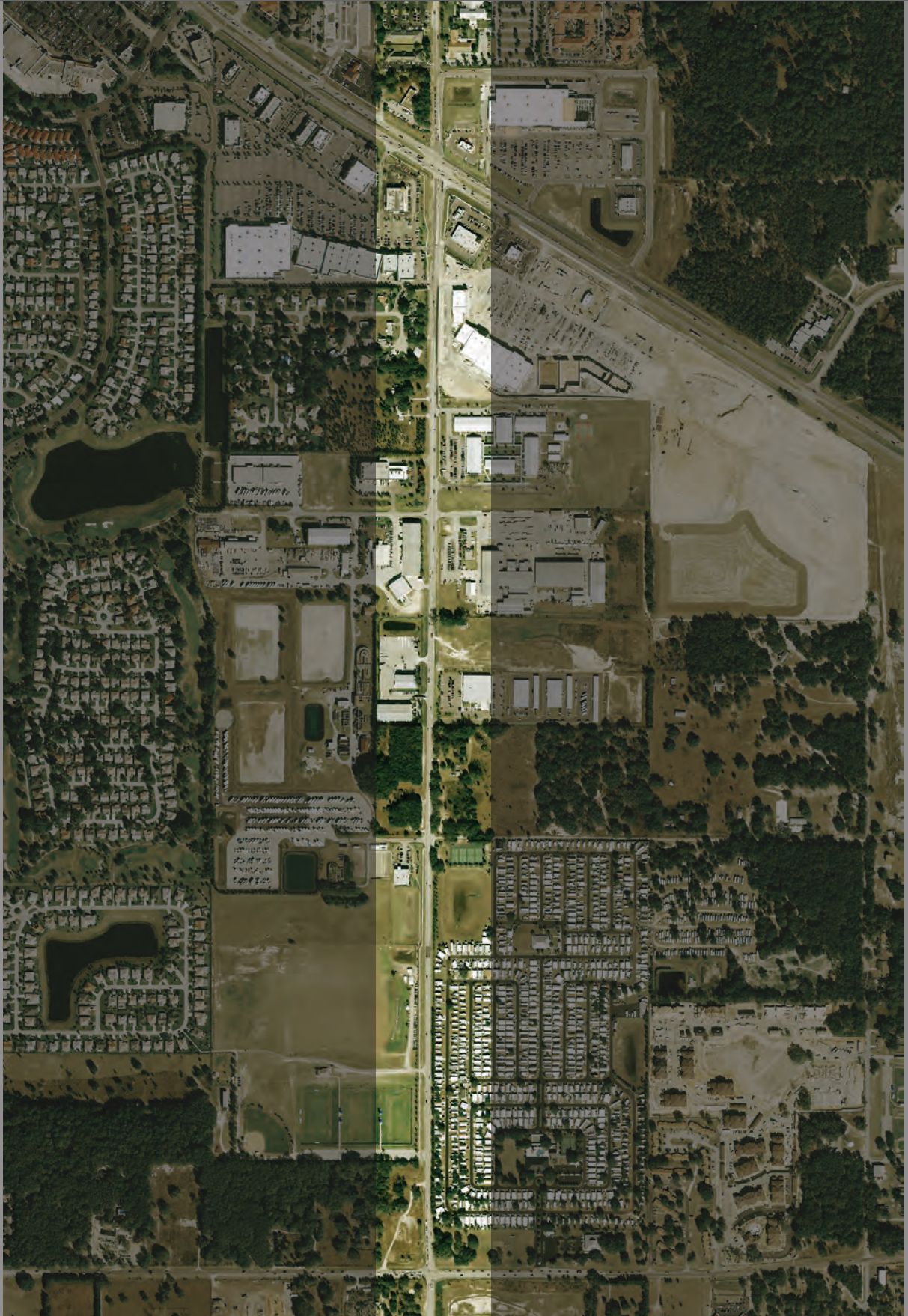
1.2 PROJECT DESCRIPTION

This PD&E Study is a comprehensive evaluation of the transportation needs of Rolling Acres Road from US 27/441 to CR 466 in the Town of Lady Lake, Florida. The length of the analyzed segment is approximately 1.26 miles.

Rolling Acres Road has a north-south orientation. The current configuration of the roadway is a two-lane roadway with no median. Left turn lanes exist at the intersections of US 27/441, Duck Lane Road, Oak Street, CR 466, and the school entrances. The roadway between US 27/441 and CR 466 currently operates under free-flow conditions as there are no traffic signals within the study corridor. However, along the roadway there is an elementary school, a shopping center on the north end, sports fields, several residential developments, and office/warehouse space. Each of these active uses produce significant turning movements at various times of the day.

These movements do add to the delay experience in the corridor. In addition to the existing developments near the project corridor the area also has a potential for additional growth in development which would generate more traffic along the corridor.

DRAFT



GMB Engineers & Planners, Inc.
2602 East Livingston Street
Orlando, Florida 32803

Rolling Acres Road Preliminary Engineering Study

Figure 1
Site Location Map

2.0 PROJECT NEED

Rolling Acres Road is classified as a major city/county roadway by the Town of Lady Lake and Lake County. The road provides a local connection between CR 466 and US 27/441. The roadway also serves as the primary connection from the elementary school and the local businesses to the surrounding residential areas.

2.1 NEED FOR IMPROVEMENT

Rolling Acres Road provides an important connection between CR 466 and US 27/441. The road also has the potential to alleviate congestion at the intersection of US 27/441 and CR 466 by providing an alternate parallel route to US 27/441. Rolling Acres Road is the primary and only access point to Lady Lake Elementary School. To the south, CR 466 is currently being widened between the Sumter County Line and US 27/441 from two-lanes to four lanes.

2.2 CAPACITY

The expected transportation demand for Rolling Acres Road is described in more detail as part of the traffic analysis in the existing conditions analysis. The analysis of the corridor includes a review of historical growth trends in traffic volumes within the study area. The study evaluations indicate that traffic volumes have shown a significant growth over the last several years due to area development. Traffic volumes have grown from an Annual Average Daily Traffic (AADT) of just under 6,000 in 2004 to an AADT of over 11,000 in the year 2008. The traffic volume increase represents an annual growth rate of approximately 19% per year. The growth rate is significantly higher than the area-wide growth rate percentages. This is intuitively a result of the increased development activity along the corridor combined with the widening of CR 466 in Sumter County.

3.0 EXISTING CONDITIONS

The following section provides a description on existing conditions for the segments of Rolling Acres Road within the study area. This section is divided into existing roadway characteristics.

3.1 EXISTING ROADWAY CHARACTERISTICS

3.1.1 Functional Classification

According to the American Association of State Highway and Transportation Officials (AASHTO) publications: *A Policy on Geometric Design of Highways and Streets*, functional classification is the grouping of streets and highways according to the character of service they intend to provide. The functional classification system is divided based on an urban or rural setting and has the general categories of principal arterials, minor arterials, collectors (subdivided into major and minor for rural settings), and local roads/streets. Rolling Acres Road has a roadway functional classification of collector.

3.1.2 Typical Sections

The existing Rolling Acres Road roadway consists of a two lane roadway having a posted speed limit of 35 mph. The existing typical section consists of two 12-ft. wide lanes, one in each direction. The roadway also has 12-ft. left turn lanes at the intersections of CR 466, Oak Street, Duck Lake Road, and at shopping center entrances near US 27/441. At the intersection with US 27/441 there are also dual 12-ft. left turn lanes in the northbound direction.

3.1.3 Pedestrian and Bicycle Facilities

Currently there are sidewalks but no bicycle lanes provided on Rolling Acres Road within the study area.

3.1.4 Right-of-way and Easements

The appropriate research was conducted in order to determine the right of way availability. Information was obtained from the available Lake County right-of-way (ROW) maps. Additional information regarding existing utility easements and property title information was obtained from the Town of Lady Lake. Through the information obtained it was determined that the right of way varies on each side of the roadway centerline. The ROW widths vary from 70 – 100 feet. The right of way widths, by segment along the roadway are shown on Figure 2.

3.1.5 Horizontal Alignment

The horizontal alignment of Rolling Acres Road is principally a straight corridor with little or no deflection of the center line. The alignment continues on tangent from CR 466 through US 27 to Griffin Road.

3.1.6 Vertical Alignment

The existing vertical alignment can be described as rolling. The existing grades range from 0.5% to 4.0% with the elevations ranging from approximately 74 feet to approximately 120 feet. The low point of the roadway is located south of Oak Street. An existing retention pond is located at the low point on the east and west side of the corridor. The high point is located at the elementary school north of Oak Street. Field observations were conducted to evaluate possible sight distance problems in the vicinity of the elementary school campus. There were no identified issues with inadequate visibility from either direction of the high point.

3.1.7 Drainage

The following is based on a comprehensive field review, GIS data obtained from St. John's River Water Management District (SJRWMD), and an analysis of the Lady Lake, Florida quadrangle maps published by the United States Department of Interior Geological Survey (USGS) and the United States Department of Agricultural Soils Conservation Service Soil Survey.



Rolling Acres Road Preliminary Engineering Report

Figure 2
 ROW Aerial Map

3.1.7.1 Basins

According to the Applicant's Handbook Management and Storage of Surface Waters, SJRWMD, the portion of Rolling Acres Road within the project limits lies within the Oklawaha River Basin. This basin is one of eight special basins identified by the SJRWMD, and as a result, additional stormwater management criteria have been established by the SJRWMD. The total offsite area that drains to the project limits is approximately 17 acres. According to the latest GIS data from SJRWMD, the elevations range from 74 feet to 120 feet.

In general, the subject area stormwater outfall is contained in five areas. The five drainage basin areas can be described as North of US 441, Elementary School, Rolling Acres Sports Complex, and CR 466. The following describes each drainage basin location and characteristic:

North of US 441 – The stormwater pond located on the east side of Rolling Acres Road just north of US 441. The high point of Rolling Acres Road is approximately 100 feet north of the intersection at US 441 and has a positive slope to the drainage pond. The roadway is open swale except for a small section of curb and gutter at the intersection.

US 441 – The stormwater pond located south of Rolling Acres Road. Drainage from Rolling Acres Road is delineated from the respective high points of the roadway north and south of US 441. The roadway is open swale except for the eastern side of Rolling Acres Road which consists of curb and gutter.

Elementary School – The existing stormwater pond is located behind the Rolling Acres Elementary School. Drainage is collected via curb and gutter and conveyed to the pond through underground piping. The high points of the

roadway north and south of the existing pond delineate the drainage basin area.

Rolling Acres Sports Complex – The existing stormwater pond is located on the west side of Rolling Acres Road within the sports complex property. Drainage is collected via curb and gutter and conveyed to the pond through underground piping. The high point of the roadway north of the pond and CR 466 pond delineate the drainage basin area.

CR 466 – The existing stormwater pond is located on the southeast corner of CR 466 and Rolling Acres Road. Stormwater is collected via curb and gutter on CR 466 and conveyed to the pond by underground piping. This stormwater is generated from the CR 466 corridor and surrounding area.

3.1.7.2 Structures

Existing stormwater runoff within the study limits is generally treated using standard Best Management Practices. Conveyance of stormwater is provided through an underground system that outfalls to a retention ponds offsite. Treatment is contained within the existing retention pond.

3.1.8 Geotechnical Data

The soils within the project area are classified as Candler Sand, Apopka Sand, and Kendrick Sand. In general, these soils are classified as Hydrologic Group A that are well drained with low runoff potential and high infiltration rates even when thoroughly wetted. A figure is provided illustrating the soils map from the latest GIS data from the SJRWMD.

3.1.9 Accident Data

Accident data for the Rolling Acres Road corridor was collected from Lake County information. Crashes for years 2004 - 2008 were analyzed. Data collected

included the nearest intersection (location), date, time, type of crash, number of injuries and/or fatalities, property damage, daylight and weather conditions, and primary contributing cause. The collision summary sheets are provided in Appendix “A”. Table 3-1 shows the number of crashes which occurred in the last five years.

Table 3-1					
High Crash Locations - Rolling Acres Road Intersections					
Location	2004	2005	2006	2007	2008
	Crashes	Crashes	Crashes	Crashes	Crashes
CR 466	8	11	13	9	11
Duck Lake Road	2	1	1	0	2
Oak Street	1	0	0	1	0
US 27	9	26	21	30	22
TOTALS	20	38	35	40	35

The number of accidents along Rolling Acres Road has been fairly consistent over the last four years. Aside from the first year of data (YR 2004) the number of crashes has ranged from 35 to 40 crashes per year. More than half of the crashes which occurred happened at or near the intersection of Rolling Acres Road and US 27441.

A review of the collision summary sheets indicates the following crash types for these intersections over the five-year period. Table 3-2, presents the types of crashes occurring at the different intersections.

Table 3-2
Crash Types For High Crash Locations
Rolling Acres Road Intersections

2004									
Location	Total	Angle	Left Turn	Rear End	Other	Bike/Ped	Night	Injury	Fatal
CR 466	8	4	2	0	2	0	0	6	0
Duck Lake Road	2	0	0	0	2	0	1	0	0
Oak Street	1	0	0	0	1	0	0	0	0
US 27	9	1	0	7	1	0	0	3	0
TOTALS	20	5	2	7	6	0	1	9	0
2005									
Location	Total	Angle	Left Turn	Rear End	Other	Bike/Ped	Night	Injury	Fatal
CR 466	11	2	0	7	2	0	0	2	0
Duck Lake Road	1	0	1	0	0	0	0	0	0
Oak Street	0	0	0	0	0	0	0	0	0
US 27	26	1	0	21	4	0	5	3	0
TOTALS	38	3	1	28	6	0	5	5	0
2006									
Location	Total	Angle	Left Turn	Rear End	Other	Bike/Ped	Night	Injury	Fatal
CR 466	13	1	1	9	2	0	1	2	0
Duck Lake Road	1	1	0	0	0	0	0	0	0
Oak Street	0	0	0	0	0	0	0	0	0
US 27	21	4	4	7	6	0	2	16	0
TOTALS	35	6	5	16	8	0	3	18	0
2007									
Location	Total	Angle	Left Turn	Rear End	Other	Bike/Ped	Night	Injury	Fatal
CR 466	9	1	0	5	3	0	1	2	0
Duck Lake Road	0	0	0	0	0	0	0	0	0
Oak Street	1	0	0	0	1	0	0	0	0
US 27	30	6	3	12	9	0	1	4	0
TOTALS	40	7	3	17	13	0	2	6	0
2008									
Location	Total	Angle	Left Turn	Rear End	Other	Bike/Ped	Night	Injury	Fatal
CR 466	11	1	0	7	3	0	0	9	0
Duck Lake Road	2	0	0	2	0	0	0	0	0
Oak Street	0	0	0	0	0	0	0	0	0
US 27	22	2	0	14	6	0	4	7	0
TOTALS	35	3	0	23	9	0	4	16	0

Based on Table 3-2, a large percentage of accidents occur at the intersection of Rolling Acres and US 27/441 and are rear end collisions. Over the five year stretch there were also no accidents with fatalities. Furthermore, based on the crash data the majority of accidents occur in the daytime.

3.1.10 Intersections and Signalization

Several public roads intersect Rolling Acres Road within the study area. These roadways primarily serve as access points to adjacent residential and commercial developments. These intersections include:

- CR 466 (signalized)
- Oak Street (stop controlled)
- Duck Lake Road (stop controlled)
- Pangola Drive (stop controlled)
- US 27 (signalized)

3.1.11 Lighting

There are no lighting systems within the study limits.

3.1.12 Utilities

The following is a summary of existing and proposed utilities within the corridor:

- Water – The Town of Lady Lake has the following:
 - 8” water main on the north side of CR 466 east of Rolling Acres Road
 - 8” water main on the east side of Rolling Acres Road from CR 466 to Oak Street
 - 12” water main on the north side of US 441
 - 12” water main on the west side of Rolling Acres Road north of US 441
 - 12” water main crossing Rolling Acres Road to the south side of Dunning Avenue
 - 8” water main serving the southwest corner of Rolling Acres Road and US 441

Proposed 12” water main from Oak Street to US 441

Proposed 12” water main on the south side of US 441 east from Rolling Acre Road

- Sewer – The Town of Lady Lake has the following:
 - 6” force main on the south side of Oak Street crossing Rolling Acres Road to WWTP
 - 6” force main on the north side of US 441 turning north on Rolling Acres Road
 - Proposed 10” gravity on south side of US 441 down to south of Oak Meadows residential
 - Proposed 16” force main on Rolling Acres Road from south of CR 466 to Oak Street running east
 - Reclaim Water – The Town of Lady Lake has the following:
 - Proposed 12” reclaim on Rolling Acres Road from south of CR 466 to US 441
 - Gas – TECO / People Gas has the following:
 - 6” line on the north side of CR 466
 - 2” line on the west side of Rolling Acres Road
 - Power – Seco Energy has the following:
 - Overhead domestic service line on west side of Rolling Acres Road
- All utilities are located within the roadway’s right-of-way. During design phase, locations will need to be verified for final plan submittal.

3.1.13 Pavement Conditions

Through visual observations it was determined that the pavement within the study area is in good condition. Construction of the existing roadway has occurred within the last ten years with no visual indications for resurfacing needed.

4.0 TRAFFIC

4.1 Existing Conditions

Within the study area, seven intersections were evaluated as part of this study. The following section provides a description of the development of future traffic volumes, required roadway and intersection geometry, and capacity evaluations. The following primary roadway and intersections were identified during project scope development for existing conditions analysis:

Roadway

- Rolling Acres Road (US 27/441 to CR 466)

Intersections

- CR 466 and Rolling Acres Road
- Oak Street and Rolling Acres Road
- School Entrance South and Rolling Acres Road
- School Entrance North and Rolling Acres Road
- Shopping Plaza South Entrance and Rolling Acres Road
- Shopping Plaza North Entrance and Rolling Acres Road
- US 27 and Rolling Acres Road

4.1.1 Traffic Counts

GMB Engineers & Planners assembled the necessary traffic counts for the roadway and intersections identified within the Study Area. Traffic counts were conducted on March 2009 for this analysis. Table 4-1 specifies the count location and type of count conducted. All turning movement counts (TMCs) are 8-hour counts from 7:00 – 9:00 am, 11:00 am – 1:00 PM, and 2:00 – 6:00 pm.

Table 4-1	
Count Locations	
Roadway Segment	Type
Rolling Acres Road at CR 466	TMC
Rolling Acres Road at Oak Street	TMC
Rolling Acres Road at Shopping Plaza	TMC
Rolling Acres Road at US 27	TMC
Rolling Acres Road at School Entrance	TMC
Rolling Acres Road south of School	24-Hour Volume
Rolling Acres Road north of School	24-Hour Volume

4.1.2 Roadway Characteristics

The segment of Rolling Acres Road which is part of the analysis is a two lane roadway that provides a north-south route between US 27 and CR 466 in Lake County. The road currently has no median but does provide left turn lanes at major intersections.

Existing geometry for the intersections being analyzed are provided on Figure 3.

4.1.3 Base Year Traffic Volumes

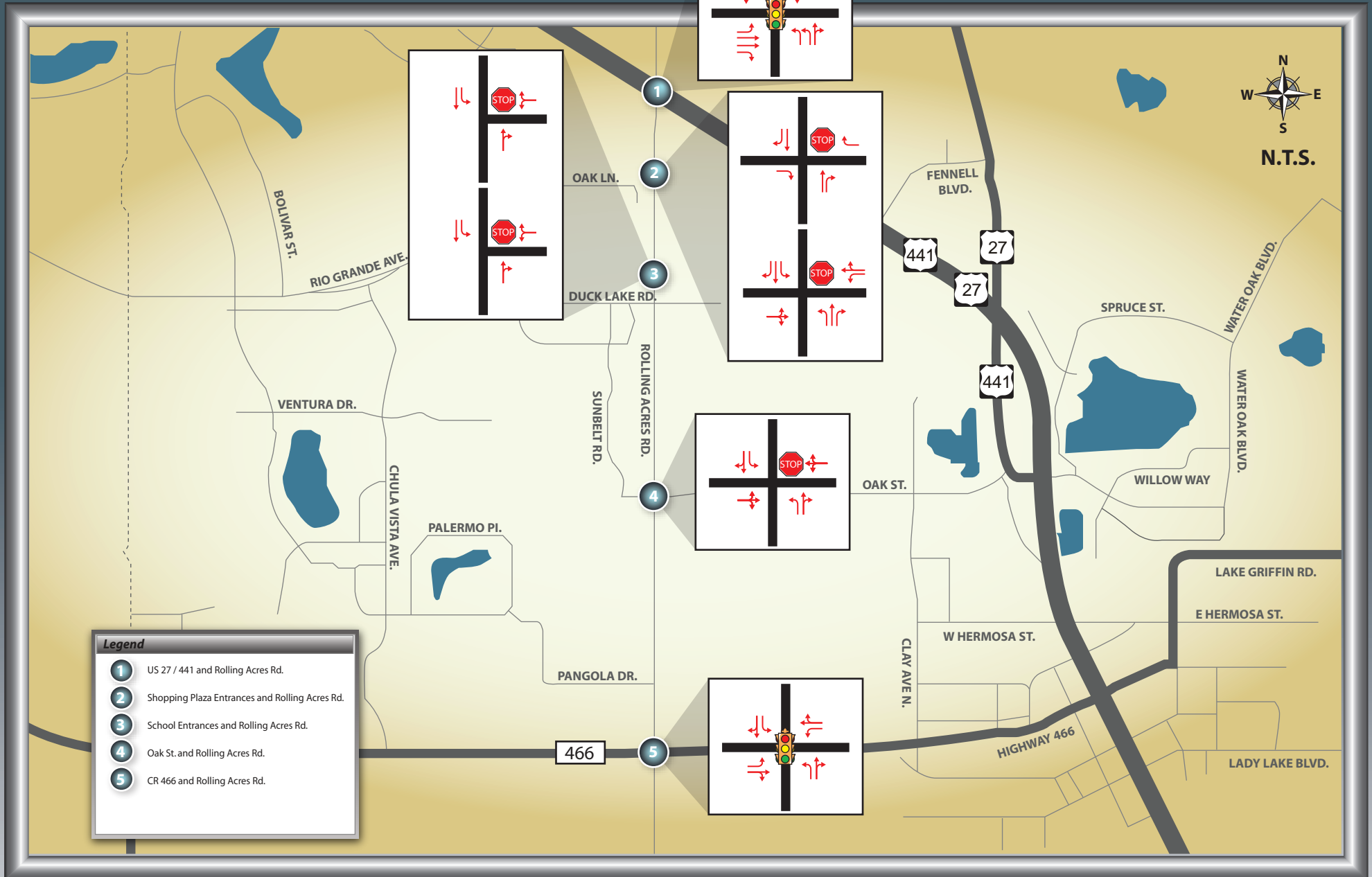
The traffic counts were seasonally and axle adjusted to provide Average Annual Daily Traffic (AADT). Table 4-2 provides the existing traffic volumes.

Table 4-2				
YR 2009 Existing Traffic Counts				
Roadway	2009 Count	Axle Factor	Seasonal Factor	2009 AADT
Rolling Acres Rd S. of school	12,707	0.92	0.91	10,638
Rolling Acres Rd N. of school	13,785	0.92	0.91	11,541
*Rolling Acres Rd S. of CR 466	-	-	-	1,928

* Source – Lake County CMS

Turning movement counts (TMCs) conducted in March 2009 for the analyzed intersections are provided in Figure 4. Traffic count data sheets are provided in Appendix “B”.

DRAFT



Legend

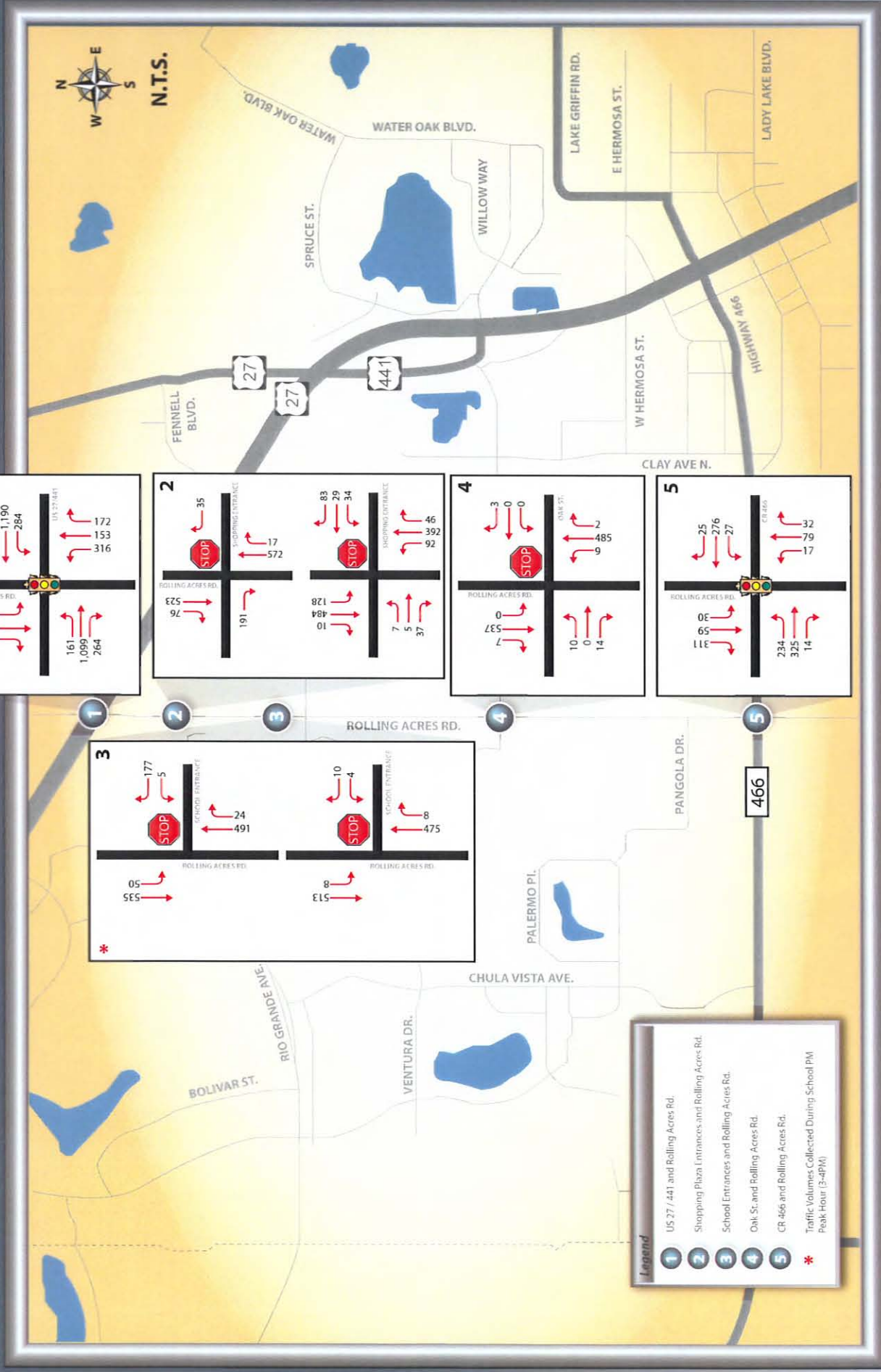
- 1 US 27 / 441 and Rolling Acres Rd.
- 2 Shopping Plaza Entrances and Rolling Acres Rd.
- 3 School Entrances and Rolling Acres Rd.
- 4 Oak St. and Rolling Acres Rd.
- 5 CR 466 and Rolling Acres Rd.



