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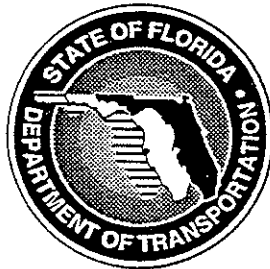
PRELIMINARY ENGINEERING REPORT

U.S. 41 (S.R. 45)
from C.R. 48 (East Orange Avenue) to S.R. 44

Project Development and Environment Study
Citrus County, Florida

Work Program Item Number: 7119008
State Project Number: 02010-1541
Federal Aid Program Number: XA-301-5(12)

Prepared for:



Florida Department of Transportation
District 7

December 1997

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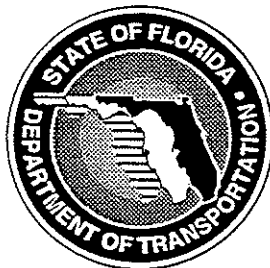
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Prepared by:

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December 1997

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1-9-98

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1.0 SUMMARY

The Florida Department of Transportation (FDOT) has undertaken a project development and environment (PD&E) study to evaluate improvement options along US 41/SR 45 in Citrus County, Florida. This project proposes improvements of approximately 10.1 km (6.3 miles) of US 41 from East Orange Avenue in Floral City to SR 44 in Inverness.

The purpose of the improvements is to enhance safety, reduce congestion, and improve stormwater drainage along the facility. The US 41 facility through Floral City and Inverness is the only major north-south arterial in eastern Citrus County. The existing roadway has several deficiencies including: current and future traffic capacity; safety; and consistency with proposed growth management and transportation plans. Related to the deficiencies of the capacity of the roadway, US 41 is used as an auxiliary and connector road for evacuation routes. Roadway deficiencies will be corrected and improved safety will result by the proposed improvements. Local transportation plans call for the improvements, while social and economic demands will also be met by the proposed project. This section will briefly discuss these topics.

US 41 does not provide adequate future capacity for north-south through traffic or traffic generated by existing and expanding land uses along the roadway. By increasing the capacity on this section of US 41, hurricane evacuation processes could proceed more effectively as people travel to designated evacuation routes.

Existing Annual Average Daily Traffic (AADT) volumes range from 7,970 vehicles per day at the south end of the project, north of East Orange Avenue to 20,070 at the north end of the project, south of SR 44. It is estimated that by the year 2020, AADT traffic volumes on US 41 will increase to approximately 16,520 vehicles between East Orange Avenue and East Julia Street at the south end of the project to 33,900 vehicles between East Eden Drive and SR 44. These volumes on the existing roadway would result in level of service (LOS) F on most roadway links and at all intersections within the project. As traffic volumes increase in the future, increased congestion could result in a higher crash rate on the existing roadway within the study area. Improvements to the road to accommodate higher traffic volumes should help to decrease the crash rate.

Citrus County is a rapidly growing county with existing rural areas becoming increasingly more developed and consequently increasing traffic volumes. The majority of US 41 in the study area is currently an undivided two lane, rural roadway that is experiencing traffic congestion and decreased level of service resulting from population growth. Improvements to the roadway are necessary to increase traffic capacity.

The proposed roadway improvements to US 41 are consistent with the City of Inverness Comprehensive Land Use Plan 1989-1999 and the Citrus County Comprehensive Plan 1989-2005. There is no Metropolitan Planning Organization in this area.

This report is one element of a Project Development and Environment (PD&E) Study which examines in detail the upgrading of the facility. The proposed roadway will have a four-lane and six-lane divided urban typical section. The total project cost is estimated to be \$26.15 million (in 1997 dollars).

1.1 COMMITMENTS

In addition to the provisions detailed in the Florida Department of Transportation's (FDOT) "Standard Specifications for Road and Bridge Construction" and to minimize impacts to the human and natural environment, the FDOT is committed to the following measures:

The following commitments were made with the Florida Department of Environmental Protection (FDEP) during coordination regarding Fort Cooper State Park and the Withlacoochee State Trail. Neither will be directly affected as a result of the preferred alternative.

- During the design phase of this project following the PD&E study, FDOT PD&E staff will coordinate with FDOT's design staff in order to evaluate the possibility of providing a landscaped buffer between US 41 and the Withlacoochee State Trail within the US 41 right-of-way.
- If, during the design phase, FDOT determines that a landscaped buffer is feasible, PD&E staff (including FDOT's District Seven Landscape Architect) will coordinate with FDOT's design staff as well as with the Fort Cooper State Park Manager and the FDEP Division of Recreation and Park's District 4 biologist, to develop a list of native plant species which may be incorporated into the buffer. FDOT's District Seven Landscape Architect will further review the FDOT's plans during the design phase to ensure the use of native plant species.
- FDOT is aware of the spread of the invasive exotic, Cogon grass, both inside and outside of the FDOT's right-of-way on US 41. When FDOT begins widening US 41, FDOT plans to remove the Cogon grass from within the right-of-way and dispose of the grass in a way which will not proliferate its spread.
- The final design of this project will provide for the collection, treatment and discharge of stormwater runoff from the expanded roadway. FDOT has

indicated that no discharge or runoff will be placed on state park lands.

- East Eden Drive is the access road to Fort Cooper State Park from US 41. Proposed improvements and new turn lanes may obscure the one small sign which currently directs the public to the park.

FDOT will provide adequate funding for park signage within the new intersection. The sign will be of sufficient dimension so as to clearly direct the public to the park.

The small sign which currently directs the public to the park may also need to be relocated as a result of the improvements to the intersection and road widening. FDOT will either relocate the existing sign or pay for a new sign. Coordination of this matter will occur with the Fort Cooper State Park Manager and the Chief, Bureau of Parks, District 4.

The following specific construction impact mitigation measures are to be implemented where the project engineer determines that noise-sensitive sites exist at the time of construction.

- The contractor will use static rollers for compaction of embankment, subgrade, base, asphalt, etc.
- Backup alarm noise from heavy equipment and trucks will be minimized by requiring the contractor to operate in forward passes or a figure eight pattern when dumping, spreading or compacting materials.

Other construction related commitments:

- Restriction of operating hours for lighting the construction areas will be determined and required of the contractor prior to beginning construction activities that require lighting.
- Coordination with law enforcement agencies will be undertaken prior to commencing construction activities to ensure that construction-related impacts are minimized or adequately mitigated when work during non-daylight hours is required.

1.2 RECOMMENDATIONS

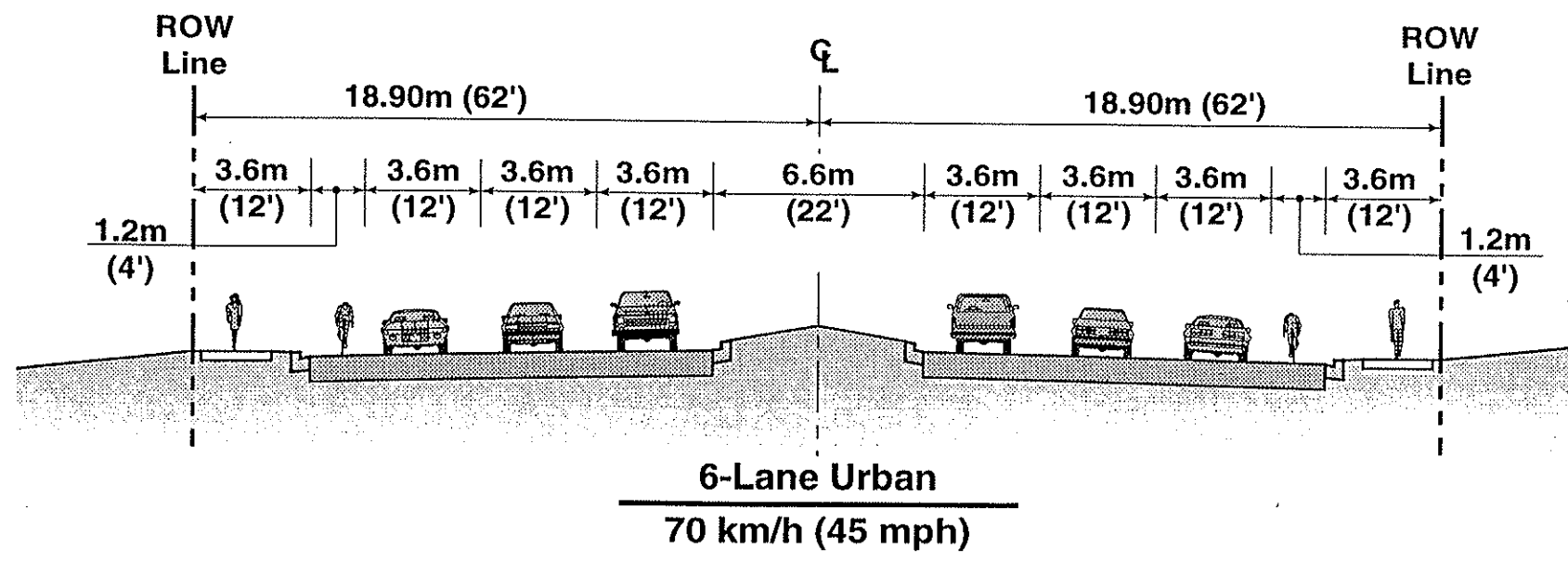
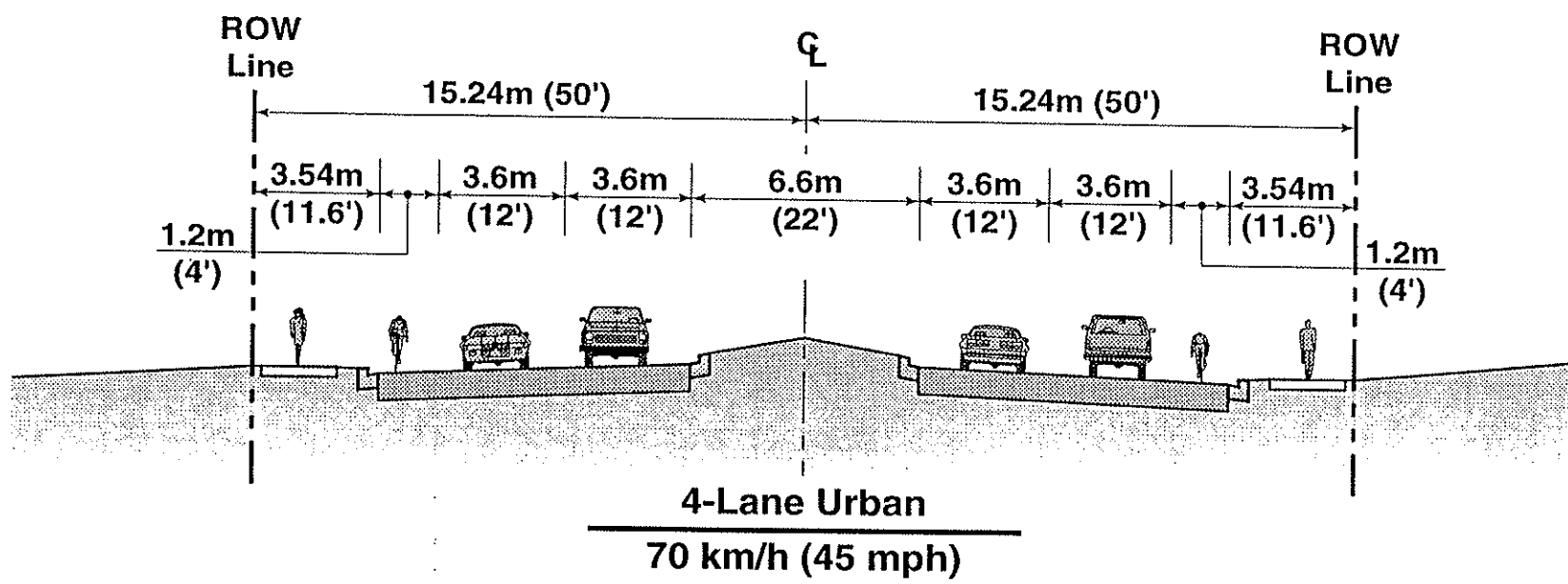
In accordance with the Citrus County Comprehensive Plan 1989 - 2005 and the City of Inverness Comprehensive Land Use Plan 1989 - 1999, and based on this PD&E study it is recommended that US 41 be improved for a distance of 10.1 km (6.3 mi). The reconstruction of US 41 will upgrade the current facility to a four-lane and six-lane divided roadway with a raised median, and left and right turn lanes.

As a result of comments received from the public hearing and coordination with local government and other agencies, the FDOT recommends the following improvements to US 41:

Two urban typical sections are proposed for the improvements: a four-lane and a six-lane divided roadway. These typical sections are illustrated in Figure 1.1. A four-lane urban typical section is recommended for use between East Orange Avenue north to East Eden Drive, while the six-lane urban typical section is recommended between East Eden Drive and SR 44. The design speed for both typical sections is 70 km/hr (45 mph). A closed drainage system would route stormwater runoff into treatment ponds adjacent to the roadway.

- ▶ Four-Lane Urban Typical Section - This typical section is curb and gutter, has two 3.6 m (12 ft) travel lanes in each direction separated by a 6.6 m (22 ft) raised median. The typical section provides for 1.2 m (4 ft) outside paved shoulders in each direction as well as 1.5 m (5 ft) sidewalks on both sides. A 3.5 m (11.6 ft) border width on both sides will be used. The minimum right-of-way required for the four-lane urban typical section is 30.5 m (100 ft).
- ▶ Six-Lane Urban Typical Section - Similarly, the six-lane urban typical section is curb and gutter, but has three 3.6 m (12 ft) travel lanes in each direction separated by a 6.6 m (22 ft) raised median. It also provides for a 1.2 m (4 ft) outside paved shoulder in each direction and 1.5 m (5 ft) sidewalks on both sides. A 3.6 m (12 ft) border width will be provided on both sides. The minimum right-of-way required for the six-lane urban typical section is 37.8 m (124 ft)

The improvements are proposed on the existing US 41 corridor. Construction of the new lanes will occur on the west side of the existing roadway between East Orange Avenue and East Julia Avenue and will require right-of-way acquisition in this area. From East Julia Avenue to SR 44, the proposed improvements will be centered and generally stay within the existing right-of-way, although some right-of-way acquisition will be required in some areas to accommodate turn lanes and corner clips, for example.



2.0 INTRODUCTION

2.1 PURPOSE

This Preliminary Engineering Report (PER) has been prepared as part of the Project Development and Environment (PD&E) study for a 10.1 km (6.3 mi) segment of US 41 (SR 45) in Citrus County, Florida. The PD&E Study identifies and evaluates potential corridors, typical sections, and alignment alternatives that will adequately accommodate present and future traffic demands, social and economic demands, and conform with present plans and policies. Potential project alternatives were considered in a logical step-by-step sequence. Each alternative was assessed for safety, feasibility, viability, and cost efficiency at appropriate stages of the study to identify alternatives that warrant further evaluation in the environmental analysis stage of the project.

Improvements to this section of US 41 are needed because the existing roadway will not be capable of providing adequate service based on future traffic projections. Roadway improvements to US 41 are consistent with local comprehensive plans for Citrus County and the City of Inverness. Expanded growth in the Inverness area will continue to worsen the capacity problems experienced on US 41 which may adversely affect the social and economic development of the area.

The information provided in this document will provide input for discussion and review during the public hearing. Pertinent public input during the hearing process and comments from review agencies will be used to refine alternatives and determine the preferred alternative, which will be included in the Final Preliminary Engineering Report for further design analysis.

This report will aid the Florida Department of Transportation (FDOT) and Federal Highway Administration (FHWA) in determining a preferred alternative and will serve as the document of record for support of subsequent engineering decisions as the project advances through design and construction.

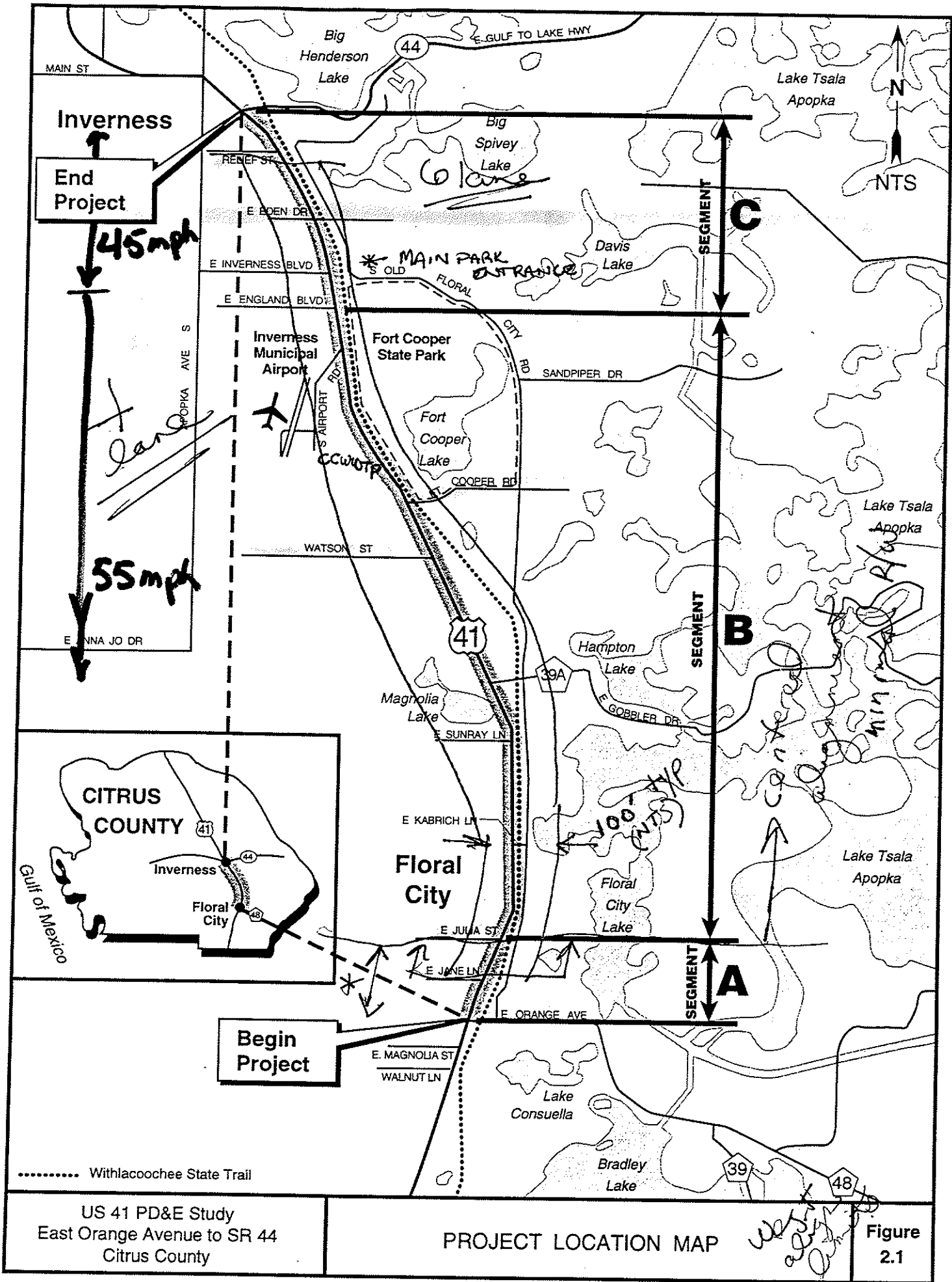
2.2 PROJECT DESCRIPTION

The FDOT proposes to improve a 10.1 km (6.3 mi) segment of US 41 in Citrus County, from East Orange Avenue (CR 48) in Floral City to SR 44 in Inverness. Figure 2.1, a project location map, depicts the study limits.

The existing typical section from East Orange Avenue to East Eden Drive is a two-lane undivided roadway consisting of one 3.6 m (12 ft) wide travel lane in each direction. From East Eden Drive to just south of SR 44, US 41 is a two-lane divided roadway with a 3.6 m (12 ft) paved median for left turns. Approximately 262 m (860 ft) south of the

US 41/SR 44 intersection, the existing road widens to a four-lane section, with two through lanes and separate left and right turn lanes at the SR 44 intersection. Existing typical sections are fully described in Section 4.1.2.

