S.R. 200
PD&E STUDY REEVALUATION

S.R. 200 PD&E Study Reevaluation

From U.S. 41 to N. of the Marion County Line
Citrus County, Florida
WPI Segment No. 257188 1
FAP No. FL62-020R

FINALTRAFFIC TECHNICAL MEMORANDUM

Florida Department of Transportation

District 7, Tampa, Florida

February 2001

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Prepared by:

ARCADIS Geraghty & Miller, Inc.

Tampa, Florida

Prepared for:

Florida Department of Transportation

District 7, Tampa, Florida

February 2001

PROFESSIONAL ENGINEER ENDORSEMENT

I hereby certify that I am a Registered Professional Engineer in the State of Florida and practicing with ARCADIS Geraghty & Miller, Inc. ARCADIS Geraghty & Miller is authorized -via Certificate Number 7917- to operate as an Engineering Business by the Florida State Board of Professional Engineers, State of Florida Department of Professional Regulation. I have prepared or supervised the preparation of the evaluations, findings, conclusions, recommendations, or professional opinions/advice contained in this document. My endorsement constitutes my approval of these items.

WPI Segment No. 257188 1

FAP No. FL62-020R

Description:

> This project involves the multi-laning of S.R. 200 from U.S. 41 (S.R. 45) to north of the Marion County Line in Citrus County, Florida.

The results contained in this report were developed using procedures and references standard to the transportation engineering practice. These references and procedures were applied using professional judgment and experience.

Name: Panos E. Kontses, P.E.

P.E. No.: 55184

Date: February 15, 2001

Signature: _____

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I. INTRODUCTION

This memorandum has been prepared as part of the engineering analysis and evaluations required for the S.R. 200 Project Development and Environment (PD&E) Study Reevaluation. The objectives of this memorandum are to document the analyses performed and provide information on the quality and safety of traffic operations in the study area. Specifically, three conditions have been evaluated:

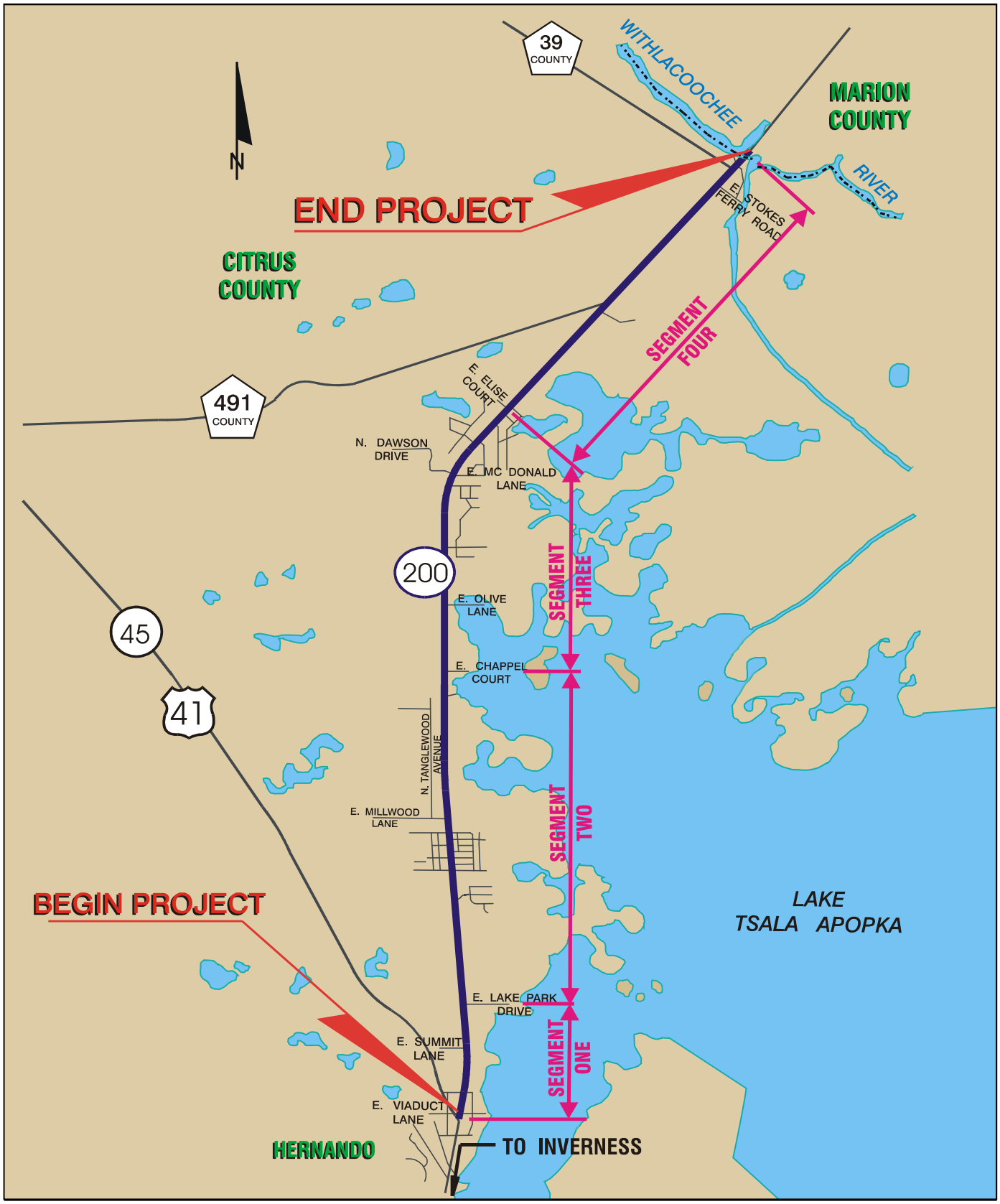
- Current Year (2000) conditions;
- Design Year (2025) conditions without any geometric improvements (Year 2025 No-Build Conditions); and
- Design Year (2025) conditions with geometric improvements (Year 2025 Build Conditions) including the widening of S.R. 200 to a four-lane divided facility.

The findings that resulted from these analyses were the key factors in developing the recommendations for the Design Year lane geometry along S.R. 200 and at key intersections and intersection traffic control devices.

I.a. Project Description

In November 1996, the Florida Department of Transportation (FDOT) received Federal Highway Administration's (FHWA) approval on a PD&E Study that evaluated improvement alternatives along the S.R. 200 corridor. The limits of the original PD&E Study extended from north of U.S. 41 (S.R. 45) in Citrus County to C.R. 484 in Marion County. After consideration of the future traffic demands, motorist safety and evacuation needs, the recommendation was to widen S.R. 200, within the project limits, to a four-lane divided facility. From U.S. 41 to East Lake Park Drive, a distance of approximately one-mile, the widening was to occur within the existing 100-foot-wide right-of-way by providing an urban typical section. For the remainder of the project, a rural typical section was recommended which required an additional 100 feet to the existing 100-foot-wide right of way.

In accordance with 23 CFR Part 771.129, FDOT is currently conducting a PD&E Study Reevaluation for the segment of S.R 200 which extends from north of U.S. 41 in Citrus County to just north of the Marion County Line, a length of approximately 6.7 miles. This Reevaluation will use current data to re-assess the effects of implementing the recommendations of the original PD&E study and where possible will modify these recommendations to further minimize these effects. The Design Year for the various analyses, evaluations and assessments performed in this study is 2025. Figure 1 depicts the limits of the PD&E Study Reevaluation.