GMB Engineers & Planners, Inc.
 2602 East Livingston Street
 Orlando, Florida 32803

Rolling Acres Road Preliminary Engineering Study

Figure 3
 Existing Geometry



GMB Engineers & Planners, Inc.
 2602 East Livingston Street
 Orlando, Florida 32803

**Rolling Acres Road
 Preliminary Engineering Study**

Figure 4
 Existing PM Peak Hour Traffic Volumes



4.1.4 Existing Level of Service

A roadway link level of service analysis was performed for the existing traffic volumes using general capacities from the 2002 FDOT Quality / Level of Service Handbook, with 2007 updates and addendums. The table below provides this information and coincides with the Lake-Sumter Metropolitan Planning Organization (MPO) concurrency management system (CMS) maximum service volumes (MSV).

Roadway / Segment	No. of Lanes	L.O.S. Standard	MSV	Daily	LOS
Rolling Acres Road					
US 27/441 to Oak Street	2L	D	14,600	11,541	D
Oak Street to CR 466	2L	D	14,600	10,638	D
CR 466 to Lake Ella Road	2L	D	13,600	1,928	C

Currently the overall roadway is operating at LOS D within the study area.

4.1.5 Existing Intersection Conditions

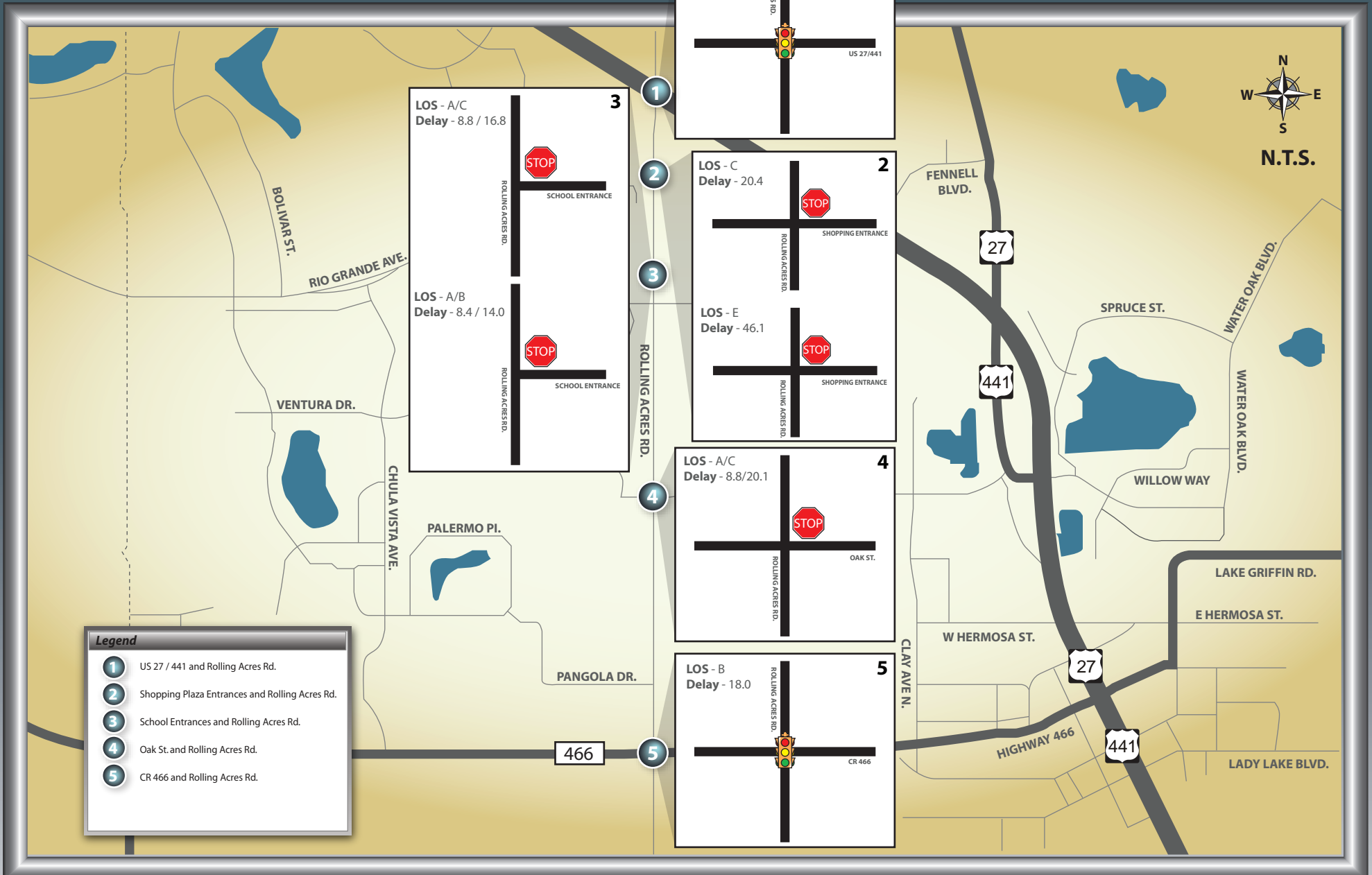
The existing intersections were evaluated using the methodology outlined in the Highway Capacity Manual and using the Highway Capacity Software (HCS+) version 5.2. The seasonal factor applied to these counts is 0.91. The HCS worksheets are included in Appendix “C”. Figure 5 provides the intersection levels of service for existing condition. The following table provides a summary of the existing intersection analysis which includes the intersection delay and LOS. As shown below, all study area intersections operate at an acceptable LOS for PM peak hour conditions.

YR 2009 PM Peak Hour

Intersection	Control	LOS	Delay (sec/veh)
US 27/441 and Rolling Acres Road	Signal	D	46.5
Shopping Plaza North and Rolling Acres Road	Stop	C	20.4

Shopping Plaza South and Rolling Acres Road	Stop	E	46.1
*School Entrance North and Rolling Acres Road	Stop	A/C	8.8/16.8
*School Entrance South and Rolling Acres Road	Stop	A/B	8.4/14.0
Oak Street and Rolling Acres Road	Stop	A/C	8.8/20.1
CR 466 and Rolling Acres Road	Signal	B	18.0

* Time period analyzed for school was 3 – 4 PM. The intersection also operates different than what is shown in the HCS analysis due to law enforcement official directing traffic therefore the intersection was not operating as an actual stop controlled intersection.



GMB Engineers & Planners, Inc.
 2602 East Livingston Street
 Orlando, Florida 32803

Rolling Acres Road Preliminary Engineering Study

Figure 5
 Existing PM Peak Hour Intersection LOS

4.1.6 Environmental Considerations

The environmental considerations for the existing analysis of the Rolling Acres corridor included soil surveys, existing land use characteristics, identification of hydrologic basins, and a review of the threatened and endangered species. The environmental considerations utilized data from the Florida Geographic Data Library (FGDL), the Florida Land Use, Cover, and Forms Classification System (GLUCFCS), and the Florida Fish and Wildlife Conservation Commission (FFWCC). Based on the existing environmental analysis, no special environmental considerations will be necessary to accommodate the widening of Rolling Acres Road. However, it should be noted that a relocation permit from the FWC must be obtained if it is determined that future development will impact gopher tortoises or their burrows. The complete environmental study completed by Glatting Jackson (GJKA) and supporting documentation can be found in the Appendix of this report.

4.1.7 Multi-modal Consideration

There are currently no mass transit options in the study area. Based on the Lake County Transit Development Plan there are also no programmed transit options within the study area.

4.2 Development of Future Traffic Conditions

This section of the report identifies the anticipated design year travel conditions in the study area roadways and intersections. As documented previously in this report, the analysis year is YR 2030.

4.2.1 Model Evaluation

The project has been evaluated for the year of 2030. An essential tool for identifying the short term and long term traffic forecasts is the Central Florida Regional Planning Model (CFRPM). The adopted year of the model is 2025. Traffic forecasts for the study year 2030 is based on the 2009 existing plus

committed roadway network with socioeconomic data grown from to the year 2030.

The model was also calibrated for the year 2009 with the latest developments in the area using the Lake County Property Appraiser. For the year 2030 model run two separate scenarios were analyzed, one with Rolling Acres as a two lane road and the next with Rolling Acres as a four lane road. The project traffic distribution patterns can be found in Appendix “D”.

4.2.2 Growth Rate Information

Historic growth trends from the past six years (2004 – 2009) were collected from a count station on Rolling Acres Road. These counts were taken from the 2008 Lake County Annual Traffic Counts. These counts reflect the growth in the area generated by adjacent developments. Due to the development of the large shopping center at the intersection of US 27/441 and Rolling Acres Road traffic volumes nearly doubled from the YR 2005 to the YR 2006. Because of the increase the long term growth rate for the roadway is understandably overstated at 9%. Growth Rate information can be found in Appendix “E”.

A second approach in calculating the growth rate was used due to the results produced by trends analyses. In the second approach YR 2009 Model volumes were compared to the YR 2030 Model volumes. The results from this evaluation are shown in Table 4-4. Based on the comparison it was determined that there would be an approximate growth rate of 2.37%. The 2.37% growth rate was deemed appropriate and was used throughout the report.

Table 4-4 - Growth Rate Derivation Table

DRAFT

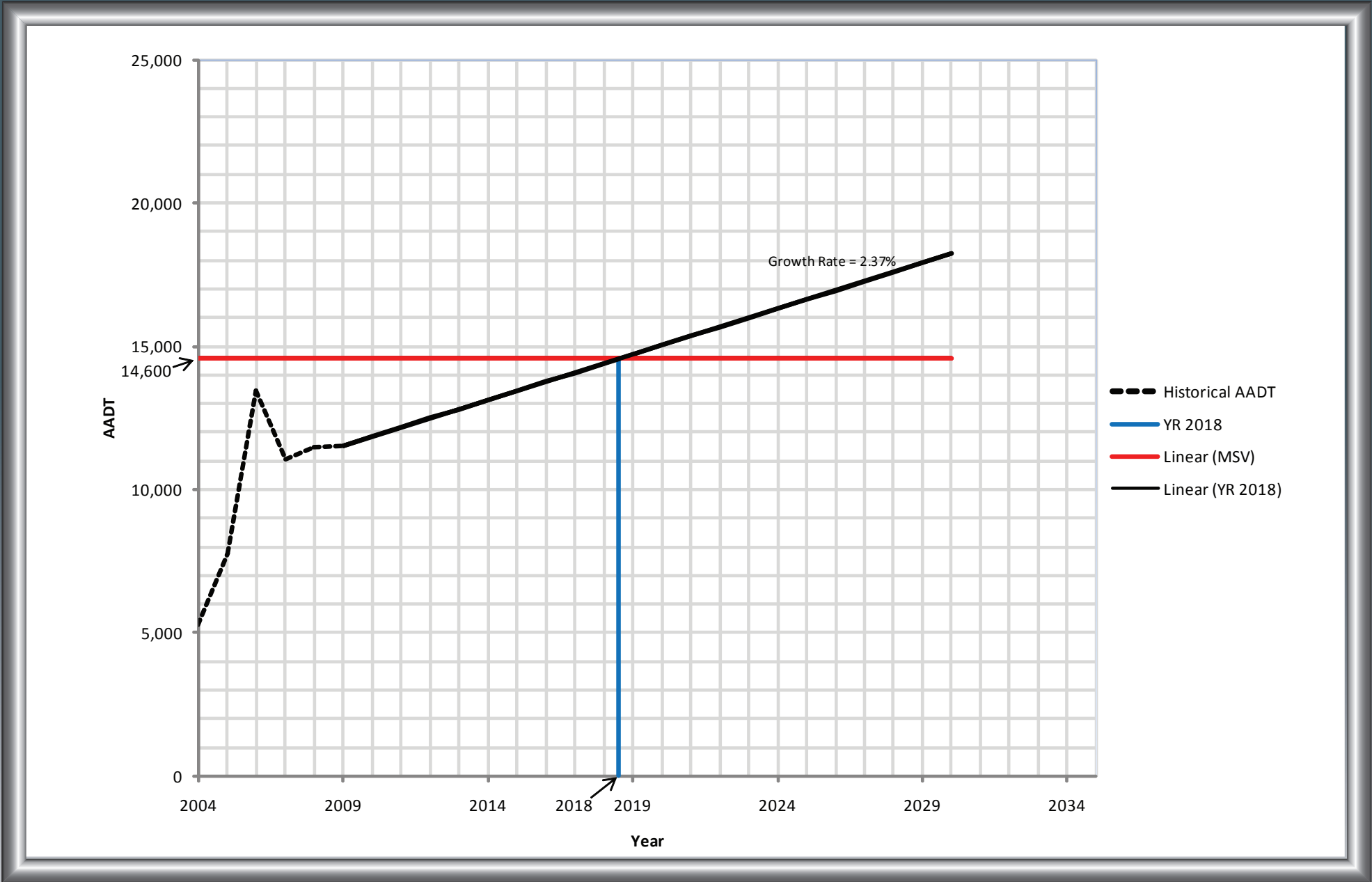
4.2.3 Design Year Forecasts

Based on the application of an average annual growth rate of 2.37%, average roadway segment volume projections for the year 2030 were produced and are shown in Table 4-5 below.

Count Station	2009	2030
Rolling Acres Road, North of School	11,541	17,285
Rolling Acres Road, South of School	10,638	15,933
Rolling Acres Road, South of CR 466	1,928	2,888

The forecasted future volume projection for Rolling Acres Road was evaluated using the generalized level of service tables found in the FDOT Quality/Level of Service Handbook for Urbanized Areas, Table 4-7. The above future volumes indicate that there is a four-lane need before the design year 2030. Therefore, the recommendation for a four-lane improvement is warranted.

Figure 6 presents a graphical illustration of the projected traffic volumes on Rolling Acres Road to the capacity of a two-lane roadway. Based on this comparison, Rolling Acres Road is projected to exceed the existing two-lane capacity in approximately year 2018.



GMB Engineers & Planners, Inc.
2602 East Livingston Street
Orlando, Florida 32803

Rolling Acres Road Preliminary Engineering Study

Figure 6
Forecasted Traffic Volume Projection

4.3 Future Conditions – No Build

The No Project Alternative (often referred to as the No Build Alternative) assumes that no improvements will be made in the study area and that existing conditions will remain. This Alternative is often used to compare the costs and benefits of implementing proposed improvements versus the alternative of continuing to use the existing facility. For this study, the No Project Alternative would mean that the roadway remain a rural two-lane facility. The No Project Alternative will be considered a viable option throughout the alternative selection process to provide a baseline condition to compare alternatives.

The advantages of the No Project Alternative include:

- No right-of-way acquisition is necessary
- Least impacts to the environment
- No disruption to traffic during construction
- No Project Alternative is least costly

The disadvantages of the No Project Alternative include:

- The Need and Purpose of the project are not satisfied
- No Project Alternative is not consistent with area-wide transportation plans
- The deficient design features (capacity and safety) are not addressed

A “no-build” analysis was conducted in order to assess the level of service in the study area for the future without the addition of any roadway or intersection improvements. Through the no build analysis the necessary conclusions could be drawn as to whether or not improvements would be warranted.

4.3.1 Roadway Analysis

A roadway link level of service analysis was performed for future no build traffic volumes using general capacities from the 2002 FDOT Quality / Level of Service Handbook, with 2007 updates and addendums.

Table 4-6					
YR 2030 Roadway Capacity Analysis					
Roadway / Segment	No. of Lanes	L.O.S. Standard	MSV	Daily	LOS
Rolling Acres Road					
US 27/441 to Oak Street	2L	D	14,600	17,285	F
Oak Street to CR 466	2L	D	14,600	15,933	F
CR 466 to Lake Ella Road	2L	D	13,600	2,888	C

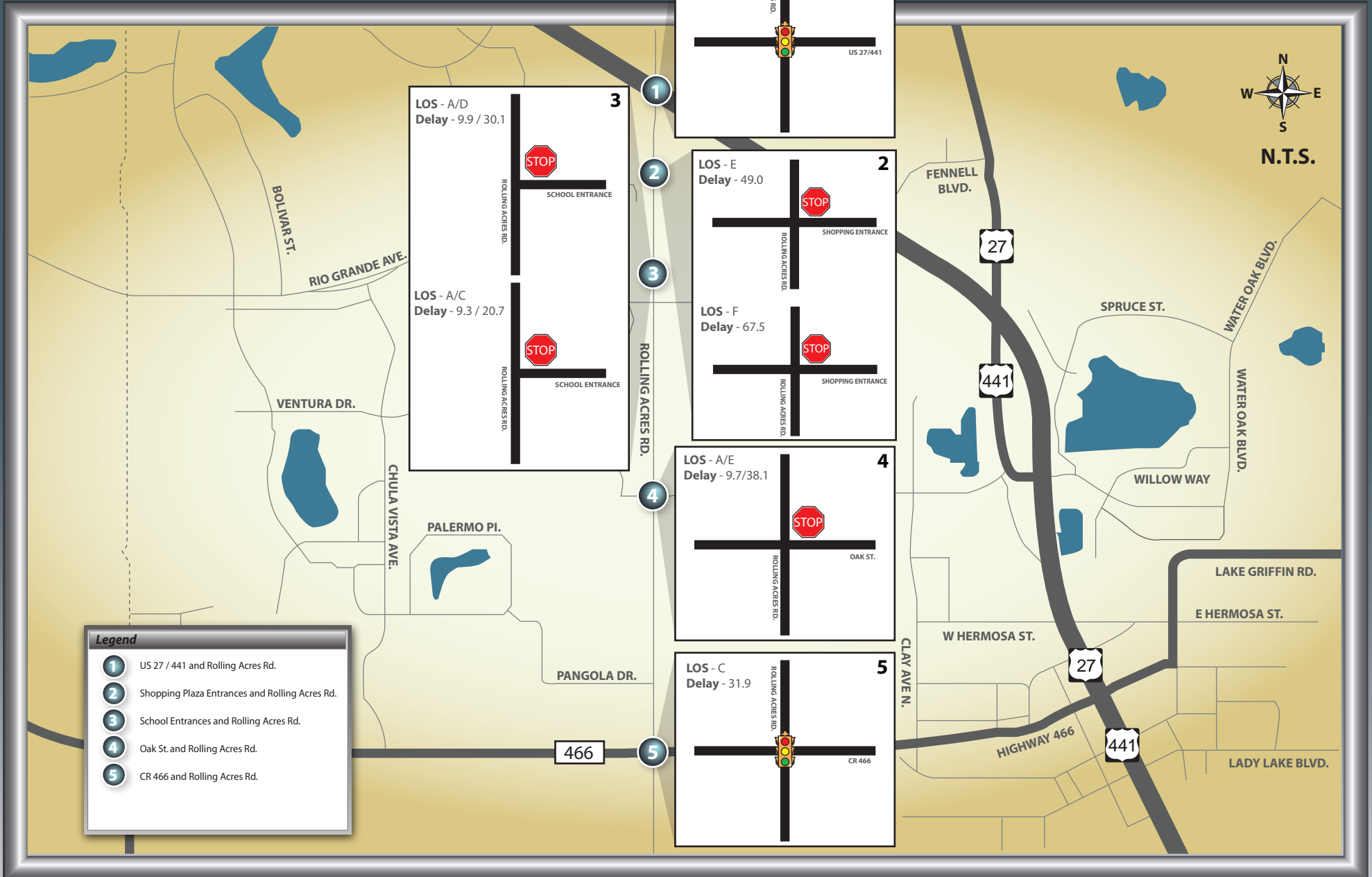
The roadway is anticipated to operate at a LOS F in the future no build scenario within the study area.

4.3.2 Intersection Analysis

The intersections were evaluated using the methodology outlined in the Highway Capacity Manual and using the Highway Capacity Software (HCS+) version 5.2. The seasonal factor applied to these counts is 0.91. The HCS worksheets are included in Appendix. Figure 7 provides the intersection levels of service for future no build conditions. The following table provides a summary of the future no build intersection analysis which includes the intersection delay and LOS. As shown below, not all study area intersections operate at an acceptable LOS for YR 2030 PM peak hour conditions.

YR 2030 PM Peak Hour

Intersection	Control	LOS	Delay (sec/veh)
US 27/441 and Rolling Acres Road	Signal	F	197.7
Shopping Plaza North and Rolling Acres Road	Stop	E	49.0
Shopping Plaza South and Rolling Acres Road	Stop	F	67.5
School Entrance North and Rolling Acres Road	Stop	A/D	9.9/30.1
School Entrance South and Rolling Acres Road	Stop	A/C	9.3/20.7
Oak Street and Rolling Acres Road	Stop	A/E	9.7/38.1
CR 466 and Rolling Acres Road	Signal	C	31.9



Legend

- 1 US 27 / 441 and Rolling Acres Rd.
- 2 Shopping Plaza Entrances and Rolling Acres Rd.
- 3 School Entrances and Rolling Acres Rd.
- 4 Oak St. and Rolling Acres Rd.
- 5 CR 466 and Rolling Acres Rd.

Rolling Acres Road Preliminary Engineering Study

Figure 7
Future No-Build PM Peak Hour
Intersection LOS



GMB Engineers & Planners, Inc.
2602 East Livingston Street
Orlando, Florida 32803

5.0 PROPOSED IMPROVEMENT AND DESIGN CRITERIA

5.1 ROADWAY IMPROVEMENTS

The corridor of Rolling Acres Road (US 441 to CR 466) is the basis for this preliminary engineering study. Rolling Acres Road currently exists as a 2-lane section that services various developments including shopping plazas and Rolling Acres Elementary School. The majority of traffic utilizing Rolling Acres Road is generated from the neighborhoods that are a part of The Villages, which are located just west of this corridor. The improvements recommended in the study must take into account the operational necessities for the wide range of developments located along Rolling Acres Road, the roadway capacity to accommodate the growth of this area, and the driver characteristics displayed by residents of The Villages. To accommodate these transportation issues, it is proposed that this corridor be widened to 4 lanes. In addition, access management strategies should be explored to address existing operational problem areas along Rolling Acres Road.

5.1.1 Four Lane Section

The four lane improvement to Rolling Acres Road will extend from US 441 to CR 466. As noted later in the report, there are two alternative typical sections for this corridor. However, the typical sections alternatives will not change the results of the capacity/operational analyses of this report.

5.1.2 Access Management

As shown in the Roadway Plans, access management along the corridor should also be modified to address safety concerns created by the four lane section with existing access issue at the shopping entrances on Rolling Acres Road south of U.S. 441. More specifically, eastbound lefts should be prohibited at the northern exit of the Villages of Rolling Acres Plaza and diverted to the southern exit which is located approximately 300 feet away. The construction of a median to restrict this turning movement will eliminate several conflict points and allow a more safe and efficient operation for this connection to Rolling Acres Road. An additional

concrete separator may be constructed between the southbound left turn lane and thru lane to further restrict possible U-turn movements from occurring. Final access issues will be addressed in the design phase of this project. Furthermore, access to the Elementary School will be addressed later in this report.

5.1.3 Corridor Analysis

The terminating intersections of the 4 lane improvement will be at US 441 (North) and CR 466 (South). Both sections of Rolling Acres Road, north and south of the 4 lane improvement are currently 2-lane roadways. As part of the PD&E study, each intersection was analyzed to determine the necessary improvements, if any, to accommodate the operation and transition from the 4 lane section into a 2 lane section.

Rolling Acres Road at US 441 (North)

The section of Rolling Acres Road north of US 441 is currently a two lane undivided roadway. The existing configuration of this intersection has one receiving lane for northbound traffic and a separate left turn, through, and right turn lane on the southbound approach. As shown in the proposed roadway plans, the existing geometry of this section will be sufficient to accommodate the anticipated buildout of YR 2030 traffic. Other contributing factors to this recommendation are the lack of right of way on the northeast quadrant of this intersection and the proposed eastbound left and northbound through geometries which do not require the use of two receiving lanes.

Rolling Acres Road South of CR 466 (South)

As shown in the Roadway Plans, the southern termini of the four lane section of Rolling Acres Road will be at the intersection with CR 466. The southbound approach will consist of a separate left turn, through, and right turn lane. For the purposes of analyzing the section of Rolling Acres Road, south of the 4 lane improvement, this intersection was analyzed to

determine if existing geometry would be sufficient to accommodate YR 2030 traffic volumes. Based on the analyses and as shown in Appendix “F”, it has been determined that the existing 2 lane section, including the geometry of the northbound approach, will not require any modifications.

5.2 TYPICAL SECTIONS

As previously stated, alternative typical sections for the 4 lane section will be provided. The segment of Rolling Acres Road under consideration for this study extends from the US 27/441 to CR 466. Through these limits the, the existing right of way varies from 80 feet to 100 feet. For the purposes of comparative evaluation and discussion, various typical sections were analyzed. However, through coordination with Town of Lady Lake Staff, it has been determined that each typical section alternative will be based on an 80 foot section, therefore, eliminating the need for right-of-way acquisition. It should be noted that the southerly portion only has a 70-foot right-of-way. However, Land Development Regulations contain language that development is contingent on right-of-way donations. As stated in the Town of Lady Lake Land Development Regulations *A proposed subdivision or site plan that abuts or encompasses an existing public road that does not conform to the minimum right-of-way requirements shall provide for the dedication of additional right-of-way along either one (1) or both sides of said road to meet the minimum right-of-way required by these regulations. If the proposed subdivision abuts only one (1) side of said road, then a minimum of one-half (1/2) of the required right-of-way shall be dedicated or reserved prior to approval of such subdivision or site plan.* A copy of the Town of Lady Lake Land Development Regulations can be found in Appendix “H”.

5.2.1 Typical Section Alternatives

There are numerous variations of typical sections that can be evaluated which satisfy the travel demand anticipated for the Rolling Acres corridor. Based on traffic forecasts that have been developed for the study, Rolling Acres Road will require two travel lanes in each direction. The variations evaluated in this report relate to ancillary features, drainage facilities and method of treatment

and landscape opportunities. Each variation encompasses different right of way requirements. It should be noted that the evaluation process of these typical sections does not include consideration for slope requirements needed to meet existing ground at the right of way line. Therefore, some construction easements may be required during the implementation phase.

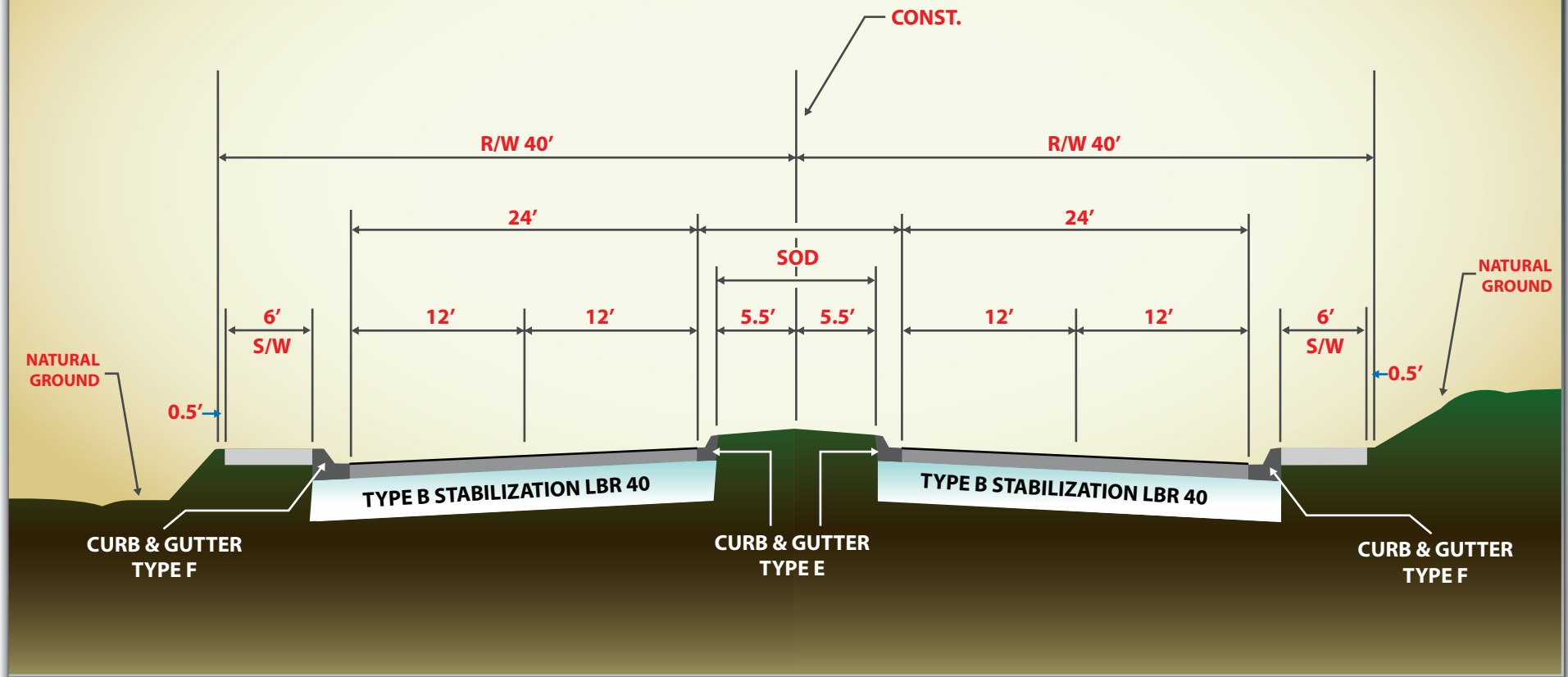
Alternative A Typical Section

Alternative A (Figure 8) consists of a four-lane divided (two 12-foot wide lanes in each direction) roadway with curb and gutter, and an 11-foot raised median that is suitable for landscaping. The section also includes two 6-foot sidewalks.