US 41 serves as a major north-south route through eastern Citrus County. Proposed improvements will widen US 41 to an urban four-lane divided roadway from East Orange Avenue to East Eden Drive, and an urban six-lane divided roadway from East Eden Drive to SR 44.



PROJECT LOCATION MAP

Figure 2.1

3.0 NEED FOR IMPROVEMENT

The US 41 facility through Floral City and Inverness is the only major north-south arterial in eastern Citrus County. The existing roadway has several deficiencies including: current and future traffic capacity; safety; and consistency with proposed growth management and transportation plans. Related to the deficiencies of the capacity of the roadway, US 41 is used as an auxiliary and connector road for evacuation routes. Roadway deficiencies will be corrected and improved safety will result by the proposed improvements. Local transportation plans call for the improvements, while social and economic demands will also be met by the proposed project. This section will briefly discuss these topics.

3.1 DEFICIENCIES

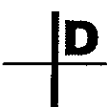


US 41 does not provide adequate future capacity for north-south through traffic or traffic generated by existing and expanding land uses along the roadway. By increasing the capacity on this section of US 41, hurricane evacuation processes could proceed more effectively as people travel to designated evacuation routes.

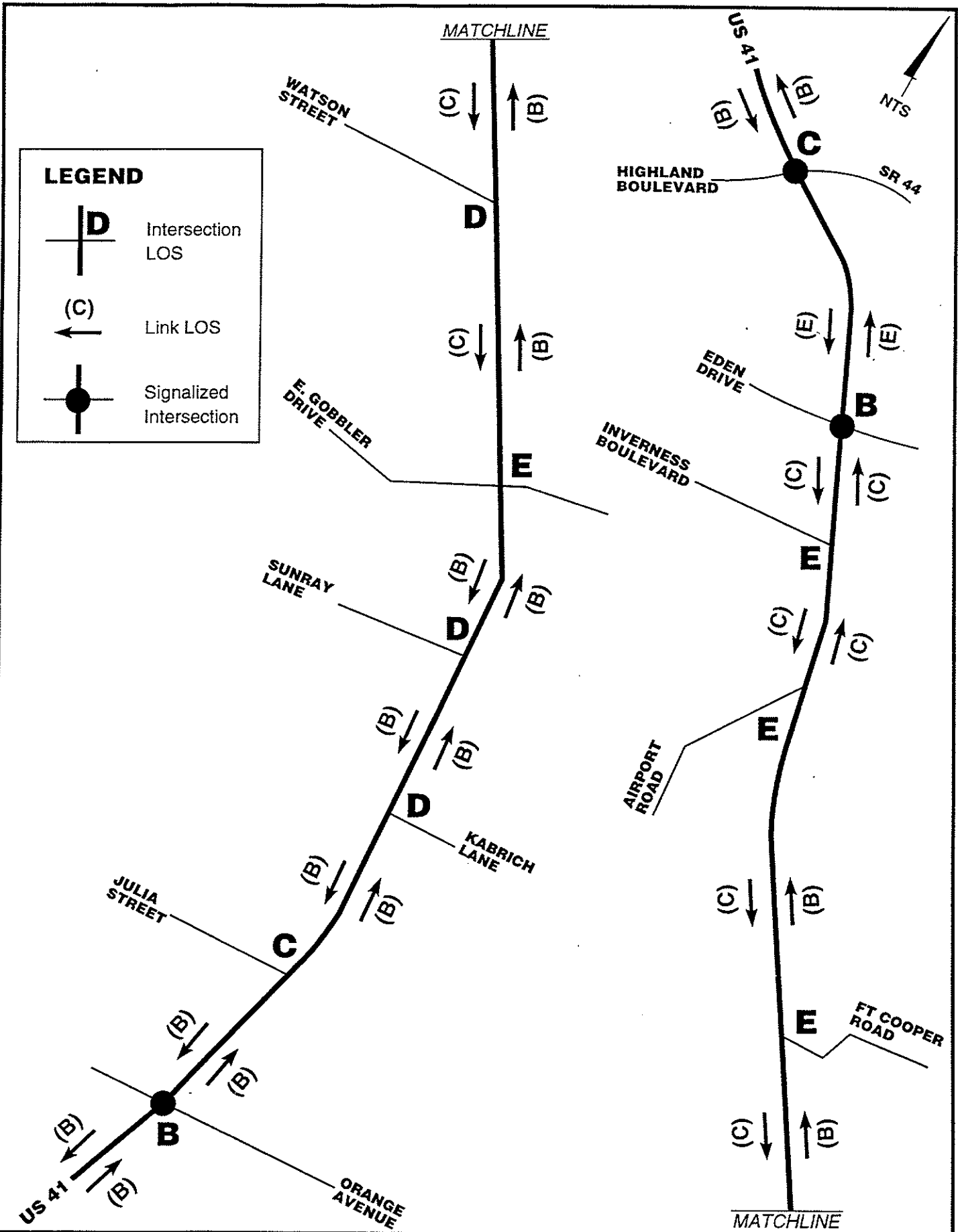
3.1.1 Capacity

A detailed Technical Memorandum, Project Traffic and Intersection Analyses Report, was prepared for this project in October 1995. Traffic counts were conducted in the US 41 study area from June 22, 1995 to July 18, 1995. Existing Annual Average Daily Traffic (AADT) volumes range from 7,970 vehicles per day at the south end of the project, north of East Orange Avenue to 20,070 at the north end of the project, south of SR 44. As illustrated on Figure 3.1, existing levels of service (LOS) range from B to E. LOS B and C occur on US 41 between East Orange Avenue and East Eden Drive. LOS E occurs between East Eden Drive and SR 44, and at the intersections of US 41 with East Gobbler Drive, Ft. Cooper Road, Airport Road and Inverness Boulevard.

It is estimated that by the year 2020, AADT traffic volumes on US 41 will increase to approximately 16,520 vehicles between East Orange Avenue and East Julia Street at the south end of the project to 33,900 vehicles between East Eden Drive and SR 44, as illustrated on Figure 3.2. These volumes on the existing roadway would result in LOS F on most roadway links and at all intersections within the project. The design year traffic volume projections establish the need for a minimum of four lanes on US 41 from East Orange Avenue to East Eden Drive, and for a minimum of six lanes from East Eden Drive to SR 44, to maintain LOS C in the year 2020.

LEGEND

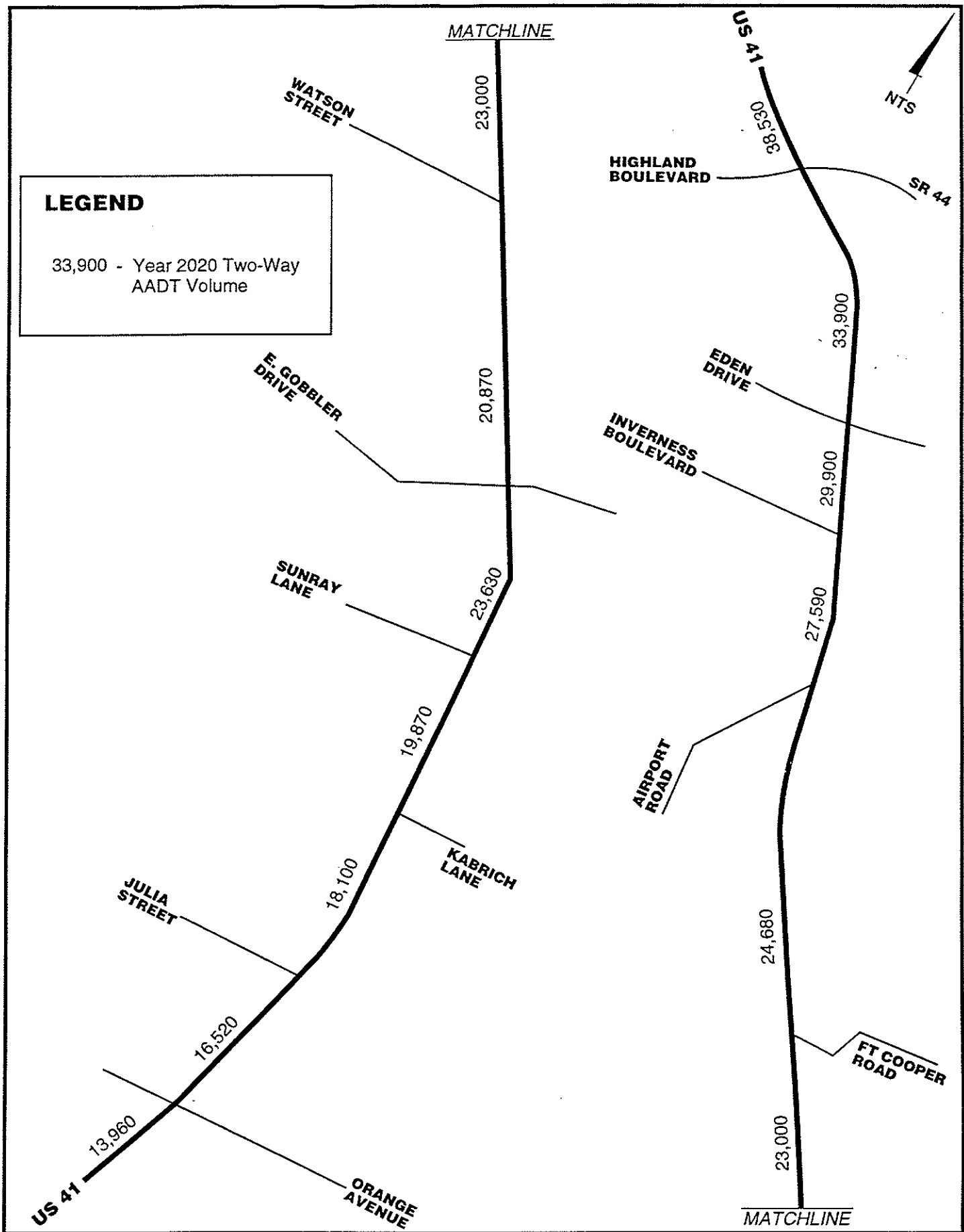
-  Intersection LOS
-  Link LOS
-  Signalized Intersection



US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

RESULTS OF INTERSECTION AND LINK
 LOS ANALYSES/1995 DESIGN HOUR

Figure
 3.1



US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

YEAR 2020 AADT TRAFFIC
 VOLUME PROJECTIONS ON US 41

Figure
 3.2

3.1.2 Evacuation Routes

The portion of US 41 within the study area runs in a north-south direction, generally paralleling the coastline of the Gulf of Mexico, which is approximately 38.6 km (24 mi) to the west. Consequently, this section of US 41 is not a designated hurricane evacuation route; it does not move people away from the coastline. However, US 41 would be used by local residents to reach east-west routes such as SR 44 and East Orange Avenue to travel east towards Interstate 75 and other designated evacuation routes. Evacuation processes would be enhanced by increasing the roadway's capacity through the proposed improvements.

3.2 SAFETY

An evaluation of crash data covering the five-year period from 1989 through 1993 indicates that the number of crashes, injuries and fatalities on this roadway is consistent with other roadways of this type in Florida (refer to Table 4.4). A total of 131 crashes occurred during the five-year period involving 192 injuries and three fatalities. Twenty-two crashes (17 percent) involved only property damage. This distribution is generally consistent with the characteristics of high speed crashes on two-lane rural highways.

As traffic volumes increase in the future, increased congestion could result in a higher crash rate on the existing roadway within the study area. Improvements to the road to accommodate higher traffic volumes may help to decrease the crash rate.

3.3 CONSISTENCY WITH EXISTING TRANSPORTATION PLANS

The proposed roadway improvements to US 41 are consistent with the City of Inverness Comprehensive Land Use Plan 1989-1999 and the Citrus County Comprehensive Plan 1989-2005. There is no Metropolitan Planning Organization in this area.

3.4 SOCIAL AND ECONOMIC DEMANDS

Citrus County is a progressively developing county. Population began to grow in the early 1980's and today continues to grow rapidly. The Citrus County Comprehensive Plan 1989-2005 states that Citrus County has been one of the five fastest growing counties in Florida since 1980.

The population of the City of Inverness grew at a rate of approximately 17.6 percent between 1980 and 1985. This projected population growth is expected to continue for both the City of Inverness and Citrus County (source: City of Inverness Comprehensive Land Use Plan 1989-1999).

Future land use plans indicate that residential, commercial and industrial activities will account for the majority of land uses along the US 41 corridor. To serve the planned growth in residential, commercial and industrial areas, Citrus County's road network must be improved to provide accessibility to new areas of development. Improvements to US 41 will be necessary to accommodate anticipated new residential and commercial development in the areas surrounding the corridor. No Developments of Regional Impact (DRI) are currently proposed.

The project is in an area designated as attainment for the ozone standards under the criteria provided in the Clean Air Act Amendment of 1990. This project is in conformance with the State Implementation Plan because it will not violate of the National Ambient Air Quality Standards.

4.0 EXISTING CONDITIONS

This section documents the engineering and environmental data collected during the PD&E study. Data was collected and has been grouped into the categories of roadway and environmental to provide a description of the existing conditions.

4.1 EXISTING ROADWAY CHARACTERISTICS

4.1.1 Functional Classification

US 41 is included on both the Federal Aid Primary and State Highway Systems. This roadway is classified by FDOT as a two-lane principal rural arterial from East Orange Avenue to East Eden Drive. From East Eden Drive to SR 44, US 41 is classified as a three-lane principal urban arterial roadway. Major roadways connecting to US 41 within the project area are East Orange Avenue, East Gobbler Drive (CR 39A), and SR 44 (East Gulf-to-Lake Highway).

4.1.2 Typical Sections

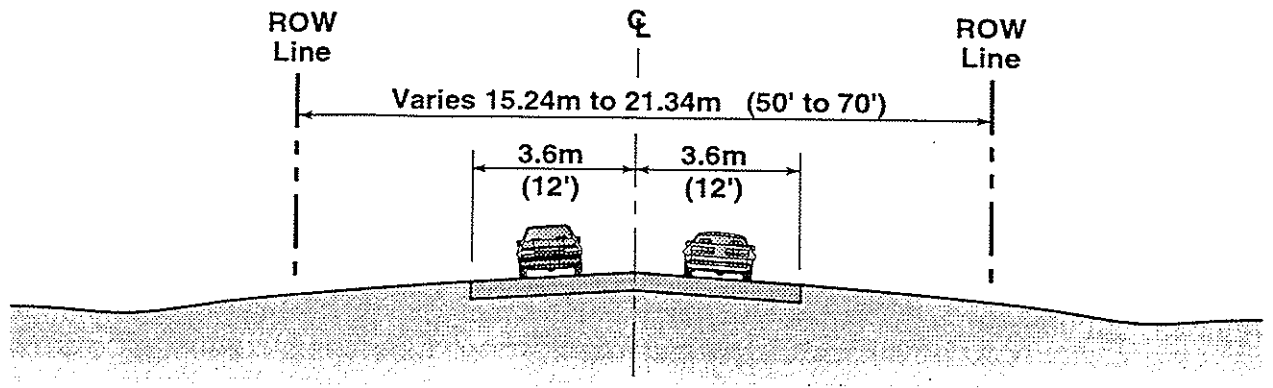
The existing typical section from East Orange Avenue to East Eden Drive is a two-lane undivided roadway consisting of one 3.6 m (12 ft) wide travel lane in each direction. From East Eden Drive to just south of SR 44, the roadway is a two-lane divided facility with a 3.6 m (12 ft) paved median for left turns. Approximately 262 m (860 ft) south of the US 41/SR 44 intersection, the existing road widens to an undivided four-lane section, with designated left and right turn lanes at the SR 44 intersection. Figure 4.1 depicts the existing typical sections.

4.1.3 Pedestrian and Bicycle Facilities

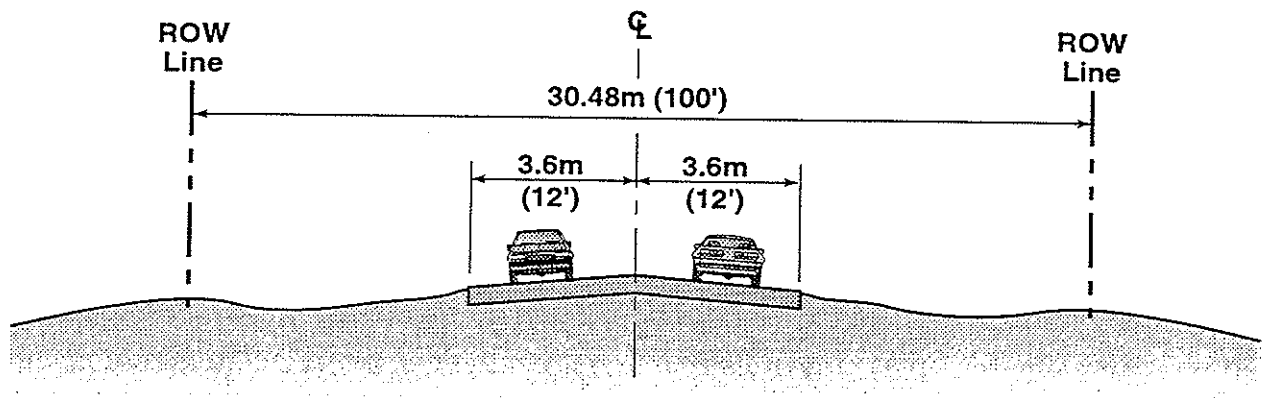
No sidewalks or bicycle facilities are present along the existing US 41 right-of-way.

4.1.4 Right-of-Way

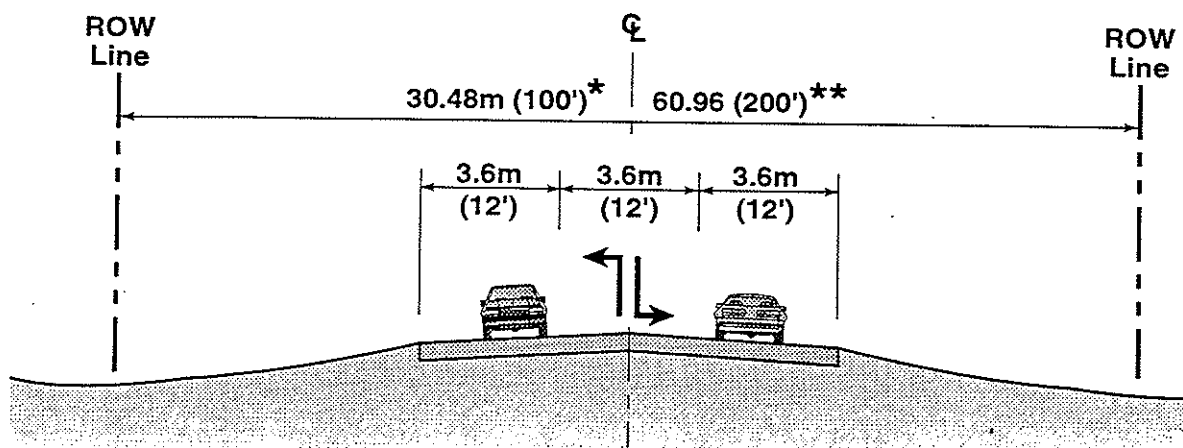
The existing right-of-way width varies from 15.2 m (50 ft) to 21.3 m (70 ft) from south of East Orange Avenue to East Jane Lane. From East Jane Lane to Relief Street, the existing right-of-way is 30.5 m (100 ft) wide. From Relief Street to SR 44, the existing right-of-way widens to 61 m (200 ft). See Figure 4.1.