S.R. 200
PD&E Study Reevaluation

PROJECT LOCATION MAP

FIGURE 1

S.R. 200 PD&E Study Reevaluation
From U.S. 41 to N. of Marion County Line
Citrus County
WPI Seg. No. 257188 1; FAP No. FL62-020R

Within the limits of the Reevaluation study area, S.R. 200 is a two-lane undivided rural facility centered within 100 feet of right-of-way. The cross section, in general, provides two 11-foot- wide travel lanes and four-foot-wide paved shoulders and drainage ditches on each side. This rural design is consistent with the adjacent land use, which is predominately rural and open space. The project includes two bridge structures; a double box culvert over a creek approximately 4.7 miles from the beginning of the project and a bridge over the Withlacoochee River, just south of the project terminus, which is currently rated as "Functionally Obsolete".

Beyond the northern terminus of the Reevaluation Study to C.R. 484 (the remaining segment from the original S.R. 200 PD&E Study), S.R. 200 is currently in the Final Design phase to be widened to a four-lane rural facility.

I.b. Data Collection

Completion of this memorandum required the analyses and evaluation of a variety of data. Table 1 presents the types and the sources of the data collected.

TABLE 1
Types and Sources of Traffic Data Collected

Type of Data	Date/Period	Source/Agency
Existing Roadway and Intersection Geometric Characteristics	Field Inventory conducted in August 2000	ARCADIS
Existing Land Use Characteristics	Field Inventory conducted in August 2000	ARCADIS
Five-day Machine Traffic Volume Counts	August and September 2000	ARCADIS
Six-hour Peak Period Intersection Turning Movement Volume Counts	August and September 2000	ARCADIS
Historical Daily Volume Data	Years 1987 through 2000 Year 1999	Citrus County Traffic Department FDOT District 7 Planning Department
Traffic Accident Data	Years 1995 through 1999	Citrus County Traffic Department
Traffic Accident Rates and Costs	Years 1994 through 1998	FDOT District 7 Traffic Operations
Seasonal Traffic Volume Adjustment Factors for Citrus County	Year 1999	FDOT District 7 Planning Department
Future Traffic Volume Forecasts and "K", "D", and "T" Factors	Year 2025	FDOT District 7 Planning Department

II. EXISTING CONDITIONS

Successful projection and evaluation of the future traffic conditions along the S.R. 200 corridor requires a thorough understanding of the current traffic operations in the study area.

II.a. Roadway Characteristics

11.a.1 Roadways

S.R. 200, also known as North Carl G. Rose Highway, is a rural principal arterial that begins at U.S. 41 (S.R. 45) in the Town of Hernando in Citrus County, follows a north/north-east direction and ends in the City of Ocala in Marion County connecting with U.S. 27 and U.S. 301.

Within the study area limits, from U.S. 41 to north of the Marion County line, S.R. 200 accommodates both regional travel as well as local access to numerous commercial establishments -most of them located near its southern terminus- and residential neighborhoods and subdivisions.

S.R. 200 is a two-lane undivided rural facility centered within 100 feet of right-of-way. In general, the cross section provides two 11-foot wide travel lanes and four-foot wide paved shoulders and drainage ditches along each side. The segment of S.R. 200 from south of East Arbor Lakes Drive to north of East Millwood Lane has been recently widened to provide a 13-foot-wide, two-way, left turn lane and 5-foot wide sidewalks behind the drainage ditches. This segment of S.R. 200 is the only segment that provides pedestrian facilities. No designated bicycle or public transit facilities exist along the S.R. 200 corridor within the study area limits. The pavement as well as the pavement markings are in fair condition.

Table 2 depicts the speed zoning within the project limits. From its southern terminus to approximately East Summit Lane, a distance of 0.8 miles, S.R. 200 follows a curvilinear horizontal alignment. The posted speed limit ranges from 40 miles per hour (mph) in the vicinity of U.S. 41 to 45 mph south of East Summit Lane.

North of East Summit Lane to approximately East Sapphire Lane, the speed limit is 50 mph and from this point to the end of the project the posted speed limit is 55 mph. For a distance of 3.1 miles, from north of East Summit Lane to just north of East Delight Street, S.R. 200 follows an approximately tangent horizontal alignment. North of East Delight Street the direction of S.R. 200 changes from north to northeast by a deflection angle of 42 degrees. A 2-degree horizontal curve is provided at this location without any superelevation. The horizontal alignment is tangent from north of this curve to the end of the project.

The vertical alignment throughout the length of S.R. 200 is curvilinear except north of C.R. 491, where it is approximately tangent at many locations, due to the profile of the roadway. The

longitudinal sight distance along S.R. 200 is restricted at many locations, due to the profile of the roadway.

TABLE 2
Current Speed Zoning Along S.R. 200

From - To Mileposts	Segment Length (Miles)	Posted Speed Limit (mph)	Physical Description
0.000-0.360	0.360	40	From US 41 to 269 feet north of E. Louise Lane
0.360-0.781	0.421	45	From 269 feet north of E. Louise Lane to 174 feet south of E. Summit Lane
0.781-2.452	1.671	50	From 174 feet south of E. Summit Lane to 413 feet north of E. Sapphire Lane
2.452-6.681	4.229	55	From 413 feet north of E. Sapphire Lane to the Marion County Line

II.a.2 Intersections

Within the project limits, S.R. 200 intersects with numerous local access roadways and two county roads, C.R. 491 (Lecanto Highway) and C.R. 39 (Withlacoochee Trail). All intersections are unsignalized and STOP-sign controlled. Figure 2 presents the lane-geometry at key study area intersections.

Due to their geometry, two intersections present operational difficulties as follows:

- C.R. 491, running in a southwest-northeast direction, intersects with SR 200 at a 30-degree skew angle forming a Y-type intersection. Due to this geometry, motorists (especially truck drivers) performing left turns from C.R. 491 have a great difficulty to observe the approaching traffic on northbound S.R. 200. Also, the travel distances for the motorists who travel northbound S.R. 200 and perform left turns to enter westbound C.R. 491 are longer requiring larger gaps for the oncoming traffic. The difficulty performing these movements is further exacerbated by the high vehicle speeds along S.R. 200.

- Orchid Street intersects with S.R. 200 approximately 4.0 miles north of U.S. 41 and forms a T-type intersection. Orchid Street is located on the east side of S.R. 200 inside the 2-degree horizontal curve mentioned earlier and therefore, sight distances for the motorists exiting Orchid Street are limited.

Figure 2

II.a.3 Access Management

The FDOT has classified S.R. 200 as a Class 3 facility with regards to Access Management for future improvements. Class 3 facilities should provide:

- a restrictive median,
- driveway spacings from 440 feet (for posted speeds less than or equal to 45 mph) to 660 feet (for posted speeds higher than 45 mph),
- minimum spacing for directional median openings of 1,320 feet,
- minimum spacing for full median openings of 2,640 feet, and
- minimum traffic signal spacing of 2,640 feet.

II.b. Traffic Crash Evaluation

To evaluate the safety of traffic operations in the study area, the most current traffic crash records were obtained from the Citrus County Traffic Department for the five-year period from 1995 through 1999 and from FDOT District 7 Traffic Operations Department for the five-year period from 1994 through 1998. Comparison of the data received from the two sources revealed that the Citrus County records were more extensive and, therefore, were used in the analyses.

Table 3 presents the characteristics of the accidents that occurred in the study area during the five-year period from 1995 through 1999. As shown, a total of 153 accidents occurred during the five-year period, representing an average of approximately 30 accidents per year. Sixty-nine accidents occurred at the many unsignalized intersections of S.R. 200 with the local access roadways while 84 accidents occurred along S.R. 200 between intersections. Approximately one-third of the accidents involved angle-type collisions, while large numbers of accidents involved rear-end collisions (42 accidents), sideswipes (22 accidents), and run-off the road-type (21 accidents). Most of these accidents were attributed to careless driving (39 accidents), right-of-way violations (36 accidents), and improper maneuver (27 accidents). The weather, time of day and pavement condition (wet or dry) were not major factors in these accidents.