Alternative B Typical Section

Alternative B (Figure 9) consists of a four-lane divided (with an 11-foot lane and 11.5-foot wide lane in each direction) roadway with curb and gutter, and a 11-foot raised median that is suitable for landscaping. The section also includes a 6-foot sidewalk on one side of the roadway and 10-foot bike path on the east side adjacent to the elementary school. It should be noted where existing right-of-way is provided that exceed the minimum proposed width, sidewalks shall be constructed as close to the right-of-way line as feasibly possible per best design practices.

Typical Section Alternative A

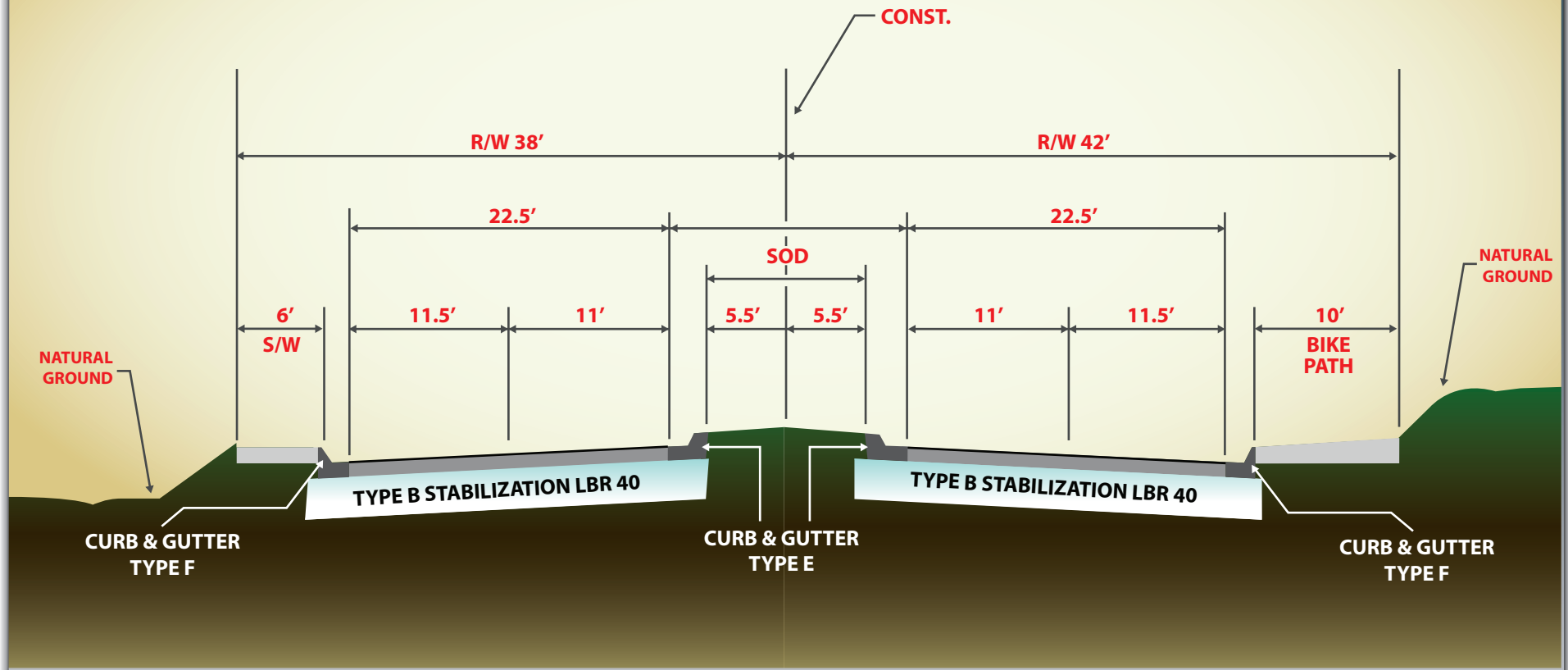


GMB Engineers & Planners, Inc.
2602 East Livingston Street
Orlando, Florida 32803

Rolling Acres Road Preliminary Engineering Study

Figure 8
Typical Section Alternative A

Typical Section Alternative B



GMB Engineers & Planners, Inc.
2602 East Livingston Street
Orlando, Florida 32803

Rolling Acres Road Preliminary Engineering Study

Figure 9
Typical Section Alternative B

5.3 DESIGN CONTROLS

The design controls for this Preliminary Engineering Study have been established in English values. These criteria, wherever possible, are based on design parameters outlined in English editions of the following publications:

- Manual of Uniform Minimum Standards for Design, Construction and Maintenance of Streets and Highways (FDOT, 2007, Florida Green Book)
- Manual of Uniform Traffic Control Devices (MUTCD) (FHWA, Washington, D.C., 2003)
- Roadside Design Guide (AASHTO, 2002)
- Drainage Handbook Cross Drains (FDOT, 2002)
- Management and Storage of Surface Waters Permit Information Manual (SFWMD, 2008)
- A Policy on Geometric Design of Highways and Streets (AASHTO, 2004), Fifth Edition

In addition, editions of the following publications were used to supplement the design criteria where needed:

- Roadway and Traffic Design Standards (FDOT, January 2008)
- Roadway Plans Preparation Manual (FDOT, January 2008)
- Flexible Pavement Design Manual (FDOT, January 2002)

5.4 FLORIDA INTRASTATE HIGHWAY SYSTEM

Rolling Acres Road is not part of the Florida Intrastate Highway System (FIHS) and is not subject to the FIHS Standards. The intersection of US44/27 and Rolling Acres Road is within the FIHS system.

5.5 GEOMETRIC DESIGN CRITERIA

The geometric design criteria and its source used for the proposed improvements are listed in Table 5-1.

Table 5-1: Roadway Design Criteria

	Design Element	Criteria	Source
General Criteria	Functional Classification	Major City/County Collector	Town of Lady Lake/Lake County Comp Plan
	Design vehicle	P, SU, WB-40	Florida Green Book: III - 5
	Design Year	2030	Town of Lady Lake / Lake County
	Capacity and Level of Service	D	Town of Lady Lake / Lake County Comp Plan
	Design Speed, V	35 MPH (Urban)	Florida Green Book: III - 4
	Posted Speed	35 MPH (Urban)	Field observation
	Travel Lane width	12 feet	FDOT Plans Prep. Vol. I:2-7
	Typical cross section slope (Travel Lane)	0.02 ft/ft	Florida Green Book: III-16
Typical Section	Typical cross section slope (Median Shoulder)	0.05 ft/ft	FDOT Plans Prep. Vol. I: 2-24
	Max Lane “Roll over” (adjacent through lanes)	0.04 ft/ft	FDOT Plans Prep. Vol. I: 2-12
	Border	10 feet (\leq 45 mph)	FDOT Plans Prep. Vol. I: 2-30
	Clear zone	4 feet (Urban)	Florida Green Book: III-52
	Sidewalk width	5 / 6 feet	FDOT Plans Prep. Vol. I: 8-4
	Bike path width	10 feet	Lake County

Table 5-1: Roadway Design Criteria (Continued)

	Design Element	Criteria	Source
Horizontal geometry	Max. deflection w/o a curve	0° 45" 00" (Urban)	FDOT Plans Prep. Vol. I: 2-41
	Minimum radius	694 ft (45 MPH, e= 0.05) 897 ft (55 MPH, e= 0.10)	FDPT Plans Prep. Vol. I: 2-49, 2-51
	Max. Curvature using 0.02	0° 30' (45 MPH) 0° 30' (55 MPH)	FDOT Plans Prep. Vol. I: 2-43
	Minimum length of curve	15 V (Arterials)	FDOT Plans Prep. Vol. I: 2-42
	Min. passing sight distance	1650 feet(45 MPH) 1950 feet(55 MPH)	FDOT Plans Prep. Vol. I: 2-38
	Min. tangent between reverse curves	100 feet	FDOT Plans Prep. Vol. I: 2-53
	Superelevation transition (desired)	80% (Tangent) 20% (Curve)	FDOT Standard Index 510
	Superelevation transition ratio	1:160 (45 MPH) 1:180 (55 MPH)	FDOT Plans Prep. Vol. I: 2-52
	Max Superelevation	0.05 ft/ft (45 MPH) 0.10 ft/ft (55 MPH)	FDOT Plans Prep. Vol. I: 2-52
	Vertical Geometry	Max. Profile Grade (Flat Terrain)	5% (45 MPH) 4% (55 MPH)
Max. Profile Grade (Rolling Terrain)		6% (45 MPH) 5% (55 MPH)	FDOT Plans Prep. Vol. I:2-35
Min. Profile Grade on Curb & Gutter Section		0.3% (Flat) 0.5% (Rolling)	FDOT Plans Prep. Vol. I:2-36
Max. Grade change w/o vc		0.70 ft/ft (45 MPH) 0.50 ft/ft (55 MPH)	Florida Green Book: III-65
Roadway Base Clearance Above Wet Season Water Elevation		3 ft (Rural Multi-lane) 2 ft (All other, including Urban)	FDOT Plans Prep. Vol. I: 2-59 Geotechnical recommendations
Min. K Value for Crest Curve		90 (45 MPH) 170 (55 MPH)	FDOT Plans Prep. Vol. I: 2-45
Min. K Value for Sag Curve		80 (45 MPH) 110 (55 MPH)	FDOT Plans Prep. Vol. I: 2-46
Minimum stopping sight distance		350' (45 MPH) 475' (55 MPH)	FDOT Plans Prep. Vol. I: 2-37

5.6 DRAINAGE DESIGN CRITERIA

This section discusses the design controls and standards for culvert design and stormwater management. Table 5-2 summarizes the required criteria. The Saint Johns River Water Management District (TSJRWMD) claims jurisdiction over the stormwater management of this project.

Table 5-2: Stormwater Design Criteria

	Design Element	Criteria	Source
Design Storm	Primary System	10-year frequency, 72-hour duration 100-year frequency, 72-hour duration 13cfs/mi. ²	SJRWMD Regs
	Arterial/Collector/Local St.	10-year HGL ≤ the gutter line.	Lake County
Discharge	Post const. Peak rate	13 cfs/mi. ²	Lake County
	Post construction Peak discharge rate	Shall not exceed pre-construction discharge for the 10-year frequency, 72-hour duration storm event	Lake County
Spread	Arterial/Collector Street	½ the outside travel lane	Lake County
	Inlet location (Type 1 & 3)	Max. 5 cfs intercepted during the 10-year frequency storm event	Lake County
	Inlets at low points (Type 2 & 4)	Intercept 100% design flow. Max 9 cfs intercepted in 10-year storm	Lake County
Culvert Design	Pipe Size (storm sewers and cross and side drains)	15-inch minimum with mitered ends Cross drains 50 yr. storm Side drains 10 yr. storm	Lake County
Manmade Stormwater Conveyance	Channel Type	Open, shallow, flat, slow velocity for detention (2ft/sec)	Lake County
	Side slopes	Depth 4 feet or less, 4:1 max Depth over 4 feet, 2:1 max.	Lake County
	Maintenance Berm	Swale < 16 ft, 20 feet 1 side Swale 16 ft-55 ft, 20 feet 2 sides Swale > 55 ft, 30 feet 2 sides	Lake County
Roadside Ditches	Min. Ditch bottom elev.	Control elevation of pond	Lake County
	Min. Ditch slope	0.20%	Lake County
Ditches are not normally to be considered for retention/detention purposes, rather they are to be designed for conveying stormwater runoff only. An area for roadway retention/detention shall be set aside outside the regular roadway right-of-way limits.			
	Design Element	Criteria	Source
	Width	Average of 100 ft.	SJRWMD
	Side slopes	4:1 max.	SJRWMD
	Pond slope	4:1 max.	SJRWMD
	Maintenance berm	20 feet wide at 4:1 max to control elevation	SJRWMD
	Recovery	½ treatment volume within 24 hrs	SJRWMD

<i>Table 5-2: Stormwater Design Criteria (Continued)</i>			
	Treatment volume	Dry retention: ½ - inch of runoff or the runoff from 1.25 - inches of rainfall over the impervious area.	SJRWMD
	Floodplain encroachment	No net encroachment between the NWL and 100-yr elevation	SJRWMD

DRAFT

6.0 FUTURE ANALYSIS – WITH PROPOSED CHANGES

6.1 FUTURE ANALYSES – WITH PROPOSED CHANGES

An analysis of the corridor was conducted consistent with the existing and “no build” analyses in order to assess the level of service in the study area for the future traffic volumes with the proposed 4 lane section and access management considerations. As previously mentioned, the alternative typical sections will not affect the capacity/operational analyses presented in this report as both alternatives will represent a 4 lane section.

6.1.1 Roadway Analysis

A roadway link level of service analysis was performed for future no build traffic volumes using general capacities from the 2002 FDOT Quality / Level of Service Handbook, with 2007 updates and addendums.

Roadway / Segment	No. of Lanes	L.O.S. Standard	MSV	Daily	LOS
Rolling Acres Road					
US 27/441 to Oak Street	4L	D	31,100	17,285	C
Oak Street to CR 466	4L	D	31,100	15,933	C
CR 466 to Lake Ella Road	2L	D	13,600	2,888	C

The roadway is anticipated to operate at a LOS C in the future with proposed changes within the study area.

6.1.2 Intersection Analysis – YR 2030

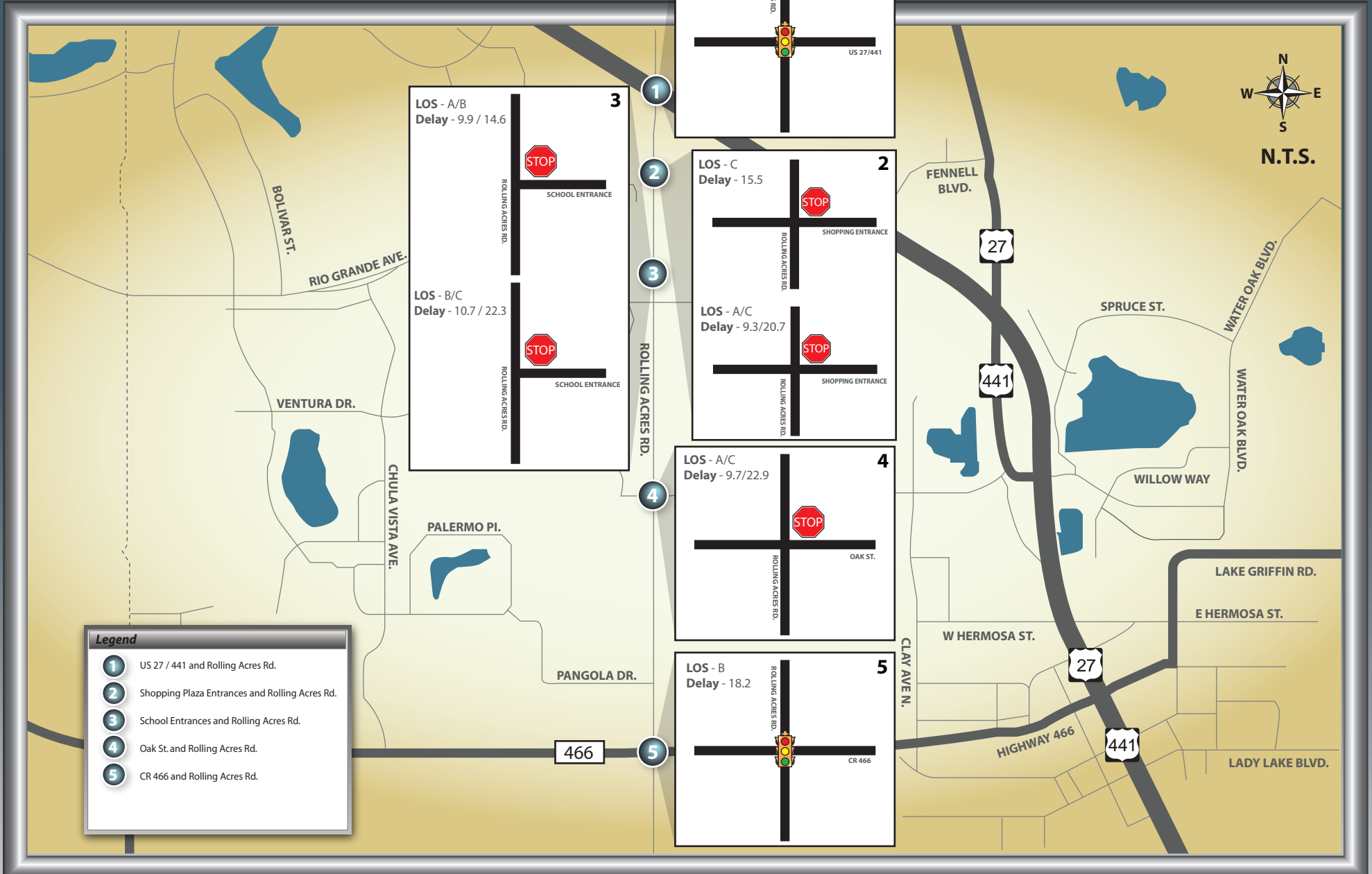
The intersections were evaluated using the methodology outlined in the Highway Capacity Manual and using the Highway Capacity Software (HCS+) version 5.2. The seasonal factor applied to these counts is 0.91. The HCS worksheets are included in Appendix. Figure 10 provides the intersection levels of service for future conditions with proposed changes. The following table provides a summary

of the future no build intersection analysis which includes the intersection delay and LOS.

YR 2030 PM Peak Hour

Intersection	Control	LOS	Delay (sec/veh)
US 27/441 and Rolling Acres Road	Signal	F	91.8
Shopping Plaza North and Rolling Acres Road	Stop	C	15.5
Shopping Plaza South and Rolling Acres Road	Stop	A/C	9.3/20.7
School Entrance North and Rolling Acres Road	Stop	A/B	9.9/14.6
School Entrance South and Rolling Acres Road	Stop	B/C	10.7/22.3
Oak Street and Rolling Acres Road	Stop	A/C	9.7/22.9
CR 466 and Rolling Acres Road	Signal	B	18.2

As shown in the future intersection analyses all study area intersections along this corridor are anticipated to operate at an acceptable level of service in the YR 2030 with the exception of the signalized intersection of Rolling Acres Road at US 441. For the purpose of the future analyses, the HCS intersection analyses includes the recommended 4 lane section of Rolling Acres Road, however, at this particular intersection, is important to also include the six lane section of US 441, which is included in the Lake-Sumter MPO Long Range Transportation Plan. An additional operational analysis was created to analyze this scenario and as shown in Appendix “H”, the intersection of Rolling Acres Road at US 441 is anticipated to operate at an acceptable LOS in the Year 2030 with this additional improvement. It should be noted that dual westbound left turn lanes should be constructed at the time that US 441 is widened.



GMB Engineers & Planners, Inc.
 2602 East Livingston Street
 Orlando, Florida 32803

Rolling Acres Road Preliminary Engineering Study

Figure 10
 Future with Proposed Changes
 PM Peak Hour Intersection LOS

7.0 ALTERNATIVE ANALYSIS

Transportation System Management Alternatives usually consist of lower cost, minor improvements (when compared to a major reconstruction) that address a specific operational or safety problem and allow the existing facility to be utilized in a more efficient way. Typical TSM Alternatives consist of intersection widening and turn lane storage enhancements, the provision of access management controls, improved signing, markings, and delineation, and improved public transit service. As discussed previously in the report, Access Management strategies should be implemented, however, since the study location is anticipated to have a steady growth in traffic volumes, TSM Alternatives alone, will not address the project needs. Therefore, due to the limited applicability of TSM Alternatives, this report will not analyze such a scenario.

7.1 School Alternative Access Analysis

In order to improve traffic circulation at the elementary school's access driveways, several improvements should be considered. The construction of a traffic signal at the pick up / drop off driveway would allow safe left turn movements exiting the school in lieu of drivers making northbound u-turns on Rolling Acres Road when forced to leave the campus by traveling north. The signal should be planned to operate only during opening / closing hours for the campus with internal access provided to the bus loop. Additional roadway signage along Rolling Acres Road prohibiting U-turns can be placed to alleviate conflict points. Pavement markings installed at the proposed signal would allow students to cross Rolling Acres Road safely and utilize sidewalks on the west side of the roadway as depicted in the recommended typical section. Finally, the use of a traffic signal would eliminate the need for a police officer at the school entrance directing traffic during the peak school hours.

8.0 PRELIMINARY DESIGN ANALYSIS

8.1 ALIGNMENT AND RIGHT-OF-WAY NEEDS

The improvements of Rolling Acres Road will generally follow the existing alignment. Right of way needs for the recommended improvements are as follows:

8.2 RELOCATIONS

The proposed project, as presently conceived, will not displace any residence or business within the community. Should this change over the course of the project; the Town of Lady Lake will carry out a right-of-way and relocation program in accordance with Florida Statue 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Public Law 91-646 as amended by Public Law 100-17).

8.3 CONSTRUCTION COSTS

Preliminary construction cost estimates were developed utilizing the latest unit item costs available from information provided by recent bids, FDOT Long Range Estimates (LRE's), and local jurisdictional costs. An example of the preliminary engineering cost estimate is provided in Appendix "G". The cost includes the construction of all roadway elements and stormwater ponds but does not include cost for the Town's utility infrastructure relocations. The estimated construction cost for the recommended alternative is:

Construction: \$6,484,856.96

Design: \$972,278.54

CEI: \$324,092.85

TOTAL: \$7,778,228.36

8.4 RECYCLING SALVAGE MATERIALS

Salvageable materials from the existing roadway should be used in construction of the new roadway to the maximum extent permitted by the Standard Specifications for Road and Bridge Construction (FDOT 2000) and as approved by the construction engineer.

8.5 USER BENEFITS

After complete and thorough analysis of the deficiencies of the existing and future roadway network, the benefits associated with the construction of the Build alternative is apparent. These benefits include improved traffic service, reduced congestion, improved level of service and improved safety.

- Improved level of service on the roadway
- Improved safety through Access Management and intersection improvements
- Improved facility aesthetics through the addition landscape materials
- Reduced user costs from improved operations and reduced delay.

8.6 PEDESTRIAN FACILITIES

The recommended alternative provides a continuation pedestrian and bicycle facility throughout the project study limits to safely accommodate pedestrians and bicyclists.

8.7 SAFETY

It is anticipated that traffic demand will decrease in the project area. By increasing the capacity of Rolling Acres Road, improving intersection geometry, implementing access management standards and utilizing the latest Green Book design criteria, safety will be greatly improved, which should result in a reduction for potential crashes.

8.8 ENVIRONMENTAL IMPACTS

The potential impacts to the natural environment were reviewed as part of this study including consideration of wetland, farmland, floodplain, threatened and endangered species, and cultural/historical sites. Due to the fact that the widening will utilize the existing right-of-way which is subject to regular maintenance activities and is in close

proximity to vehicular traffic and normal disturbances, it is unlikely that the project will pose any adverse environmental impacts or interfere with any listed species constraints. The environmental review is further summarized in a memorandum completed by Glatting Jackson (GJKA) and can be found in Appendix “J” of this report.

8.9 PUBLIC NOTIFICATION AND INVOLVEMENT

At the initiation of the study, an initial mailing list was prepared. This list was assembled using the Lake and Sumter County Property Appraisers database and included all properties located within 300 feet of the existing right-of-way. The mailing list was expanded to include appointed and elected officials as well as potential permitting or review agencies, community leaders, media, and other interested parties. Notification of those listed on the mailing list was accomplished by the distribution of project notices and newsletters to provide updates of the study’s progress and to announce upcoming meetings. To date, one project newsletter was distributed on June 2009. Copies of all project notifications are provided in Appendix “K”.

The first public meeting was held on July 20th, 2009. GMB provided a study update which included an introduction of the project team, the study description and objectives, and the data & analysis conducted to date. In addition to this handout, several visual aids pertaining to the study area were made available for public display. The handout provided and the citizen’s comments/questions recorded at this public meeting can be found in Appendix “L”. In addition, during the public meeting, verbal comments from the participants were summarized.