South of East Orange Avenue to East Jane Lane



East Jane Lane to East Eden Drive

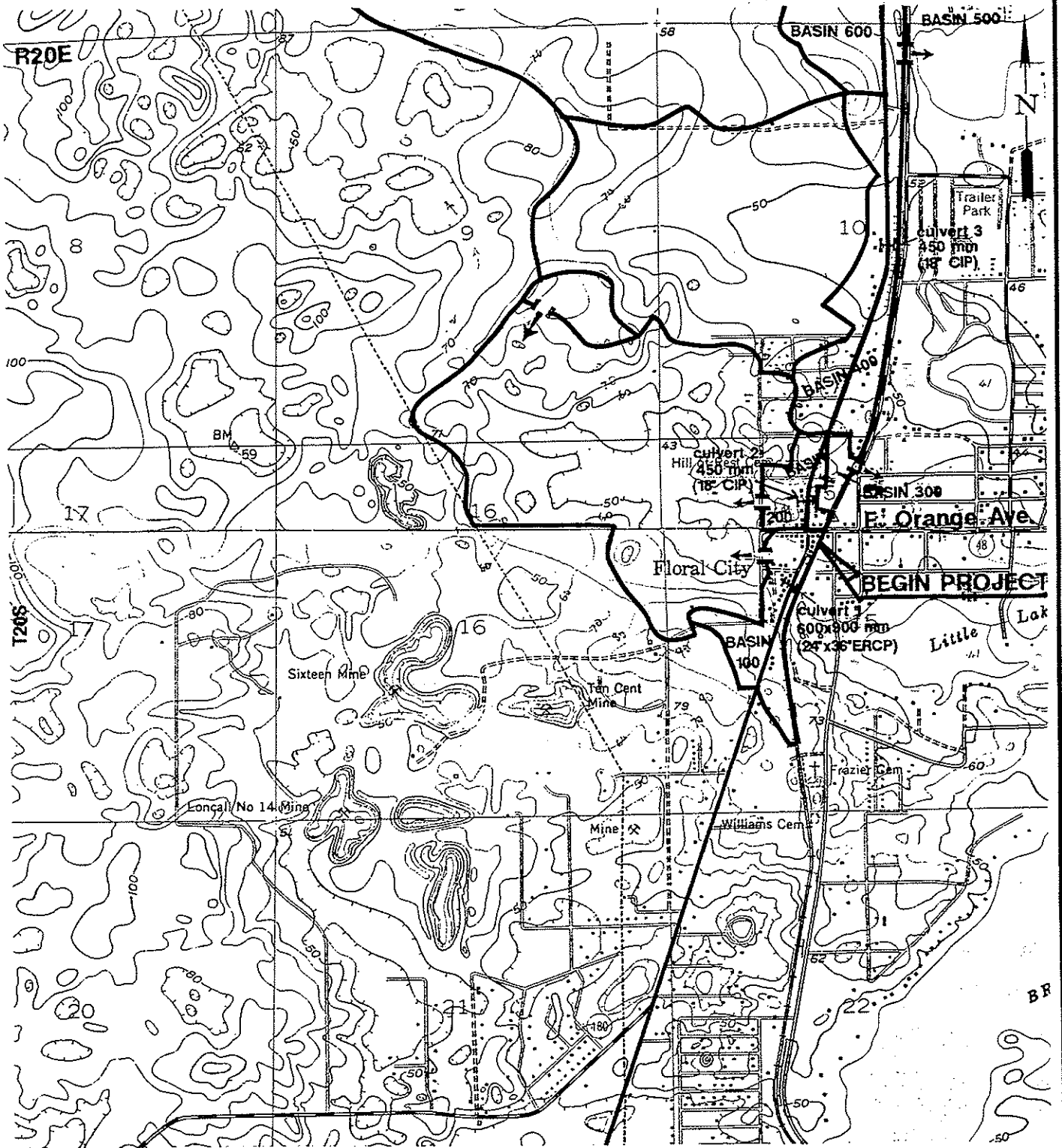


* From East Eden Drive to Relief Street

** From Relief Street to SR 44

MATCHLINE

(FIGURE 4.2b)

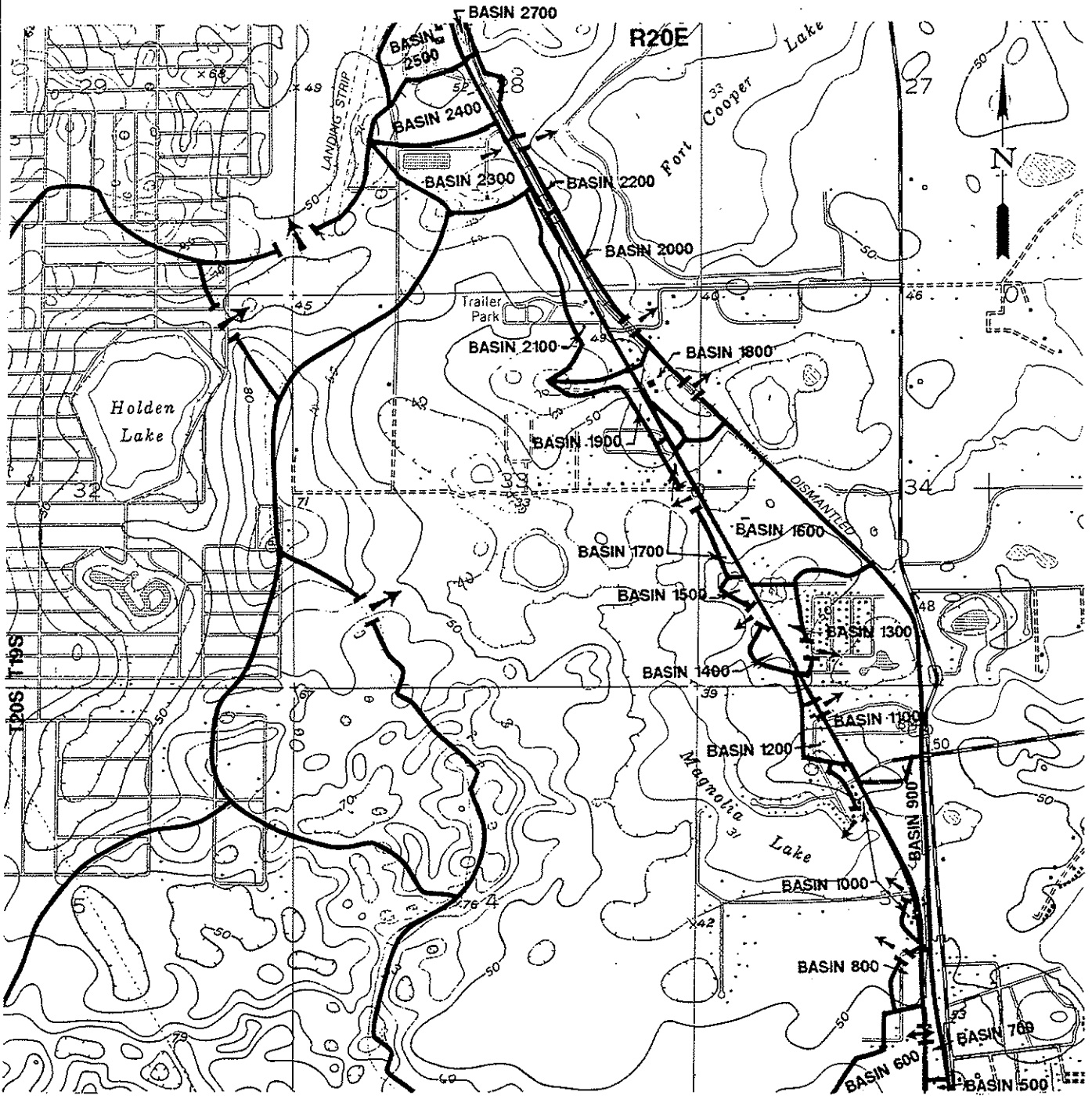


US 41 PD&E Study
E. Orange Avenue to SR 44
Citrus County

BASIN LOCATIONS

Figure
4.2a

MATCHLINE
(FIGURE 4.2c)

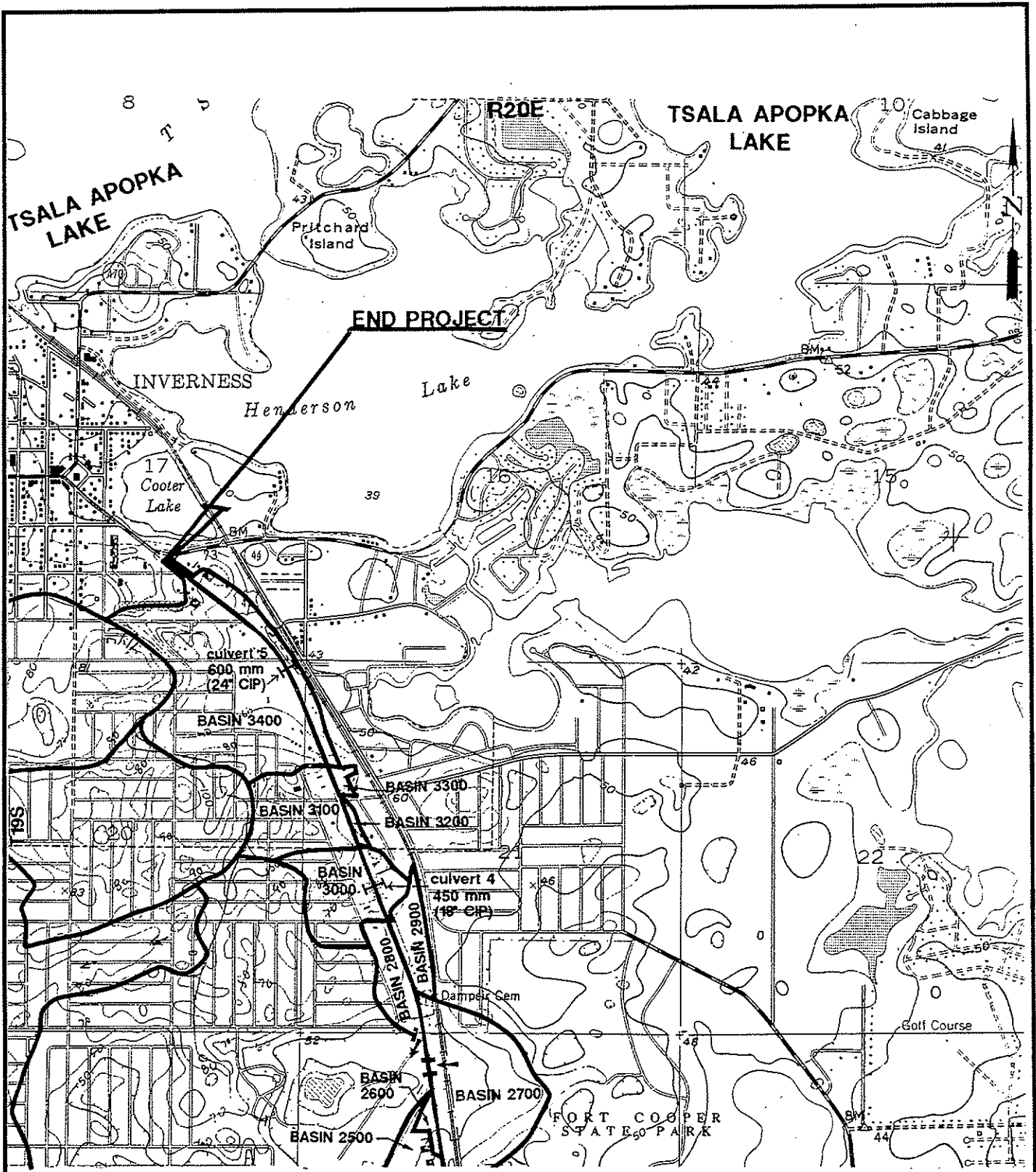


MATCHLINE
(FIGURE 4.2a)

US 41 PD&E Study
E. Orange Avenue to SR 44
Citrus County

BASIN LOCATIONS

Figure
4.2b



MATCHLINE
(FIGURE 4.2b)

US 41 PD&E Study
E. Orange Avenue to SR 44
Citrus County

BASIN LOCATIONS

Figure
4.2c

4.1.5 Horizontal Alignment

There are eight horizontal curves within the study limits on US 41 that vary from a radius of 388 m to 1165 m (4° 30' to 1° 30'). These horizontal curves are as follows:

- South of East Orange Avenue: the alignment curves left at a 388 m radius or 4° 30'.
- North of East Orange Avenue: the alignment curves right at a 388 m radius or 4° 30'.
- North of East Julia Street: the alignment curves left at a 1,165 m radius or 1° 30'.
- South of Gobbler Dr. (SR 39A): the alignment curves left at a 635 m radius or 2° 45'.
- South of South Airport Road: the alignment curves right at a 635 m radius or 2° 45'.
- North of East England Boulevard: the alignment curves left at a 873 m radius or 2° 00'.
- North of Mossy Oak Drive (north of East Eden Drive): the alignment curves left at a 699 m radius or 2° 30'.

4.1.6 Vertical Alignment

The vertical alignment of US 41 within the study limits varies from relatively flat to rolling. The maximum grade is 2.0 percent.

4.1.7 Drainage

The proposed project traverses 34 closed drainage basins with no positive outfalls. Figures 4.2a through 4.2c depicts the locations of these basins. Stormwater runoff from the project site combines with runoff from the off-site areas and is discharged into depressed areas of the closed basins. Many of these depressed areas are adjacent to the road.

FDOT maintenance staff has documented flooding problems at ten locations along the existing US 41 drainage system. Table 4.1 describes these problem areas. Preliminary flooding investigations discovered that the natural topography conveys overland flow to depressions located adjacent to US 41. In many cases, low lying areas have been residentially or commercially developed without compensation for lost floodplain storage volume. Therefore, the amount of flooding on the highway may increase as development occurs.

Table 4.1
Existing Drainage Problem Areas

Drainage Problem Areas	Location
Depressions located in commercial and residential areas west of US 41 store runoff in areas along the highway in Basin 100.	305 m (100 ft) south of East Orange Ave.
Runoff stands in the east right-of-way of US 41 and sometimes floods the road in Basin 200.	137 m (450 ft) north of East Orange Ave.
An undeveloped depression adjacent to US 41 on its east side of Basin 400 stores water. This area is not causing problems yet, but if it is developed, it has the potential to flood US 41.	214 m (700 ft) north of East Jane Lane
Runoff from US 41 is stored in depressions adjacent to the highway on either side within Basin 600. Presently, these depressions offer sufficient storage, but, if the area is developed without compensating for the lost retention, US 41 could flood.	1158 m (3800 ft) south of East Gobbler Drive (CR 39A)
Water stands in US 41's west right-of-way in Basin 1200. In heavy rains, the runoff floods the highway.	335 m (1100 ft) north of East Gobbler Drive (CR 39A)
An undeveloped depression within Basin 1700, adjacent to US 41 on its west side, stores water. This area is not causing problems yet, but if it is developed, it has the potential to flood US 41.	91 m (300 ft) south of Watson Street
A low lying area that historically retained runoff was developed into a mobile home community. The lost storage volume was not compensated; thus, runoff floods the west right-of-way of US 41 within Basin 2100.	777 m (2550 ft) north of Watson Street
A low lying area that historically retained runoff was developed without compensation for lost storage volume. Presently, runoff floods in the west right-of-way of US 41 within Basin 2300.	884 m (2900 ft) south of South Airport Road
Runoff from US 41 is stored in depressions adjacent to the highway on either side within Basin 3000. Presently, these depressions offer adequate storage, but if the land is developed without compensating for the lost retention, US 41 could flood.	1722 m (5650 ft) south of SR 44
An existing pond in the east right-of-way of US 41 does not provide adequate storage capacity for the runoff developed within Basin 3400. Thus, runoff partially floods US 41.	671 m (2200 ft) south of SR 44

Presently, there are five cross-drain culverts along US 41 within the project limits. Table 4.2 provides a description of the culverts. Cross-drain culverts connect the depressed areas within closed basins adjacent to the road, therefore functioning as equalizer pipes. These culverts convey flow within closed basins, and flooding results from the lack of well-defined outfall systems for each structure. The hydraulic condition at the basins is controlled by the available storage within the basins, not by the size of the cross-drain pipes.

Table 4.2
Culvert Specifics

Culvert No.	Culvert Location	Culvert Size
Culvert 1 (Basin 100)	At Walnut Lane, 305 m (1000 ft) south of E. Orange Ave.	600 x 900 mm (24 x 36 in) ERCP
Culvert 2 (Basin 200)	137 m (450 ft) north of E. Orange Ave.	450 mm (18 in) CIP
Culvert 3 (Basin 400)	330 m (1080 ft) north of E. Julia St.	450 mm (18 in) CIP
Culvert 4 (Basin 3000)	137 m (450 ft) north of E. Inverness Blvd.	450 mm (18 in) CIP
Culvert 5 (Basin 3400)	671 m (2200 ft) south of SR 44	600 mm (24 in) CIP

ERCP = elliptical reinforced concrete pipe
CIP = cast iron pipe

The Federal Emergency Management Agency (FEMA) has developed a floodplain map for the area, which is included as Figures 4.3a through 4.3g. Based on the FEMA map, the entire project is located in Zone C. Zone C refers to areas of minimal flooding that would not be flooded during a 100-year storm. Therefore, according to the FEMA, the entire roadway crosses through areas that are presently above the base floodplain elevation and there are no designated floodways within the project limits.

0063 0250B

CATO LAKE

END PROJECT

City of Inverness
AREA NOT INCLUDED



LAKE

SUMTER COUNTY

120063 0255B

120063 0260B

120063 0270B

RAILROAD

LINE

581

41

45

SEABOARD

COAST

120063 0265B*

RIVER

THIS AREA OF TH
ON PANEL 12006

BEGIN PROJECT

BRADLEY LAKE

LAKE

WITHLACOCHEE

SEABOARD

480

48

581

41

45

39

RAILROAD

HERNANDO COUNTY

* = PANEL NOT PRINTED

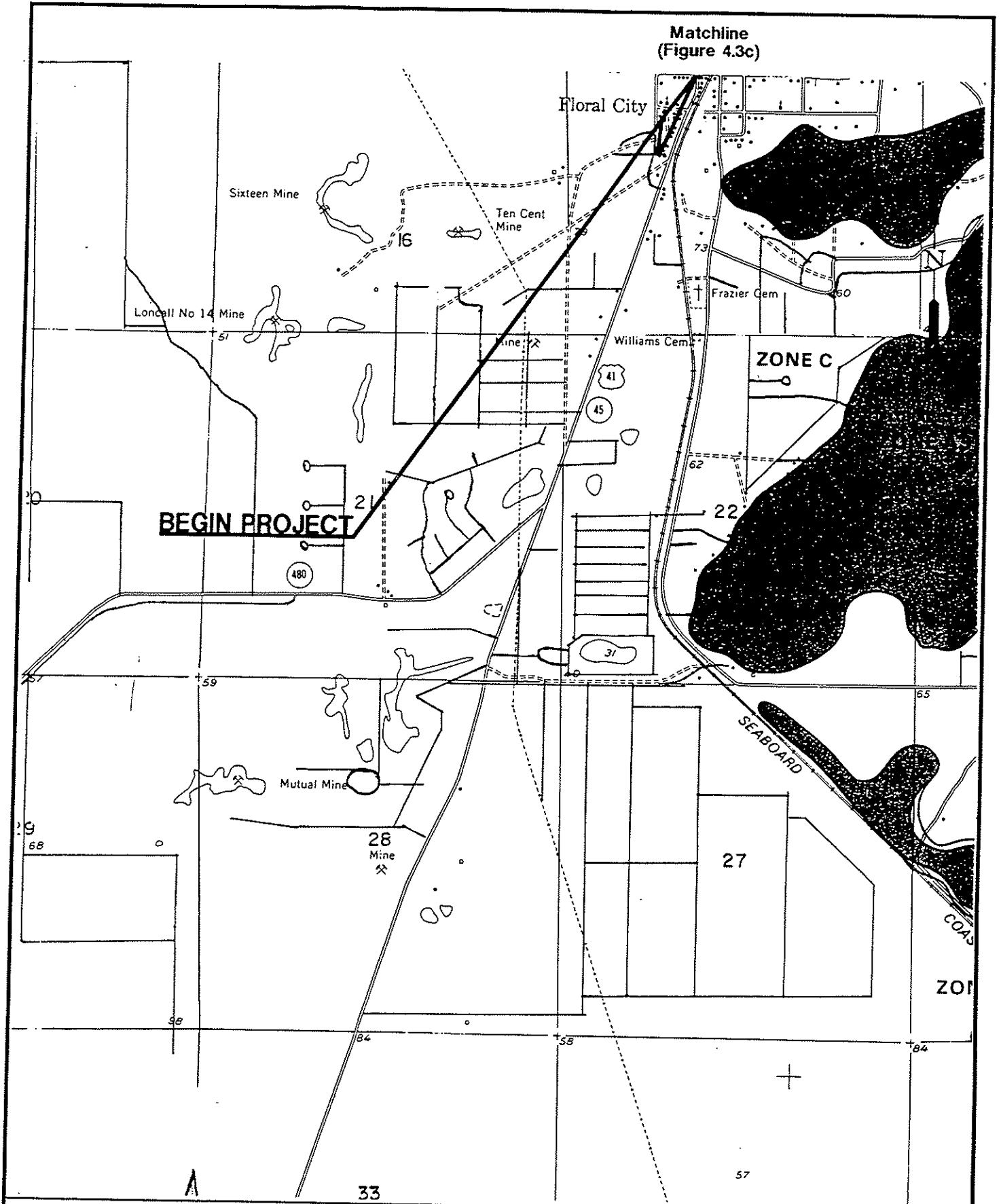
120063 0400B

US 41 PD&E Study
E. Orange Avenue to SR 44
Citrus County

FEMA FLOOD ZONE
MAP INDEX

Figure
4.3a

Matchline
(Figure 4.3c)