The accident report investigation revealed that during the five-year period there were 91 accidents that caused property damage only, 54 accidents that caused personal injuries and 8 fatal accidents, in which a total of 13 persons lost their lives. Specifically, one fatal accident occurred in 1995, two in 1996, one in 1997, two in 1998 and two in 1999. Two of the fatal accidents were angle-type collisions caused by failure of the drivers to yield right-of-way at intersections, while the remainder were caused by drivers crossing into the opposing path of on-coming traffic along S.R.
200, either due to loss of vehicle control or due to attempting to pass other vehicles. Two fatal accidents occurred within the limits of the 2-degree horizontal curve mentioned earlier.

Table 3

1995 Number of Accidents per Intersection at SR 200

Accident Characteristics	Arbor Lakes	Buffalo	Millwood	Orchid	491	Stokes Ferry	39	Other	Links	Total
Type of Accident:										
- Angle	0	0	0	0	3	0	2	2	4	11
-Rear End	0	0	0	0	1	0	0	1	7	9
-Head On	0	0	0	1	1	0	0	0	1	3
-Sideswipe	0	0	0	1	2	0	0	1	2	6
-Run-off-road	0	0	0	0	0	0	0	0	4	4
-Other	0	0	0	0	1	0	0	0	5	6
-Total	0	0	0	2	8	0	2	4	23	39
Cause of Accident:										
-Right-of-way Violation	0	0	0	1	4	0	0	1	3	9
-High Speed	0	0	0	0	0	0	0	0	0	0
-Improper Maneuver	0	0	0	0	1	0	2	0	6	9
-Careless driving	0	0	0	0	3	0	0	1	8	12
-Driving under influence	0	0	0	0	0	0	0	1	0	1
-Following too close	0	0	0	0	0	0	0	0	0	0
-Other	0	0	0	1	0	0	0	1	6	8
-Total	0	0	0	2	8	0	2	4	23	39
Accident Severity:										
-Fatalities	0	0	0	0	0	0	0	0	1	1
-Personal injuries	0	0	0	0	2	0	2	2	11	17
-Property damage only	0	0	0	2	6	0	0	2	11	21
-Total	0	0	0	2	8	0	2	4	23	39
Weather Conditions:										
-Clear	0	0	0	2	4	0	1	2	21	30
-Rain	0	0	0	0	1	0	0	2	0	3
-Cloudy	0	0	0	0	2	0	1	0	2	5
-Other	0	0	0	0	1	0	0	0	0	1
-Total	0	0	0	2	8	0	2	4	23	39
Surface Conditions:										
-Wet	0	0	0	0	3	0	1	2	2	8
-Dry	0	0	0	2	4	0	1	2	21	30
-Other	0	0	0	0	1	0	0	0	0	1
-Total	0	0	0	2	8	0	2	4	23	39
Time of Day:										
-7:00-9:00 am	0	0	0	0	1	0	0	0	1	2
-11:00 am-1:00 pm	0	0	0	0	2	0	0	0	6	8
-4:00-6:00 pm	0	0	0	0	2	0	0	1	3	6
-Other	0	0	0	2	3	0	2	3	13	23
-Total	0	0	0	2	8	0	2	4	23	39

Based on accident data obtained from the Citrus County Engineering Department

1996 Number of Accidents per Intersection at SR 200

Accident Characteristics	Arbor Lakes	Buffalo	Millwood	Orchid	491	Stokes Ferry	39	Other	Links	Total
Type of Accident:										
- Angle	0	0	0	0	0	0	0	6	4	10
-Rear End	0	1	0	0	0	0	0	3	5	9
-Head On	0	0	0	0	0	0	0	2	0	2
-Sideswipe	0	1	0	0	0	0	0	0	4	5
-Run-off-road	0	0	0	0	0	0	0	1	1	2
-Other	0	0	0	0	0	0	0	1	5	6
-Total	0	2	0	0	0	0	0	13	19	34
Cause of Accident:										
-Right-of-way Violation	0	1	0	0	0	0	0	5	5	11
-High Speed	0	0	0	0	0	0	0	0	0	0
-Improper Maneuver	0	0	0	0	0	0	0	2	2	4
-Careless driving	0	1	0	0	0	0	0	2	4	7
-Driving under influence	0	0	0	0	0	0	0	0	0	0
-Following too close	0	0	0	0	0	0	0	2	2	4
-Other	0	0	0	0	0	0	0	2	6	8
-Total	0	2	0	0	0	0	0	13	19	34
Accident Severity:										
-Fatalities	0	0	0	0	0	0	0	1	1	2
-Personal injuries	0	1	0	0	0	0	0	6	8	15
-Property damage only	0	1	0	0	0	0	0	6	10	17
-Total	0	2	0	0	0	0	0	13	19	34
Weather Conditions:										
-Clear	0	1	0	0	0	0	0	10	13	24
-Rain	0	1	0	0	0	0	0	2	0	3
-Cloudy	0	0	0	0	0	0	0	0	3	3
-Other	0	0	0	0	0	0	0	1	3	4
-Total	0	2	0	0	0	0	0	13	19	34
Surface Conditions:										
-Wet	0	1	0	0	0	0	0	2	0	3
-Dry	0	1	0	0	0	0	0	10	16	27
-Other	0	0	0	0	0	0	0	1	3	4
-Total	0	2	0	0	0	0	0	13	19	34
Time of Day:										
-7:00-9:00 am	0	1	0	0	0	0	0	0	4	5
-11:00 am-1:00 pm	0	1	0	0	0	0	0	3	0	4
-4:00-6:00 pm	0	0	0	0	0	0	0	4	0	4
-Other	0	0	0	0	0	0	0	6	15	21

Based on accident data obtained from the Citrus County Engineering Department

ACCIDENT SUMMARY
(2 of 5)

-Total	0	2	0	0	0	0	0	13	19	34

Based on accident data obtained from the Citrus County Engineering Department

1997 Number of Accidents per Intersection at SR 200

Accident Characteristics	Arbor Lakes	Buffalo	Millwood	Orchid	491	Stokes Ferry	39	Other	Links	Total
Type of Accident:										
- Angle	0	0	1	0	1	0	1	2	6	11
-Rear End	0	0	1	0	0	0	1	3	5	10
-Head On	0	0	0	0	0	0	0	0	1	1
-Sideswipe	0	0	0	0	0	0	0	0	2	2
-Run-off-road	0	0	0	0	0	0	0	0	1	1
-Other	0	0	0	0	0	0	0	0	0	0
-Total	0	0	2	0	1	0	2	5	15	25
Cause of Accident:										
-Right-of-way Violation	0	0	0	0	1	0	1	1	5	8
-High Speed	0	0	0	0	0	0	0	0	0	0
-Improper Maneuver	0	0	0	0	0	0	0	2	1	3
-Careless driving	0	0	0	0	0	0	0	1	7	8
-Driving under influence	0	0	0	0	0	0	0	0	1	1
-Following too close	0	0	0	0	0	0	1	0	0	1
-Other	0	0	2	0	0	0	0	1	1	4
-Total	0	0	2	0	1	0	2	5	15	25
Accident Severity:										
-Fatalities	0	0	0	0	0	0	0	0	1	1
-Personal injuries	0	0	1	0	0	0	0	0	5	6
-Property damage only	0	0	1	0	1	0	2	5	9	18
-Total	0	0	2	0	1	0	2	5	15	25
Weather Conditions:										
-Clear	0	0	1	0	1	0	1	2	9	14
-Rain	0	0	0	0	0	0	0	1	4	5
-Cloudy	0	0	0	0	0	0	0	1	0	1
-Other	0	0	1	0	0	0	1	1	2	5
-Total	0	0	2	0	1	0	2	5	15	25
Surface Conditions:										
-Wet	0	0	0	0	0	0	0	2	5	7
-Dry	0	0	1	0	1	0	1	2	9	14
-Other	0	0	1	0	0	0	1	1	1	4
-Total	0	0	2	0	1	0	2	5	15	25
Time of Day:										
-7:00-9:00 am	0	0	0	0	0	0	1	0	4	5
-11:00 am-1:00 pm	0	0	0	0	0	0	1	1	0	2
-4:00-6:00 pm	0	0	1	0	1	0	0	1	4	7
-Other	0	0	1	0	0	0	0	3	7	11