APPENDIX "A"

COLLISION SUMMARY SHEETS

APPENDIX “B”

TRAFFIC COUNT DATA

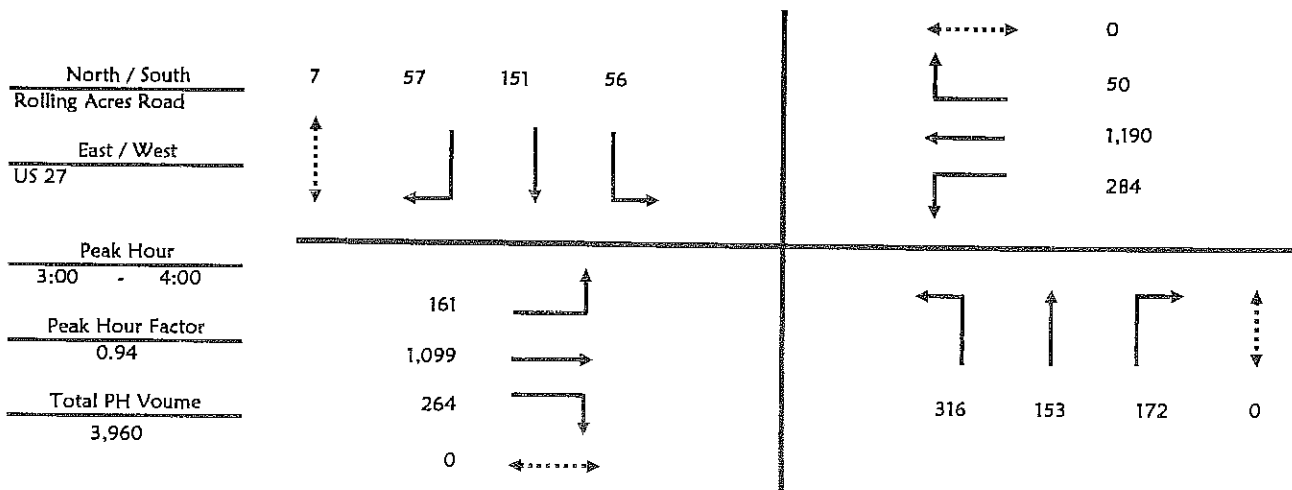
Roadway Count Summary

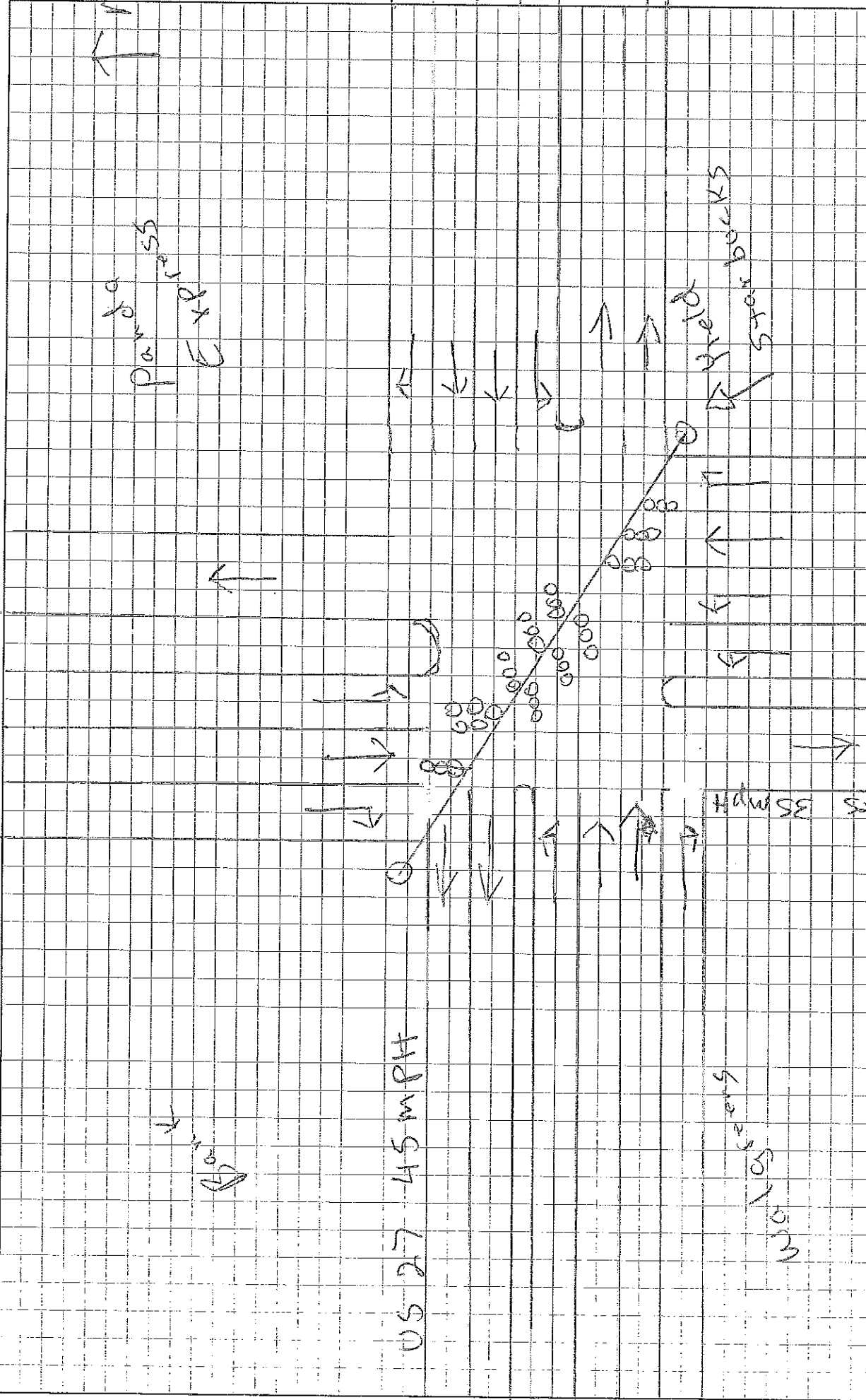
GMB Engineers & Planners, Inc.

Intersection Rolling Acres Road & US 27
Date March 19, 2009
Time Period PM Peak Hour

Time Period	Northbound					Southbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	64	34	26	1	124	32	33	19	0	84
2:15 - 2:30	54	32	26	0	112	17	40	15	0	72
2:30 - 2:45	55	35	21	1	111	10	31	18	0	59
2:45 - 3:00	59	29	28	0	116	16	35	15	0	66
3:00 - 3:15	94	53	64	0	211	13	41	15	0	69
3:15 - 3:30	75	33	54	0	162	9	34	15	0	58
3:30 - 3:45	98	37	30	0	165	19	29	10	7	58
3:45 - 4:00	49	30	24	0	103	15	47	17	0	79
4:00 - 4:15	61	32	30	0	123	8	25	14	0	47
4:15 - 4:30	66	30	31	0	127	17	28	11	0	56
4:30 - 4:45	80	37	33	1	150	20	26	20	0	66
4:45 - 5:00	63	35	12	0	110	18	38	13	4	69
5:00 - 5:15	86	43	25	0	154	12	26	17	0	55
5:15 - 5:30	53	33	24	0	110	14	24	9	0	47
5:30 - 5:45	61	30	15	0	106	12	28	11	0	51
5:45 - 6:00	115	85	30	0	230	47	134	37	0	218
Total	1,133	608	473	3	2,214	279	619	256	11	1,154

Time Period	Eastbound					Westbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	42	242	45	0	329	45	324	6	0	375
2:15 - 2:30	41	280	56	0	377	82	234	10	0	326
2:30 - 2:45	54	242	42	0	338	107	255	9	0	371
2:45 - 3:00	44	275	67	0	386	68	252	4	1	324
3:00 - 3:15	45	246	66	0	357	88	311	13	0	412
3:15 - 3:30	47	290	60	0	397	70	308	13	0	391
3:30 - 3:45	41	274	63	0	378	54	332	9	0	395
3:45 - 4:00	28	289	75	0	392	72	239	15	0	326
4:00 - 4:15	44	276	49	0	369	43	320	9	0	372
4:15 - 4:30	27	304	47	0	378	51	272	5	1	328
4:30 - 4:45	44	236	49	0	329	44	333	10	0	387
4:45 - 5:00	19	223	69	0	311	33	250	4	0	287
5:00 - 5:15	30	268	46	0	344	37	286	8	0	331
5:15 - 5:30	18	247	40	0	305	46	242	11	0	299
5:30 - 5:45	27	225	47	0	299	42	252	5	0	299
5:45 - 6:00	42	357	76	0	475	30	264	12	0	306
Total	593	4,274	897	0	5,764	912	4,474	143	2	5,529





GMB Engineers & Planners - Intersection Sketch
 North / South Road: Rolling Acres
 East / West Road: US 27
 Date: 3/19/09 Project: 06-212.06
 Observations:

Signals & Timings
 Pavement Markings
 Speed Limits
 Surrounding Areas



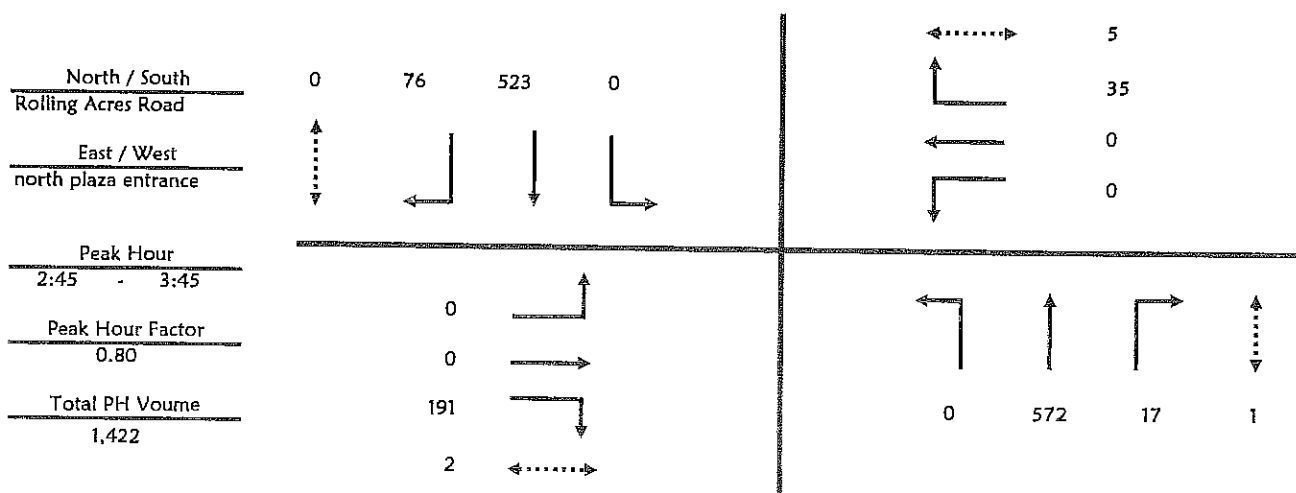
Roadway Count Summary

GMB Engineers & Planners, Inc.

Intersection Rolling Acres Road & north plaza entrance
Date March 19, 2009
Time Period PM Peak Hour

Time Period	Northbound					Southbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	0	109	2	0	111	0	102	17	1	119
2:15 - 2:30	0	105	3	0	108	0	141	21	0	162
2:30 - 2:45	0	99	1	0	100	0	106	25	0	131
2:45 - 3:00	0	114	2	0	116	0	125	20	0	145
3:00 - 3:15	0	195	4	0	199	0	157	23	0	180
3:15 - 3:30	0	141	4	1	145	0	117	19	0	136
3:30 - 3:45	0	122	7	0	129	0	124	14	0	138
3:45 - 4:00	0	106	1	0	107	0	120	31	2	151
4:00 - 4:15	0	101	0	2	101	0	103	23	0	126
4:15 - 4:30	1	119	2	0	122	0	92	22	0	114
4:30 - 4:45	0	127	2	0	129	0	101	25	0	126
4:45 - 5:00	0	97	5	0	102	0	85	17	0	102
5:00 - 5:15	0	131	1	0	132	0	94	21	0	115
5:15 - 5:30	0	93	4	0	97	0	91	25	0	116
5:30 - 5:45	0	82	4	0	86	0	85	20	0	105
5:45 - 6:00	0	85	4	0	89	0	82	16	0	98
Total	1	1,826	46	3	1,873	0	1,725	339	3	2,064

Time Period	Eastbound					Westbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	0	0	36	1	36	0	0	8	3	8
2:15 - 2:30	0	0	41	0	41	0	0	9	1	9
2:30 - 2:45	0	0	39	0	39	0	0	6	0	6
2:45 - 3:00	0	0	40	0	40	0	0	9	2	9
3:00 - 3:15	0	0	53	2	53	0	0	13	0	13
3:15 - 3:30	0	0	56	0	56	0	0	8	1	8
3:30 - 3:45	0	0	42	0	42	0	0	5	2	5
3:45 - 4:00	0	0	35	1	35	0	0	11	1	11
4:00 - 4:15	0	0	41	0	41	0	0	8	0	8
4:15 - 4:30	0	0	34	0	34	0	0	6	0	6
4:30 - 4:45	0	0	36	0	36	0	0	16	0	16
4:45 - 5:00	0	0	37	0	37	0	0	6	0	6
5:00 - 5:15	0	0	36	2	36	0	0	9	0	9
5:15 - 5:30	0	0	24	0	24	0	0	4	0	4
5:30 - 5:45	0	0	36	0	36	0	0	7	4	7
5:45 - 6:00	0	0	36	2	36	0	0	3	0	3
Total	0	0	622	8	622	0	0	128	14	128



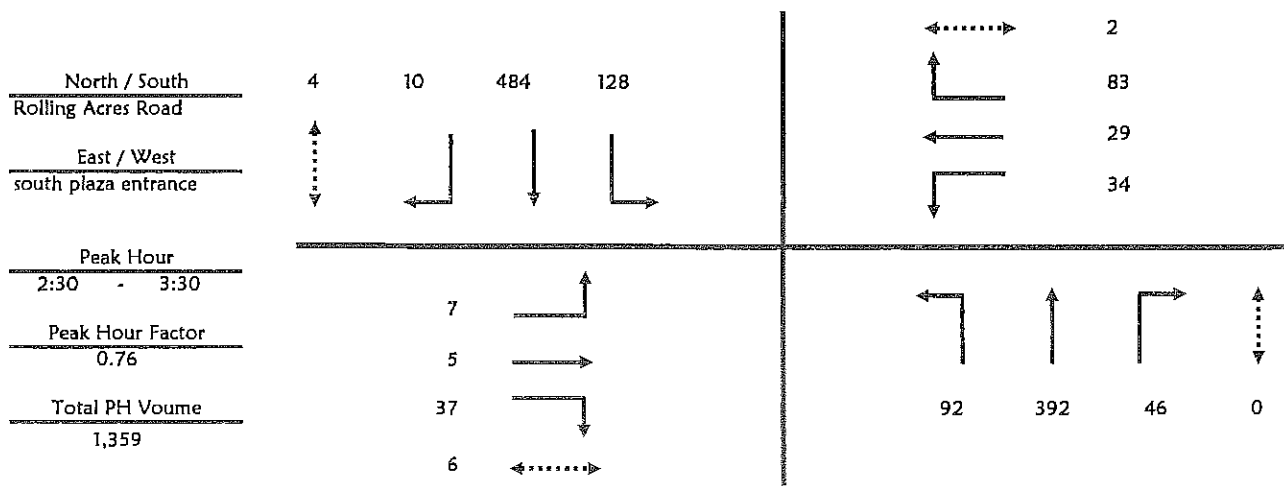
Roadway Count Summary

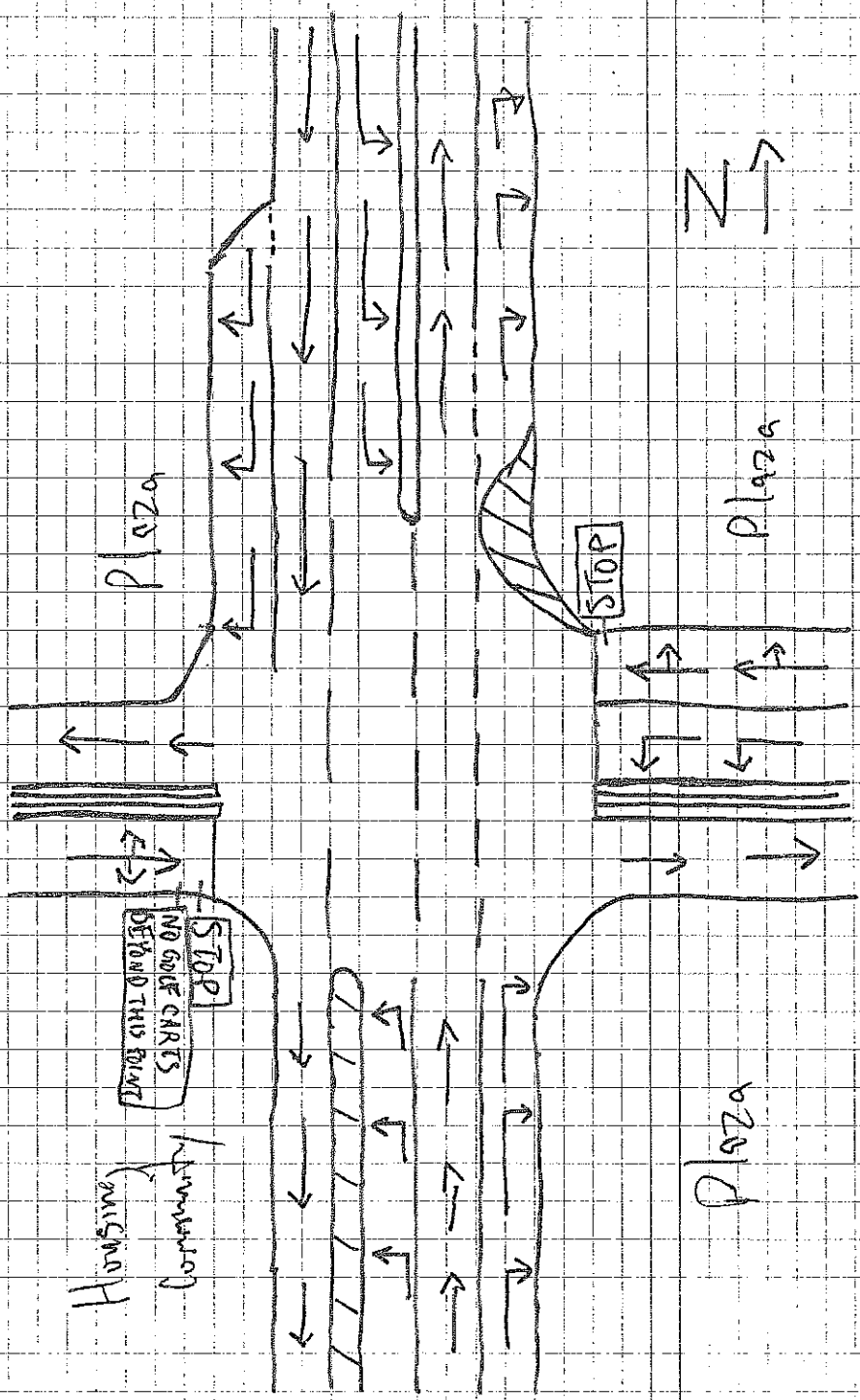
GMB Engineers & Planners, Inc.

Intersection Rolling Acres Road & south plaza entrance
Date March 19, 2009
Time Period PM Peak Hour

Time Period	Northbound					Southbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	17	73	12	0	102	29	99	0	2	128
2:15 - 2:30	16	88	8	0	112	35	137	1	0	173
2:30 - 2:45	19	71	9	0	99	27	93	1	3	121
2:45 - 3:00	19	76	16	0	111	33	117	0	0	150
3:00 - 3:15	31	156	11	0	198	39	152	6	1	197
3:15 - 3:30	23	89	10	0	122	29	122	3	0	154
3:30 - 3:45	15	76	6	0	97	27	85	3	0	115
3:45 - 4:00	20	72	10	0	102	21	99	1	0	121
4:00 - 4:15	17	69	14	1	100	36	82	0	0	118
4:15 - 4:30	33	90	10	0	133	29	86	1	0	116
4:30 - 4:45	19	92	12	0	123	28	97	0	0	125
4:45 - 5:00	19	65	8	0	92	23	83	0	0	106
5:00 - 5:15	18	91	10	0	119	34	76	2	1	112
5:15 - 5:30	19	63	7	0	89	20	88	1	0	109
5:30 - 5:45	24	62	9	0	95	25	81	3	0	109
5:45 - 6:00	18	56	2	0	76	23	82	1	0	106
Total	327	1,289	154	1	1,770	458	1,579	23	7	2,060

Time Period	Eastbound					Westbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	1	2	12	0	15	11	9	23	0	43
2:15 - 2:30	0	1	11	0	12	15	8	14	0	37
2:30 - 2:45	3	2	9	3	14	5	9	14	2	28
2:45 - 3:00	1	3	5	3	9	3	9	23	0	35
3:00 - 3:15	3	0	13	0	16	10	5	18	0	33
3:15 - 3:30	0	0	10	0	10	16	6	28	0	50
3:30 - 3:45	0	1	10	0	11	9	9	14	0	32
3:45 - 4:00	2	2	6	1	10	9	3	14	0	26
4:00 - 4:15	2	1	10	1	13	10	8	18	0	36
4:15 - 4:30	2	1	6	0	9	10	6	27	2	43
4:30 - 4:45	4	1	4	0	9	5	8	19	0	32
4:45 - 5:00	6	2	8	0	16	7	6	17	0	30
5:00 - 5:15	1	0	7	0	8	9	2	17	0	28
5:15 - 5:30	4	3	9	0	16	10	4	17	0	31
5:30 - 5:45	1	0	4	1	5	8	11	9	0	28
5:45 - 6:00	4	1	6	0	11	5	5	19	0	29
Total	34	20	130	9	184	142	108	291	4	541





Housing Community

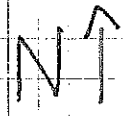
STOP
NO GOLF CARTS
BEYOND THIS POINT

STOP

Plaza

Plaza

Plaza



GMB Engineers & Planners - Intersection Sketch
 North / South Road: Rolling Acres Road
 (35 mph)
 East / West Road: South Plaza Entrance
 Date: 5/19/09 Project: 06-212.08
 Observations:
 Intersection - 8 Pedestrian (class crossed the street) / 1 bicyclist

Signals & Timings: _____
 Pavement Markings: _____
 Speed Limits: _____
 Surrounding Areas: _____

ENGINEERS & PLANNERS, INC.
GMB

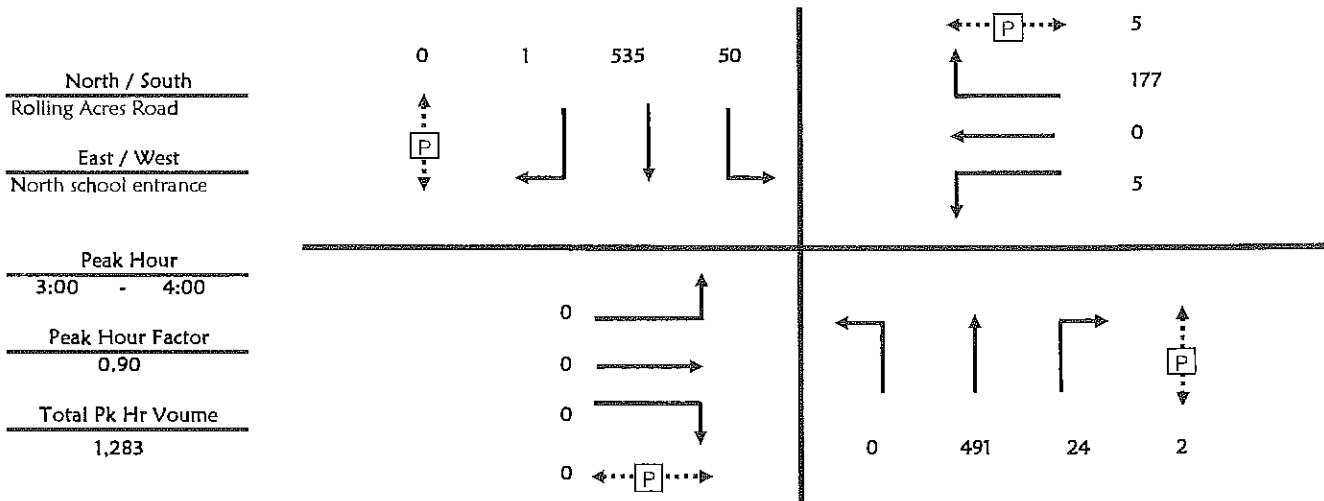
Roadway Count Summary

GMB Engineers & Planners, Inc.

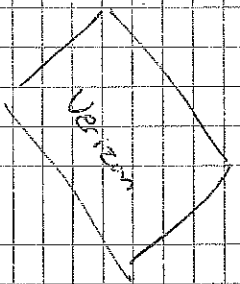
Intersection Rolling Acres Road & North school entrance
Date March 31, 2009
Time Period PM Peak Hour

Time Period	Northbound					Southbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	0	108	1	0	109	4	116	0	0	120
2:15 - 2:30	0	108	4	0	112	4	146	0	0	150
2:30 - 2:45	0	108	7	1	115	10	149	0	0	159
2:45 - 3:00	0	96	7	0	103	28	131	0	0	159
3:00 - 3:15	0	108	11	0	119	28	128	0	0	156
3:15 - 3:30	0	118	10	0	128	20	137	0	0	157
3:30 - 3:45	0	138	2	1	140	2	129	1	0	132
3:45 - 4:00	0	127	1	1	128	0	141	0	0	141
	0	911	43	3	954	96	1,077	1	0	1,174

Time Period	Eastbound					Westbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	0	0	0	0	0	0	0	2	0	2
2:15 - 2:30	0	0	0	0	0	0	0	2	0	2
2:30 - 2:45	0	0	0	0	0	0	0	4	0	4
2:45 - 3:00	0	0	0	0	0	1	0	4	0	5
3:00 - 3:15	0	0	0	0	0	0	0	63	0	63
3:15 - 3:30	0	0	0	0	0	0	0	72	5	77
3:30 - 3:45	0	0	0	0	0	2	0	25	0	27
3:45 - 4:00	0	0	0	0	0	3	0	17	0	20
	0	0	0	0	0	6	0	189	5	195



Signals & Timings
 Pavement Markings
 Speed Limits
 Surrounding Areas



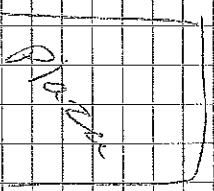
(Pavement)

← Rolling Acres Rd →
 (35)

(Concrete Median)

(Pavement)

← North Plaza Entrance



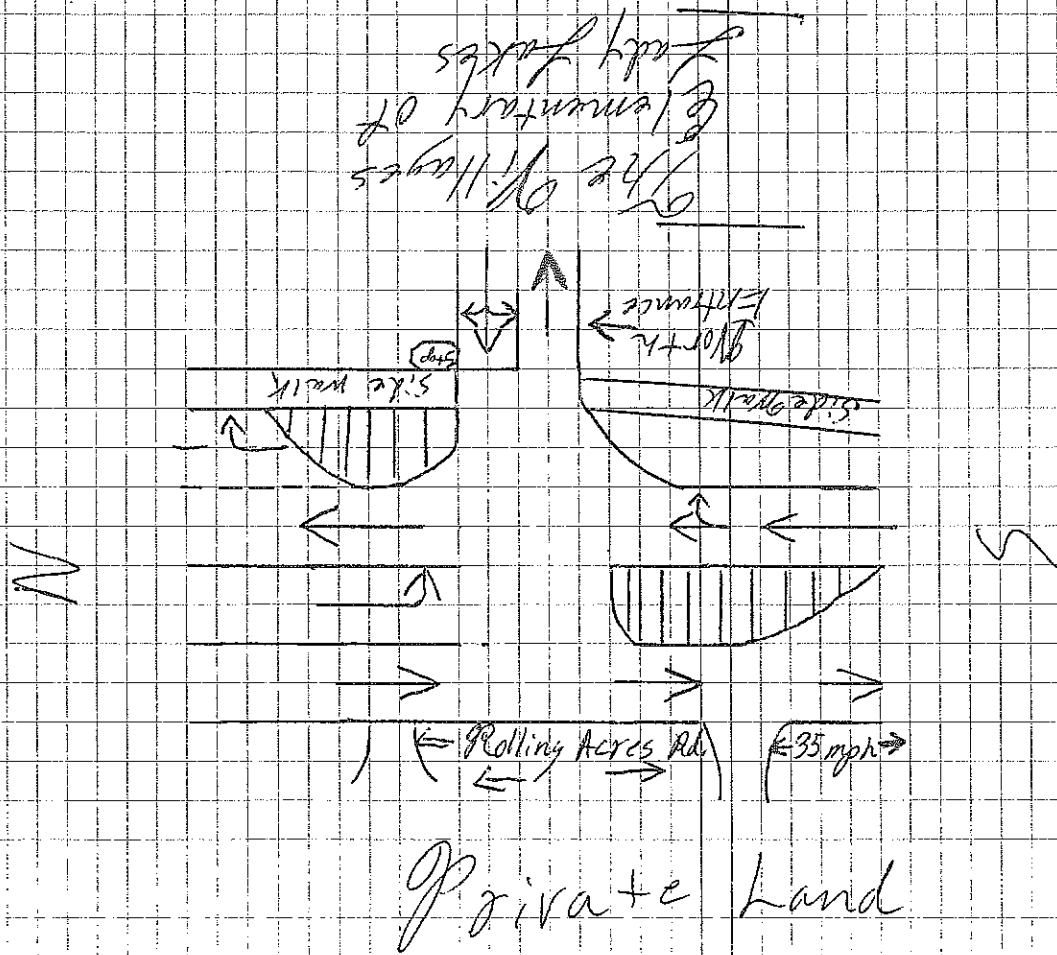
GMB Engineers & Planners- Intersection Sketch
 North / South Road: Rolling Acres Rd

East / West Road: North Plaza Entrance

Date: 3.19.09 Project: 05-242.03

Observations: drawings advised (see back)

~~Rolling Acres Rd~~
 Box E
 06-21208



GMB Engineers & Planners - Intersection Sketch
 North / South Road: Rolling Acres Rd
 East / West Road: North Entrance
 Date: 2/3/04 Project: Lady Lake
 Observations: Overcast

Signals & Timings: ✓
 Pavement Markings: ✓
 Speed Limits: ✓
 Surrounding Areas: ✓

ENGINEERS & PLANNERS, INC.
GMB

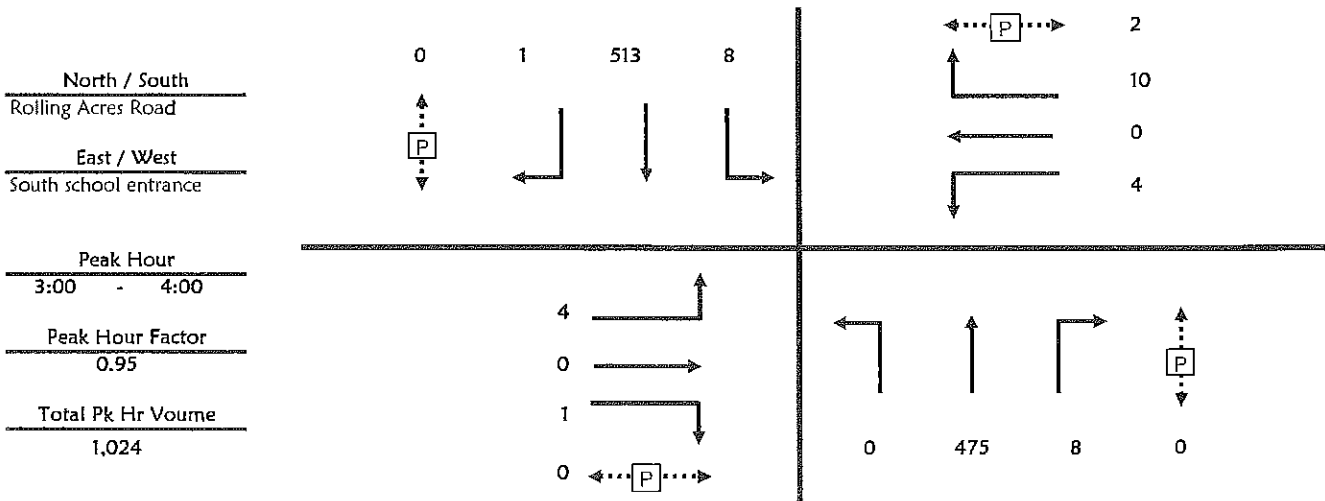
Roadway Count Summary

GMB Engineers & Planners, Inc.