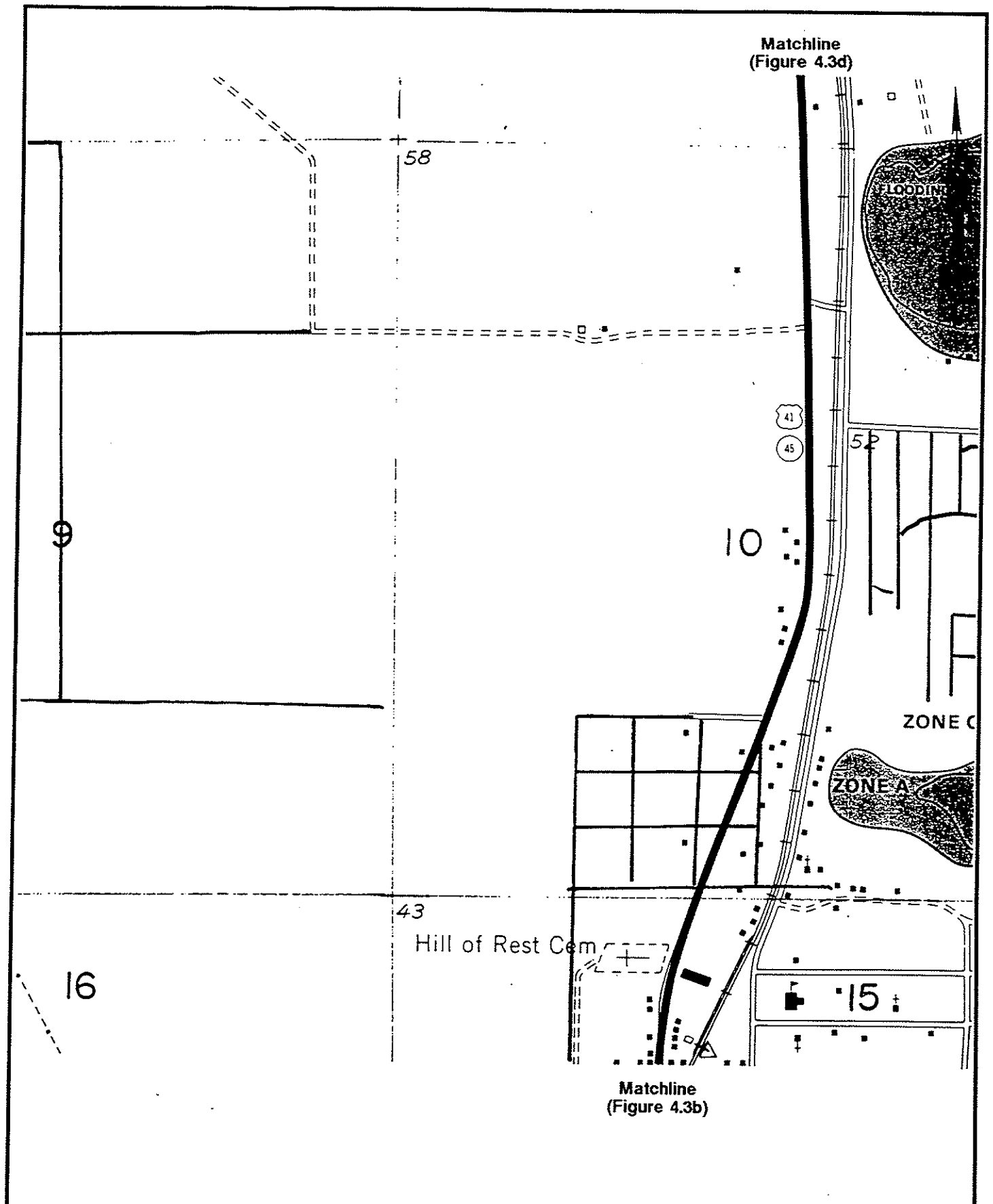
Source: FIRM Citrus County, Florida, Panel 400 of 400; August 15, 1984
Federal Emergency Management Agency

SCALE: 1" = 2000'

US 41 PD&E Study
E. Orange Avenue to SR 44
Citrus County

FEMA Flood Zone Map

Figure
4.3b

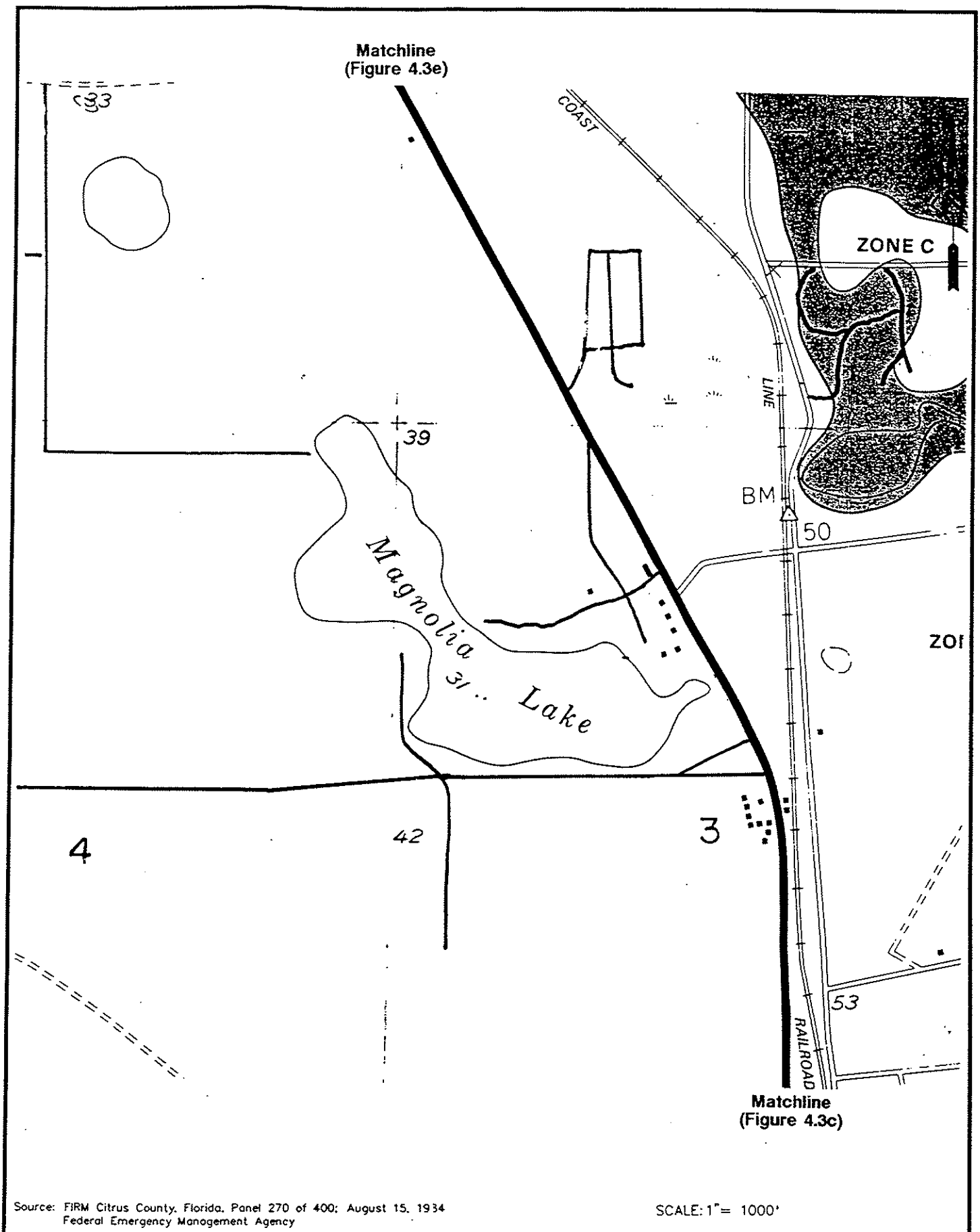


Source: FIRM Citrus County, Florida. Panel 270 of 400; August 15, 1984
 Federal Emergency Management Agency

US 41 PD&E Study
 E. Orange Avenue to SR 44
 Citrus County

FEMA Flood Zone Map

Figure
 4.3c



Source: FIRM Citrus County, Florida, Panel 270 of 400; August 15, 1984
 Federal Emergency Management Agency

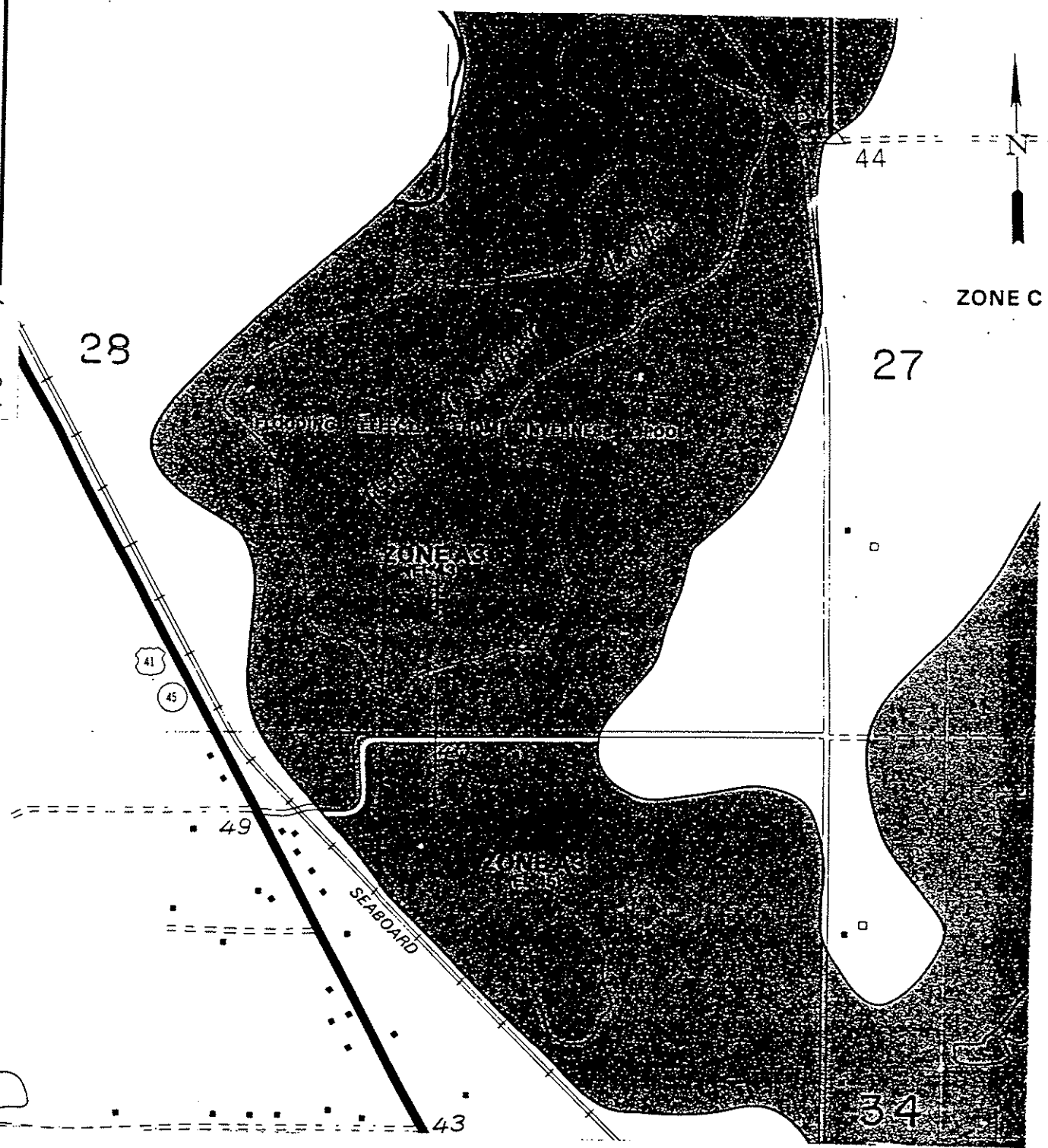
SCALE: 1" = 1000'

US 41 PD&E Study
 E. Orange Avenue to SR 44
 Citrus County

FEMA Flood Zone Map

Figure
 4.3d

Matchline
(Figure 4.3f)



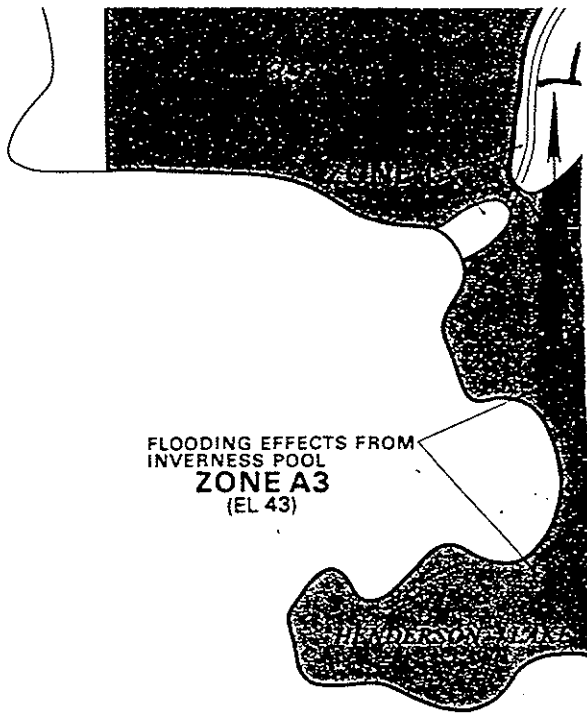
Matchline
(Figure 4.3d)

Source: FIRM Citrus County, Florida, Panel 270 of 400; August 15, 1984
Federal Emergency Management Agency

US 41 PD&E Study
E. Orange Avenue to SR 44
Citrus County

FEMA Flood Zone Map

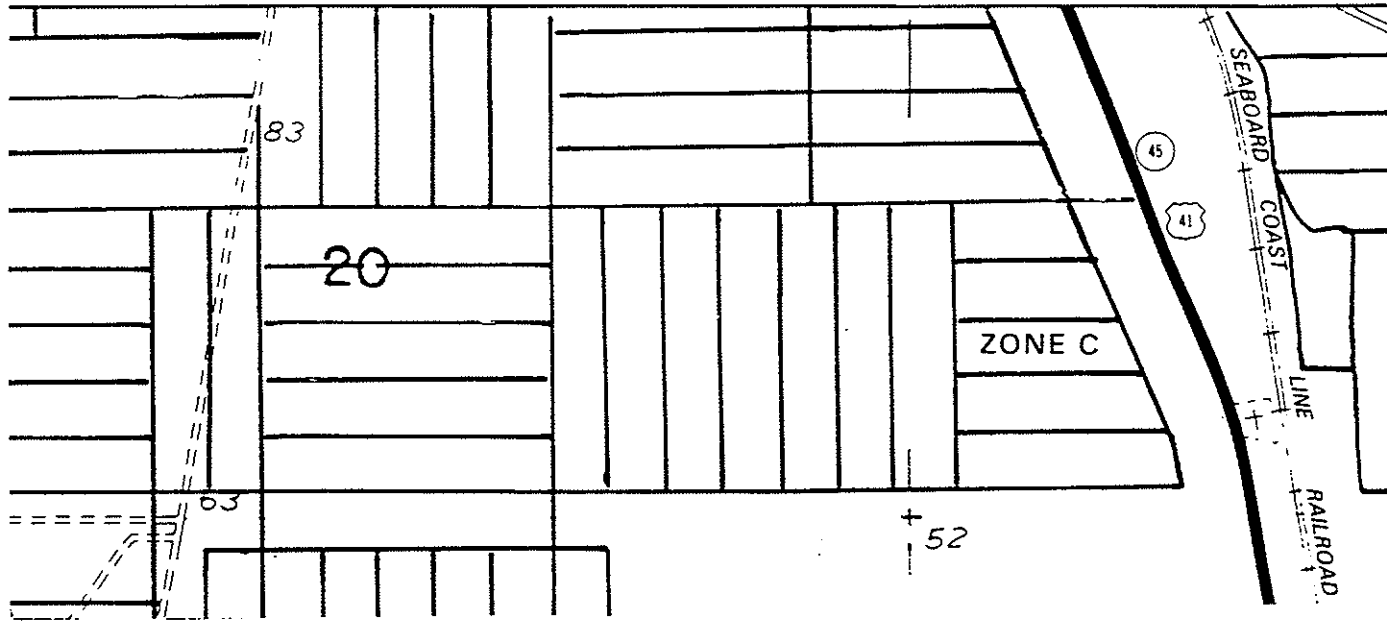
Figure
4.3e



FLOODING EFFECTS FROM
INVERNESS POOL
ZONE A3
(EL 43)

RM33 X

Matchline
(Figure 4.3g)



Matchline
(Figure 4.3e)

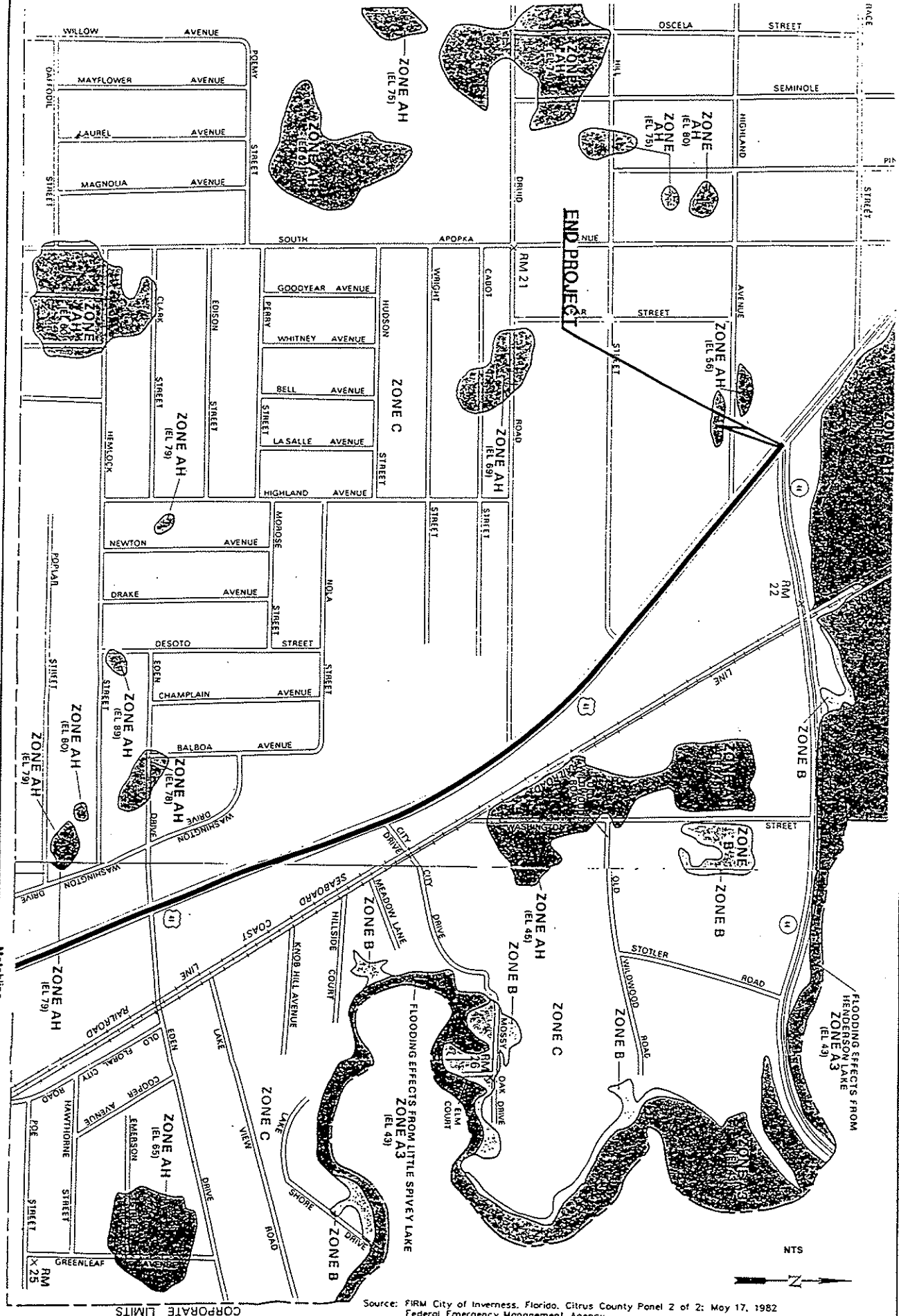
Source: FIRM Citrus County, Florida, Panel 255 of 400; August 15, 1984
Federal Emergency Management Agency

SCALE: 1"

US 41 PD&E Study
E. Orange Avenue to SR 44
Citrus County

FEMA Flood Zone Map

Figure
4.3f



Marchling
(Figure 4.31)

Source: FIRM City of Inverness, Florida, Citrus County Panel 2 of 2; May 17, 1982
Federal Emergency Management Agency

U S 41 PD&E Study
E. Orange Avenue to S R 44
Citrus County

FEMA Flood Zone Map

Figure
4.3g

FEMA's analysis for the project area does not appear to be accurate since there is a base floodplain associated with each closed basin. As stated above, depressed areas in many of the closed basins are adjacent to US 41. Therefore, it can be assumed that if the roadway is widened, it will fill a portion of the floodplain associated with the closed basins. Refer to the Location Hydraulics Report, February 1996, for details regarding floodplains associated with the closed basins adjacent to US 41.