Based on accident data obtained from the Citrus County Engineering Department

ACCIDENT SUMMARY
(3 of 5)

-Total	0	0	2	0	1	0	2	5	15	25

Based on accident data obtained from the Citrus County Engineering Department

1998 Number of Accidents per Intersection at SR 200

Accident Characteristics	Arbor Lakes	Buffalo	Millwood	Orchid	491	Stokes Ferry	39	Other	Links	Total
Type of Accident:										
- Angle	0	1	1	1	1	0	0	1	3	8
-Rear End	0	0	0	0	1	0	0	2	3	6
-Head On	0	0	0	0	1	0	0	0	0	1
-Sideswipe	0	0	1	0	0	0	0	0	2	3
-Run-off-road	0	0	0	0	0	0	0	0	1	1
-Other	0	0	0	0	1	0	0	0	0	1
-Total	0	1	2	1	4	0	0	3	9	20
Cause of Accident:										
-Right-of-way Violation	0	1	1	0	0	0	0	0	1	3
-High Speed	0	0	0	0	0	0	0	0	0	0
-Improper Maneuver	0	0	1	1	0	0	0	1	1	4
-Careless driving	0	0	0	0	2	0	0	1	3	6
-Driving under influence	0	0	0	0	0	0	0	0	1	1
-Following too close	0	0	0	0	1	0	0	0	0	1
-Other	0	0	0	0	1	0	0	1	3	5
-Total	0	1	2	1	4	0	0	3	9	20
Accident Severity:										
-Fatalities	0	0	0	0	1	0	0	0	1	2
-Personal injuries	0	1	0	0	0	0	0	0	5	6
-Property damage only	0	0	2	1	3	0	0	3	3	12
-Total	0	1	2	1	4	0	0	3	9	20
Weather Conditions:										
-Clear	0	1	2	1	0	0	0	2	5	11
-Rain	0	0	0	0	3	0	0	0	1	4
-Cloudy	0	0	0	0	0	0	0	0	1	1
-Other	0	0	0	0	1	0	0	1	2	4
-Total	0	1	2	1	4	0	0	3	9	20
Surface Conditions:										
-Wet	0	0	0	0	3	0	0	0	1	4
-Dry	0	1	2	1	0	0	0	3	6	13
-Other	0	0	0	0	1	0	0	0	2	3
-Total	0	1	2	1	4	0	0	3	9	20
Time of Day:										
-7:00-9:00 am	0	1	0	0	1	0	0	0	0	2
-11:00 am-1:00 pm	0	0	0	0	2	0	0	1	0	3
-4:00-6:00 pm	0	0	1	0	0	0	0	0	2	3
-Other	0	0	1	1	1	0	0	2	7	12

Based on accident data obtained from the Citrus County Engineering Department

ACCIDENT SUMMARY
(4 of 5)

-Total	0	1	2	1	4	0	0	3	9	20

Based on accident data obtained from the Citrus County Engineering Department

1999 Number of Accidents per Intersection at SR 200

Accident Characteristics	Arbor Lakes	Buffalo	Millwood	Orchid	491	Stokes Ferry	39	Other	Links	Total
Type of Accident:										
- Angle	0	0	0	0	1	0	2	3	0	6
-Rear End	0	0	0	0	1	0	0	5	2	8
-Head On	0	0	0	0	0	0	0	0	0	0
-Sideswipe	0	0	0	0	0	0	0	1	5	6
-Run-off-road	0	0	0	0	1	0	0	2	10	13
-Other	0	0	0	0	0	0	0	1	1	2
-Total	0	0	0	0	3	0	2	12	18	35
Cause of Accident:										
-Right-of-way Violation	0	0	0	0	1	0	1	3	0	5
-High Speed	0	0	0	0	0	0	0	0	1	1
-Improper Maneuver	0	0	0	0	2	0	0	2	3	7
-Careless driving	0	0	0	0	0	0	0	2	4	6
-Driving under influence	0	0	0	0	0	0	1	0	2	3
-Following too close	0	0	0	0	0	0	0	1	1	2
-Other	0	0	0	0	0	0	0	4	7	11
-Total	0	0	0	0	3	0	2	12	18	35
Accident Severity:										
-Fatalities	0	0	0	0	0	0	0	0	2	2
-Personal injuries	0	0	0	0	1	0	1	4	4	10
-Property damage only	0	0	0	0	2	0	1	8	12	23
-Total	0	0	0	0	3	0	2	12	18	35
Weather Conditions:										
-Clear	0	0	0	0	3	0	2	8	15	28
-Rain	0	0	0	0	0	0	0	1	1	2
-Cloudy	0	0	0	0	0	0	0	1	1	2
-Other	0	0	0	0	0	0	0	2	1	3
-Total	0	0	0	0	3	0	2	12	18	35
Surface Conditions:										
-Wet	0	0	0	0	0	0	1	2	2	5
-Dry	0	0	0	0	3	0	1	8	15	27
-Other	0	0	0	0	0	0	0	2	1	3
-Total	0	0	0	0	3	0	2	12	18	35
Time of Day:										
-7:00-9:00 am	0	0	0	0	1	0	1	2	3	7
-11:00 am-1:00 pm	0	0	0	0	0	0	0	0	1	1
-4:00-6:00 pm	0	0	0	0	1	0	0	1	1	3
-Other	0	0	0	0	1	0	1	9	13	24

Based on accident data obtained from the Citrus County Engineering Department

ACCIDENT SUMMARY
(5 of 5)