Intersection Rolling Acres Road & South school entrance
Date March 31, 2009
Time Period PM Peak Hour

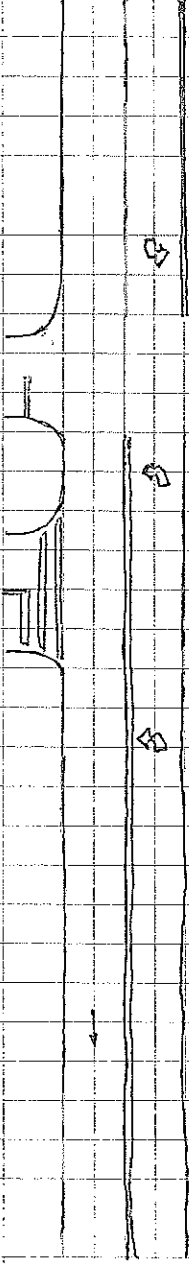
Time Period	Northbound					Southbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	0	103	0	0	103	0	112	2	0	114
2:15 - 2:30	0	105	0	0	105	0	140	1	0	141
2:30 - 2:45	0	116	0	0	116	0	144	0	0	144
2:45 - 3:00	0	96	5	0	101	2	113	1	0	116
3:00 - 3:15	0	122	1	0	123	1	117	0	0	118
3:15 - 3:30	0	111	4	0	115	5	126	0	0	131
3:30 - 3:45	0	132	1	0	133	0	135	0	0	135
3:45 - 4:00	0	110	2	0	112	2	135	1	0	138
	0	895	13	0	908	10	1,022	5	0	1,037

Time Period	Eastbound					Westbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	4	0	0	0	4	0	0	0	0	0
2:15 - 2:30	2	0	0	0	2	0	0	0	0	0
2:30 - 2:45	1	0	0	0	1	0	0	0	1	0
2:45 - 3:00	0	0	0	0	0	0	0	0	0	0
3:00 - 3:15	1	0	0	0	1	3	0	1	0	4
3:15 - 3:30	1	0	0	0	1	1	0	6	0	7
3:30 - 3:45	0	0	0	0	0	0	0	2	1	2
3:45 - 4:00	2	0	1	0	3	0	0	1	1	1
	11	0	1	0	12	4	0	10	3	14



School

Pro Build



Rolling Access →
35' length

Duck Lake Rd

Woodhouse

* all EB traffic counted from this entrance

Signals & Timings
 Pavement Markings
 Speed Limits
 Surrounding Areas

GMB Engineers & Planners - Intersection Sketch
 North / South Road: Rolling Access

East / West Road: South entrance

Date: 3-21-09 Project: 06-212-08
 Observations:



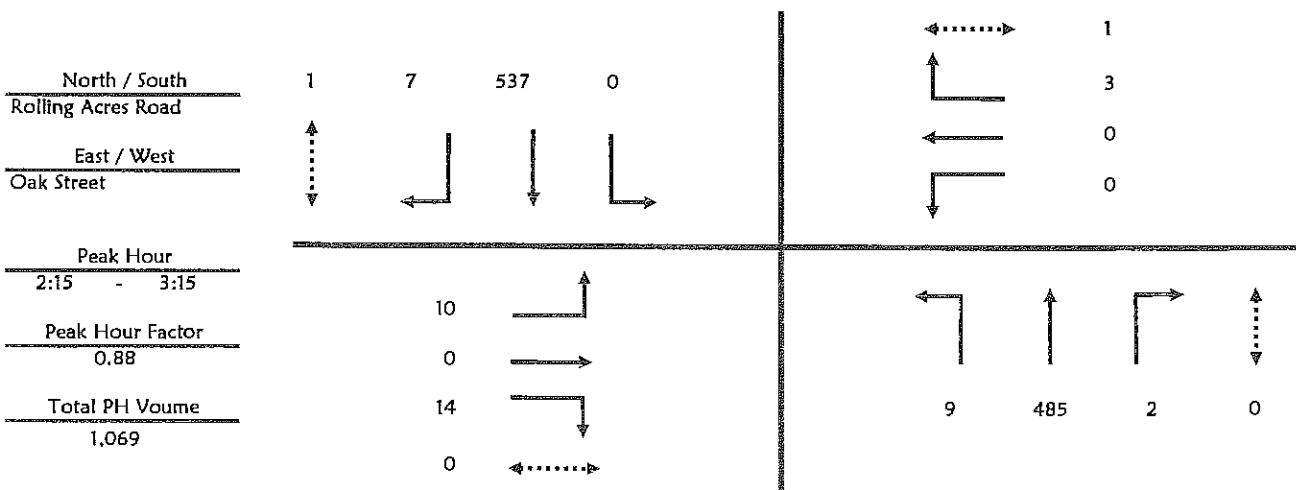
Roadway Count Summary

GMB Engineers & Planners, Inc.

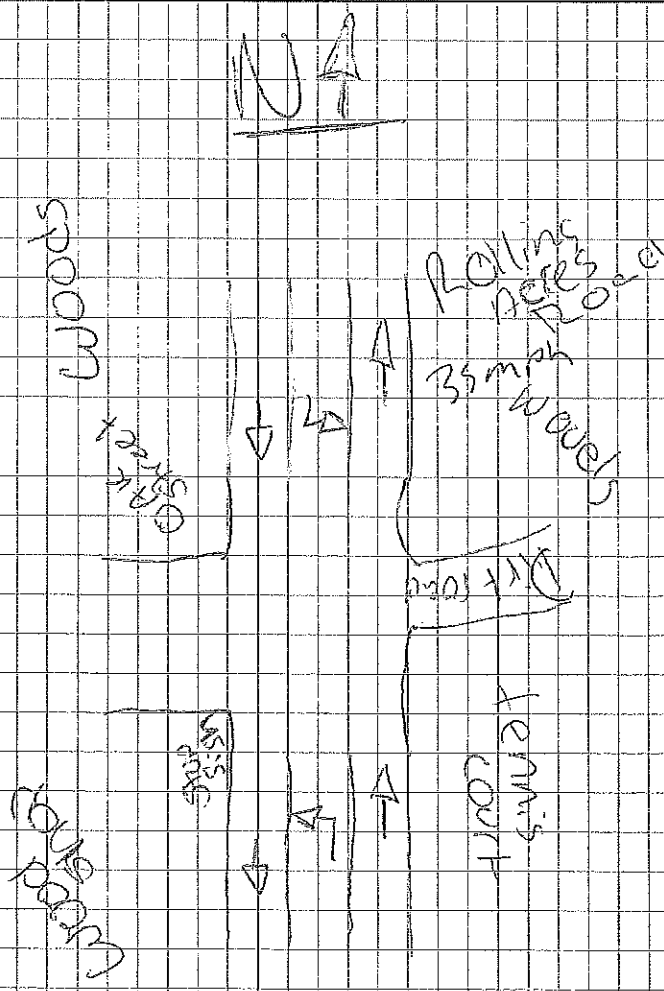
Intersection Rolling Acres Road & Oak Street
Date March 19, 2009
Time Period PM Peak Hour

Time Period	Northbound					Southbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	1	106	0	0	107	0	139	2	1	141
2:15 - 2:30	2	106	0	0	108	0	155	3	1	158
2:30 - 2:45	1	107	0	0	108	0	109	3	0	112
2:45 - 3:00	4	139	1	0	144	0	111	0	0	111
3:00 - 3:15	2	133	1	0	136	0	162	1	0	163
3:15 - 3:30	3	83	0	1	86	0	153	1	0	154
3:30 - 3:45	0	74	0	0	74	2	134	9	1	145
3:45 - 4:00	0	83	0	0	83	1	134	4	3	139
4:00 - 4:15	1	76	0	3	77	1	111	2	1	114
4:15 - 4:30	2	119	0	2	121	0	115	2	0	117
4:30 - 4:45	0	94	0	0	94	0	104	2	0	106
4:45 - 5:00	3	98	0	0	101	1	111	1	0	113
5:00 - 5:15	0	107	0	0	107	0	112	0	0	112
5:15 - 5:30	2	98	0	1	100	0	126	5	0	131
5:30 - 5:45	1	83	0	0	84	0	103	0	0	103
5:45 - 6:00	0	86	0	0	86	0	108	0	1	108
Total	22	1,592	2	7	1,616	5	1,987	35	8	2,027

Time Period	Eastbound					Westbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	1	0	2	0	3	0	0	0	0	0
2:15 - 2:30	3	0	4	0	7	0	0	0	0	0
2:30 - 2:45	2	0	3	0	5	0	0	1	1	1
2:45 - 3:00	3	0	4	0	7	0	0	1	0	1
3:00 - 3:15	2	0	3	0	5	0	0	1	0	1
3:15 - 3:30	0	0	6	0	6	0	0	0	0	0
3:30 - 3:45	8	1	1	0	10	0	0	0	0	0
3:45 - 4:00	3	0	2	0	5	0	0	0	0	0
4:00 - 4:15	6	0	3	0	9	0	0	0	0	0
4:15 - 4:30	2	0	1	0	3	0	0	0	0	0
4:30 - 4:45	3	1	4	0	8	0	0	0	0	0
4:45 - 5:00	2	0	6	0	8	0	0	1	0	1
5:00 - 5:15	3	0	0	0	3	0	0	0	0	0
5:15 - 5:30	2	0	0	0	2	0	0	0	0	0
5:30 - 5:45	1	0	2	0	3	0	0	0	0	0
5:45 - 6:00	0	0	1	0	1	1	0	0	0	1
Total	41	2	42	0	85	1	0	4	1	5



Panel
BOX



GMB Engineers & Planners - Intersection Sketch
North / South Road: Rolling Acres Road
East / West Road: OAK STREET
Date: 3/19/05 Project: 06-212-08
Observations: ACI

Signals & Timings
Pavement Markings
Speed Limits
Surrounding Areas

The logo for GMB Engineers & Planners, Inc. features the letters 'GMB' in a stylized font, with 'ENGINEERS & PLANNERS, INC.' written in a smaller font around it.

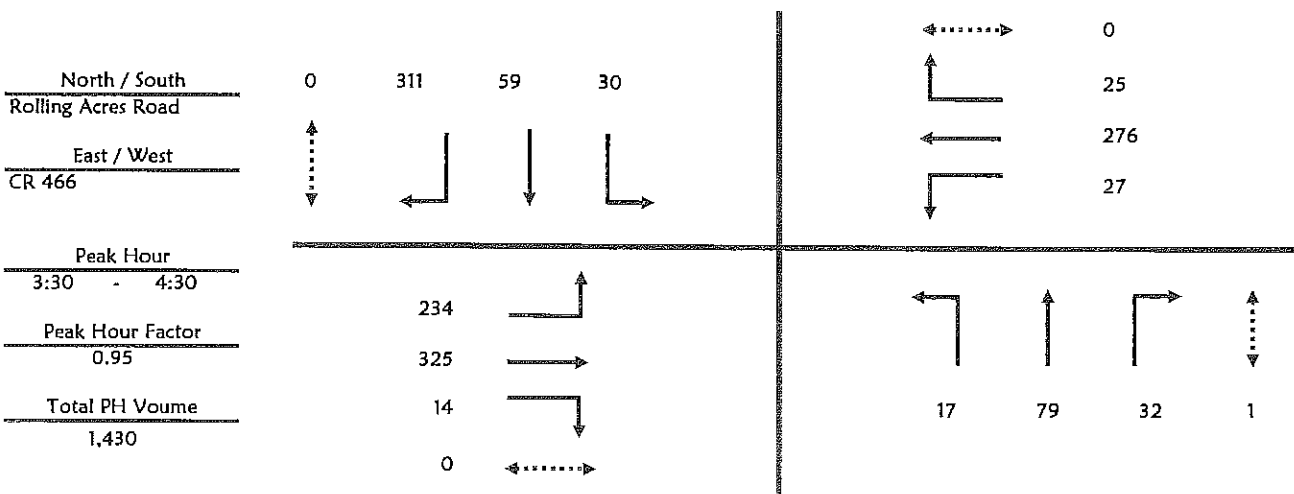
Roadway Count Summary

GMB Engineers & Planners, Inc.

Intersection Rolling Acres Road & CR 466
 Date May 13, 2009
 Time Period PM Peak Hour

Time Period	Northbound					Southbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	7	20	6	0	33	3	10	81	0	94
2:15 - 2:30	9	26	7	0	42	9	12	44	0	65
2:30 - 2:45	8	8	8	0	24	9	13	64	0	86
2:45 - 3:00	5	12	7	0	24	6	19	82	0	107
3:00 - 3:15	5	11	5	0	21	6	11	62	0	79
3:15 - 3:30	4	14	5	0	23	2	17	62	0	81
3:30 - 3:45	6	27	10	0	43	9	15	94	0	118
3:45 - 4:00	4	23	6	1	33	8	19	83	0	110
4:00 - 4:15	2	10	7	0	19	8	10	58	0	76
4:15 - 4:30	5	19	9	0	33	5	15	76	0	96
4:30 - 4:45	4	15	13	0	32	9	13	60	0	82
4:45 - 5:00	10	21	13	0	44	13	15	65	0	93
5:00 - 5:15	5	18	9	0	32	16	29	60	0	105
5:15 - 5:30	6	15	7	0	28	13	11	69	0	93
5:30 - 5:45	5	15	4	0	24	12	18	52	0	82
5:45 - 6:00	4	22	14	0	40	17	17	41	1	75
	89	276	130	1	495	145	244	1,053	1	1,442

Time Period	Eastbound					Westbound				
	Left	Through	Right	Peds	Total	Left	Through	Right	Peds	Total
2:00 - 2:15	59	44	6	0	109	13	82	5	0	100
2:15 - 2:30	62	47	1	1	110	5	83	7	0	95
2:30 - 2:45	51	63	3	0	117	5	101	4	1	110
2:45 - 3:00	61	75	7	1	143	5	75	6	0	86
3:00 - 3:15	74	81	4	0	159	4	66	7	0	77
3:15 - 3:30	42	69	8	0	119	6	65	5	0	76
3:30 - 3:45	43	61	3	0	107	4	84	4	0	92
3:45 - 4:00	65	86	4	0	155	7	69	2	0	78
4:00 - 4:15	74	101	3	0	178	9	65	10	0	84
4:15 - 4:30	52	77	4	0	133	7	58	9	0	74
4:30 - 4:45	61	75	3	0	139	6	67	10	0	83
4:45 - 5:00	44	77	5	0	126	4	54	3	0	61
5:00 - 5:15	40	84	5	0	129	8	74	8	0	90
5:15 - 5:30	60	85	5	0	150	9	66	10	1	85
5:30 - 5:45	42	79	2	0	123	8	68	11	0	87
5:45 - 6:00	41	78	1	0	120	6	54	17	0	77
	871	1,182	64	2	2,117	106	1,131	118	2	1,355



APPENDIX “C”

HCS INTERSECTION SUMMARY SHEETS

Existing Conditions

HCS+™ DETAILED REPORT													
General Information						Site Information							
Analyst GMB Agency or Co. Date Performed 3/26/2009 Time Period PM Peak Hour						Intersection US 441 at Rolling Acres Road Area Type All other areas Jurisdiction Lake County Analysis Year 2009 Project ID Existing Conditions PM Peak Hour							
Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of Lanes, N _i	1	2	1	1	2	1	2	1	1	1	1	1	
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R	
Volume, V (vph)	161	1099	264	284	1190	284	316	153	172	56	151	57	
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2	
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A	
Start-up Lost Time, I _i	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Extension of Effective Green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival Type, AT	3	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Filtering/Metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Initial Unmet Demand, Q _b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	60	0	0	0	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking Maneuvers, N _m													
Buses Stopping, N _b	0	0	0	0	0	0	0	0	0	0	0	0	
Min. Time for Pedestrians, G _p	3.2			3.2			3.2			3.2			
Phasing	Excl. Left	Thru & RT	03			04			Excl. Left	Thru & RT	07		08
Timing	G = 13.0	G = 26.2	G =			G =			G = 7.5	G = 8.0	G =		G =
	Y = 5	Y = 5	Y =			Y =			Y = 5	Y = 5	Y =		Y =
Duration of Analysis, T = 0.25							Cycle Length, C = 74.7						
Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adjusted Flow Rate, v	171	1169	281	302	1266	302	336	163	119	60	161	61	
Lane Group Capacity, c	308	1244	555	308	1244	555	345	200	170	178	200	170	
v/c Ratio, X	0.56	0.94	0.51	0.98	1.02	0.54	0.97	0.81	0.70	0.34	0.81	0.36	
Total Green Ratio, g/C	0.17	0.35	0.35	0.17	0.35	0.35	0.10	0.11	0.11	0.10	0.11	0.11	
Uniform Delay, d ₁	28.2	23.5	19.1	30.7	24.2	19.5	33.5	32.6	32.2	31.3	32.6	31.0	
Progression Factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Delay Calibration, k	0.15	0.45	0.11	0.48	0.50	0.14	0.48	0.36	0.27	0.11	0.35	0.11	
Incremental Delay, d ₂	2.2	13.6	0.8	45.8	30.0	1.1	41.3	22.3	12.1	1.1	20.9	1.3	
Initial Queue Delay, d ₃	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay	30.4	37.1	19.9	76.5	54.3	20.6	74.8	54.9	44.3	32.4	53.5	32.3	
Lane Group LOS	C	D	B	E	D	C	E	D	D	C	D	C	
Approach Delay	33.4			52.4			63.7			44.4			
Approach LOS	C			D			E			D			
Intersection Delay	46.5			X _c = 0.97			Intersection LOS			D			

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	MR			Intersection	RollingAcres & Shopping North			
Agency/Co.	GMB			Jurisdiction				
Date Performed	8/4/2009			Analysis Year				
Analysis Time Period	Existing PM Peak Hour							
Project Description Existing PM Peak Hour								
East/West Street: Shopping Plaza North Entrance				North/South Street: Rolling Acres Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		572	17		523	76		
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80		
Hourly Flow Rate, HFR (veh/h)	0	714	21	0	653	94		
Percent Heavy Vehicles	2	--	--	0	--	--		
Median Type	Raised curb							
RT Channelized			0			0		
Lanes	0	1	1	0	1	1		
Configuration		T	R		T	R		
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)			191			35		
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80		
Hourly Flow Rate, HFR (veh/h)	0	0	238	0	0	43		
Percent Heavy Vehicles	2	0	2	0	0	2		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	1	0	0	1		
Configuration			R			R		
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration					R			R
v (veh/h)					43			238
C (m) (veh/h)					431			467
v/c					0.10			0.51
95% queue length					0.33			2.84
Control Delay (s/veh)					14.3			20.4
LOS					B			C
Approach Delay (s/veh)	--	--	14.3			20.4		
Approach LOS	--	--	B			C		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	MR			Intersection	Rolling Acres & Shopping South			
Agency/Co.	GMB			Jurisdiction				
Date Performed	8/4/2009			Analysis Year				
Analysis Time Period	Existing PM Peak Hour							
Project Description Existing PM Peak Hour								
East/West Street: Shopping Plaza South Entrance				North/South Street: Rolling Acres Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	92	392	46	128	484	10		
Peak-Hour Factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76		
Hourly Flow Rate, HFR (veh/h)	121	515	60	168	636	13		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Raised curb							
RT Channelized			0				0	
Lanes	1	1	1	1	1	1		
Configuration	L	T	R	L	T	R		
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	7	5	37	34	29	83		
Peak-Hour Factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76		
Hourly Flow Rate, HFR (veh/h)	9	6	48	44	38	109		
Percent Heavy Vehicles	2	2	2	2	2	2		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration		LTR		L		TR		
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	L		TR		LTR	
v (veh/h)	121	168	44		147		63	
C (m) (veh/h)	937	998	78		286		182	
v/c	0.13	0.17	0.56		0.51		0.35	
95% queue length	0.44	0.60	2.46		2.74		1.45	
Control Delay (s/veh)	9.4	9.3	99.1		30.2		34.9	
LOS	A	A	F		D		D	
Approach Delay (s/veh)	--	--	46.1			34.9		
Approach LOS	--	--	E			D		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	MR			Intersection	Rolling Acres & School Ent Nor			
Agency/Co.	GMB			Jurisdiction				
Date Performed	4/23/2009			Analysis Year				
Analysis Time Period	Existing PM Peak (3PM - 4PM)							
Project Description Existing PM Peak (3PM - 4PM)								
East/West Street: School Entrance North				North/South Street: Rolling Acres Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		491	24	50	535			
Peak-Hour Factor, PHF	0.95	0.90	0.90	0.90	0.90	0.95		
Hourly Flow Rate, HFR (veh/h)	0	545	26	55	594	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration			TR	L	T			
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				5		177		
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.90	0.95	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	5	0	196		
Percent Heavy Vehicles	0	0	0	2	0	2		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		55		201				
C (m) (veh/h)		1002		504				
v/c		0.05		0.40				
95% queue length		0.17		1.90				
Control Delay (s/veh)		8.8		16.8				
LOS		A		C				
Approach Delay (s/veh)	--	--		16.8				
Approach LOS	--	--		C				

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	MR			Intersection	Rolling Acres & School Ent Sou			
Agency/Co.	GMB			Jurisdiction				
Date Performed	4/23/2009			Analysis Year				
Analysis Time Period	Existing PM Peak (3PM - 4PM)							
Project Description Existing PM Peak (3PM - 4PM)								
East/West Street: School Entrance South				North/South Street: Rolling Acres Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		475	8	8	513			
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95		
Hourly Flow Rate, HFR (veh/h)	0	500	8	8	540	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration			TR	L	T			
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				4		10		
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95		
Hourly Flow Rate, HFR (veh/h)	0	0	0	4	0	10		
Percent Heavy Vehicles	0	0	0	2	0	2		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		8		14				
C (m) (veh/h)		1057		413				
v/c		0.01		0.03				
95% queue length		0.02		0.11				
Control Delay (s/veh)		8.4		14.0				
LOS		A		B				
Approach Delay (s/veh)	--	--		14.0				
Approach LOS	--	--		B				

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	GMB			Intersection	Rolling Acres Road at Oak St			
Agency/Co.				Jurisdiction	Lake County			
Date Performed	3/26/2009			Analysis Year	2009			
Analysis Time Period	PM Peak Hour							
Project Description Existing Conditions Pm Peak Hour								
East/West Street: Oak Street				North/South Street: Rolling Acres Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street		Northbound			Southbound			
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	9	485	2	0	537	7		
Peak-Hour Factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88		
Hourly Flow Rate, HFR (veh/h)	10	551	2	0	610	7		
Percent Heavy Vehicles	2	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0				0	
Lanes	1	1	0	1	1	0		
Configuration	L		TR	L		TR		
Upstream Signal		0			0			
Minor Street		Eastbound			Westbound			
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	10	0	14	0	0	3		
Peak-Hour Factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88		
Hourly Flow Rate, HFR (veh/h)	11	0	15	0	0	3		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration		LTR			LTR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			LTR		
v (veh/h)	10	0	3			26		
C (m) (veh/h)	963	1027	537			265		
v/c	0.01	0.00	0.01			0.10		
95% queue length	0.03	0.00	0.02			0.32		
Control Delay (s/veh)	8.8	8.5	11.7			20.1		
LOS	A	A	B			C		
Approach Delay (s/veh)	--	--	11.7			20.1		
Approach LOS	--	--	B			C		

HCS+™ DETAILED REPORT												
General Information						Site Information						
Analyst GMB Agency or Co. Date Performed 5/26/2009 Time Period PM Peak Hour						Intersection CR 466 at Rolling Acres Road Area Type All other areas Jurisdiction Lake County Analysis Year 2009 Project ID Existing Conditions PM Peak Hour						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _i	1	1	0	1	1	0	1	1	0	1	1	0
Lane Group	L	TR		L	TR		L	TR		L	TR	
Volume, V (vph)	234	325	14	27	276	25	17	79	32	30	59	311
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, I ₁	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Arrival Type, AT	3	3		3	3		3	3		3	3	
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Initial Unmet Demand, Q _b	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0		0	0		0	0		0	0	
Min. Time for Pedestrians, G _p	3.2			3.2			3.2			3.2		
Phasing	EB Only	EW Perm	03	04	SB Only	NS Perm	07	08				
Timing	G = 10.0	G = 16.0	G =	G =	G = 8.5	G = 8.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25							Cycle Length, C = 62.5					
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	246	357		28	317		18	117		32	389	
Lane Group Capacity, c	470	918		261	471		127	228		428	560	
v/c Ratio, X	0.52	0.39		0.11	0.67		0.14	0.51		0.07	0.69	
Total Green Ratio, g/C	0.50	0.50		0.26	0.26		0.13	0.13		0.34	0.34	
Uniform Delay, d ₁	10.2	9.8		17.8	20.9		24.2	25.4		13.8	17.7	
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Delay Calibration, k	0.13	0.11		0.11	0.24		0.11	0.12		0.11	0.26	
Incremental Delay, d ₂	1.1	0.3		0.2	3.8		0.5	2.0		0.1	3.7	
Initial Queue Delay, d ₃	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay	11.3	10.1		18.0	24.7		24.7	27.4		13.9	21.4	
Lane Group LOS	B	B		B	C		C	C		B	C	
Approach Delay	10.6			24.1			27.1			20.8		
Approach LOS	B			C			C			C		
Intersection Delay	18.0			X _c = 0.72			Intersection LOS			B		