4.1.8 Geotechnical Data

A geotechnical study was performed for this PD&E Study and data reviewed for the geotechnical study included the USDA Soil Conservation Service (SCS) Soil Survey for Citrus County, Florida, USGS Quadrangle Maps and recent aerial photographs of the existing alignment. FDOT roadway plans for the existing alignment were not available. Site reconnaissance was performed to evaluate areas where the existing pavement conditions may indicate the possible presence of any deleterious soils (i.e., muck, clay) beneath the existing roadway, to observe the general topography of the roadway and surrounding areas, and to evaluate the soil and groundwater conditions along the alignment.

Based on review of the SCS Soil Survey of Citrus County, fourteen (14) soil series types were found to exist within the study area of US 41 from East Orange Avenue to SR 44 in Citrus County, Florida. The study corridor extended from the limits of the proposed right of way, approximately 60 m (200 ft) east and west of US 41. Table 4.3 provides a description of each soil type with its particular characteristics.

Of the fourteen (14) soil designations, the most prevalent is Tavares fine sand (soil no. 11 on Table 4.3), covering about 50 percent of the alignment. This soil is a nearly level well drained soil present on lower ridges of uplands. The seasonal high groundwater depth generally ranges from 1.0 to 2.0 m (3.5 to 6.0 ft) below ground surface. The slopes are gentle and range from 0 to 5 percent.

Candler fine sand (soil no. 3) covers approximately 16 percent of the alignment. This soil is a nearly level, excessively drained soil on uneven side slopes and convex ridgetops of uplands. The seasonal high groundwater depth is generally below 2.0 m (6.0 ft). The slopes are gentle and range from 0 to 5 percent.

Adamsville fine sand (soil no. 2) covers approximately 8 percent of the alignment. This soil is a nearly level, poorly drained soil on low ridges of coastal swamps, flatwoods and of lower slopes on uplands. The seasonal high groundwater depth generally ranges from 0.5 to 1.0 m (2.0 to 3.5 ft). The slopes are smooth and range from 0 to 2 percent.

Table 4.3
Soil Characteristics and Limitations
(SCS Soil Survey of Citrus County)

Soil No.	Soil Name	USDA Texture	AASHTO Classification	SHGW* Depth (m)	Shallow Excavation	Roads/ Streets	Ponds
2	Adamsville	Fine Sand, Sand	A-3 A-2-4	0.6-1.1	Severe-Cutbanks cave, Wetness	Moderate-Wetness	Severe-Seepage
3	Candler	Fine Sand, Sand	A-3	> 1.8	Severe-Cutbanks cave	Slight	Severe-Seepage
4	Candler	Fine Sand, Sand	A-3	> 1.8	Severe-Cutbanks cave	Slight	Severe-Seepage
5, 6	Basinger	Fine Sand, Sand	A-3 A-2-4	0-0.3; +0.6-0.3	Severe-Cutbanks cave, Wetness; Ponding	Severe-Wetness; Ponding	Severe-Seepage
9	Pompano	Fine Sand, Sand	A-3 A-2-4	0-0.3	Severe-Cutbanks cave, Wetness	Severe-Wetness	Severe-Seepage
10	Pompano	Fine Sand, Sand	A-3 A-2-4	+0.6-0.3	Severe-Cutbanks cave, Ponding	Severe-Ponding	Severe-Seepage
11	Tavares	Fine Sand, Sand	A-3	1.1-1.8	Severe-Cutbanks cave	Slight	Severe-Seepage
14	Lake	Fine Sand	A-3 A-2-4	> 1.8	Severe-Cutbanks cave	Slight	Severe-Seepage
22	Quartzipsament	Fill Material	-	-	-	-	-
29, 30	Astatula	Fine Sand, Sand	A-3	> 1.8	Severe-Cutbanks cave	Slight	Severe-Seepage
32	Candler-Urban Land	Fine Sand, Sandy Clay	A-3 A-2-4	> 1.8	Severe-Cutbanks cave	Slight	Severe-Seepage
35	Sparr	Fine Sand, Sandy Clay	A-3 A-2-4	0.5-1.1	Severe-Cutbanks cave, Wetness	Moderate-Wetness	Severe-Seepage

* SHGW = Seasonal High Ground Water

Lake fine sand (soil no. 14) covers approximately 8 percent of the alignment. This soil is a nearly level, excessively drained soil on upland ridges. The seasonal high groundwater depth is generally below 2.0 m (6.0 ft). The slopes are gentle and range from 0 to 5 percent.

The remaining soil series types cover the remaining approximately 18 percent of the alignment. Each soil type covers approximately 1 to 5 percent of the alignment. The seasonal high groundwater depths range from 0.0 to greater than 2.0 m (0.0 to greater than 6.0 ft). The slopes range from 0 to 8 percent. The soil types are as follows: Sparr, Pompano, Candler, Basinger, Astatula fine sands, Candler-Urban land complex, and Quartzipsamments.

Sparr, Adamsville and Basinger soil types may present problems in potential pond construction due to near surface limestone formations. The Basinger (soil no. 6) and Pompano (soil no. 10) soil types are also a concern for pond and roadway construction due to near surface seasonal high groundwater levels. Final grades should consider the effects of these soils.

The Inverness and Nobleton, Florida USGS Quadrangle Maps were reviewed to evaluate topographical and drainage conditions along the proposed alignment. The quadrangle maps indicate that the ground surface elevation in the study area ranges from +12.19 m (+40 ft) to +22.86 m (75 ft) along the alignment. The study area has numerous lake formations adjacent to the alignment. It appears that the topography generally slopes towards these depressional areas over the entire study area. Two depressional areas of concern are located at mile post 6.39 (just south of East Julia Street) and mile post 11.13 (just north of East Inverness Boulevard). These areas have slopes on the order of 3:1 to 4:1 which appear to be stable and contain shallow limestone.

A total of 33 hand auger borings to an average depth of 1.5 m (5 ft) and 4 Standard Penetration Test borings to an average depth of 9 m (30 ft) were performed along the proposed alignment to determine the soil classifications. Interpretation of the field logs by a geotechnical engineer encountered 3 generalized strata as follows:

- Fine SAND, fine SAND with trace silt, and silty fine SAND (A-3, A-2-4) from the ground surface to depths of approximately 4.5 m (15 ft) below existing grade.
- Clayey SAND, sandy CLAY (A-2-6, A-6) to depths ranging from 4.5 to 9 m (15 to 30 ft) below existing grade.

- Weathered LIMESTONE to depths ranging from 6 to 9 m (20 to 30 ft) below existing grade.

At the time of exploration (July 29 to August 15, 1996), the shallow groundwater level was not encountered to a depth of 1.5 m (5 ft) below existing grade. Fluctuation of the groundwater level should be anticipated throughout the year due to variations in seasonal rainfall.

4.1.9 Accident Data

Crash data for the project was obtained and summarized for the five-year period from 1989 to 1993. Tabulations were made for eleven intersections along the project and the remaining crashes were grouped according to roadway segments. Eleven intersections and ten roadway segments were identified for crash tabulation. Two of the three fatalities involved motorcycles. During the five-year period, a total of 131 crashes were reported, including three fatalities. In addition, there were 192 non-fatal personal injuries related to these crashes. An analysis of crash data indicated that approximately 77 percent of the crashes occurred at intersections or were related to intersections.

Table 4.4 is a summary of crash data at the locations analyzed. Information in the table includes the number of crashes, fatalities, and injuries, as well as the predominant crash types at each location. Total economic loss was approximately \$9.78 million for the five-year period, which equates to an average economic loss of approximately \$1.95 million per year.

4.1.10 Traffic Signal Locations and Intersection Configuration

There are three signalized intersections within the US 41 study limits. These intersections and their configurations are discussed in Section 6.0 Traffic, and shown in Figure 6.1. Roads intersecting with US 41 with a traffic signal are East Orange Avenue, East Eden Drive and SR 44.

The US 41/East Eden Drive intersection is approximately 8.7 km (5.4 mi) north of the US 41/East Orange Avenue intersection. The East Eden Drive/US 41 intersection is 1.3 km (0.8 mi) south of SR 44. Existing signalized intersection spacings were obtained from straight-line diagrams provided by the FDOT.

4.1.11 Lighting

Roadway lighting is provided in a small section of the northern end of the project.

Table 4.4
Crash Data Summary
US 41 from East Orange Avenue to SR 44
1989 - 1993

Mile Post	Roadway Segment or Intersection	Crashes	Fatalities	Injuries	Rear End	Angle	Left Turn	Collision with Pedestrian	Collision with Bicycle	Head On	Side Swipe	Other
12.198	SR 44	10	0	7	5	2	1	0	0	0	0	2
		18	0	15	3	4	4	0	0	3	2	2
11.397	Eden Dr.	4	0	6	2	1	0	0	0	0	1	0
		8	1	11	3	1	2	0	0	0	0	2
11.042	Inverness Blvd.	3	0	5	3	0	0	0	0	0	0	0
		6	1	22	1	1	4	0	0	0	0	0
10.592	Airport Rd.	1	0	1	1	0	0	0	0	0	0	0
		15	0	20	7	1	3	0	0	0	1	3
9.559	Ft. Cooper Rd.	2	1	6	1	0	1	0	0	0	0	0
		7	0	19	1	1	3	0	0	1	1	0
9.048	Watson St.	1	0	2	0	0	0	0	0	1	0	0
		6	0	5	0	1	0	0	1	0	1	3
8.211	E. Gobbler Dr.	9	0	19	2	3	4	0	0	0	0	0
		10	0	13	3	1	2	0	0	0	2	2
7.211	Sunray Ln.	0	0	0	0	0	0	0	0	0	0	0
		5	0	8	3	0	0	0	0	0	0	2
7.113	Kabrich Ln.	0	0	0	0	0	0	0	0	0	0	0
		3	0	1	0	0	1	0	0	0	0	2
6.530	Julia St.	0	0	0	0	0	0	0	0	0	0	0
		12	0	13	10	0	1	0	0	0	1	0
5.994	E. Orange Ave.	11	0	19	4	1	2	0	0	0	1	3
	Total	131	3	192	49	17	28	0	1	5	10	21

Lighting is provided by a conventional single-mast light system, and street lights are spaced approximately 53.3 m (175 ft) apart. Street lights are found from Relief Street north to SR 44 in Inverness. Maintenance for these lights is provided by Florida Power and Light Corporation.

4.1.12 Utilities

Five utility providers have facilities along the project corridor that would be impacted by the project. Sumter Electric Cooperative, Inc.; Floral City Water Association; Florida Power; Sprint; and the City of Inverness have utilities within the existing US 41 right-of-way.

Utility locations and relocation costs were obtained using the Utility Request Package processed through the FDOT District Utility Engineer. The utility relocation costs associated with the alignment alternatives analyzed for this study are estimated at \$3.55 million.

An existing well operated by Floral City Water Association (FCWA) is approximately 182.9 m (600 ft) west of US 41 at E. Jo's Court in Segment B. Land was purchased in 1996 in the vicinity of the existing well and is being reserved by FCWA for future use as a well site.

Correspondence with the utilities companies is included in Appendix A. A general description of each company's facilities is provided in Table 4.5.

Table 4.5
Generalized Descriptions of Existing Utilities

Utility Company	Segment	General Description of Utilities
Floral City Water Association (FCWA)	A	<p>Water main (2" to 8") paralleling east and west sides of US 41 from East Orange Avenue to about 700' north of East Julia Street.</p> <p>Some crossings underneath the US 41.</p>
	B	<p>Future well area with planned 12" well on a parcel on east side of US 41 between East Gobbler Lane and East Sunray Lane; bordered on east side by Withlacoochee State Trail. Existing 10" well is accessible via East Jo's Court (just south of East Gobbler Drive).</p> <p>Land was purchased by FCWA in 1996 between US 41 and the Withlacoochee State Trail and East Jo's Court south to the Wishing Stone Tavern. This land is reserved for a future well site.</p> <p>Water main (4" to 10") paralleling US 41 on west side from East Jo's Court north to Stoneridge Drive (north of East Gobbler Drive).</p>
	C	No Floral City Water utilities in Segment C.
Florida Power and Light Corporation	A	12 kV overhead electrical wires paralleling US 41 primarily on the east side of the roadway from south of East Orange Avenue to East Jane Lane.
	B	No Florida Power utilities in Segment B.

Utility Company	Segment	General Description of Utilities
Floral City Water Association (FCWA)	A	<p>Water main (2" to 8") paralleling east and west sides of US 41 from East Orange Avenue to about 700' north of East Julia Street.</p> <p>Some crossings underneath the US 41.</p>
	C	<p>12.5 kV overhead electrical wires from Relief Street to northern project limit paralleling US 41 on east and west sides.</p> <p>120 V street light circuit from Relief Street to northern end of project.</p>
Sprint (telephone services)	A, B, C	<p>Fiber optics paralleling the east side of US 41 for the length of the project. Cables are underground from Relief Street to the northern project terminus.</p> <p>Numerous road crossovers.</p>
City of Inverness (water and sewer utilities)	A	No City of Inverness Utilities in Segment A.
	B	<p>Utilities are between Ft. Cooper Road and SR 44.</p> <p>8" C-900 PVC force main sanitary line paralleling the west side of US 41 beginning at Ft. Cooper Road and continuing north to 411.5 m (1350 ft) south of Citrus County Wastewater Treatment Plant (CCWTP) (south of the airport).</p> <p>Sanitary gravity sewer lines, 14" DI sanitary force main and a 2" - 8" PVC water main parallel the west side of US 41 beginning at the CCWTP and continue north to the end of the project.</p>

Utility Company	Segment	General Description of Utilities
Floral City Water Association (FCWA)	A	<p>Water main (2" to 8") paralleling east and west sides of US 41 from East Orange Avenue to about 700' north of East Julia Street.</p> <p>Some crossings underneath the US 41.</p>
	C	<p>From East Eden Drive north to end of project, the City of Inverness has utilities on both sides of US 41.</p> <p>Fire hydrants on a 6" water main on the east side of US 41 are found:</p> <ul style="list-style-type: none"> ▶ 60.9 m (200 ft) north of East Inverness Boulevard ▶ 137.2 m (450 ft) south of Mossy Oak Drive; ▶ 6.1 m (20 ft) north of Mossy Oak Drive; and ▶ 274.3 m (900 ft) south of SR 44, in the western right-of-way
Sumter Electric Cooperative, Inc.	A/B	<p>Overhead electrical wires from East Jane Lane north to Airport Road where lines are underground.</p> <p>Lines parallel US 41 on the west side and frequently cross road to provide service to east side.</p>
	C	<p>At East England Boulevard the lines cross US 41 to become overhead again paralleling the east side of US 41. Lines stop paralleling US 41 and turn east out of study area at Mossy Oak Drive.</p>

4.1.13 Pavement Conditions

General pavement conditions are good to fair for the length of the study corridor. The existing roadway is asphaltic concrete.

4.1.14 Posted Speed

From the beginning of the study at East Orange Avenue in Floral City to East Stark Lane [137.1 m (450 ft) south of East Julia Street], the posted speed limit is 45 mph (70 km/h). At East Stark Lane, it becomes 55 mph (90 km/h) to approximately 152.4 m (500 ft) north of East England Boulevard. From this point to the end of the study limit at SR 44, the posted speed limit is 45 mph (70 km/h).

4.2 ENVIRONMENTAL CHARACTERISTICS

4.2.1 Land Use Data

Land uses along the existing US 41 corridor transition from commercial at the ends of the study limits (Inverness and Floral City) to mixed use along the central segment. Figure 4.4 is a generalized existing land use map. Mixed uses include residential (low and medium density), commercial and industrial. A small portion of the land use is institutional/public/ semi-public, and transportation/communication/utilities.