-Total	0	0	0	0	3	0	2	12	18	35

Based on accident data obtained from the Citrus County Engineering Department

TABLE 3
Summary of Traffic Crashes for the Years 1995 through 1999*

	Crashes per Intersection of S.R. 200								Crashes	
Crash Characteristics	at E. Arbor Lakes Drive**	at E. Buffalo Lane	at E. Millwood Lane	at Orchid Street	at C.R. 491	at Stokes Ferry Road	at C.R. 39	at other Intersections	**along Segments**	**Total Crashes**
Type of Crash:										
- Angle	0	1	2	1	6	0	5	14	17	46
-Rear End	0	1	1	0	3	0	1	14	22	42
-Head On	0	0	0	1	2	0	0	2	2	7
-Sideswipe	0	1	1	1	2	0	0	2	15	22
-Run-off-road	0	0	0	0	1	0	0	3	17	21
-Other	0	0	0	0	2	0	0	2	11	15
-Total	0	3	4	3	16	0	6	37	84	153
Cause of Crash:										
-Right-of-way Violation	0	2	1	1	6	0	2	10	14	36
-High Speed	0	0	0	0	0	0	0	0	1	1
-Improper Maneuver	0	0	1	1	3	0	2	7	13	27
-Careless driving	0	1	0	0	5	0	0	7	26	39
-Driving under influence	0	0	0	0	0	0	1	1	4	6
-Following too close	0	0	0	0	1	0	1	3	3	8
-Other	0	0	2	1	1	0	0	9	23	36
Crash Severity:										
-Fatalities	0	0	0	0	1	0	0	1	6	8
-Personal injuries	0	2	1	0	3	0	3	12	33	54
-Property damage only	0	1	3	3	12	0	3	24	45	91
Weather Conditions:										
-Clear	0	2	3	3	8	0	4	24	63	107
-Rain	0	1	0	0	4	0	0	6	6	17
-Cloudy	0	0	0	0	2	0	1	2	7	12
-Other	0	0	1	0	2	0	1	5	8	17
Surface Conditions:										
-Wet	0	1	0	0	6	0	2	8	10	27
-Dry	0	2	3	3	8	0	3	25	67	111
-Other	0	0	1	0	2	0	1	4	7	15
Time of Day:										
-7:00-9:00 am	0	2	0	0	3	0	2	2	12	21
-11:00 am-1:00 pm	0	1	0	0	4	0	1	5	7	18
-4:00-6:00 pm	0	0	2	0	4	0	0	7	10	23
-Other	0	0	2	3	5	0	3	23	55	91
Year:										
-1995	N/A	0	0	2	8	0	2	4	23	39
-1996	N/A	2	0	0	0	0	0	13	19	34
-1997	N/A	0	2	0	1	0	2	5	15	25
-1998	0	1	2	1	4	0	0	3	9	20
-1999	0	0	2	0	3	0	2	12	18	35

* Based on crash records provided by the Citrus County Traffic Department

** This intersection did not exist prior to 1998

Table 4 summarizes the accident rates for S.R. 200, the average crash rates for similar facilities, the rates ratio, and the economic losses incurred for the six-year period from 1994 through 1999. These statistics were obtained from the FDOT District 7 maintained crash records. As shown, an estimated total of $28,722,000 were lost during the six-year period due to the traffic accidents in the study area. The crash rates ratio exceeded the value of 1.0 only during the years 1995 and 1996, which indicates that during this period accident occurrence along S.R. 200 was above the average expectancy.

II.c. Traffic Volumes

As noted earlier, an extensive inventory of traffic counts was obtained from the Citrus County Traffic Department, FDOT District 7 Planning Department, as well as from new traffic volume data collected as follows:

- Machine traffic volume counts at five locations:

    1. S.R. 200 just north of U.S. 41
    2. S.R. 200 just north of C.R. 491
    3. S.R. 200 just north of C.R. 39
    4. C.R. 491 west of S.R. 200, and
    5. C.R. 39 west of S.R. 200

- Six-hour (morning, midday, and evening peak period) turning volume traffic counts at seven locations:

    1. S.R. 200 at East Arbor Lakes Drive
    2. S.R. 200 at East Buffalo Lane
    3. S.R. 200 at East Millwood Lane
    4. S.R. 200 at Orchid Street
    5. S.R. 200 at C.R. 491
    6. S.R. 200 at Stokes Ferry Road, and
    7. S.R. 200 at C.R. 39.

Appendix A provides printouts of the collected traffic counts.

Table 4

TABLE 4
Crash Rates and Economic Losses[1]

Year	AADT	Number of Crashes	Accident Severity [2]			Accident Rate	Critical Accident Rate	Rate Ratio	Economic Loss ($)
			F	I	PDO				
1994	8,500	16	0	23	2	0.771	0.947	0.814	3,502,400
1995	9,000	31	1	48	3	1.412	1.003	1.407	6,652,500
1996	9,880	29	1	52	6	1.203	1.023	1.175	6,348,100
1997	9,355	22	1	25	7	0.963	1.016	0.947	4,482,300
1998	9,840	18	6	32	2	0.749	1.062	0.705	3,406,600
1999	9,990	21	4	16	7	0.862	0.977	0.882	4,330,100
							TOTAL LOSS		**28,722,000**

[1] Based on the FDOT District Seven Accident Statistics
[2] F: Fatality; I: Personal Injury; PDO: Property Damage Only

II.c.1 Daily Traffic Volumes

The daily traffic volume data were adjusted for seasonal variation using the 1999 seasonal adjustment factors for Citrus County supplied by the FDOT District 7 Planning Department. A copy of these factors is provided in Appendix A.2. Since the traffic counts were performed from approximately mid-August to mid-September, the seasonal adjustment factors that were applied ranged from 1.05 to 1.06.

Table 5 presents the adjusted average annual daily traffic (AADT) volumes. As shown, current AADT volumes along S.R. 200 range from 10,100 vehicles per day (vpd) at the northern project limit to 10,600 vpd at the southern end. Review of the distribution of the hourly volumes indicates that the evening peak period (4:00 to 6:00 p.m.) is the highest volume period for all five locations.

TABLE 5
Year 2000 Daily Volumes

Location	AADT Volume (vpd)
S.R. 200 north of U.S. 41	10,600
S.R. 200 north of C.R. 491	11,000
S.R. 200 north of C.R. 39	10,100
C.R. 491 west of S.R. 200	5,500
C.R. 39 west of S.R. 200	2,000

II.c.2 Hourly Traffic Volumes

The turning volume count data sheets are included in Appendix A. Figure 3 depicts the peak hour volumes for the morning (7:00 – 8:00 a.m.), midday (12:00 – 1:00 p.m.) and evening (4:30 – 5:30 p.m.) peak periods. The counted traffic volumes were adjusted for seasonal variation by using the seasonal adjustment factor of 1.05. As shown, the evening peak hour is clearly the highest traffic volume hour of the day in the study area.

II.c.3 "K", "D" and "T" Factors

Year 1999 classification traffic count data supplied by FDOT District 7 for two locations were reviewed to develop an understanding of the "K", "D" and "T" factors along S.R. 200 in the study area. Table 6 summarizes the findings for each location. As shown:

Figure 3

Table 6

TABLE 6
Summary of Existing "K", "D", and "T" Factors*

Location	Daily Volume (vpd)	Peak Hour	Peak Hour Traffic Volume (vph)		"K" Factor	"D" Factor	"T" Factor
Station 1008	8,956	A.M.	NB	381		58%	
SR 200 N of US 41			SB	272		42%	
			Total	653	7.29%	100%	7.8%
		Midday	NB	240		49%	
			SB	253		51%	
			Total	493	5.50%	100%	7.5%
		P.M.	NB	345		47%	
			SB	390		53%	
			Total	735	8.21%	100%	4.2%
		24 Hour					5.6%
Station 0200	8,997	A.M.	NB	323		55%	
SR 200 N of CR 491			SB	264		45%	
			Total	587	6.52%	100%	9.9%
		Midday	NB	220		47%	
			SB	250		53%	
			Total	470	5.22%	100%	9.8%
		P.M.	NB	245		33%	
			SB	501		67%	
			Total	740	8.29%	100%	5.5%
		24 Hour					7.9%

* Based on traffic counts dated August 18, 1999 supplied by the FDOT District 7 Planning Deptartment

- S.R. 200 is traveled more extensively during the evening peak hour. At both locations, the evening peak hour volume ranged from 8.21 to 8.29 percent of the respective daily volumes.

- During the evening peak hour, the directional distribution of the traffic north of C.R. 491 is 33 percent northbound and 67 percent southbound, while close to U.S. 41 it tends to be more balanced at 47 and 53 percent, respectively.