Future Conditions – No Build

HCS+™ DETAILED REPORT												
General Information						Site Information						
Analyst	GMB					Intersection	US 441 at Rolling Acres Road					
Agency or Co.						Area Type	All other areas					
Date Performed	3/26/2009					Jurisdiction						
Time Period	Future PM Peak Hour - No Build					Analysis Year	2030					
						Project ID	Future PM Peak Hour - No Build					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N1	1	2	1	1	2	1	2	1	1	1	1	1
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	241	1646	395	425	1782	75	473	229	258	84	226	85
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Qb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	60	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, Nm												
Buses Stopping, Nb	0	0	0	0	0	0	0	0	0	0	0	0
Min. Time for Pedestrians, Gp	3.2			3.2			3.2			3.2		
Phasing	Excl. Left	Thru & RT	03		04		Excl. Left	Thru & RT	07		08	
Timing	G = 13.0	G = 26.2	G =		G =		G = 7.5	G = 8.0	G =		G =	
	Y = 5	Y = 5	Y =		Y =		Y = 5	Y = 5	Y =		Y =	
Duration of Analysis, T = 0.25							Cycle Length, C = 74.7					
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	254	1733	416	447	1876	79	498	241	208	88	238	89
Lane Group Capacity, c	308	1244	555	308	1244	555	345	200	170	178	200	170
v/c Ratio, X	0.82	1.39	0.75	1.45	1.51	0.14	1.44	1.21	1.22	0.49	1.19	0.52
Total Green Ratio, g/C	0.17	0.35	0.35	0.17	0.35	0.35	0.10	0.11	0.11	0.10	0.11	0.11
Uniform Delay, d1	29.8	24.2	21.4	30.8	24.2	16.6	33.6	33.3	33.3	31.8	33.3	31.5
Progression Factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.36	0.50	0.30	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.50	0.13
Incremental Delay, d2	16.5	181.9	5.6	220.4	232.8	0.1	215.3	129.8	141.7	2.2	124.3	2.9
Initial Queue Delay, d3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	46.3	206.1	27.0	251.3	257.1	16.7	248.9	163.2	175.1	34.0	157.6	34.5
Lane Group LOS	D	F	C	F	F	B	F	F	F	C	F	C
Approach Delay	158.2			248.1			210.9			105.0		
Approach LOS	F			F			F			F		
Intersection Delay	197.7			Xc = 1.44			Intersection LOS			F		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	MR			Intersection	RollingAcres & Shopping North		
Agency/Co.	GMB			Jurisdiction			
Date Performed	8/4/2009			Analysis Year	2030		
Analysis Time Period	Future PM Peak Hour - No Build						
Project Description: Future PM Peak Hour - No Build							
East/West Street: Shopping Plaza North Entrance				North/South Street: Rolling Acres Road			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		857	17		783	76	
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	
Hourly Flow Rate, HFR (veh/h)	0	1071	21	0	978	94	
Percent Heavy Vehicles	2	--	--	0	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	0	1	1	0	1	1	
Configuration		T	R		T	R	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)			191			35	
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	
Hourly Flow Rate, HFR (veh/h)	0	0	238	0	0	43	
Percent Heavy Vehicles	2	0	2	0	0	2	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	1	0	0	1	
Configuration			R			R	
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration					R		R
v (veh/h)					43		238
C (m) (veh/h)					268		304
v/c					0.16		0.78
95% queue length					0.56		6.18
Control Delay (s/veh)					21.0		49.0
LOS					C		E
Approach Delay (s/veh)	--	--	21.0			49.0	
Approach LOS	--	--	C			E	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	MR			Intersection	Rolling Acres & Shopping South		
Agency/Co.	GMB			Jurisdiction			
Date Performed	8/4/2009			Analysis Year	2030		
Analysis Time Period	Future PM Peak Hour - No Build						
Project Description: Future PM Peak Hour - No Build							
East/West Street: Shopping Plaza South Entrance				North/South Street: Rolling Acres Road			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	92	587	46	128	0	10	
Peak-Hour Factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	
Hourly Flow Rate, HFR (veh/h)	121	772	60	168	0	13	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	1	1	1	1	1	1	
Configuration	L	T	R	L	T	R	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	7	5	37	34	29	83	
Peak-Hour Factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	
Hourly Flow Rate, HFR (veh/h)	9	6	48	44	38	109	
Percent Heavy Vehicles	2	2	2	2	2	2	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	1	1	0	
Configuration		LTR		L		TR	
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	L		TR		LTR
v (veh/h)	121	168	44		147		63
C (m) (veh/h)	1606	801	179		317		0
v/c	0.08	0.21	0.25		0.46		
95% queue length	0.24	0.79	0.93		2.34		
Control Delay (s/veh)	7.4	10.7	31.5		25.8		
LOS	A	B	D		D		F
Approach Delay (s/veh)	--	--	27.1				
Approach LOS	--	--	D				

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	MR			Intersection	Rolling Acres & School Ent Nor			
Agency/Co.	GMB			Jurisdiction				
Date Performed	4/23/2009			Analysis Year	2030			
Analysis Time Period	Future PM Peak (3PM - 4PM)							
Project Description <i>Future PM Peak (3PM - 4PM) - No Build</i>								
East/West Street: <i>School Entrance North</i>				North/South Street: <i>Rolling Acres Road</i>				
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		735	24	50	801			
Peak-Hour Factor, PHF	0.95	0.90	0.90	0.90	0.90	0.95		
Hourly Flow Rate, HFR (veh/h)	0	816	26	55	890	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration			TR	L	T			
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				5		177		
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.90	0.95	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	5	0	196		
Percent Heavy Vehicles	0	0	0	2	0	2		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		55		201				
C (m) (veh/h)		794		338				
v/c		0.07		0.59				
95% queue length		0.22		3.63				
Control Delay (s/veh)		9.9		30.1				
LOS		A		D				
Approach Delay (s/veh)	--	--		30.1				
Approach LOS	--	--		D				

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	MR			Intersection	Rolling Acres & School Ent Sou			
Agency/Co.	GMB			Jurisdiction				
Date Performed	4/23/2009			Analysis Year	2030			
Analysis Time Period	Future PM Peak (3PM - 4PM)							
Project Description: Future PM Peak (3PM - 4PM) - No Build								
East/West Street: School Entrance South				North/South Street: Rolling Acres Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		711	8	8	768			
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95		
Hourly Flow Rate, HFR (veh/h)	0	748	8	8	808	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration			TR	L	T			
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				4		10		
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95		
Hourly Flow Rate, HFR (veh/h)	0	0	0	4	0	10		
Percent Heavy Vehicles	0	0	0	2	0	2		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		8		14				
C (m) (veh/h)		855		243				
v/c		0.01		0.06				
95% queue length		0.03		0.18				
Control Delay (s/veh)		9.3		20.7				
LOS		A		C				
Approach Delay (s/veh)	--	--		20.7				
Approach LOS	--	--		C				

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	GMB			Intersection	Rolling Acres Road at Oak St		
Agency/Co.				Jurisdiction			
Date Performed	3/26/2009			Analysis Year	2030		
Analysis Time Period	Future PM Peak Hour - No Build						
Project Description <i>Future PM Peak Hour - No Build</i>							
East/West Street: <i>Oak Street</i>				North/South Street: <i>Rolling Acres Road</i>			
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	13	726	3	0	804	10	
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	13	764	3	0	846	10	
Percent Heavy Vehicles	2	--	--	0	--	--	
Median Type	<i>Undivided</i>						
RT Channelized			0			0	
Lanes	1	1	0	1	1	0	
Configuration	L		TR	L		TR	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	15	0	21	0	0	4	
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	15	0	22	0	0	4	
Percent Heavy Vehicles	2	0	2	0	0	0	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	13	0	4			37	
C (m) (veh/h)	784	856	406			145	
v/c	0.02	0.00	0.01			0.26	
95% queue length	0.05	0.00	0.03			0.96	
Control Delay (s/veh)	9.7	9.2	14.0			38.1	
LOS	A	A	B			E	
Approach Delay (s/veh)	--	--	14.0			38.1	
Approach LOS	--	--	B			E	

HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	GMB			Intersection	CR 466 at Rolling Acres Road		
Agency or Co.				Area Type	All other areas		
Date Performed	5/26/2009			Jurisdiction			
Time Period	Future PM Peak Hour - No Build			Analysis Year	2030		
				Project ID	Future PM Peak Hour - No Build		

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _i	1	2	0	1	2	0	1	1	0	1	1	0
Lane Group	L	TR		L	TR		L	TR		L	TR	
Volume, V (vph)	350	487	21	40	413	37	25	118	48	45	88	466
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l _i	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Arrival Type, AT	3	3		3	3		3	3		3	3	
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Initial Unmet Demand, Q _b	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0		0	0		0	0		0	0	
Min. Time for Pedestrians, G _p	3.2			3.2			3.2			3.2		
Phasing	EB Only	EW Perm	03	04	SB Only	NS Perm	07	08				
Timing	G = 10.0	G = 16.0	G =	G =	G = 8.5	G = 8.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 62.5						

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	368	535		42	474		26	175		47	584	
Lane Group Capacity, c	477	1748		216	897		119	228		378	560	
v/c Ratio, X	0.77	0.31		0.19	0.53		0.22	0.77		0.12	1.04	
Total Green Ratio, g/C	0.50	0.50		0.26	0.26		0.13	0.13		0.34	0.34	
Uniform Delay, d ₁	10.8	9.4		18.2	20.0		24.4	26.4		14.1	20.5	
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Delay Calibration, k	0.32	0.11		0.11	0.13		0.11	0.32		0.11	0.50	
Incremental Delay, d ₂	7.6	0.1		0.4	0.6		0.9	14.6		0.1	49.7	
Initial Queue Delay, d ₃	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay	18.4	9.5		18.6	20.6		25.4	40.9		14.3	70.2	
Lane Group LOS	B	A		B	C		C	D		B	E	
Approach Delay	13.1			20.4			38.9			66.0		
Approach LOS	B			C			D			E		
Intersection Delay	31.9			X _c = 0.79			Intersection LOS			C		

Future Conditions – With Proposed Changes

HCS+™ DETAILED REPORT

General Information		Site Information	
Analyst	GMB	Intersection	US 441 at Rolling Acres Road
Agency or Co.		Area Type	All other areas
Date Performed	3/26/2009	Jurisdiction	
Time Period	Future PM Peak Hour w Changes	Analysis Year	2009
		Project ID	Future PM Peak Hour with Changes

Volume and Timing Input														
	EB			WB			NB			SB				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Number of Lanes, N _l	1	3	1	1	3	1	2	1	1	1	1	1		
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R		
Volume, V (vph)	241	1646	335	425	1782	75	473	229	258	84	226	85		
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2		
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A		
Start-up Lost Time, I _l	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Extension of Effective Green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Arrival Type, AT	3	3	3	3	3	3	3	3	3	3	3	3		
Unit Extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Filtering/Metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Initial Unmet Demand, Q _b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	60	0	0	0		
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N		
Parking Maneuvers, N _m														
Buses Stopping, N _b	0	0	0	0	0	0	0	0	0	0	0	0		
Min. Time for Pedestrians, G _p	3.2			3.2			3.2			3.2				
Phasing	Excl. Left	Thru & RT	03			04			Excl. Left	Thru & RT	07		08	
Timing	G = 13.0	G = 26.2	G =			G =			G = 7.5	G = 8.0	G =		G =	
	Y = 5	Y = 5	Y =			Y =			Y = 5	Y = 5	Y =		Y =	
Duration of Analysis, T = 0.25							Cycle Length, C = 74.7							

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	254	1733	353	447	1876	79	498	241	208	88	238	89
Lane Group Capacity, c	308	1780	555	308	1780	555	345	200	170	178	200	170
v/c Ratio, X	0.82	0.97	0.64	1.45	1.05	0.14	1.44	1.21	1.22	0.49	1.19	0.52
Total Green Ratio, g/C	0.17	0.35	0.35	0.17	0.35	0.35	0.10	0.11	0.11	0.10	0.11	0.11
Uniform Delay, d ₁	29.8	23.9	20.3	30.8	24.2	16.6	33.6	33.3	33.3	31.8	33.3	31.5
Progression Factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.36	0.48	0.22	0.50	0.50	0.11	0.50	0.50	0.50	0.11	0.50	0.13
Incremental Delay, d ₂	16.5	15.5	2.4	220.4	37.2	0.1	215.3	129.8	141.7	2.2	124.3	2.9
Initial Queue Delay, d ₃	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	46.3	39.4	22.7	251.3	61.4	16.7	248.9	163.2	175.1	34.0	157.6	34.5
Lane Group LOS	D	D	C	F	E	B	F	F	F	C	F	C
Approach Delay	37.6			95.3			210.9			105.0		
Approach LOS	D			F			F			F		
Intersection Delay	91.8			X _c = 1.23			Intersection LOS			F		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	MR			Intersection	Rolling Acres & Shopping North		
Agency/Co.	GMB			Jurisdiction			
Date Performed	8/4/2009			Analysis Year			
Analysis Time Period	Future PM Peak Hour w Changes						
Project Description: Future PM Peak Hour with Changes							
East/West Street: Shopping Plaza North Entrance				North/South Street: Rolling Acres Road			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		857	17		783	76	
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	
Hourly Flow Rate, HFR (veh/h)	0	1071	21	0	978	94	
Percent Heavy Vehicles	2	--	--	0	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	0	2	1	0	2	1	
Configuration		T	R		T	R	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)			191			35	
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	
Hourly Flow Rate, HFR (veh/h)	0	0	238	0	0	43	
Percent Heavy Vehicles	2	0	2	0	0	2	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	1	0	0	1	
Configuration			R			R	
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration					R		R
v (veh/h)					43		238
C (m) (veh/h)					543		577
v/c					0.08		0.41
95% queue length					0.26		2.01
Control Delay (s/veh)					12.2		15.5
LOS					B		C
Approach Delay (s/veh)	--	--	12.2			15.5	
Approach LOS	--	--	B			C	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	MR			Intersection	Rolling Acres & Shopping South		
Agency/Co.	GMB			Jurisdiction			
Date Performed	8/4/2009			Analysis Year			
Analysis Time Period	Future PM Peak Hour w Changes						
Project Description <i>Future PM Peak Hour with Changes</i>							
East/West Street: <i>Shopping Plaza South Entrance</i>				North/South Street: <i>Rolling Acres Road</i>			
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	92	587	46	128	0	10	
Peak-Hour Factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	
Hourly Flow Rate, HFR (veh/h)	121	772	60	168	0	13	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	1	2	1	1	2	1	
Configuration	L	T	R	L	T	R	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	7	5	37	34	29	83	
Peak-Hour Factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	
Hourly Flow Rate, HFR (veh/h)	9	6	48	44	38	109	
Percent Heavy Vehicles	2	2	2	2	2	2	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	1	1	0	
Configuration		LTR		L		TR	
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	L		TR		LTR
v (veh/h)	121	168	44		147		63
C (m) (veh/h)	1604	796	164		411		330
v/c	0.08	0.21	0.27		0.36		0.19
95% queue length	0.24	0.79	1.03		1.59		0.69
Control Delay (s/veh)	7.4	10.7	34.8		18.6		18.5
LOS	A	B	D		C		C
Approach Delay (s/veh)	--	--	22.3			18.5	
Approach LOS	--	--	C			C	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	MR			Intersection	Rolling Acres & School Ent Nor			
Agency/Co.	GMB			Jurisdiction				
Date Performed	4/23/2009			Analysis Year				
Analysis Time Period	Future PM Peak (3PM - 4PM)							
Project Description Future PM Peak (3PM - 4PM) with Changes								
East/West Street: School Entrance North				North/South Street: Rolling Acres Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		735	24	50	801			
Peak-Hour Factor, PHF	0.95	0.90	0.90	0.90	0.90	0.95		
Hourly Flow Rate, HFR (veh/h)	0	816	26	55	890	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	2	0	1	2	0		
Configuration		T	TR	L	T			
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				5		177		
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.90	0.95	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	5	0	196		
Percent Heavy Vehicles	0	0	0	2	0	2		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (veh/h)		55		201				
C (m) (veh/h)		789		574				
v/c		0.07		0.35				
95% queue length		0.22		1.56				
Control Delay (s/veh)		9.9		14.6				
LOS		A		B				
Approach Delay (s/veh)	--	--		14.6				
Approach LOS	--	--		B				

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	MR			Intersection	Rolling Acres & School Ent Sou		
Agency/Co.	GMB			Jurisdiction			
Date Performed	4/23/2009			Analysis Year			
Analysis Time Period	Future PM Peak (3PM - 4PM)						
Project Description							
East/West Street: School Entrance South				North/South Street: Rolling Acres Road			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		711	8	8	768		
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	0	748	8	8	808	0	
Percent Heavy Vehicles	0	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0				0
Lanes	0	1	0	1	1		0
Configuration			TR	L	T		
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				4		10	
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	0	0	0	4	0	10	
Percent Heavy Vehicles	0	0	0	2	0	2	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0				0
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration		L		LR			
v (veh/h)		8		14			
C (m) (veh/h)		855		243			
v/c		0.01		0.06			
95% queue length		0.03		0.18			
Control Delay (s/veh)		9.3		20.7			
LOS		A		C			
Approach Delay (s/veh)	--	--		20.7			
Approach LOS	--	--		C			

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	GMB			Intersection	Rolling Acres Road at Oak St		
Agency/Co.				Jurisdiction			
Date Performed	3/26/2009			Analysis Year	2030		
Analysis Time Period	Future PM Peak Hour - w Change						
Project Description <i>Future Pm Peak Hour - with Changes</i>							
East/West Street: <i>Oak Street</i>				North/South Street: <i>Rolling Acres Road</i>			
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	13	726	3	0	804	10	
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	13	764	3	0	846	10	
Percent Heavy Vehicles	2	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	1	2	0	1	2	0	
Configuration	L	T	TR	L	T	TR	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	15	0	21	0	0	4	
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	15	0	22	0	0	4	
Percent Heavy Vehicles	2	0	2	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	13	0	4			37	
C (m) (veh/h)	780	856	668			238	
v/c	0.02	0.00	0.01			0.16	
95% queue length	0.05	0.00	0.02			0.54	
Control Delay (s/veh)	9.7	9.2	10.4			22.9	
LOS	A	A	B			C	
Approach Delay (s/veh)	--	--	10.4			22.9	
Approach LOS	--	--	B			C	

HCS+™ DETAILED REPORT

General Information				Site Information			
Analyst	GMB			Intersection	CR 466 at Rolling Acres Road		
Agency or Co.				Area Type	All other areas		
Date Performed	5/26/2009			Jurisdiction	Lake County		
Time Period	Future PM Peak Hour - w Change			Analysis Year	2030		
				Project ID	Future PM Peak Hour - with Changes		

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _l	1	2	0	1	2	0	1	1	0	1	2	0
Lane Group	L	TR		L	TR		L	TR		L	TR	
Volume, V (vph)	350	487	21	40	413	37	25	118	48	45	88	466
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, l ₁	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Arrival Type, AT	3	3		3	3		3	3		3	3	
Unit Extension, UE	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Initial Unmet Demand, Q _b	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0		0	0		0	0		0	0	
Min. Time for Pedestrians, G _p	3.2			3.2			3.2			3.2		
Phasing	EB Only	EW Perm	03	04	SB Only	NS Perm	07	08				
Timing	G = 10.0	G = 16.0	G =	G =	G = 8.5	G = 8.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis, T = 0.25							Cycle Length, C = 62.5					

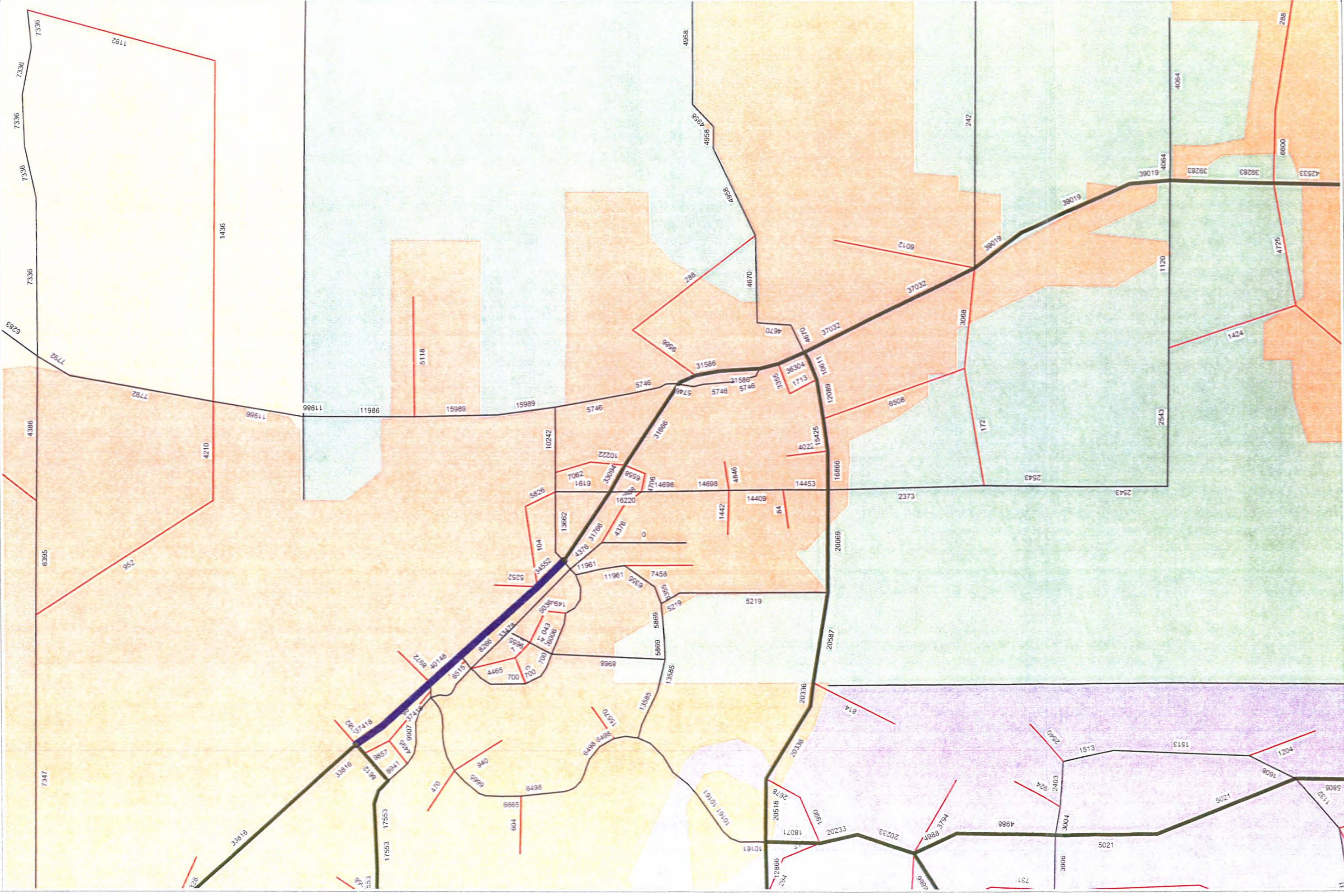
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	368	535		42	474		26	175		47	584	
Lane Group Capacity, c	477	1748		216	897		119	228		378	1066	
v/c Ratio, X	0.77	0.31		0.19	0.53		0.22	0.77		0.12	0.55	
Total Green Ratio, g/C	0.50	0.50		0.26	0.26		0.13	0.13		0.34	0.34	
Uniform Delay, d ₁	10.8	9.4		18.2	20.0		24.4	26.4		14.1	16.6	
Progression Factor, PF	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Delay Calibration, k	0.32	0.11		0.11	0.13		0.11	0.32		0.11	0.15	
Incremental Delay, d ₂	7.6	0.1		0.4	0.6		0.9	14.6		0.1	0.6	
Initial Queue Delay, d ₃	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay	18.4	9.5		18.6	20.6		25.4	40.9		14.3	17.2	
Lane Group LOS	B	A		B	C		C	D		B	B	
Approach Delay	13.1			20.4			38.9			17.0		
Approach LOS	B			C			D			B		
Intersection Delay	18.2			X _c = 0.59			Intersection LOS			B		

APPENDIX “D”

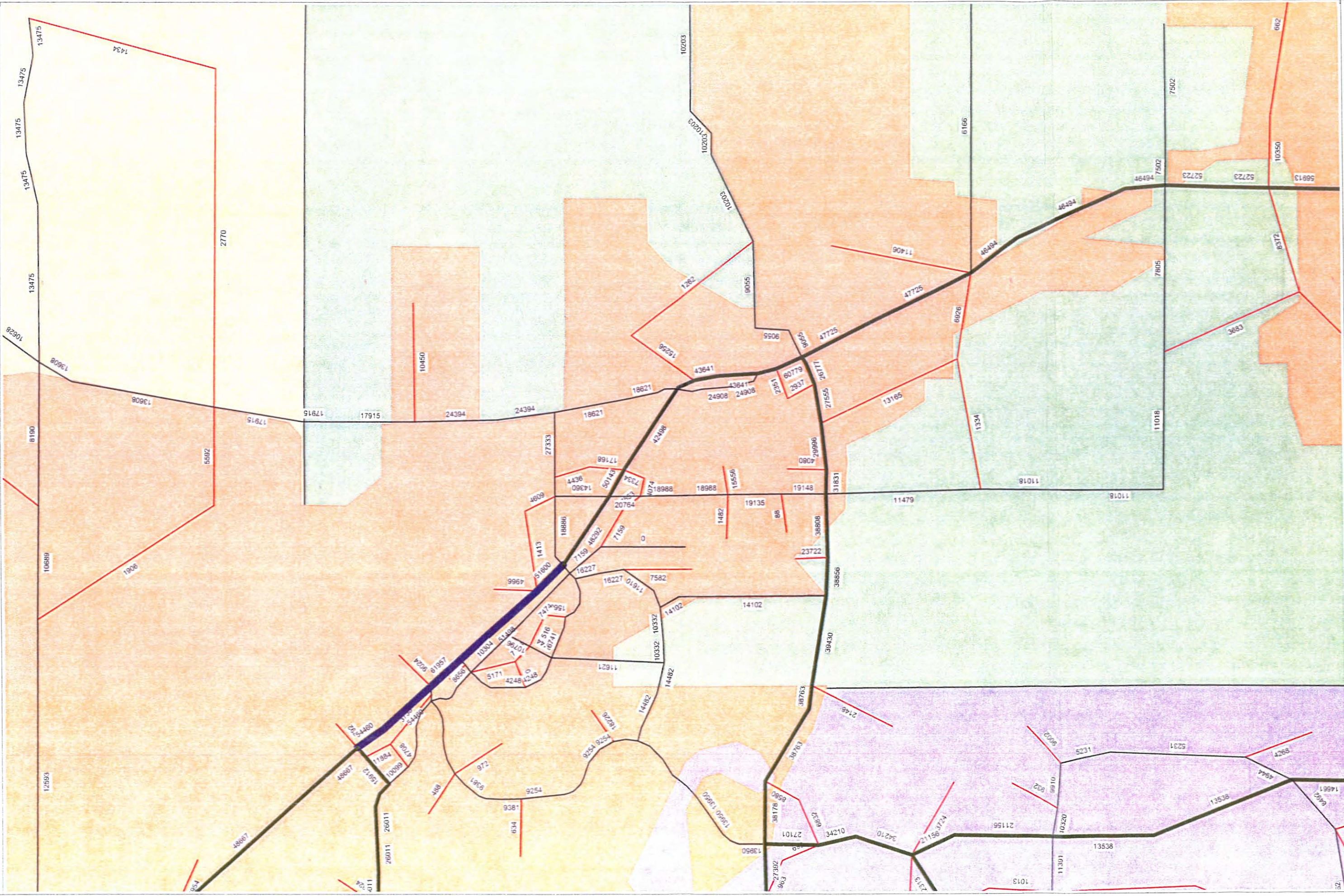
CENTRAL FLORIDA REGIONAL PLANNING MODEL

(CFRPMV410)