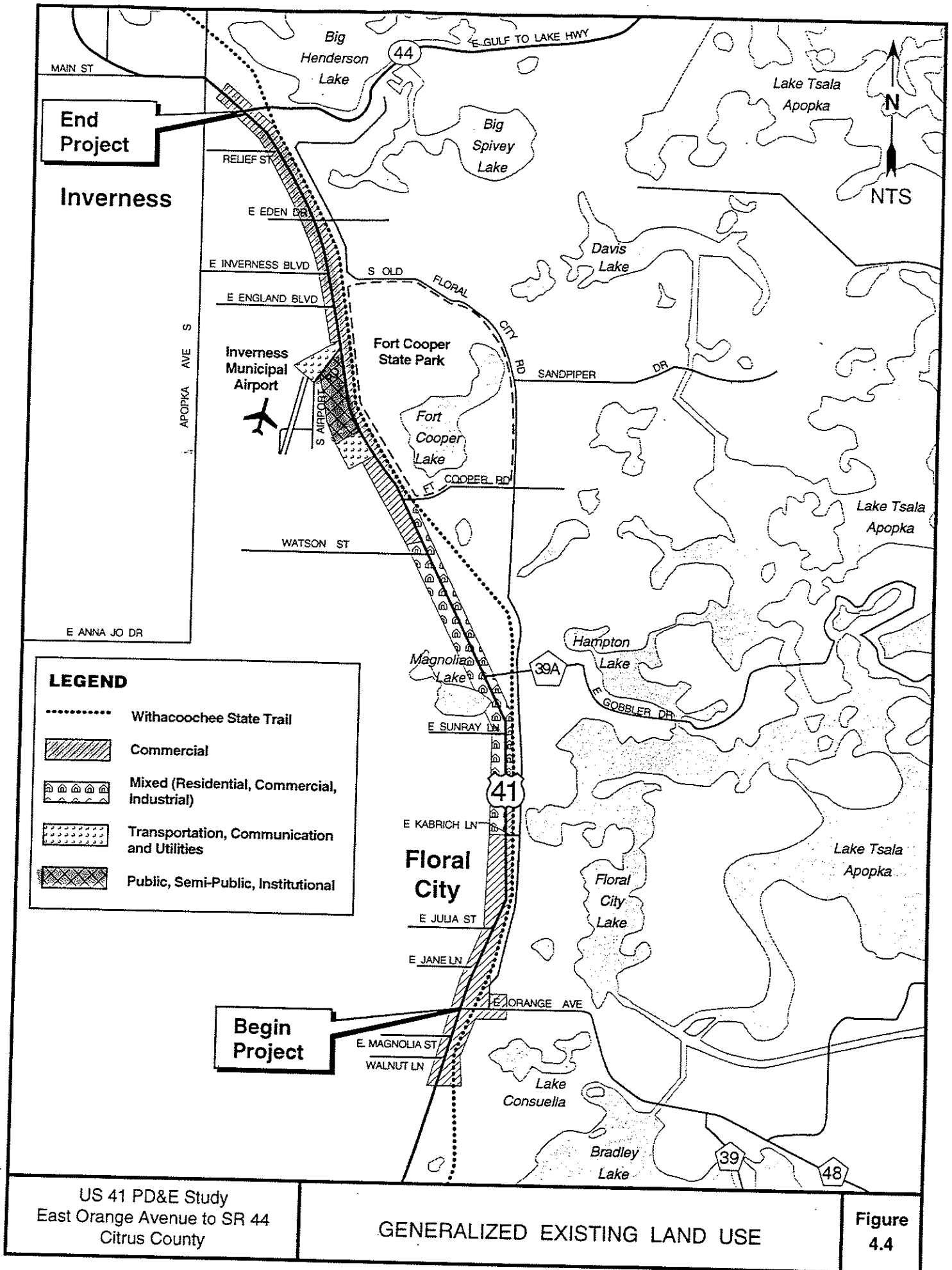
Institutional land uses include four churches and two cemeteries. Public and semi-public uses include the Citrus County Airport and Citrus County Auditorium and Fairgrounds.

The Withlacoochee State Trail and the Fort Cooper State Park are recreational land uses in the project study area. The Withlacoochee State Trail runs roughly parallel to US 41 on the east for the length of the project. Fort Cooper State Park is adjacent to the study area east of the Withlacoochee State Trail between Fort Cooper Road and South Old Floral City Road.

Generalized future land uses along the project corridor are shown in Figure 4.5. Transition from open space to low and medium density residential areas and commercial land use is anticipated in conjunction with the ongoing growth and economic development in Citrus County.

4.2.2 Cultural Features and Community Services

Public facilities, community services, and cultural features within the project area are discussed below. Figure 4.6 lists the location of these in the study area.



End Project

Inverness



LEGEND

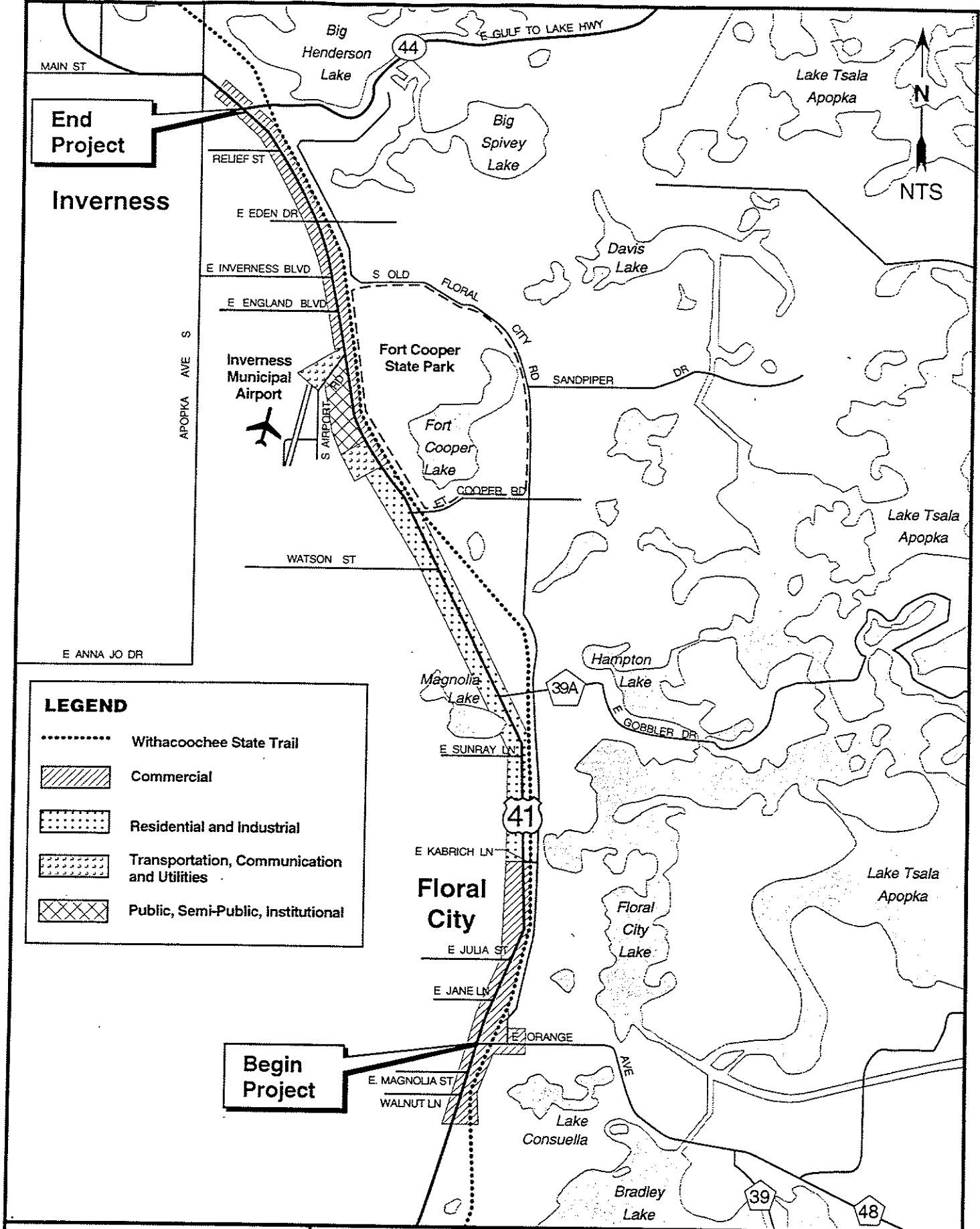
- Withacoochee State Trail
- Commercial
- Mixed (Residential, Commercial, Industrial)
- Transportation, Communication and Utilities
- Public, Semi-Public, Institutional

Begin Project

US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

GENERALIZED EXISTING LAND USE

Figure 4.4



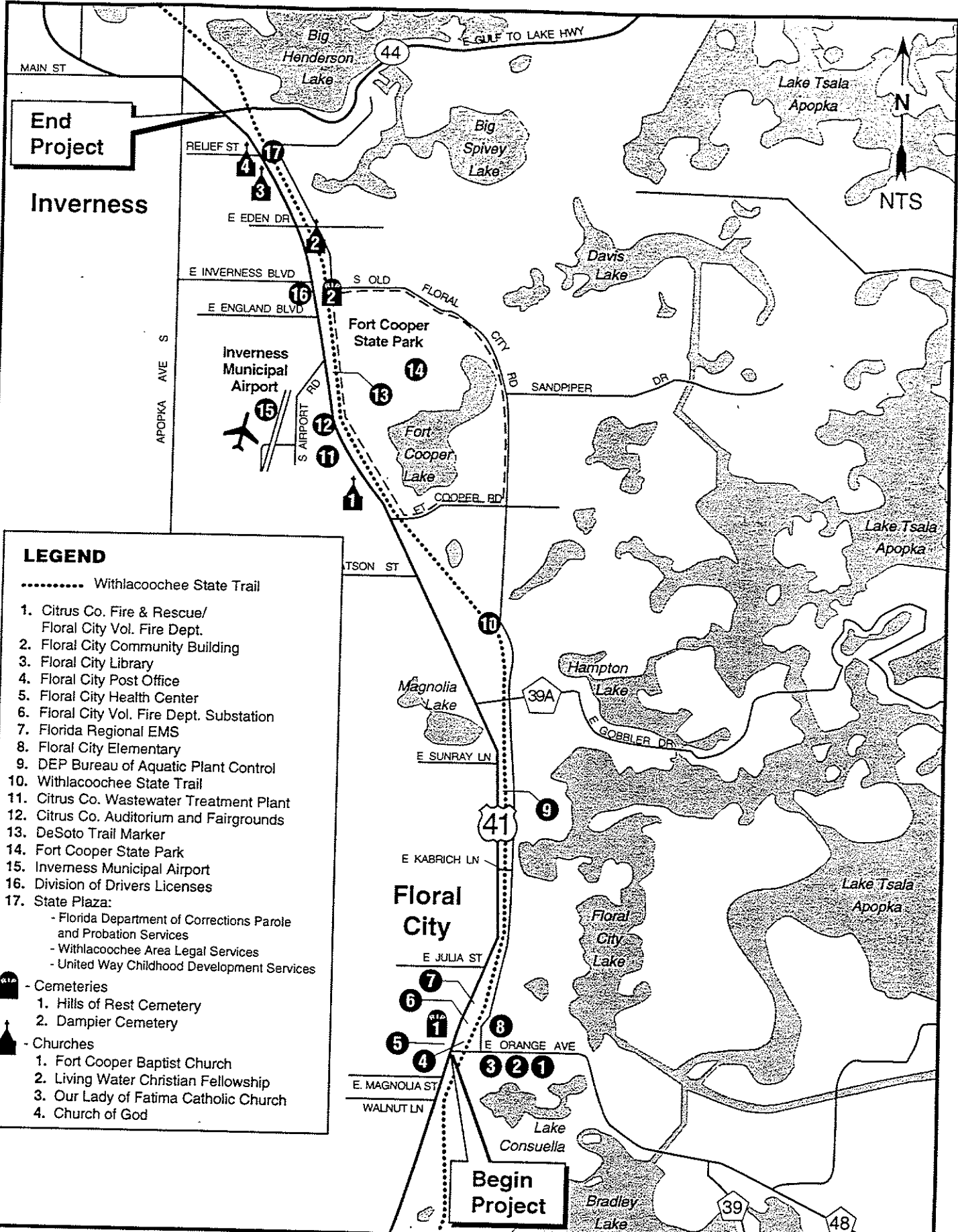
LEGEND

- Withacoochee State Trail
- Commercial
- Residential and Industrial
- Transportation, Communication and Utilities
- Public, Semi-Public, Institutional

US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

GENERALIZED FUTURE LAND USE

Figure 4.5



End Project

Inverness

NTS

LEGEND

- Withlacoochee State Trail
- 1. Citrus Co. Fire & Rescue/
Floral City Vol. Fire Dept.
- 2. Floral City Community Building
- 3. Floral City Library
- 4. Floral City Post Office
- 5. Floral City Health Center
- 6. Floral City Vol. Fire Dept. Substation
- 7. Florida Regional EMS
- 8. Floral City Elementary
- 9. DEP Bureau of Aquatic Plant Control
- 10. Withlacoochee State Trail
- 11. Citrus Co. Wastewater Treatment Plant
- 12. Citrus Co. Auditorium and Fairgrounds
- 13. DeSoto Trail Marker
- 14. Fort Cooper State Park
- 15. Inverness Municipal Airport
- 16. Division of Drivers Licenses
- 17. State Plaza:
 - Florida Department of Corrections Parole and Probation Services
 - Withlacoochee Area Legal Services
 - United Way Childhood Development Services
- Cemeteries
 - 1. Hills of Rest Cemetery
 - 2. Dampier Cemetery
- Churches
 - 1. Fort Cooper Baptist Church
 - 2. Living Water Christian Fellowship
 - 3. Our Lady of Fatima Catholic Church
 - 4. Church of God

Begin Project

US 41 PD&E Study
East Orange Avenue to SR 44
Citrus County

**COMMUNITY SERVICES
AND FACILITIES**

**Figure
4.6**

Post Offices -- Two US Post Offices serve Floral City and Inverness. The Floral City Post Office, 7667 South Florida Avenue (US 41), is located within the study area.

Medical Facilities -- Medical services for the communities of Inverness and Floral City are provided by Citrus Memorial Hospital in Inverness, outside the study limits. Other hospitals within the region are located in the towns of Crystal River, Ocala, and Spring Hill.

In April, 1997, a Phase I of the Citrus Primary Care medical facility (locally referred to as the Floral City Health Center) was completed on what was a vacant parcel west of US 41 and just south of the Hills of Rest Cemetery in Floral City in Segment A. The health center is a satellite office of Citrus Memorial Hospital, and currently provides physician care only. Future planned services are dictated by need and may include on-site clinical support and diagnostic testing facilities. A total of three building phases are anticipated.

Ambulance Services -- Florida Regional EMS provides ambulance service to the area with two stations serving Floral City and Inverness. The Floral City station, Station 25 at 7705 South Florida Avenue (US 41), is within the study limits.

Fire and Police Protection -- Three fire stations serve the area: Station 101, Station 51, and Station 52. None of these stations are located within the study area; however, Station 51 (Floral City Volunteer Fire Department) has a substation next to the Floral City Post Office, which is within the study limits.

The substation is an enclosed one-stall garage that was built by the people of Floral City on land donated by a local resident. At present, the substation is used specifically for storage of the volunteer fire department's boat and for other general storage purposes. The building and the land are the property of Floral City.

No sheriff or police departments have facilities within the study area.

Educational Facilities -- The study area is served by the School Board of Citrus County. There are no schools inside the study limits. Floral City Elementary, adjacent to South Old Floral City Road, is in closest proximity to the study area.

Libraries -- The Floral City Library, 8360 East Orange Avenue, is outside the study limits. The library is about 106.6 m (350 ft) east of the US 41/East Orange Avenue intersection.

Government Offices -- Four government offices are adjacent to the US 41 right-of-way within the study limits:

- Florida Department of Environmental Protection, Bureau of Aquatic Plant Control and Research, 6355 South Florida Avenue (US 41), Inverness.
- State of Florida Division of Drivers Licensing, 1103 Inverness Boulevard, Inverness. This office is in a building on the corner of Inverness Boulevard and US 41.
- State of Florida Department of Corrections Parole and Probation Services, State Plaza, 601 US 41, Inverness.
- Withlacoochee Area Legal Services, State Plaza, 601 US 41, Inverness

County Facilities -- Citrus County has a number of community service facilities adjacent to the US 41 right-of-way. These are listed below.

- Citrus County Wastewater Treatment Plant, 3900 South Florida Avenue (US 41), Inverness
- Citrus County Auditorium and Fairgrounds, 3600 South Florida Avenue (US 41), Inverness
- Inverness Municipal Airport on Airport Road, west of US 41.
- Citrus County United Way Childhood Development Services, State Plaza, 601 US 41, Inverness.

Recreational Areas - Withlacoochee State Trail and Fort Cooper State Park, illustrated on Figure 4.6, are recreational facilities adjacent to the study area.

The **Withlacoochee State Trail** is a Florida Rails-to-Trails project that has converted 65.9 km (41 mi) of CSX railroad right-of-way to a trail. It extends from Citrus Springs in Citrus County southward to US 301 near Trilby in Pasco County. The Withlacoochee State Trail roughly parallels the east side of US 41 and varies in distance from US 41. At its closest point, the trail is 9.1 m (30 ft) from the existing FDOT right-of-way. The State of Florida owns the trail; however, it is managed by the Florida Park Service (Florida Department of Environmental Protection, Division of Recreation and Parks).

Trail activities include walking, jogging, bicycling and horse-back riding. The Withlacoochee State Trail provides an opportunity for users to traverse upland mixed

forest, sandhill, and wetland habitats. The trail is accessible at virtually any part of the trail; therefore, no annual "park attendance" can be easily calculated.

Fort Cooper State Park, illustrated on figure 4.6, is a 287.34 ha (710 acre) park. The park is east of US 41, and is closest to US 41 between Fort Cooper Road and South Old Floral City Road, where the park boundary is 30.5 m (100 ft) from the existing FDOT right-of-way. The Withlacoochee State Trail (described above) lies between the park boundary and the US 41 right-of-way. Fort Cooper State Park is not accessible via US 41. The main entrance is on Old Floral City Road.

It is estimated that park attendance reached 30,000 people in 1995. Facilities at the park include volleyball courts, horseshoe pits, and two nature trails. Two primitive campsites, picnicking facilities, grills, tables, and shelters are available. Fort Cooper Lake (also known as Lake Holathlikaha) is a 64.75 ha (160 ac) lake within the park. Related activities include a day-use beach, canoeing, paddle boating, swimming and fishing.

Annual re-enactments of historic events that took place during the Second Seminole War at the historic site of Fort Cooper are other activities at the park. The site of Fort Cooper is an historic archaeological site and is listed on the National Register of Historic Places (NRHP).

Archaeologic and Historic Resources -- A cultural resources survey of US 41 within the study limits was performed to locate and identify archaeological and historic resources and to assess their significance in terms of eligibility for NRHP-listing. The site of Fort Cooper is listed in the NRHP as an historic archaeological site. As a result of the investigation, four archaeological sites (not including Fort Cooper) and 19 historic properties were identified and evaluated within the project corridor, including all viable alternative alignments. None of the sites within the project corridor are within the existing or proposed right-of-way. None of the archaeological sites or historic structures identified are eligible for NRHP consideration.

A DeSoto Trail Marker commemorating the approximate route of Hernando DeSoto's historic trail is about 76.2 m (200 ft) south of Airport Road on the east side of the existing US 41 right-of-way. The marker is approximately 10.7 m (35 ft) from the existing US 41 edge of pavement. This marker does not mark a historic archeological site, nor is it associated with the exact route traveled by DeSoto (the actual route taken by DeSoto is unknown). Several markers have been placed along the trail route throughout the state, and the nearest similar DeSoto Trail Marker is east of Floral City on CR 48.

Religious Institutions and Cemeteries – Four churches and two cemeteries are adjacent to the US 41 right-of-way within the study limits and are listed below. Figure 4.7 shows the locations of these churches and cemeteries.

- Fort Cooper Baptist Church, 4222 South US 41, Inverness
- Living Water Christian Fellowship, 960 South US 41, Inverness
- Our Lady of Fatima Catholic Church, 550 South US 41, Inverness
- The Church of God, 416 South US 41, Inverness
- Dampier Cemetery, Inverness
- Hills of Rest Cemetery, Floral City

4.2.3 Natural and Biological Features

Natural and biological aspects of the project are addressed below. Discussions on water quality, wetlands, geologic information and contaminated sites are provided.

4.2.3.1 Water Quality

Presently, there are no stormwater detention or retention ponds specifically for the roadway. Roadside swales and ditches are along the existing facility and provide limited treatment during stormwater conveyance to discharge points.

US 41 does not cross any streams, rivers or water bodies within the study limits. Magnolia Lake is immediately adjacent to the western right-of-way of the roadway and untreated roadway runoff runs directly into the lake. No other water resources are adjacent to the study area. Refer to the Water Quality Impact Evaluation (WQIE) checklist in Appendix B for additional information.

4.2.3.2 Wetlands

The proposed project corridor has been surveyed with respect to jurisdictional wetland involvement as required by provisions of Executive Order 11990 and subsequent federal regulations. Wetland sites displayed the characteristics required for wetland definition as given in the 1987 Corps of Engineers Wetlands Delineation Manual: 1) prevalence of hydrophytic vegetation; 2) hydric soils; and 3) permanent or periodic inundation or saturation.