- The presence of trucks along S.R. 200 is also more pronounced north of C.R. 491 where, during the evening peak hour, truck volumes equal to 5.5 percent of the hourly volume. In the vicinity of U.S. 41, truck traffic during the same peak hour equals to 4.2 percent of the hourly volume.

II.c.4 Pedestrian and Bicyclist Activity

Observations of pedestrian and bicyclist activities along the S.R. 200 indicate that these operations are minimal to non-existent. This condition can be primarily attributed to the rural nature of the environment adjacent to S.R. 200 as well as to the lack of pedestrian and designated bicycle facilities.

II.d. Existing Traffic Operations

Capacity analyses were performed to evaluate the quality of traffic flow currently experienced during the morning, midday and evening peak hours. The procedures presented in the 1997 Highway Capacity Manual, Special Report 209, were applied in these analyses. The morning, midday, and evening peak hour levels of service were determined for seven unsignalized intersections and three segments of S.R. 200. The capacity analyses worksheets are included in Appendix C.

Figure 4 depicts the current peak hour levels of service at each location. As shown, at all intersections the left turns from S.R. 200 to the minor roadways operate at Levels-of-Service (LOS) A at all hours. The minor street approaches operate at LOS B or better except:

- the eastbound approach of C.R. 491, which operates at LOS C during the morning and evening peak hours,

- the westbound approach of Stokes Ferry Road, which operates at LOS C during the evening peak hour, and

- the eastbound approach of C.R. 39, which operates at LOS C during the evening peak hour.

Figure 4

The two-lane rural highway analysis indicates that currently the segment of S.R. 200 north of C.R. 491 operates at LOS E during the morning and evening peak hours and LOS D during the midday peak hour. Observations of operational vehicle speeds during the peak hour, however, indicate that this segment functions at LOS D or better, which is consistent with the Generalized Level of Service Tables. The

segment of S.R. 200 south of East Arbor Lakes Drive operates at LOS D during all three peak periods of the day.

III. FUTURE CONDITIONS

This section presents forecasts for the future traffic volume demand in the study area as well as evaluations of the quality of the future traffic operations during the Design Year 2025. At locations - roadway segments and intersections- where the levels-of-service are projected to deteriorate below the minimum desirable LOS D, improvements are recommended.

III.a. Planned Roadway Improvements

The Citrus County Comprehensive Plan was reviewed to identify any short-term and long-term roadway improvements planned in the study area. As shown in Figure 5, the Comprehensive Plan includes two improvement projects within the study horizon at the S.R. 200 project, as follows:

- C.R. 491 is planned to be widened by the Year 2020 to a four-lane divided facility.
- U.S. 41 is also planned to be widened to a four-lane divided highway.

It should be noted that currently the Comprehensive Plan for the recommended Year 2020 Roadway Network, indicates that S.R. 200 should be a two-lane, undivided facility.

III.b. Future Traffic Volume Projections

III.b.1 Average Annual Daily Traffic Volumes

The Average Annual Daily Traffic (AADT) volume projections for the Years 2005, 2015, and 2025 were supplied by the FDOT District 7 Planning Department. These data were developed by using the following methodology:

- Historical traffic volume data and socio-economic growth trends were reviewed and analyzed.
- The validated Tampa Bay Regional Planning Model (TBRPM) output for the Year 1995 was checked.
- The results of the TBRPM output for the Year 2020 corresponding to the latest adopted 2020 Long Range Transportation Plan (LRTP) network and socio-economic data were reviewed.
- The Year 2020 model volumes were smoothed and adjusted to AADT volumes.

Figure 5

- Year 2005 and 2015 AADT volumes were calculated by using linear interpolation and extrapolation between the corresponding Year 1999 and 2020 volumes.

- Design Year 2025 AADT volumes were calculated by extrapolating from the corresponding Year 2025 and 2020 volumes.

Figure 6 depicts the estimated AADT volumes for the years 1999, 2005, 2015 and 2025. Appendix B provides copies of the data received from FDOT. As shown, during the Design Year daily volumes along S.R. 200, should be expected to range from 23,000 vpd at the northern project terminus to 27,000 vpd at the southern end. These volumes represent an increase of 130 to 184 percent, respectively, over the Year 1999 volumes or annual traffic growth rates from 5.20 to 7.37 percent.

III.b.2 Design Year "K", "D" and "T" Factors

The Design Year 2025 "K", "D", and "T" factors were also supplied by the FDOT District 7 Planning Department and are shown in Table 7.

TABLE 7
Design Year "K", "D", and "T" Factors

Factor	Percent (%)
"K" [1]	9.95
"D" [2]	53.49
Design Hour "T" [3]	3.00
Daily "T" [4]	6.00

[1] Percent of daily volume during the design hour

[2] Percent of design hour volume in the peak flow direction.

[3] Percent of trucks in the design hour volume.

[4] Percent of trucks in the design daily volume.

III.b.3 Projected Directional Design Hour Volumes (DDHV)

Figure 7 depicts the DDHV for various roadway segments in the study area. These volumes were calculated with the application of the "K" and "D" factors shown in Table 7 on the AADT volumes shown in Figure 6.

The peak traffic flow direction along S.R. 200, C.R. 491, and C.R. 39, as well as along the other local roadways was modeled to follow the existing evening peak hour flow patterns depicted in Figure 3. As such, from U.S. 41 to East Millwood Lane, the peak flow direction for S.R. 200 is

Figure 6

Figure 7

the northbound, while for the remainder is the southbound. For C.R. 491, C.R. 39 and the local roadways, the direction departing S.R. 200 was chosen as the peak flow direction.

III.b.4 Design Hour Turning Volumes

The DDHV were converted to Design Hour Turning volumes by using the following methodology:

1. Annual growth factors were calculated by comparing the existing (Year 2000) evening peak hour link volumes with the corresponding Year 2025 design hour volumes. Table 8 summarizes the annual growth factors.

TABLE 8
Annual Growth Rates Based on Future Volume Projections

Location	Existing (Year 2000) Evening Peak Hour Volume (vph)	Estimated (Year 2025) Design Hour Volume (vph)	Annual Growth Rate (%)
S.R. 200 north of U.S. 41	860[1]	2,685	8.49 [2]
S.R. 200 north of C.R. 491	855	2,490	7.65 [3]
S.R. 200 north of C.R. 39	825	2,290	7.10
C.R. 491 west of S.R. 200	385	995	6.34
C.R. 39 west of S.R. 200	200	360	3.20 [4]

1 Volume taken from traffic count performed by Citrus County and adjusted to average using seasonal adjustment factors.
2 This rate was assumed for calculating link volumes along S.R. 200 from U.S. 41 to East Millwood Lane.
3 This rate was assumed for calculating link volumes along S.R. 200 north of East Millwood Lane.
4 This rate was assumed for calculating link volumes along the local roadways intersecting S.R. 200.

2. The annual growth factors were, in turn, used to project the Year 2025 design hour link volumes, from the existing evening peak hour volumes, at locations where the design year volumes were not available.

3. The calculated design hour link volumes were reduced to directional volumes by applying the "D" factors presented in Section III.b.2.

4. The DDHV's at each intersection were smoothed so that the total of the inbound DDHV's be equal to the total of the outbound DDHV's.

5. The TURNS program was utilized to develop the design hour turning volumes at each intersection by using the DDHV's calculated in Step 4 and by assuming that the existing turning volume patterns will continue to be valid in the future.

6. At the intersection of S.R. 200 with East Arbor Lakes Drive turning volumes were calculated after the evening peak hour trip generation was calculated for the ultimate development plan, which accounts for 368 dwelling single/detached units.

Figure 8 depicts the Year 2025 design for turning volumes at key study area intersections.