Year 2009 CFRPM - Rollings Acre Rd Study
Total Traffic Volumes



Year 2030 Data CFRPM - Rollings Acre Rd Study
Total Traffic Volumes (with Rollings Acre Rd 2 Lanes)



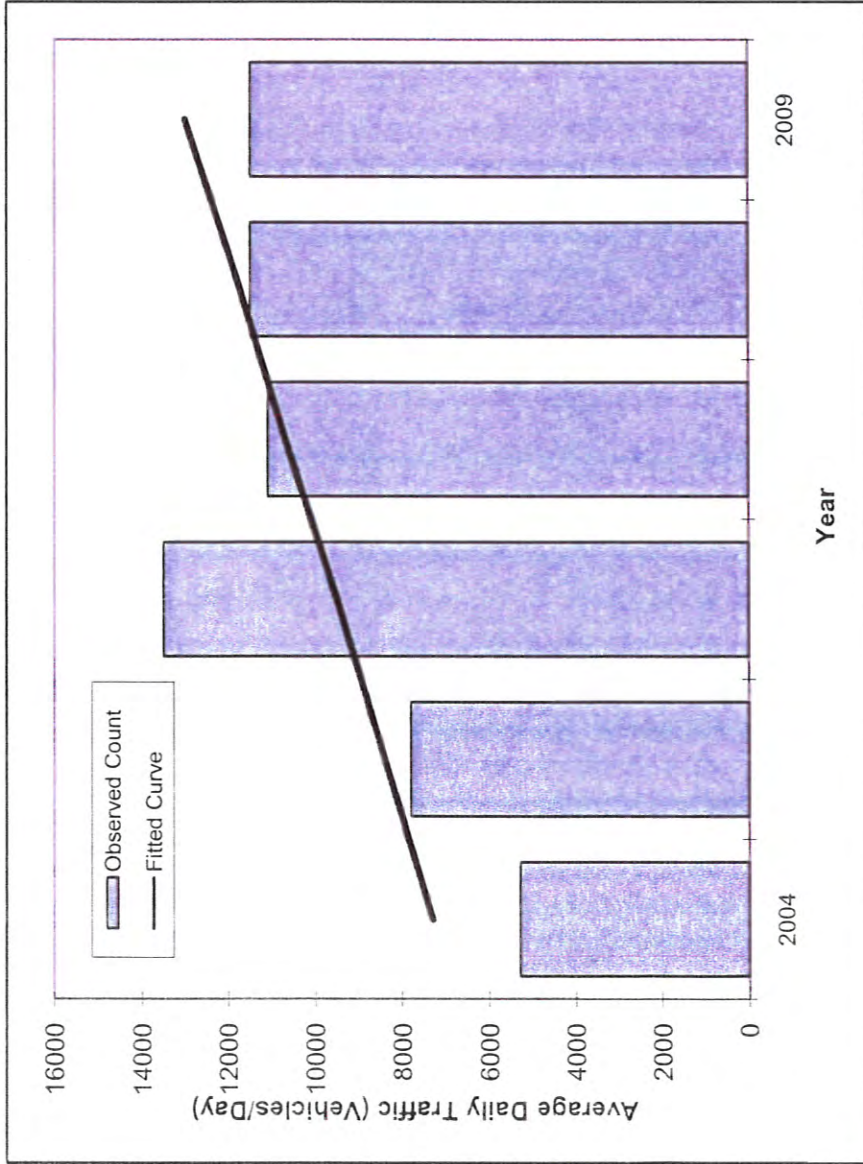
APPENDIX “E”

GROWTH RATE INFORMATION

Traffic Trends - V2.0

Rolling Acres Road -- Nort of School

FIN#	0	County:	Lake (11)
Location	1	Station #:	0
		Highway:	Rolling Acres Road



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2004	5300	7300
2005	7800	8400
2006	13500	9500
2007	11100	10700
2008	11500	11800
2009	11500	13000
2010 Opening Year Trend		
2010	N/A	14100
2011 Mid-Year Trend		
2011	N/A	15200
2012 Design Year Trend		
2012	N/A	16400
TRANPLAN Forecasts/Trends		

**** Annual Trend Increase:** 1,134
Trend R-squared: 50.25%
Trend Annual Historic Growth Rate: 15.62%
Trend Growth Rate (2009 to Design Year): 8.72%
Printed: 27-May-09

Straight Line Growth Option

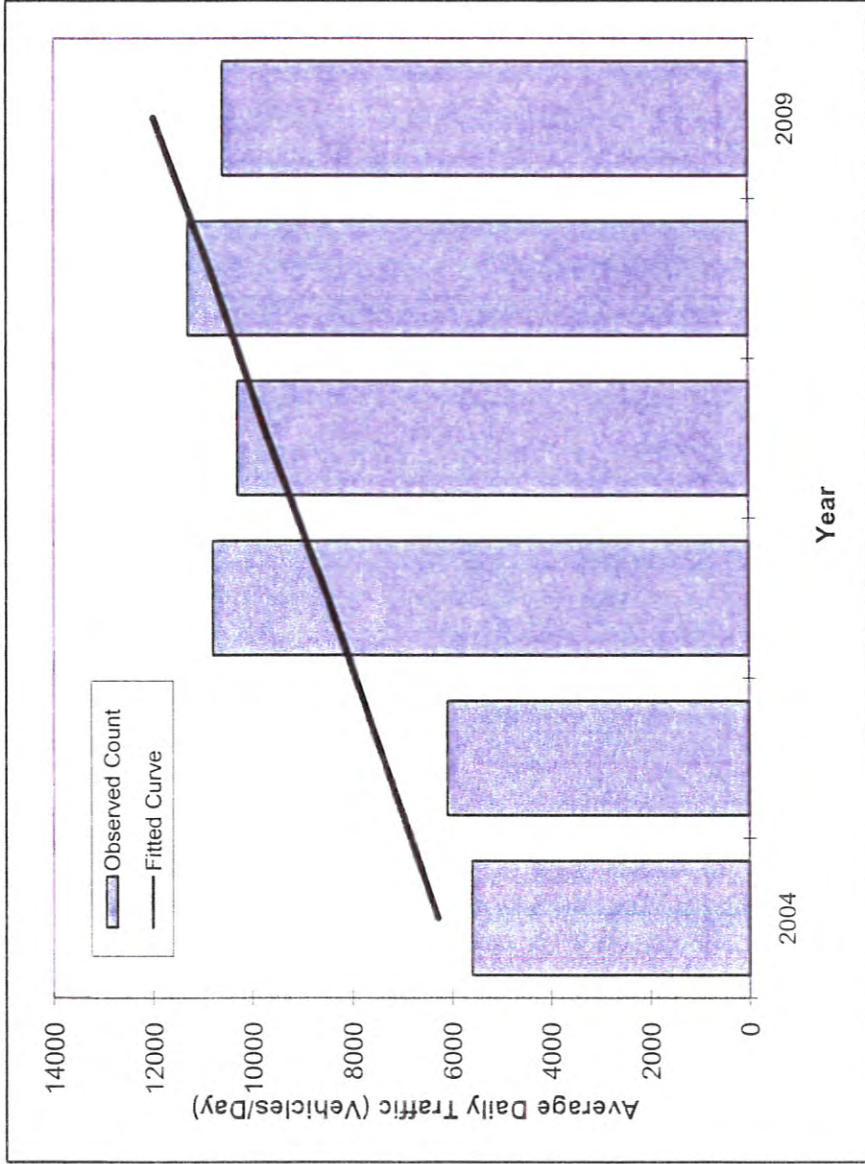
*Axle-Adjusted

Traffic Trends - V2.0

Rolling Acres Road -- South of School

County:	Lake (11)
Station #:	0
Highway:	Rolling Acres Road

FIN#	0
Location	1



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2004	5600	6300
2005	6100	7400
2006	10800	8500
2007	10300	9700
2008	11300	10800
2009	10600	12000

2010 Opening Year Trend	
2010	N/A 13100
2011 Mid-Year Trend	
2011	N/A 14300
2012 Design Year Trend	
2012	N/A 15400
TRANPLAN Forecasts/Trends	

**** Annual Trend Increase:** 1,146
Trend R-squared: 70.32%
Trend Annual Historic Growth Rate: 18.10%
Trend Growth Rate (2009 to Design Year): 9.44%
Printed: 27-May-09

Straight Line Growth Option

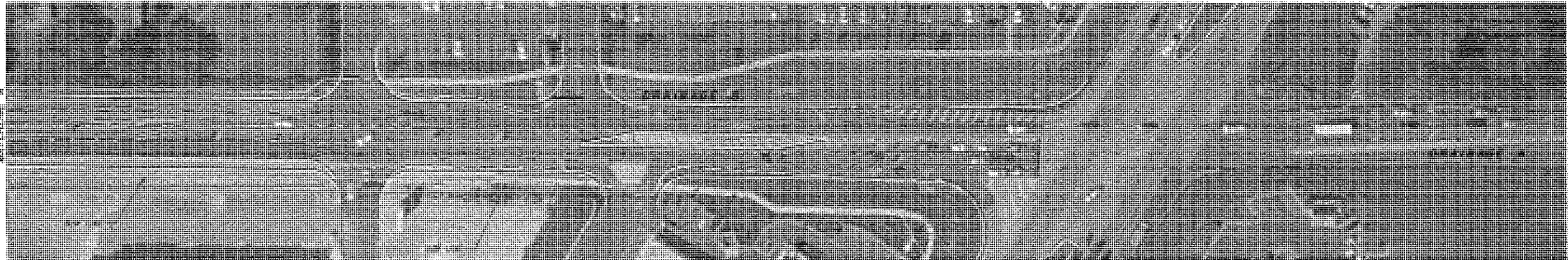
*Axle-Adjusted

APPENDIX “F”

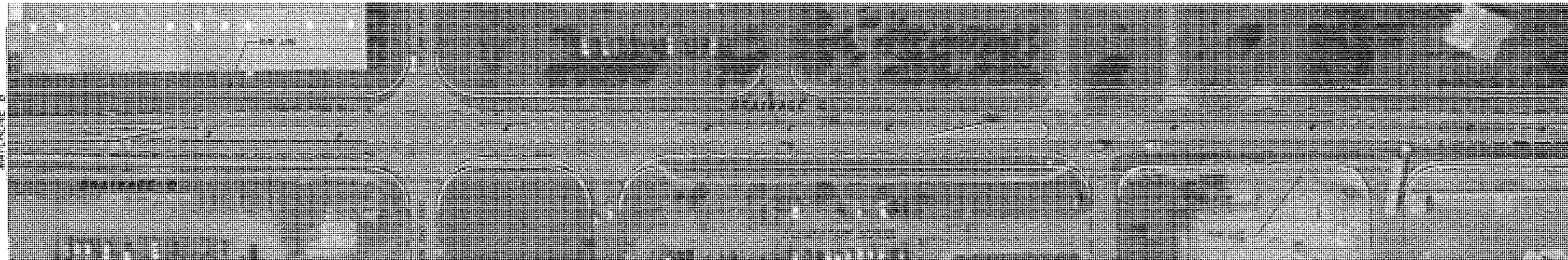
ROADWAY PLANS



AS BUILT



AS BUILT



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

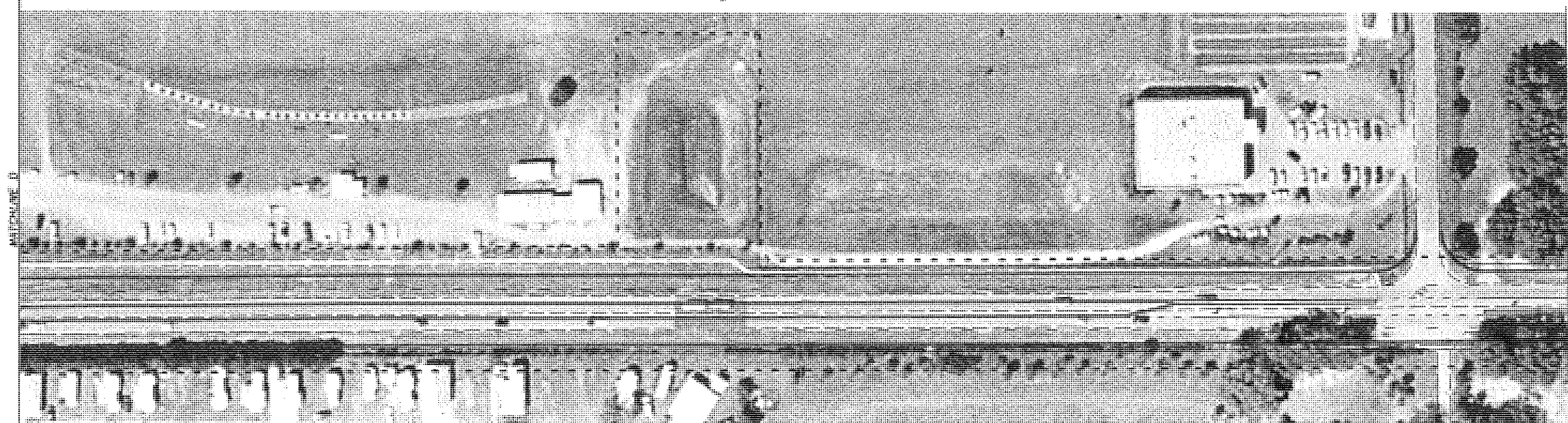
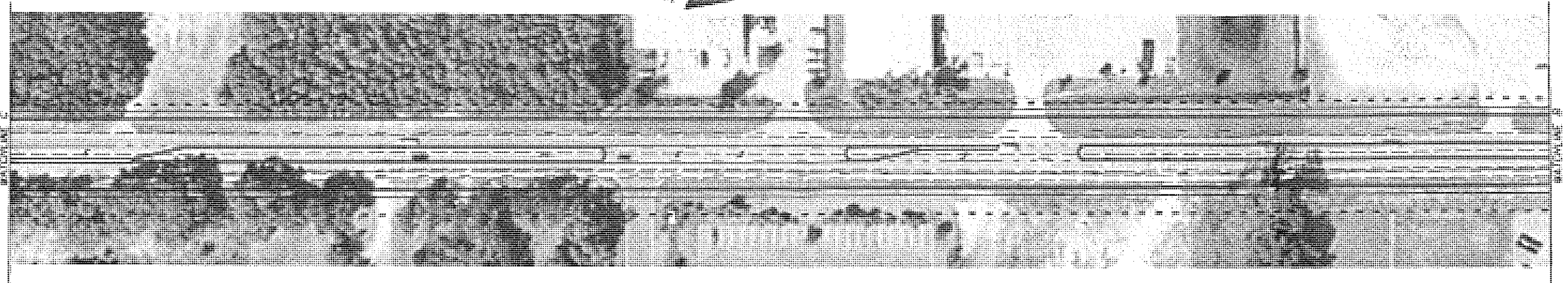
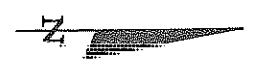


GMB Engineers & Planners, Inc.
 2802 E. Livingston Street
 Orlando, FL 32803
 Phone: 407-898-5424 Fax: 407-898-5425

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

ROADWAY PLANS

SHEET NO.
1



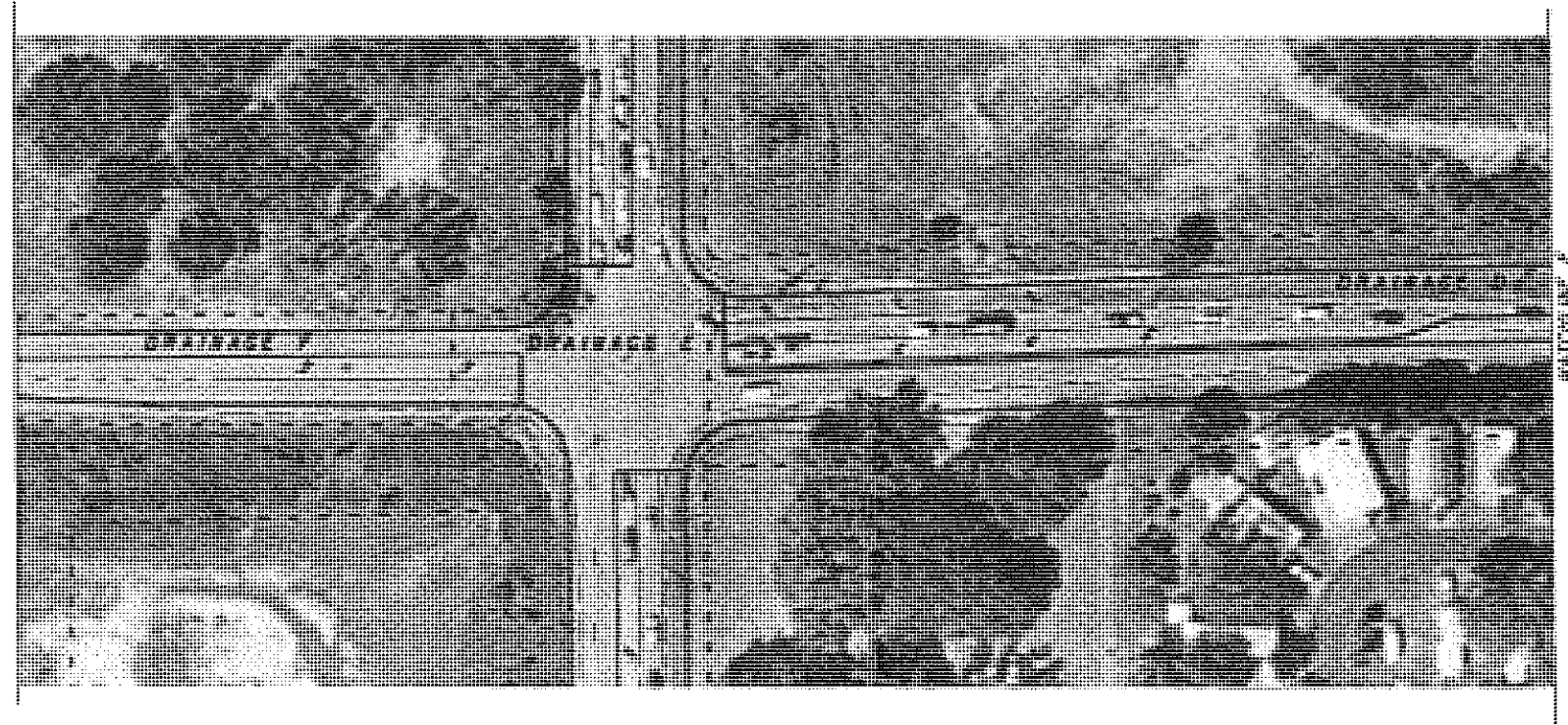
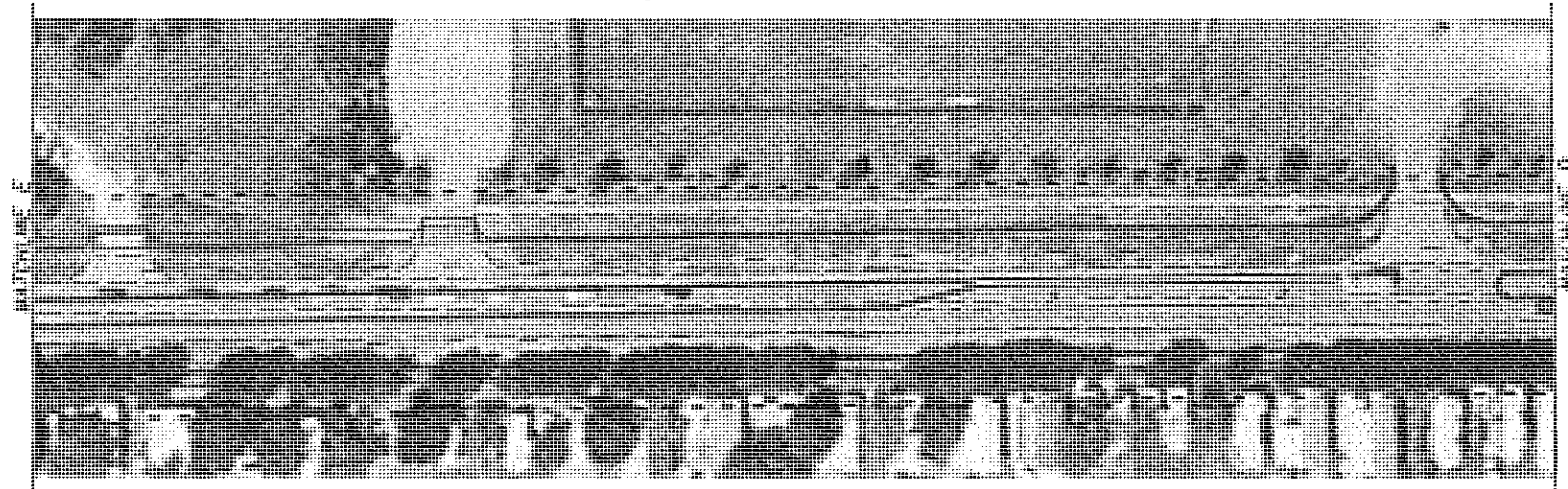
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION


GMB Engineers & Planners, Inc.
 2802 E Livingston Street
 Orlando, FL 32803
 Phone: 407-898-5424 Fax: 407-898-5425

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

ROADWAY PLANS

SHEET NO.
2



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION


GMB Engineers & Planners, Inc.
 2802 E. Livingston Street
 Orlando, FL 32803
 Phone: 407-898-5424 Fax: 407-898-3425

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

ROADWAY PLANS

SHEET NO.
3

APPENDIX “G”

COST ESTIMATE

Rolling Acres Road
Roadway Construction (1.25 miles)
4 Lane Boulevard Typical Section

Cost Estimate

Description	Unit	Unit Cost	Quantity	Total
Excavation Regular	CY	\$12.00	16,742	\$200,904.00
Embankment	CY	\$8.00	1,748	\$13,984.00
Clearing & Grubbing	LS	\$200,000.00	1	\$200,000.00
Remove Existing Concrete	SY	\$17.00	2,444	\$41,548.00
12" Stabilizes Subgrade	SY	\$8.00	22,292	\$178,336.00
10" Lime rock	SY	\$24.00	19,336	\$464,064.00
Mill Existing Pavement	SY	\$16.00	36,437	\$582,992.00
Asphaltic Concrete Type S	TN	\$195.00	2,659	\$518,505.00
Concrete Separator	LF	\$35.00	1,200	\$42,000.00
Friction Course FC-3	TN	\$240.00	3,067	\$736,080.00
Sod (Bahia)	SY	\$2.55	6,746	\$17,202.30
Directional Arrow	EA	\$35.00	18	\$630.00
Striping, 6" White	LF	\$1.00	14,502	\$14,502.00
Striping, 6" White (10'-30' Skip)	LF	\$1.00	3,380	\$3,380.00
Striping, 24" White	LF	\$4.00	144	\$576.00
Striping, 6" Yellow	LF	\$1.00	14,502	\$14,502.00
Reflective Nose Paint	SF	\$5.00	24	\$120.00
Reflective Pavement Markings	EA	\$4.75	422	\$2,004.50
Delineater	EA	\$75.00	8	\$600.00
Type 'E' Curb and Gutter	LF	\$16.00	13,200	\$211,200.00
Type 'F' Curb and Gutter	LF	\$16.00	14,440	\$231,040.00
Signal Modification	LS	\$150,000.00	2	\$300,000.00
Drainage Inlets	AS	\$6,000.00	28	\$168,000.00
18" RCP	LF	\$74.00	2,720	\$201,280.00
24" RCP	LF	\$104.00	1,100	\$114,400.00
36" RCP	LF	\$140.00	850	\$119,000.00
Ditch Bottom Inlet	EA	\$3,500.00	2	\$7,000.00
Miter End Section	EA	\$1,200.00	4	\$4,800.00
Conc. Sidewalk 4" Thick	LF	\$42.00	6,494	\$272,748.00
Sign Installation	EA	\$350.00	16	\$5,600.00
Erosion Control	LS	\$30,000.00	1	\$30,000.00

Net Total: **\$4,696,997.80**

Cost Estimate Summary

Typical Section - 80' RW 4-Lane w/ Median	Construction Cost	Mobilization (10%)	MOT (10%)	Subtotal	Scope Contingency (15%)	Total Construction Cost	PE Design and Survey (15%)	CEI (5%)	Total Project Cost
	\$4,696,997.80	\$469,699.78	\$469,699.78	\$5,636,397.36	\$845,459.80	\$6,481,856.96	\$972,278.54	\$324,092.85	\$7,778,228.36

APPENDIX “H”

TOWN OF LADY LAKE LAND DEVELOPMENT REGULATIONS

- 1) The following are generalized right-of-way width requirements for new development within the Town:

ROAD CLASSIFICATION	WIDTH
Urban Arterial with Swales	100
Major Collector with Swales	100
Major Collector (curb and gutter)	80
Minor Collector with Swales	80
Minor Collector (curb and gutter)	70
Local with Swales	60
Local with Curb and Gutter	50

These are generalized width requirements and may be increased at the request of the appropriate jurisdiction if the proposed project fronts on a State or County road.