One wetland site was identified within the study area. Review of 1"-100' scale aerial photographs, Natural Resources Conservation Service soils maps and USGS topographic maps, in conjunction with ground-truthing efforts, were used to characterize and describe wetlands within the project corridor.

The site is associated with Magnolia Lake and is both within and adjacent to the western right-of-way of US 41. Upland-cut, man-made, wet, roadside swales run parallel to the existing road and connect to jurisdictional waters. Their primary functions include stormwater conveyance and flood control. Historically, water levels in the lake were much higher; however, ground and surface water levels have dropped. While this wetland may have been an open lacustrine system historically, the system is now a scrub-shrub habitat with standing water of varying levels.

Dominant vegetation includes willow (*Salix* spp.), loblolly bay (*Gordonia lasianthus*), and rushes (*Juncus* spp.). Live oaks (*Quercus virginiana*) surround the depressional area and form the upper banks of the shoreline and surrounding uplands. Hydric soils were noted at this wetland site. This wetland, which is classified as palustrine scrub-shrub broad leaved deciduous/broad leaved evergreen seasonally flooded (PSS1/3C) in accordance with the US Fish and Wildlife Service (USFWS) classification system (Cowardin et. al., 1979), functions as a closed basin. A Wetland Evaluation Report was prepared for this study and provides more detailed wetlands information.

4.2.3.3 Geological Information

The project area is in the southeastern portion of Citrus County at the interface of two physiographic regions: the Tsala Apopka Plain to the east and the Brooksville Ridge to the west. Both geologic regions are underlain by a limestone (Hawthorn) formation.

The ridge region is overlain with an additional clay and sand formation and Pleistocene sand dunes that resulted during the last period of sea level rise. The region generally can be described as a sandhill upland habitat. Karst formations are common in the region. Numerous lakes, ponds, and wetlands make up the nearby Tsala Apopka Chain of Lakes, which is approximately 28.9 km (18 mi) long and 9.5 km (6.0 mi) wide, and occupies about 99,151 ha (24,500 ac).

Citrus County is underlain by the Floridan aquifer, which is characterized by highly porous sands and limestone that typically allow rapid infiltration of rainfall and surface runoff. Leakance, the rate at which surface water infiltrates the aquifer, is high in Citrus County relative to many other Florida counties. This indicates that the proposed project lies within an area of moderate to high groundwater pollution potential.

The study area lies entirely within the Withlacoochee River Drainage Basin. Because of population growth and the associated increases in demand for potable water, the groundwater level in the area has been significantly lowered. The depth to the water table along the corridor is generally greater than 1.5 m (5 ft), except in the northernmost portion of the study area in Inverness, where the groundwater depth ranges from 0.9 m to 1.5 m (3 ft to 5 ft). Groundwater generally flows with the topography of the project.

4.2.3.4 Farmlands

Through coordination with the Soil Conservation Service, it has been determined that no farmlands as defined by 7 CFR 658 are in the project vicinity.

4.2.3.5 Wildlife and Habitat

In accordance with the Fish and Wildlife Coordination Act, consultation with the USFWS was initiated to determine possible damage to wildlife resources. Coordination with the regulatory agencies was initiated regarding measures to prevent the loss or damage to wildlife resources, or for methods to provide for the improvement of the biological resources.

Terrestrial and wetland cover types within the project area were identified, delineated, and mapped using both aerial photographs and field inspection. A data search of available information was conducted to determine any known presence of critical habitat within the project area. By using the FDOT SPECIES database, Florida Natural Areas Inventory (FNAI) database, and the USFWS list of protected species, a list of species that may potentially occur within the project area was developed (refer to Appendix C). Analysis of the existing biotic communities resulted in a list of species that could potentially occur within the project boundaries, based on the available resources.

The potential occurrence of several protected species within the project area is based on the surrounding land uses and existing available habitat. Combined with the known habitat types preferred by the species listed as occurring in Citrus County (Appendix C), the potential for the occurrence of any given species can be concluded. The occurrence of all the described species has been documented in Citrus County, although life requirements may not be present to support a viable population. Some sightings of listed species may be based on transient individuals. All of the project area was surveyed for protected species and habitat types were mapped. No protected plant or animal species have been identified as occurring within the scope of the project. For more complete information, refer to the Biological Assessment prepared for this study.

4.2.4 Contaminated Materials Site Data

A Level I contamination analysis was performed and a Contamination Screening Evaluation Report (CSER) was prepared pursuant to the Federal Highway Administration's (FHWA) Technical Advisory T 6640.8A, dated October 30, 1987, and in accordance with the FDOT Project Development and Environment (PD&E) Manual, Part 2, Chapter 22, dated February 8, 1994.

Forty-two sites within the project study corridor were identified as having the potential for contamination. These sites were evaluated and rated as **No**, **Low**, **Medium**, or **High** for having potential petroleum or hazardous materials contamination. Three sites were rated **No**, 36 were rated **Low**, one was rated **Medium**, and two sites were rated **High**. Table 4.6 provides a list of all identified sites and their risk rating.

After Location/Design Acceptance (LDA), it is recommended that a Contamination Impact Assessment (Level II) be performed for a minimum of five sites within the project corridor to verify or refute the contamination concerns. These sites will require an updated file review and field sampling and quantitative analytical testing prior to project implementation. The evaluation should focus on the sites rated **High** and **Medium** and may evaluate sites rated **Low** that will be directly impacted by the selected alternative.

Sites rated **High** are the Wishing Stone Tavern (previously a gas station) located adjacent to the eastern right-of-way and Circle K #7211 (currently a gas station), also located adjacent to the eastern right-of-way. These sites were rated **High** for potentially having petroleum contamination because regulatory agency records indicate these sites contain some degree of petroleum contamination.

The one site that rated **Medium** is the Lil Champ Store #183, in the southeast quadrant of the Gobbler Drive/US 41 intersection. This site was rated **Medium** for potentially having petroleum contamination because records indicate that this site has a history of contamination, requiring remediation and/or monitoring.

FDOT has evaluated the proposed right-of-way and has identified potential contamination sites, i.e., petroleum contamination, along the proposed project corridor. Resolution of problems associated with contamination will be coordinated with the regulatory agencies, and appropriate action will be taken prior to construction.

Prior to construction, all available assessment and remediation efforts and actions on these sites should be reviewed to substantiate any potential contamination. It must be recognized that limitations exist for hazardous materials and petroleum contamination screening. The contamination assessment for this study did not involve sampling the sites' soil, ground or surface water. Therefore, there may exist unreported and undiscovered hazardous materials, petroleum products, and other regulated substances that may have occurred on private property or deposited during the construction of residences or parking facilities. This evaluation does not provide a certification as to the absence of hazardous materials or petroleum contamination in the project vicinity, but does decrease the chance that unknown contamination will be encountered.

**Table 4.6
Contaminated Materials
Site List and Risk Rating**

Site Number	Facility	Pet. or Haz. Mat.	Risk	Address	Phone
1W	Citgo #164	Pet.	Low	7810 US Hwy. 41 S.	637-1304
2E	Mac's Tire	Pet.	Low	7881 US Hwy. 41 S.	637-3930
3W	Nichol's Autobroker	Pet.	Low	7430 US Hwy. 41 S.	726-7172
4W	Bob Perry's Body Shop	Haz. Mat.	Low	7364 US Hwy. 41 S.	344-4858
5W	Holloway Marine Service	Pet.	Low	7360 US Hwy. 41 S.	637-3001
6W	Mike Fuller's Auto Repair	Pet.	Low	7366 US Hwy. 41 S.	n/a
7W	Floral City Farm & Garden Ctr	Haz. Mat.	No	7298 US Hwy. 41 S.	726-4303
8W	Hannie Printing, Inc.	Haz. Mat.	Low	7190 US Hwy. 41 S.	637-0707
9E	Wishing Stone Tavern	Pet.	High	5975 US Hwy. 41 S.	726-2526
10E	Circle K #7211	Pet.	High	1224 US Hwy. 41 S.	850-3168
11E	Ralph's Automotive	Pet.	Low	5990 US Hwy. 41 S.	344-2277
12W	Save-A-Buck RV Repair	Pet.	Low	5460 US Hwy. 41 S.	726-3068
13E	Mauro's Surplus	Haz. Mat.	Low	5401 US Hwy. 41 S.	726-2926
14W	Clark's Auto Paint, Body Shop	Haz. Mat.	Low	5320 US Hwy. 41 S.	637-1530
15W	Medlin's Nursery	Haz. Mat.	Low	5224 US Hwy. 41 S.	726-2183
16W	Mike Gonter's Tire	Pet.	Low	5164 US Hwy. 41 S.	637-0988
17W	Graber Automotive	Pet.	Low	5164 US Hwy. 41 S.	726-9737
18E	Tim's Automotive	Pet.	Low	4915 US Hwy. 41 S.	637-3669
19E	Pemberton Airboats, Inc.	Pet.	Low	4875 US Hwy. 41 S.	344-0869
20E	Ed's AutoRepair and Towing	Pet.	Low	4610 US Hwy. 41 S.	726-5223
21E	Jan's Waste Oil Service	Pet.	No	4401E US Hwy. 41 S.	637-6100
22W	Citrus Rent-All	Pet.	Low	4150 US Hwy. 41 S.	726-7368
23W	Evan's Nursery & Irrigation	Haz. Mat.	Low	4530 US Hwy. 41 S.	637-5825
24W	Citrus County Waste Water Treatment Plant	Pet.	Low	3900 US Hwy. 41 S.	726-2777
25W	C & G Body Shop	Haz. Mat.	Low	3808 US Hwy. 41 S.	344-4447
26W	Citrus County Public Works	Pet.	No	Inverness Airport	746-2694
27W	Venero Snapper Sales & Service	Pet.	Low	3238 US Hwy. 41 S.	344-2526
28E	Citrus Marine	Pet.	Low	3221 US Hwy. 41 S.	726-2413
29E	Tony's Body Shop	Haz. Mat.	Low	3251 US Hwy. 41 S.	726-2139
30W	Three M Auto Service/Texaco	Pet.	Low	3190 US Hwy. 41 S.	726 -1814
31E	National Gas Company	Pet.	Low	3103 US Hwy. 41 S.	726-1522
32E	Charles E. Davis Funeral Home (formerly Stone's Fuel Service)	Haz. Mat., Pet.	Low	3075 US Hwy. 41 S.	726-8323
33W	RG Printing	Haz. Mat.	Low	1006 US Hwy. 41 S.	726-2026
34W	EML Pool Supply	Haz. Mat.	Low	1011 US Hwy. 41 S.	NotListed
35E	Lil Champ Food Store #183	Pet.	Medium	742 US Hwy. 41 S.	(904) 464 7200
36W	Sumter Electric Co-op, Inc.	HazMat.,Pet.	Low	610 US Hwy. 41 S.	726-3924
37E	Coastline Printing	Haz. Mat.	Low	407 US Hwy. 41 S.	637-3303
38E	Perry Motors, Inc.	Pet.	Low	525 US Hwy. 41 S.	726-1968
39E	Pacifico Pool & Home Store	Haz. Mat.	Low	419 US Hwy. 41 S.	726-5020
40E	Apopka Marine	Pet.	Low	415 US Hwy. 41 S.	726-7773
41E	Firestone City Tire	Pet.	Low	441 US Hwy. 41 S.	726-5118
42E	Cox Lumber	Pet., HazMat.	Low	315 US Hwy. 41 S.	726-2901

5.0 DESIGN CRITERIA

The design criteria applicable to the development of design alternatives for this project include those necessary to develop roadway typical sections, horizontal and vertical alignments, and clearances, within the established AASHTO, FHWA, and FDOT design criteria. A thorough review of design standards resulted in the design criteria matrices, shown as Tables 5.1 and 5.2. Table 5.1 provides the criteria used to develop urban roadway typical sections for the project. Table 5.2 provides the criteria for suburban roadway typical sections. These standards are provided in FDOT's Metric Plans Preparation Manual, Chapter 2.

Additional standards as referenced in FDOT's Project Development and Environment Guidelines, Part I, Chapter 9, Section 9-2.3.1, will be used in the development and subsequent analysis of design alternatives, where applicable.

Table 5.1
Design Criteria
for Urban Typical Section

Project : US-41 in Citrus County

1. TYPE OF HIGHWAY	Principal Rural Arterial (East Orange Ave. to East Eden Dr.) & Principal Urban Arterial (East Eden Dr. to SR-44)
2. DESIGN SPEED	70 km/h (45 MPH) - URBAN TYPICAL SECTION
3. HORIZ. ALIGNMENT:	
*Minimum Radius	= 215.0m (Table 2.8.3)
*Border Width	= 3.6m (Table 2.5.2)
*Max. Superelevation	= 5% (Table 2.8.3)
*Max. Deflection without a Curve	= 1° 00' 00" (Table 2.8.1)
*Min. Horizontal Curve Length	= 210.0m (Table 2.8.2)
*Min. Radius for Curves Without Superelev.	= 2330.0m (Table 2.8.4)
4. VERTICAL ALIGNMENT	
*K Value for Vertical Curve (sag)	= 25 (Table 2.8.6)
*K Value for Vertical Curve (crest)	= 30 (Table 2.8.5)
*Max. Grade	= 7% (Table 2.6.1)
*Min. Grade	= 0.3% (Page 2-37)
*Max. Change in Grade Without a Vert. Curve	= 0.70% (Table 2.6.2)
*Min.Length (Sag)	= 42.0m (Table 2.8.6)
*Min.Length (Crest)	= 42.0m (Table 2.8.5)
5. SIGHT DISTANCE	
*Minimum Stopping	= 110m (Table 2.7.1)
6. ROADWAY ELEMENTS	
*No. of Lanes (thru) - Orange Ave. to Eden Dr.	= 4-Lanes (2 in each direction) at 3.6m ea. (Table 2.1.1)
*No. of Lanes (thru) - Eden Dr. to SR-44	= 6-Lanes (3 in each direction) at 3.6m ea. (Table 2.1.1)
*Median Width	= 6.6m (Table 2.2.1)
*Outside Shoulders (Paved/Total)	= N/A
*Bike Lane	= 1.5m Bike lane provided in each direction (Table 2.1.2)
*Sidewalk Width	= 1.5m Min. (1.8m when adjacent to Curb & Gutter)

All Noted Tables refer to FDOT Metric P.P.M. - Chapter 2.

Access management classification is rated at level 4. Will be reclassified to a 5.

Mainline will accommodate WB 50 (large semitrailer) for through movements and turning movements for major sidestreets.

Table 5.2
Design Criteria
for Suburban Typical Section

Project : US-41 in Citrus County

1. TYPE OF HIGHWAY	Principal Rural Arterial (East Orange Ave. to East Eden Dr.) & Principal Urban Arterial (East Eden Dr. to SR-44)
2. DESIGN SPEED	80 km/h (50 MPH) - SUBURBAN TYPICAL SECTION
3. HORIZ. ALIGNMENT:	
*Minimum Radius	= 210.0m (Table 2.8.3)
*Clear Zone Width	= 7.3m (Table 2.12.1)
*Max. Superelevation	= 10% (Table 2.8.3)
*Max. Deflection without a Curve	= 0° 45' 00" (Table 2.8.1)
*Min. Horizontal Curve Length	= 210.0m (Table 2.8.2)
*Min. Radius for Curves Without Superelev.	= 2500.0m (Table 2.8.4)
4. VERTICAL ALIGNMENT	
*K Value for Vertical Curve (sag)	= 25 (Table 2.8.6)
*K Value for Vertical Curve (crest)	= 36 (Table 2.8.5)
*Max. Grade	= 4% (Table 2.6.1)
*Min. Grade	= N/A to outside (0.3% if in Superelev.)
*Max. Change in Grade Without a Vert. Curve	= 0.60% (Table 2.6.2)
*Min.Length (Sag)	= 48.0m (Table 2.8.6)
*Min.Length (Crest)	= 48.0m (Table 2.8.5)
5. SIGHT DISTANCE	
*Minimum Stopping	= 120m (Table 2.7.1)
6. ROADWAY ELEMENTS	
*No. of Lanes (thru) - Orange Ave. to Eden Dr.	= 4-Lanes (2 in each direction) at 3.6m ea. (Table 2.1.1)
*No. of Lanes (thru) - Eden Dr. to SR-44	= 6-Lanes (3 in each direction) at 3.6m ea. (Table 2.1.1)
*Median Width	= 6.6m (Table 2.2.1)
*Outside Shoulders (Paved/Total)	= 1.5m / 3.0m (Table 2.3.2)
*Bike Lane	= Provided for within the 1.5m paved outside shoulders
*Sidewalk Width	= N/A

All Noted Tables refer to FDOT Metric P.P.M. - Chapter 2.

Access management classification is rated at level 4. Will be reclassified to a 5.

Mainline will accommodate WB 50 (large semitrailer) for through movements and turning movements for major sidestreets.

6.0 TRAFFIC

The material presented in this section is summarized from the Technical Memorandum, Project Traffic and Intersection Analysis Report (October 1995), for US 41. This report documents the analysis of existing and design year traffic operations on US 41 from East Orange Avenue to SR 44.

6.1 EXISTING TRAFFIC CONDITIONS

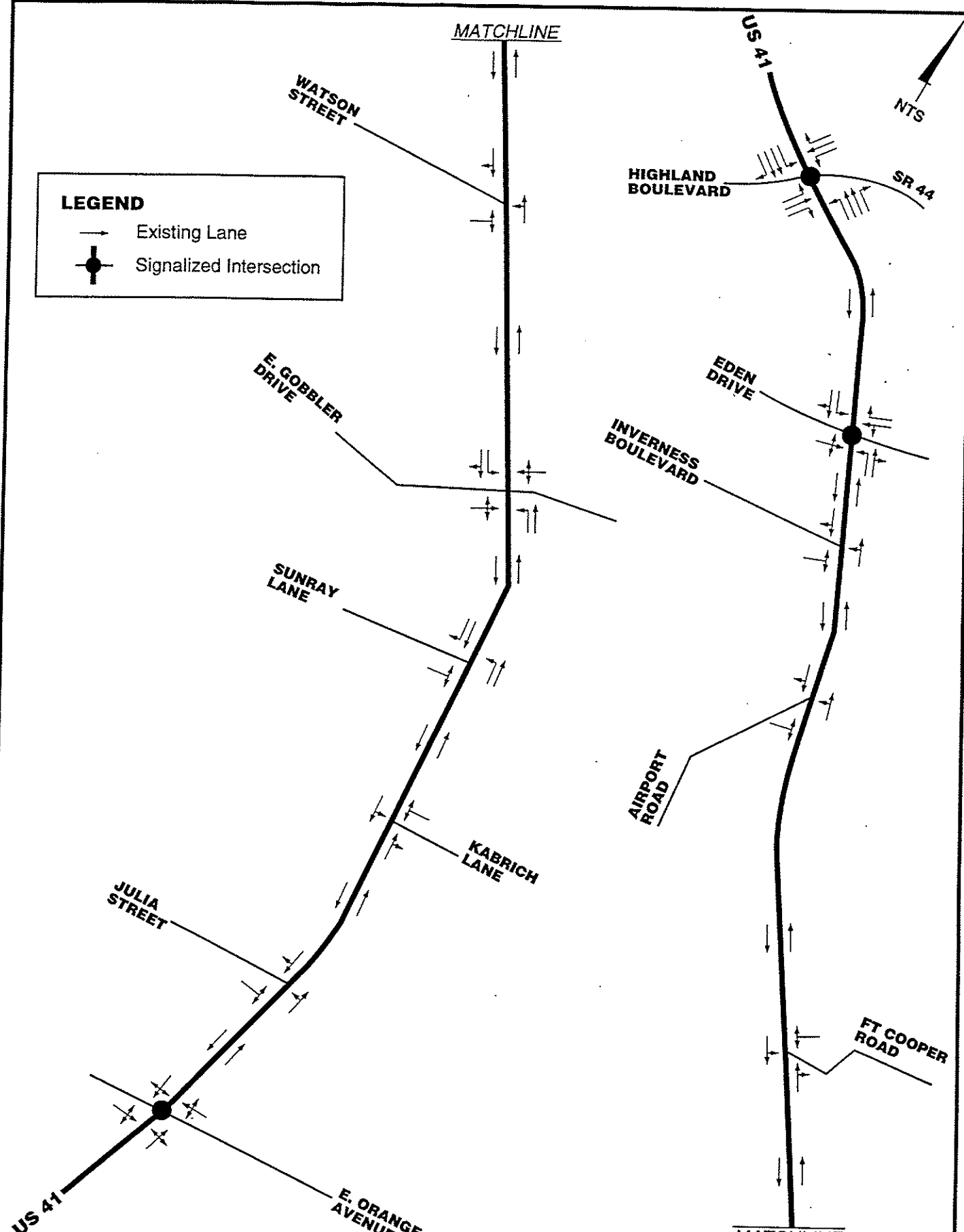
US 41 is a two-lane principal rural arterial roadway, from East Orange Avenue in Floral City to East Eden Drive in Inverness. North of East Eden Drive, US 41 is a two-lane principal urban arterial roadway with a continuous left lane, which widens to a four-lane cross section on the south approach at the SR 44 intersection. As illustrated on Figure 6.1, exclusive left and right-turn lanes currently exist on US 41 at SR 44, East Eden Drive, East Gobbler Drive, and East Sunray Lane.