III.c. Level of Service Analyses

The quality of traffic operations (levels-of-service), expected to be provided along S.R. 200 during the design hour of the 2025 Design Year was evaluated according to the procedures described in the 1997 Highway Capacity Manual, Special Report 209. The Capacity Software (HCS) was utilized. The analyses worksheets are provided in Appendix C. Specifically, the following scenarios were analyzed, gradually progressing from minimum improvement efforts to more expensive solutions.

- No-Build Alternative: Maintain the existing roadway and intersection geometry and traffic controls throughout the Year 2025.

- Build without signalization: Enhance S.R. 200 to a four-lane divided facility and attempt by geometric enhancements (lane additions) to improve operations at the unsignalized intersections that would fail if their current geometries were maintained through Year 2025.

- Build with signalization: Enhance S.R. 200 to a four-lane divided facility, improve the geometry of those unsignalized intersections that can be brought to LOS D or better by those improvements and, where these improvements fail to reestablish LOS D or better, introduce signalization. This analysis was performed to evaluate the effectiveness of the signals in improving operational levels of service and to establish the lane geometry requirements and in turn, right-of-way requirements at the subject intersections. The decision on whether or not to provide traffic signals at these locations, however, will be based on the results of the Signal Warrant Analysis, which will be performed during the Design Phase of this project.

- Transportation System Management (TSM) measures and short-term safety and capacity improvements were also evaluated. These improvements were developed to be compatible with the ultimate Build Scenario for S.R. 200.

Figure 8

III.c.1 No-Build Alternative

Two-lane highway and unsignalized intersection capacity analyses were performed as part of this alternative.

Table 9 summarizes the results of the unsignalized intersection analyses while Figure 9 depicts graphically the link and intersection levels of service. As shown, without improvements, during the Design Year peak hour:

- The entire length of S.R. 200 is expected to operate at LOS E or worse.
- The STOP-signed controlled approaches of all unsignalized intersections considered in the analyses are also expected to operate at LOS E or worse.

Due to the varying travel demand along S.R. 200, its segments are expected to fail (experience operational LOS E or worse) at different years. According to the Generalized Level-of-Service Tables, the S.R. 200 segment from U.S. 41 to north of East Millwood Lane is expected to fail by the Year 2011. The segment from north of East Millwood Lane to C.R. 491 is expected to fail by the Year 2020. The segment from C.R. 491 to north of the Marion County Line is expected to fail by the Year 2008.

III.c.2 Build Alternative without Signalization

The following improvements were assumed under this alternative:

- Widening of S.R.200 to a four-lane divided facility for its entire length. Northbound and southbound left-turn bays were assumed to be provided at all intersections.
- Widening of the C.R. 491 eastbound approach to provide exclusive lanes for the left-turn and right-turn movements.
- Widening of the Stokes Ferry Road westbound approach to provide exclusive left-turn and right-turn lanes.
- Widening of the C.R. 39 eastbound approach to provide exclusive left-turn and right-turn lanes.

Table 10 summarizes the results of the unsignalized intersection analyses for this alternative. Figure 10 depicts graphically the results of the link and intersection analyses. As shown in Table 9, the widening of S.R. 200 to a four-lane divided facility will help improve operations at the intersections with East Buffalo Lane, East Millwood Lane and Orchid Street. The widening of S.R. 200 will also help operations at the intersections with C.R. 491, Stokes Ferry Road and C.R. 39, however, the left turns exiting the minor approaches will continue to operate at LOS E or F.

Table 9

Figure 9

Table 10

Figure 10

The widening of S.R. 200 will drastically improve operations along the roadway. The expected LOS along S.R. 200 will range from LOS A to C.

III.c.3 Build Alternative with Signalization

This alternative assumed that in addition to the assumptions presented in Section III.c.2:

- The intersection of S.R. 200 with C.R. 491 will be signalized while the eastbound C.R. 491 approach will be widened to provide an exclusive left-turn and a shared left/right-turn lane.

- The intersection of S.R. 200 with C.R. 39 will also be signalized.

- No evaluation for signalization was performed for the S.R. 200 and Stokes Ferry Road intersection due to its proximity with C.R. 39. After consideration of the median opening spacing criteria for Class 3 facilities, such as S.R. 200, it is apparent that due to the proximity of Stokes Ferry Road to C.R. 39 (620 feet), no median opening is expected to be provided at this location. In this case, the Stokes Ferry Road approach to S.R. 200 will consist of a single right-turn lane and will be expected to operate at LOS B. In the event that the left turns out of Stokes Ferry Road are permitted by way of a median opening, the traffic gaps generated by the two signals at C.R. 491 and C.R. 39 should help the operations at this intersection.

Table 11 presents the results of the signalized intersection analyses. As shown, both intersections are expected to operate at satisfactory levels of service. Arterial analysis performed for the segment of S.R. 200 between the two signalized intersections indicates that both directions are expected to operate at LOS B.

III.c.4 Recommended Lane Geometry and Storage Lengths

Figure 11 depicts the recommended intersection lane geometry along the S.R. 200 corridor for the design year 2025. Table 12 summarizes the recommended storage lengths for the turning lanes along the project. These lengths were based on the 95th percentile queue length results of the HCS analyses. For those cases where the calculated total length of the turning lane (queue length plus deceleration length) was less than the queue length on the adjacent through lane, the recommended length of the turning lane was adjusted to match the length of the through lane queue.

III.d. TSM and Short-Term Improvements

TSM measures and short-term capacity and/or safety improvements were also considered for this project. Due to the characteristics of the travelers using the S.R. 200 corridor as well as the rural nature of the corridor's environs, TSM-type measures to reduce traffic demand such as car pool, variable message signs and public transit were not deemed to be effective and appropriate.

Table 11

Figure 11

Table 12, 1 of 2

TABLE 11
Build Alternative with Signalization - Design Year 2025
Signalized Intersection Capacity Analyses Results

Intersection	Approach	Lane Group	Measurement Effectiveness			Overall LOS
			V/C[1]	Delay[2]	LOS[3]	
S.R. 200 at C.R. 491	EB	L	0.57	25.4	C	B
		LR	0.05	19.8	B	
	NB	L	0.07	7.2	A	
		T	0.40	8.9	A	
	SB	T	0.46	9.5	A	
		R	0.35	0.6	A	
S.R. 200 at C.R. 39	EB	L	0.19	25.4	C	B
		R	0.20	15.7	B	
	NB	L	0.59	18.2	B	
		T	0.71	17.9	B	
	SB	T	0.83	21.9	C	
		R	0.08	2.9	A	

[1] V/C: Volume-to-capacity ratio
[2] Average delay in seconds per entering vehicle
[3] Level of service

Table 12, 2 of 2

TABLE 12
Design Year 2025 Queue and Storage Lane Lengths – Build Alternative

Intersection	Approach	Lane Group[1]	Group Volume (vph)	Queue Length (vehicles)	Queue Length (feet)	Clearance and Deceleration Length (feet)	Total Length (feet)	Recommended Length[2] (feet)
S.R. 200 at East Arbor Lakes Drive	WB	L	60	1.7	42.5	145	188	190
		R	65	0.6[3]	25.0	145	170	170
	NB	2T	1105	UF[4]	UF	N/A[7]	N/A	N/A
		R	120	UF	UF	N/A	N/A	N/A
	SB	L	105	0.8	25.0	455	480	480
		2T	925	UF	UF	N/A	N/A	N/A
S.R. 200 at East Buffalo Lane	EB	LTR	41	0.4	25.0	145	170	170
	WB	LTR	11	0.1	25.0	145	170	170
	NB	L	25	0.0	25.0	455	480	480
		T+TR	1145	UF	UF	N/A	N/A	N/A
	SB	L	5	0.0	25.0	455	480	480
		T+TR	1000	UF	UF	N/A	N/A	N/A
S.R. 200 at East Millwood Lane	EB	LR	50	0.4	25.0	145	170	170
	NB	L	55	0.2	25.0	455	480	480
		2T	1095	UF	UF	N/A	N/A	N/A
	SB	T+TR	970	UF	UF	N/A	N/A	N/A
S.R. 200 at Orchid Street	WB	LR	50	0.4	25.0	145	170	170
	NB	T+TR	735	UF	UF	N/A	N/A	N/A
	SB	L	40	0.0	25.0	455	480	480
		2T	825	UF	UF	N/A	N/A	N/A