- 2) A proposed subdivision or site plan that abuts or encompasses an existing public road that does not conform to the minimum right-of-way requirements shall provide for the dedication of additional right-of-way along either one (1) or both sides of said road to meet the minimum right-of-way required by these regulations. If the proposed subdivision abuts only one (1) side of said road, then a minimum of one-half (1/2) of the required right-of-way shall be dedicated or reserved prior to approval of such subdivision or site plan.

i) Roads Within Flood Prone Areas

The minimum centerline elevation for roads within flood prone areas shall be as follows:

<u>Classification</u>	<u>Height above 100-yr Flood Elevation</u>
Arterial	As required by FDOT
Major Collector	2.50 ft
Minor Collector	2.00 ft
Local Street	1.00 ft

j) Medians, Islands, and Guardhouses

APPENDIX “I”

US 27/441 INTERSECTION ALTERNATIVE ANALYSIS

HCS+™ DETAILED REPORT												
General Information						Site Information						
Analyst GMB Agency or Co. Date Performed 3/26/2009 Time Period Future PM Peak Hour - Alt						Intersection US 441 at Rolling Acres Road Area Type All other areas Jurisdiction Analysis Year 2030 Project ID Future PM Peak Hour - Alternative Analysis						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _l	1	3	1	2	3	1	2	1	1	1	1	1
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V (vph)	241	1646	335	425	1782	75	473	229	258	84	226	85
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Pretimed (P) or Actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up Lost Time, I _l	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green, e	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type, AT	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension, UE	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/Metering, I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial Unmet Demand, Q _b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	90	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0	0	0	0	0	0	0	0	0	0	0
Min. Time for Pedestrians, G _p	3.2			3.2			3.2			3.2		
Phasing	Excl. Left	Thru & RT	D3		04		Excl. Left	NB Only	Thru & RT	08		
Timing	G = 18.5	G = 43.5	G =	G =		G = 9.0	G = 9.0	G = 17.0	G =			
	Y = 5	Y = 5	Y =	Y =		Y = 0	Y = 5	Y = 5	Y =			
Duration of Analysis, T = 0.25							Cycle Length, C = 117.0					
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	254	1733	353	447	1876	79	498	241	177	88	238	89
Lane Group Capacity, c	280	1886	589	543	1886	589	529	494	419	136	271	230
v/c Ratio, X	0.91	0.92	0.60	0.82	0.99	0.13	0.94	0.49	0.42	0.65	0.88	0.39
Total Green Ratio, g/C	0.16	0.37	0.37	0.16	0.37	0.37	0.15	0.26	0.26	0.08	0.15	0.15
Uniform Delay, d ₁	48.4	35.1	29.7	47.7	36.6	24.3	49.0	36.3	35.6	52.5	49.0	45.3
Progression Factor, PF	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay Calibration, k	0.43	0.44	0.19	0.36	0.50	0.11	0.45	0.11	0.11	0.22	0.41	0.11
Incremental Delay, d ₂	30.9	7.8	1.7	9.9	19.4	0.1	25.3	0.8	0.7	10.2	26.2	1.1
Initial Queue Delay, d ₃	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay	79.3	42.8	31.4	57.6	56.1	24.4	74.3	37.1	36.3	62.7	75.2	46.4
Lane Group LOS	E	D	C	E	E	C	E	D	D	E	E	D
Approach Delay	45.1			55.3			57.2			66.4		
Approach LOS	D			E			E			E		
Intersection Delay	52.4			X _c = 0.95			Intersection LOS			D		

APPENDIX “J”

ENVIRONMENTAL ANALYSIS

We Plan and Design
Livable Communities

MEMORANDUM

Jack F. Glattling, Founder

DATE: July 17, 2009

William J. Anglin, Jr.

TO: Darrell Cunningham

David L. Barth

Gregory A. Bryla

Dan E. Burden

Frances E. Chandler-Marino

FROM: Julia Erica Noran, M.S.

Charles P. Cobble

Jay H. Exum

Carey S. Hayo

Jay R. Hood

Timothy T. Jackson

SUBJECT: Rolling Acres PD&E
GJ Project No. 21847

William C. Kercher, Jr.

Walter M. Kulash

Brent A. Lacy

Sharon K. Lamantia

Ian M. Lockwood

Thomas J. McMacken, Jr.

John H. Percy

Troy P. Russ

Peter C. Sechler

Donald G. Wishart

We appreciate the opportunity to participate in the evaluation of the Rolling Acres Road corridor (**Figure 1**). The section of Rolling Acres Road included in this study extends from C.R. 466 to U.S. 27/441. This section is approximately 1.25 miles long and has a north-south orientation. The existing corridor is a two-lane standard rural road that connects an existing, heavily traveled, four lane road (U.S. 27/441) and two lane road that currently is being widened to a four lane road (C.R. 466). The following sections of this summary memo describe the existing conditions of the corridor as documented during a cursory field review conducted by myself and Philip Blaiklock on June 12, 2009.

Existing Conditions

Existing data from the Florida Geographic Data Library (FGDL) were analyzed to assess the existing conditions and natural resources within the corridor. These data include conservation lands, soils, land use, and hydrologic basins. Maps were produced to define these data within 500 feet in either direction of the Rolling Acres corridor.

Soils – According to the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) Soil Survey of Lake County (1975), six (6) soil types exist within a 500-foot buffer of the Rolling Acres Road corridor (**Figure 2**). Generally, the existing soils are well- to excessively-drained soils characteristic of pine or oak forests, palmetto prairie, or grassland. Soils are designated as hydric if mapped inclusions total 30% or more (Hydric Soils of Florida Handbook, 1995). No soils found within a 500 foot buffer of the corridor are classified as hydric. The borrow pit soil type formerly may have been associated with a waterbody, but this area has been developed. A VFW post has been erected in this location.

Land Uses – Land uses within a 500-foot buffer of the corridor were mapped using Florida Land Use, Cover, and Forms Classification System (FLUCFCS) designations (FDOT 1999). Existing land uses are characteristic of a corridor that transitions from rural to suburban environments (**Figure 3**). Specifically, development includes:

- High density residential,
- Medium density residential,



- Agricultural,
- Recreational,
- Strip commercial/retail,
- Industrial,
- Educational facilities, and
- Natural/ undeveloped.

Hydrologic Basins – The corridor is divided between the Marshall Swamp planning unit, a noncontributing area within the Ocklawaha River basin, and Lake Miona Outlet planning unit of the Withlacoochee basin (**Figure 4**). Hydrologic basins as they relate to the natural flow of water and topography are relevant to the drainage and stormwater design. Additionally, in the event that there are wetland impacts, off-site mitigation alternatives may be dictated by what is available in these basins. The basins identified do not have special criteria for mitigation or stormwater.

Threatened and Endangered Species – The majority of the habitat within 500 feet of the Rolling Acres corridor has been altered or developed. A few patches of natural habitat remain, and these patches are predominantly comprised of oak hammock. There are also several maintained lawn areas within the 500-foot buffer that provide some wildlife habitat. The natural habitat is fragmented, not subject to land management practices, and do not provide a diversity of habitat types, and these factors limit the potential to support most listed species. However, the remaining undeveloped patches may be inhabited by gopher tortoises and their commensal species. The gopher tortoise is common to both forested and grassland upland habitat throughout Florida, and it is listed as Threatened by the Florida Fish and Wildlife Conservation Commission (FWCC). A relocation permit from the FWC must be obtained if there will be impacts to gopher tortoises or their burrows as a result of construction.

Recommendations

The existing right-of-way may be sufficient to accommodate the contemplated widening, and if this is the case, impacts will be confined to a maintained, lawn area that is unlikely to pose environmental or listed species constraints. The maintained right-of way is unlikely to house any listed species because it is subject to regular maintenance activities and is in close proximity to vehicular and pedestrian traffic as well as other disturbances on a regular basis. No natural wetland systems are located within the maintained right-of-way. A conveyance swale is located within the right-of-way and runs the length of the corridor. This swale will be considered an other surface water by the WMD. Impacts will have to be quantified, and the conveyance will have to be maintained post-development.

There is a potential to impact natural habitat or fallow land if the road alignment shifts outside of the right-of-way or if new ponds must be constructed as part of the overall stormwater management system. If pond locations are identified outside the 500-foot corridor evaluated, additional environmental surveys should be conducted so that wetlands and habitat value can be assessed.



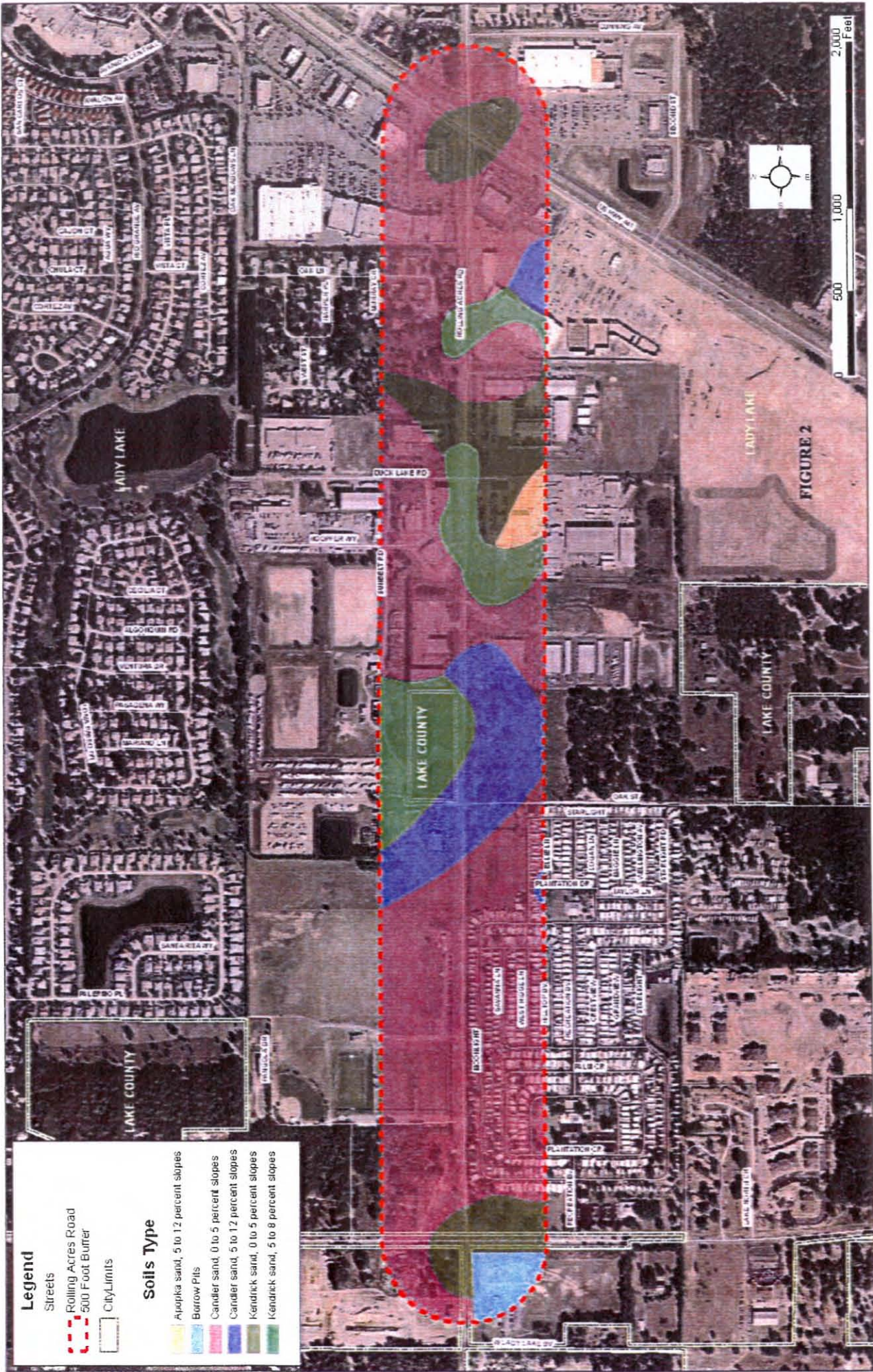


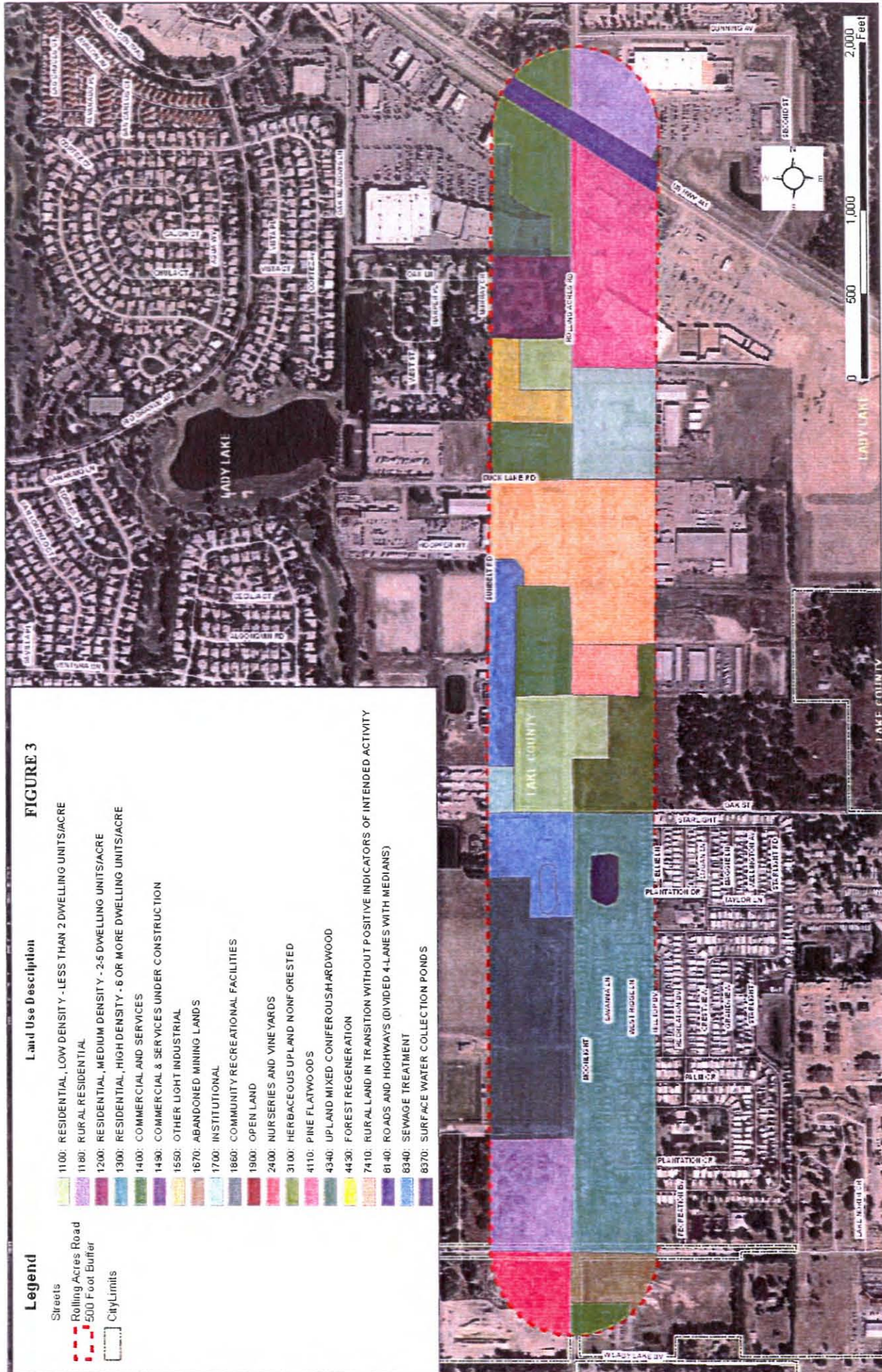
FIGURE 3

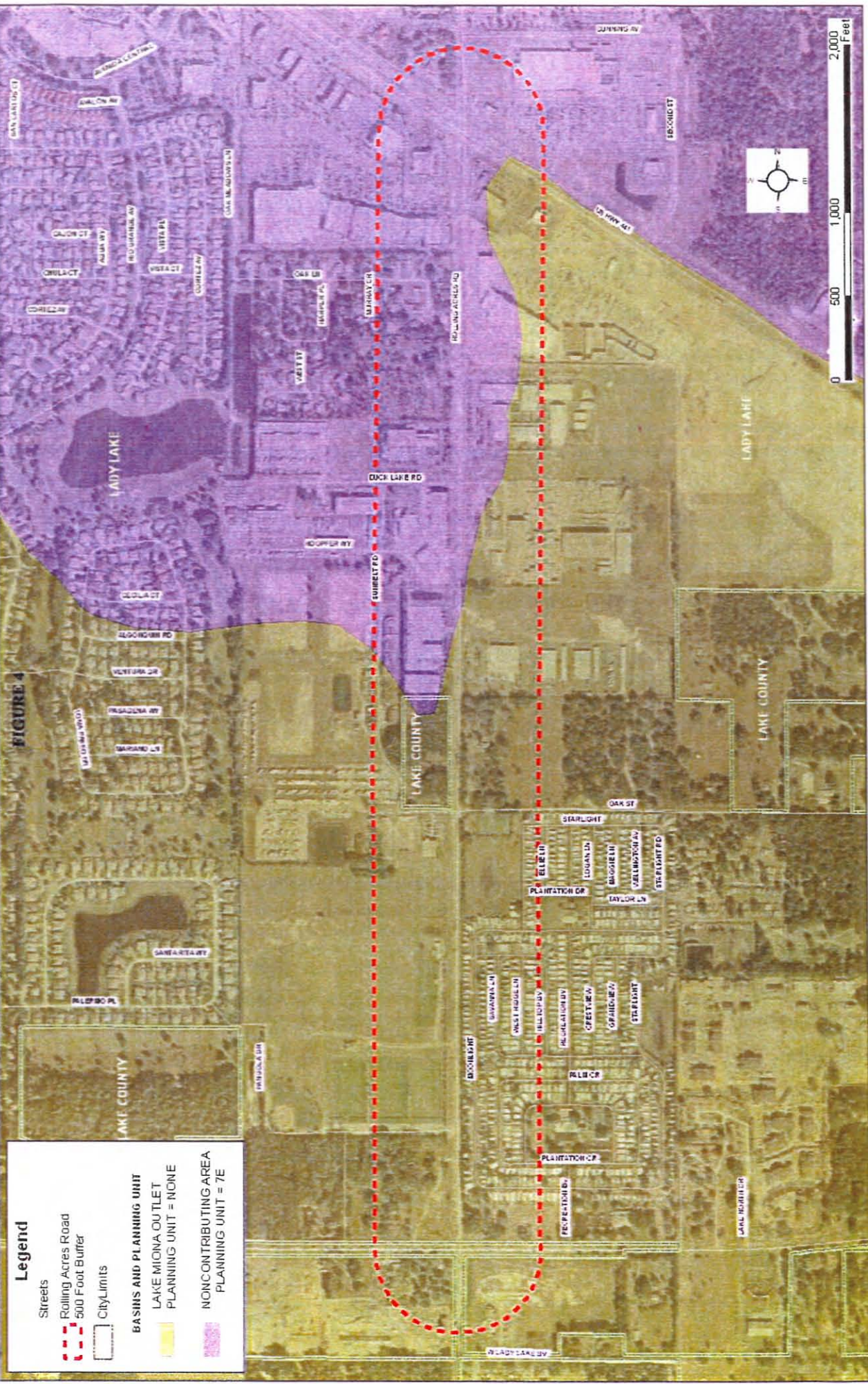
Land Use Description

- 1100: RESIDENTIAL, LOW DENSITY - LESS THAN 2 DWELLING UNITS/ACRE
- 1180: RURAL RESIDENTIAL
- 1200: RESIDENTIAL, MEDIUM DENSITY - 2-5 DWELLING UNITS/ACRE
- 1300: RESIDENTIAL, HIGH DENSITY - 6 OR MORE DWELLING UNITS/ACRE
- 1400: COMMERCIAL AND SERVICES
- 1490: COMMERCIAL & SERVICES UNDER CONSTRUCTION
- 1550: OTHER LIGHT INDUSTRIAL
- 1670: ABANDONED MINING LANDS
- 1700: INSTITUTIONAL
- 1860: COMMUNITY RECREATIONAL FACILITIES
- 1900: OPEN LAND
- 2400: NURSERIES AND VINEYARDS
- 3100: HERBACEOUS UPLAND NONFORESTED
- 4110: PINE FLATWOODS
- 4340: UPLAND MIXED CONIFEROUS/HARDWOOD
- 4430: FOREST REGENERATION
- 7410: RURAL LAND IN TRANSITION WITHOUT POSITIVE INDICATORS OF INTENDED ACTIVITY
- 8140: ROADS AND HIGHWAYS (DIVIDED 4-LANES WITH MEDIANS)
- 8340: SEWAGE TREATMENT
- 8570: SURFACE WATER COLLECTION PONDS

Legend

- Streets
- Rolling Acres Road
- 500 Foot Buffer
- City Limits







21847

FLORIDA DEPARTMENT OF STATE
Kurt S. Browning
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Ms. Julia Noran
Glatting Jackson Kercher Anglin
120 North Orange Avenue
Orlando, Florida 32801

August 18, 2009

Re: DHR Project No.: 2009-4471/ GJ Project No.:21847
Received by DHR: July 27, 2009
Historic and Archaeological Review of the Rolling Acres Road Project
Lady Lake, Lake County

Dear Ms. Noran:

In accordance with the procedures contained in the Lake County local requirements, we reviewed the referenced parcel for possible impact to cultural resources (any prehistoric or historic district, site, building, structure, or object) listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, archaeological, or architectural value.

Our review of the Florida Master Site File indicates that no significant archaeological or historical resources are recorded within the project area. Furthermore, because of the location and/or nature of the project it is unlikely that any such site will be affected.

If there are any questions concerning our comments or recommendations, please contact Katherine Peterson, Historic Sites Specialist, by phone at (850) 245-6333, or by electronic mail at kdpeterson@dos.state.fl.us. We appreciate your continued interest in protecting Florida's historic properties.

Sincerely,

Laura A. Kammerer
Historic Preservationist Supervisor
Compliance Review Section
Bureau of Historic Preservation

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

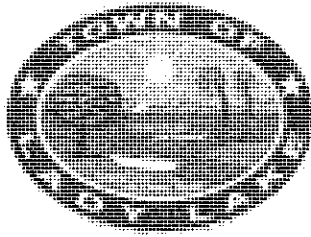
Director's Office
(850) 245-6300 • FAX: 245-6436

Archaeological Research
(850) 245-6444 • FAX: 245-6452

Historic Preservation
(850) 245-6333 • FAX: 245-6437

APPENDIX “K”

PUBLIC NOTIFICATION NOTICE



PUBLIC HEARING NOTICE ROLLING ACRES ROAD PD&E PROJECT PUBLIC WORKSHOP SESSION

The Town of Lady Lake will hold its first public workshop for the Rolling Acres Road Project Development and Environment Study (PD&E) to encourage citizen input regarding future transportation alternatives for the corridor extending from U.S. Highway 27/441 to County Road 466.

The Town welcomes your participation at this meeting and looks forward to the contributions of citizens in this process. Town of Lady Lake Growth Management staff and engineering consultants, GMB Engineering, will be present to answer questions regarding the preliminary findings thus far. Visual aids pertaining to the study area will be made available for public display in the Commission Chambers as well.

This public hearing will be held just prior to the regularly scheduled Town Commission Meeting on Monday, July 20th, 2009, and will begin at 4:00 PM, in the Town Hall Commission Chambers, 409 Fennell Boulevard, Lady Lake, Florida.

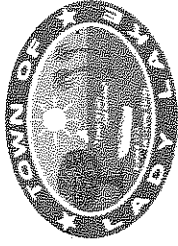
Please be advised that one or more members of any other Town Board, Committee, or Commissioners may be in attendance of this meeting.

This public hearing is being conducted in a handicapped accessible location. Any handicapped person requiring an interpreter for the hearing impaired or the visually impaired should contact the Clerk's Office at least five (5) calendar days prior to the meeting and an interpreter will be provided. To access a Telecommunication Device for Deaf Persons (TDD), please call (352) 751-1565. Any handicapped person requiring special accommodation at this meeting should contact the Clerk's Office at least five (5) calendar days prior to the meeting.

Town of Lady Lake

Rolling Acres Preliminary Engineering Study

Public Meeting #1



Town of Lady Lake
409 Fennell Boulevard
Lady Lake, FL 32159
Phone: 352-751-1500
<http://www.ladylake.org/>

Attendance Sheet

Name	Address	Phone	E-mail
LYN BRUZARD	# 410 PLANTATION DR The Villages	350-1483	Seyjapapa@yahoo.com
Dan Robuck	610 E Main St Leesburg, FL 34748	314-3177	drobuck@romanceumber.com
Paul Turner	Andy Sun The Villages, FL	753-1114	-
Linda Pullen	192 Palovina Palace - Lady Lake	750-5957	Mayor L@comcast.net
H. M. Ochs	1404 Broadview Way LLC	359-9836	KIMANAS@EMBARCADERO.COM
Noble Ocasimbo	LAKE COUNTY PUBLIC WORKS	751-1543	bponce@ladylake.org
BILL VANCE	TOWN OF LADY LAKE	751-1521	tearrollebodylake.org
STAN M CARROLL	TOWN OF LADY LAKE	315-0770	fourke@lakecountypa.net
THOMAS BURKE	USAPO	430-9707	MESPIRIT@COMCAST.NET
WALLY GINSELE	1121 RIMWOOD AVE		

APPENDIX “L”

CITIZEN COMMENTS/HAND OUTS

Rolling Acres Preliminary Engineering Report – 1st Public Workshop

July 20, 2009

Citizen Comments

1. Preference for sidewalk, if on one side, should be constructed on east side of roadway.
2. Traffic at elementary school during session is a nightmare. Long delays occur when school is dismissing.
3. Golf cart access across Rolling Acres Road should be available, especially on the north side of corridor to access commercial sites.
4. Can intersection improvements occur prior to potential widening of corridor?
5. Water Oaks residential community has expressed interest in golf cart access to northern portion of Rolling Acres Road. The Villages community is concerned that access will then be open to their property.
6. A prior Villages traffic study and subsequent board meeting occurred in the past and stated that traffic would not increase on Rolling Acres Road. A former P & Z board member felt that this statement was not correct.
7. Are there any locations present where gopher tortoises were found?
8. If a grassed median is used for the ultimate 4-Laning, could additional foliage and small tree plantings be used?



COMMENT FORM



for the Rolling Acres Road Preliminary Project Development and Environment (PD&E) Study

Public Workshop/Meeting | July 20, 2009 | 4:00PM

Your Comments

Please write down your comments and ideas. Also, additional space for your comments is provided on the back.

Great Idea

[Handwritten comment: Great Idea]

(Additional space is provided on the back.)

Mailing List Information

Please fill out the information below if you would like to be added to the study mailing list. *Please print.*

Name: Dan Robock

Address: 610 E Main St

City/State/Zip: weasburg, FL 34748

New Change Delete

Please return tonight or mail by July 31, 2009 to:

Darrell Cunningham, GMB Engineers & Planners, Inc.
2602 East Livingston Street | Orlando, FL 32803 | Email: dcunningham@gmb.cc



PRELIMINARY PROJECT DEVELOPMENT & ENVIRONMENT STUDY

STUDY UPDATE | JUNE 2009

STUDY DESCRIPTION

The preliminary Project Development & Environment (PD&E) Study is a comprehensive evaluation of the transportation needs and the possible impacts to the built and natural environment that would result from any expansion or improvements to the transportation facilities in the study corridor. The study will evaluate the existing transportation and traffic circulation conditions, and produce and evaluate the long-range traffic demands within the study limits. The study will include the portion of Rolling Acres Road between County Road 466 and US 27/441 in the Town of Lady Lake. This section of roadway is approximately 1 ¼ miles in length. Based on the recent growth in traffic on Rolling Acres Road (a 45% increase in the last four years), it is apparent that modifications to the roadway are needed and will be necessary to address the demands that will occur in the future.

Particular attention will be paid to the existing land uses and the associated access needs along the corridor, including the educational facilities, the retail development at the north end of the corridor, the public sports fields, and the residential and office/industrial development that exist today. Future land use and development plans will also be taken into consideration.

The potential impacts to the natural environment will be reviewed and will include consideration of wetland, farmland, floodplain, threatened and endangered species and cultural and historic sites.

The results of the evaluation will be published in a study report that presents the procedures, the data used in the analyses and the recommendations to address the corridor transportation needs. The study is expected to be completed in October of 2009.

PROJECT TEAM

The Preliminary PD&E Study is being conducted in coordination with the Lake County Public Works Department and the Town of Lady Lake. The project consultant team consists of GMB Planners & Engineers, Inc. (GMB), the team leader on the assignment, and Glatting Jackson Kercher Anglin, Inc. (GJKA).

STUDY OBJECTIVES

As described under Study Description on this page, the purpose of the study is to develop recommendations that will improve traffic circulation and transportation service within the Rolling Acres Road corridor. The major goals for the study will be:

- Develop improvement concepts that eliminate existing traffic circulation issues,
- Prepare recommendations that provide safe and efficient access to all adjacent properties,
- Minimize any impacts from the improvements to adjacent properties, businesses and the natural environment, and
- Improve the overall corridor level of service and meet the long-range transportation demand.