1 L: Left-turn Lane; R: Right-turn Lane; T: Through Lane; TR: Combined use through and right-turn lane; LTR: Combined use left-turn, through, and right-turn lane; LR: combined use right-turn and left-turn lane
2 Includes a 50-foot-long taper.
3 For queues shorter than one vehicle, minimum storage length for one vehicle is provided.
4 UF: unimpeded flow
5 Left-turn volume
6 Right-turn volume
7 N/A: Not applicable
8 The eastbound through lane of C.R. 491 will become the exclusive left-turn lane.
9 The eastbound through lane of C.R. 39 will become the right-turn lane.

TABLE 12 (Continued)
Design Year 2025 Queue and Storage Lane Lengths – Build Alternative

Intersection	Approach	Lane Group[1]	Group Volume (vph)	Queue Length (vehicles)	Queue Length (feet)	Clearance and Deceleration Length (feet)	Total Length (feet)	Recommended Length[2] (feet)
S.R. 200 at C.R. 491	EB	L	445[5]	9.6	240.0	N/A[8]	N/A	N/A
		LR	20[6]	1.1	27.5	320	348	350
	NB	L	20	0.6	25.0	520	545	545
		2T	715	9.7	242.5	N/A	N/A	N/A
	SB	2T	820	11.3	282.5	N/A	N/A	N/A
		R	510	UF	UF	520	520	520
S.R. 200 at Stokes Ferry Road	WB	R	85	0.7	25.0	145	170	170
	NB	T+TR	1200	UF	UF	N/A	N/A	N/A
	SB	2T	1300	UF	UF	N/A	N/A	N/A
S.R. 200 at C.R. 39	EB	L	55	2.6	65.0	320	385	390
		R	110	4.1	102.5[9]	N/A	N/A	N/A
	NB	L	180	13.4	335.0	520	855	860
		2T	1010	18.2	455.0	N/A	N/A	N/A
	SB	2T	1190	24.2	605.0	N/A	N/A	N/A
		R	85	1.5	37.5	520	558	560

1 L: Left-turn Lane; R: Right-turn Lane; T: Through Lane; TR: Combined use through and right-turn lane; LTR: Combined use left-turn, through, and right-turn lane; LR: combined use right-turn and left-turn lane
2 Includes a 50-foot-long taper.
3 For queues shorter than one vehicle, minimum storage length for one vehicle is provided.
4 UF: unimpeded flow
5 Left-turn volume
6 Right-turn volume
7 N/A: Not applicable
8 The eastbound through lane of C.R. 491 will become the exclusive left-turn lane.
9 The eastbound through lane of C.R. 39 will become the right-turn lane.

Short-term capacity and/or safety improvements were considered for the unsignalized intersections shown to fail under the Year 2025 No-Build scenario. Review of the volumes and the capacity analyses indicated that these intersections fail due to the growth of the traffic volumes along the mainline of S.R. 200 rather than the approach volumes on the side streets. Therefore, geometric improvements on the approaches would have little effect on the operational levels of service at these intersections. Two short-term improvements, one safety and one capacity, are recommended:

- At the intersection of S.R. 200 with C.R. 491, it is recommended that C.R. 491 is realigned to intersect with S.R. 200 at a 90º angle. This improvement could be combined with the widening of the eastbound C.R. 491 approach to provide exclusive lanes for the right-turn and left-turn movements so that it is compatible with the planned widening of C.R. 491 to a four-lane facility by Citrus County. As shown in Table 10, however, the widening will not improve significantly the operations of the eastbound C.R. 491 approach. Since this improvement has more impact on safety rather than on capacity, it could occur at any time prior to the widening of S.R. 200 and is compatible with the ultimate Year 2025 Build scenario.

- At the intersection of S.R. 200 with C.R. 39 the eastbound approach should be widened to provide an exclusive right-turn lane. This improvement is compatible with both -the Build without signalization and the Build with signalization- ultimate improvement scenarios for S.R. 200. To maintain LOS D or better for the C.R. 39 approach, this improvement should be in place by the Year 2006.

IV. AIR AND NOISE ANALYSES DATA FORMS

Traffic volumes are one of the key inputs in evaluating existing and future conditions regarding air quality and noise levels. Appendix E provided the traffic data forms for these analyses. The air and noise analyses are presented in separate documents.

V. CONCLUSIONS

The study of the existing traffic operations as well as the projected future traffic conditions in the study area revealed the following:

- S.R. 200, a two-lane undivided rural facility for most of its length, currently carries volumes ranging from 10,100 to 11,000 vehicles per day. The most predominant peak hour is the evening peak hour (4:30 – 5:30 P.M.) when two-way traffic volumes range from 540 to 855 vehicles per hour.

- Currently during the peak hours, S.R. 200 operates at levels-of-service (LOS) ranging from C to E. At all intersections, the left turns from the mainline to the local streets operate at LOS A. The left turns from the side street approaches, including C.R. 491 and C.R. 39, operate at LOS ranging from B to C.

- There were 153 traffic accidents reported during the five-year period from 1995 through 1999; eight accidents were fatal causing the loss of life for 13 persons. According to the FDOT District 7 accident statistics, the accident rates for the last two available years (1987 and 1998) were below the average expectancy for similar type and volume facilities. According to the same statistics during the five year period from 1994 through 1998 the total monetary loss due to traffic accidents along S.R. 200 is estimated to be approximately $24,400,000.

- According to the Tampa Bay Regional Planning Model (TBRPM), historic growth trends and currently available socio-economic data, traffic volumes along S.R. 200 are expected to increase for the next 25 years at average annual growth rates ranging from 7.10 to 8.49 percent. Traffic demand on the local roadways intersecting S.R. 200 is expected to increase at an estimated annual rate of 3.20 percent. The Design Year 2025 daily volumes along S.R. 200 are projected to range from 23,000 to 27,000 vehicles per day.

- Analyses of the Design Year 2025 peak hour conditions indicate that the entire length of S.R. 200 as well as several intersections should be expected to operate at LOS E or F if the current geometry is maintained. The segment of S.R. 200 from C.R. 491 to the northern terminus is expected to fail by the Year 2008 while the segment from U.S. 41 to East Millwood Lane is expected to fail by the Year 2011. The middle segment of S.R. 200, from East Millwood Lane to C.R. 491, is expected to fail by the Year 2020.

- Two short-term capacity and/or safety improvements are recommended. The C.R. 491 approach to S.R. 200 should be realigned to form a 90º intersection. The eastbound C.R. 39 approach to S.R. 200 should be widened by Year 2006 to provide an additional exclusive right-turn lane.

- Widening of S.R. 200 to a four-lane divided facility will restore LOS ranging from A to C along the mainline and most unsignalized intersections. Signalization may be required at the

intersections with C.R. 491 and C.R. 39 to maintain acceptable levels of service. The necessity of traffic signals at these intersections should be further evaluated during the Design Phase by performing the requisite Signal Warrant Analyses.