The 10.1 km (6.3 mile) segment of US 41 from East Orange Avenue to SR 44 encompasses three signalized intersections, as illustrated on Figure 6.1, and traverses a rural area on the southern two-thirds of the project, transitioning to more urban land use on the north end of the project in Inverness.

6.1.1 Traffic Counts

Traffic counts were conducted in the US 41 study area from June 22, 1995 to July 18, 1995. Figure 6.2 identifies the locations at which the 24-hour and 7-day counts, and the AM and PM peak hour turning movement counts, were conducted. Twenty-four hour machine traffic recorder counts were conducted on each leg of the eleven intersections. The 24-hour and 7-day count data were summarized by 15-minute increments, with hourly and daily totals at the locations identified. Morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) peak period turning movement counts were conducted at each of the eleven intersections.

Based on the 24-hour and peak period count data, the morning peak hour generally occurs from 7:30 AM to 8:30 AM, while the evening peak hour typically occurs from 4:30 PM to 5:30 PM.



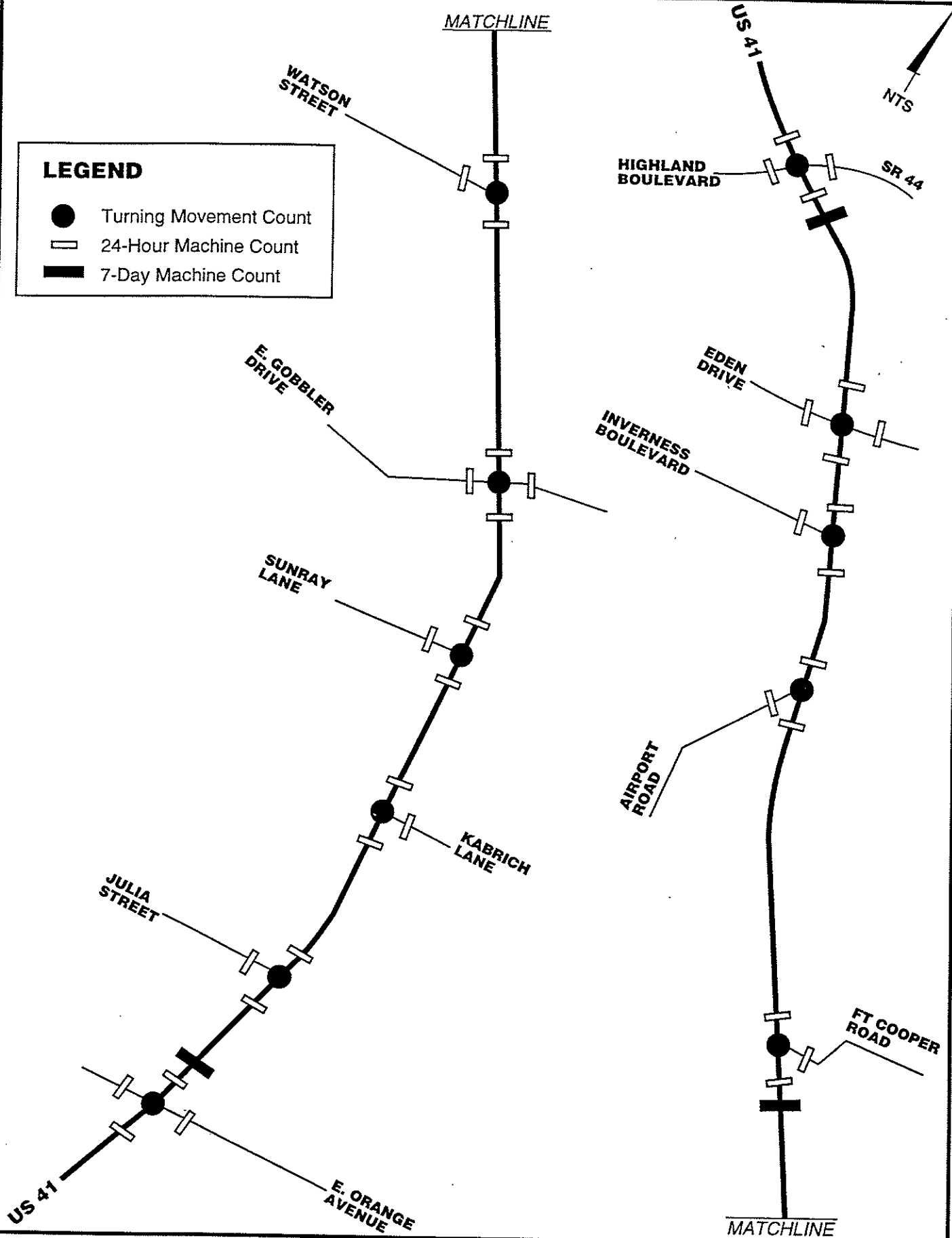
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 East Orange Avenue to SR 44
 Citrus County

EXISTING ROADWAY GEOMETRY
 AND TRAFFIC CONTROL

Figure
 6.1

LEGEND

- Turning Movement Count
- 24-Hour Machine Count
- 7-Day Machine Count



US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

TRAFFIC COUNT LOCATION MAP

Figure 6.2

6.1.2 Existing AADT Volumes

The traffic count data were adjusted to represent average annual daily traffic (AADT) conditions. The peak period turning movement count data were adjusted based on a weekly seasonal adjustment factor of 1.02, provided by the Florida Department of Transportation (FDOT). The 24-hour and 7-day machine traffic counts were also adjusted for truck traffic by the application of an axle factor of 0.98, provided by FDOT. The application of the seasonal adjustment factor (1.02) and the axle adjustment factor (0.98), both multipliers, to the 24-hour and 7-day count data does not change the unadjusted volumes.

Figure 6.3 illustrates the 1995 AM and PM peak hour intersection traffic volumes adjusted to represent AADT conditions. Figure 6.4 illustrates the 1995 daily and peak hour directional link volumes adjusted to AADT conditions.

6.1.3 Existing Traffic Characteristics

Figure 6.5 illustrates the percentage of daily traffic occurring in the peak hour (K), and the percentage of peak hour traffic traveling in the predominant direction (D) for both the morning and evening peak hours. Table 6.1 summarizes the data illustrated on Figures 6.3, 6.4, and 6.5.

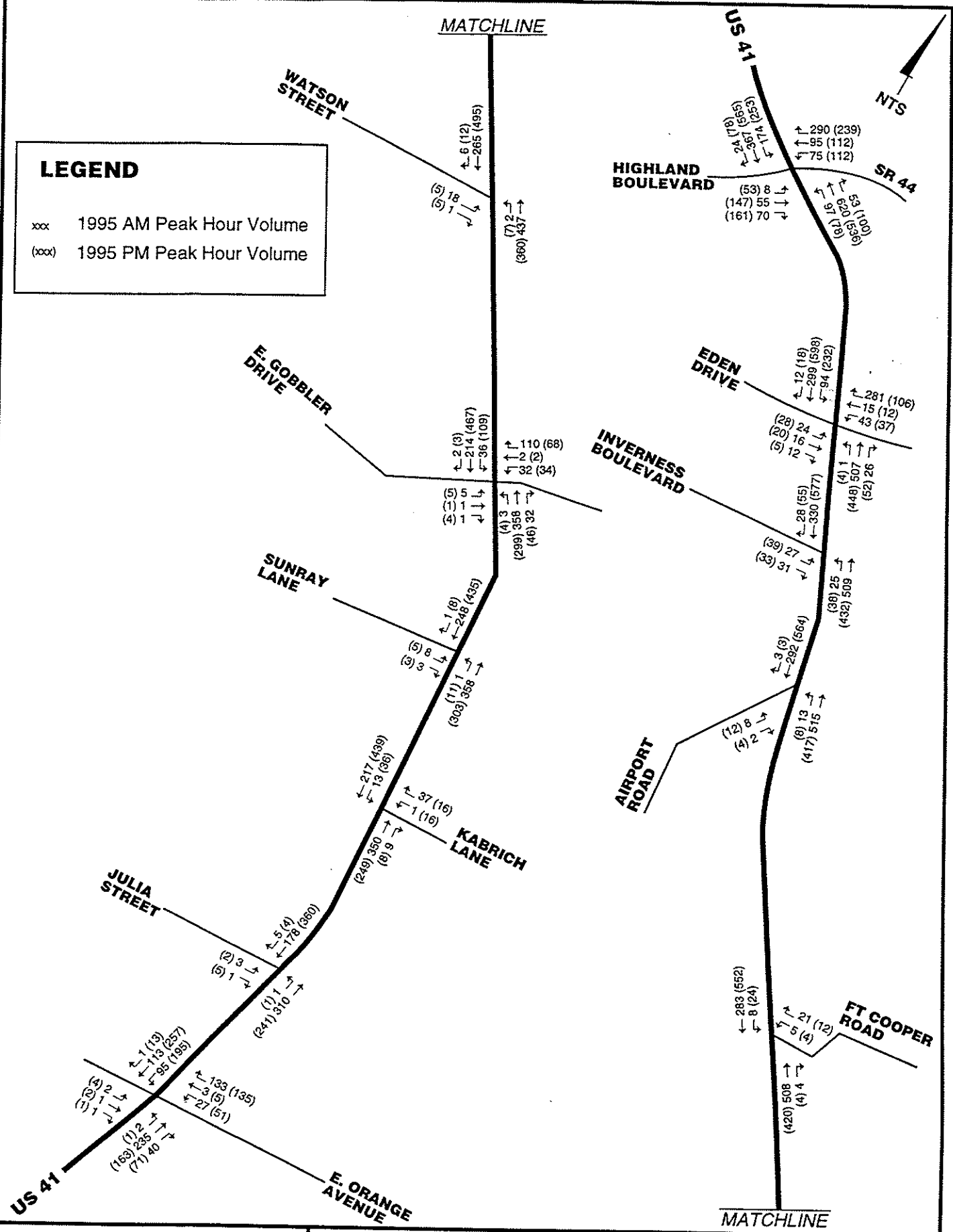
As shown in Table 6.1, the average directional distribution factors (D) estimated from the count data for the morning and evening peak hours are 63 percent and 58 percent, respectively. Therefore, a D factor in the 2020 design year of 60 percent will be assumed.

Several sources were reviewed to determine the appropriate K_{30} - factor, the factor used to convert AADT volumes to design hour (30th highest hour) volumes. The 24-hour counts conducted on US 41 yielded peak-to-daily (K) values ranging from 5.39 percent to 8.85 percent, while the average K value for the study segment of SR 44 was 6.32 percent in the morning peak hour and 7.86 percent in the evening peak hour. These K values were calculated from ADT volumes and represent an average annual condition, which approximates the 100th highest hour conditions, or a K_{100} value.

The K_{30} value at the nearest permanent count station on US 41, located north of Lutz in Pasco County, was 7.51 percent in 1994. The K_{100} value at this location in 1994, which approximates average annual conditions, was 7.23 percent. These data, plus data from three additional permanent count stations in the region surrounding the study area, are shown in Table 6.2.

LEGEND

xxx 1995 AM Peak Hour Volume
 (xxx) 1995 PM Peak Hour Volume



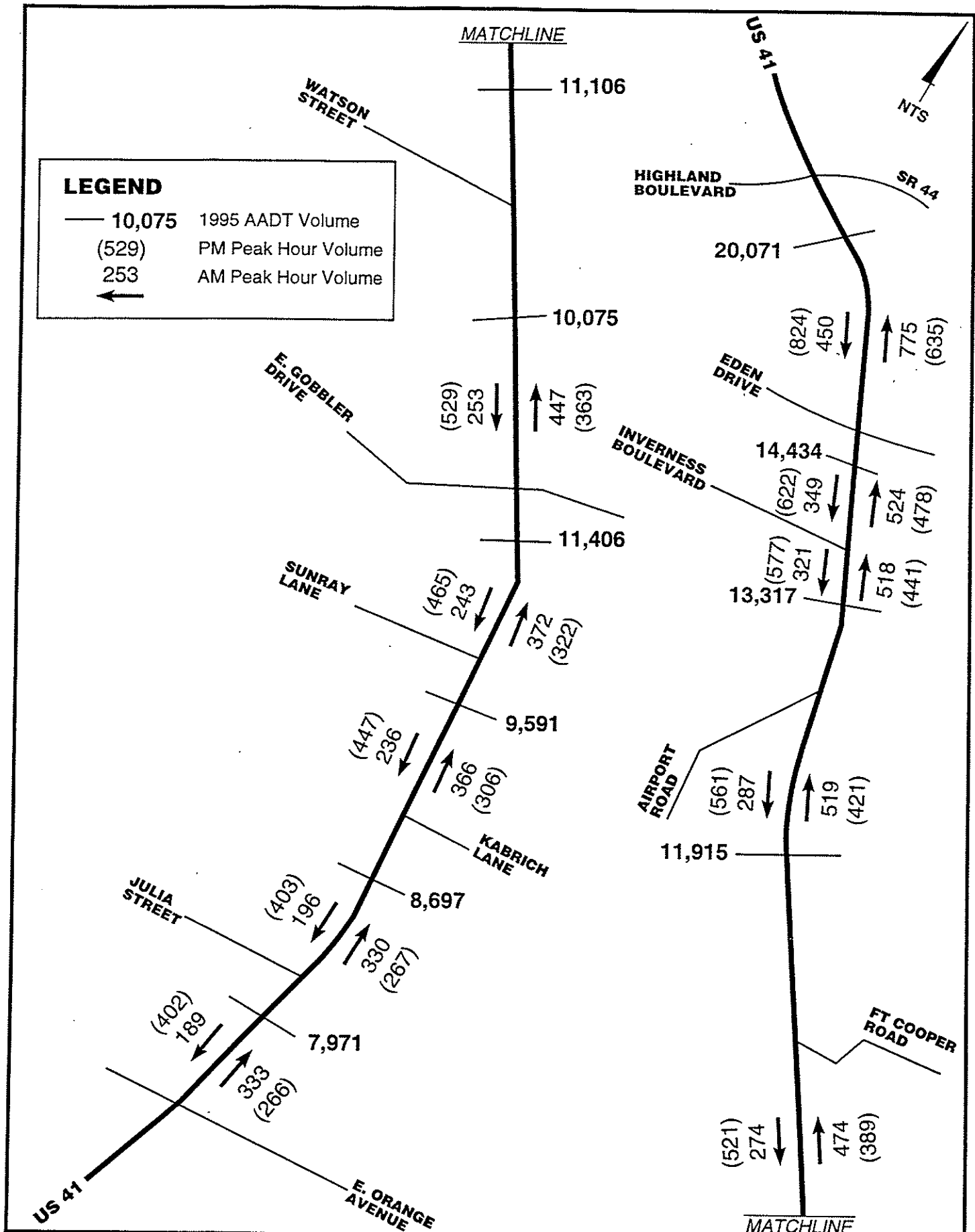
US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

1995 AM & PM PEAK HOUR
 INTERSECTION TURNING MOVEMENT VOLUMES

Figure
 6.3

LEGEND

- 10,075 1995 AADT Volume
- (529) PM Peak Hour Volume
- 253 AM Peak Hour Volume
- ←

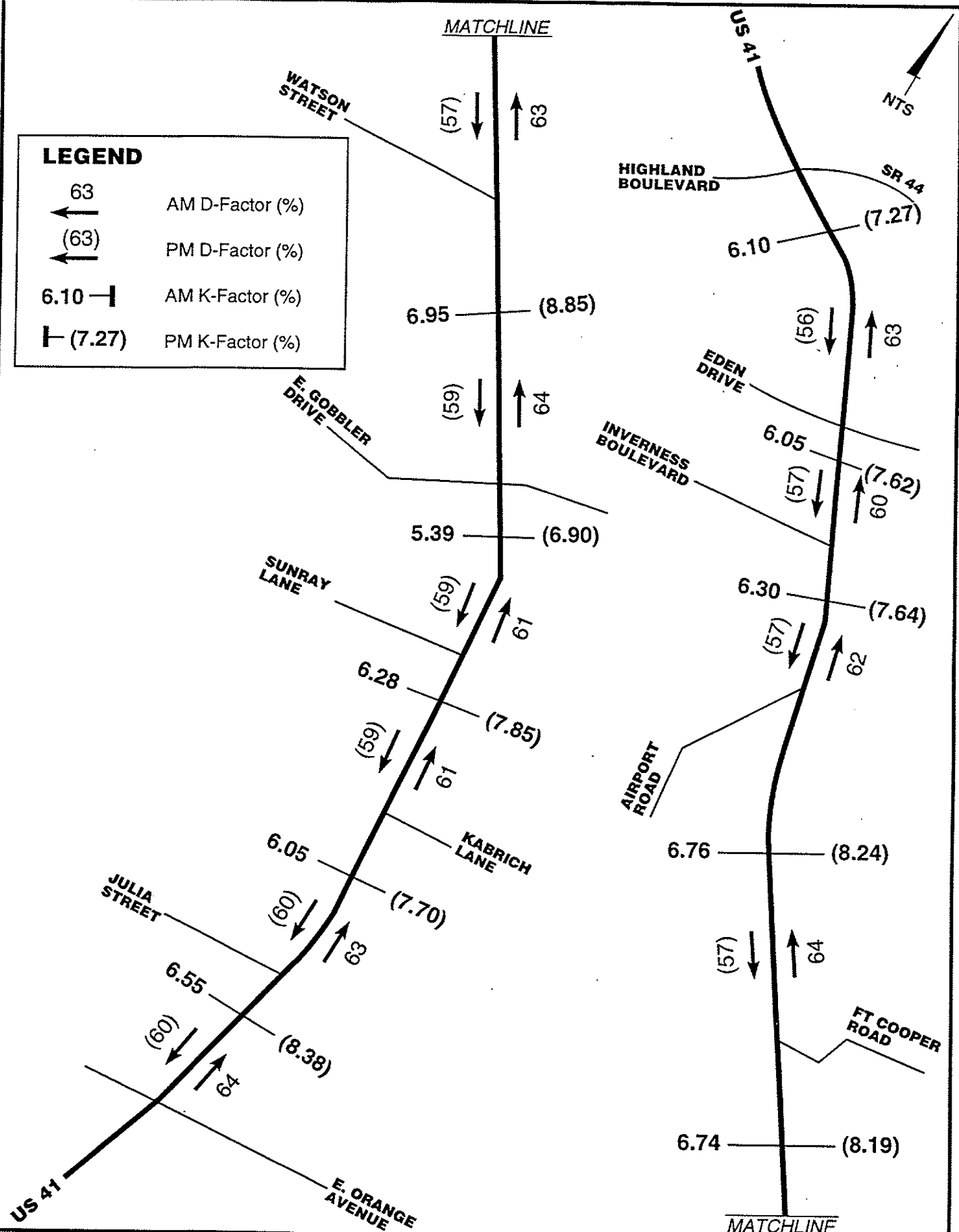


US 41 PD&E Study
East Orange Avenue to SR 44
Citrus County

1995 24-HOUR AND DIRECTIONAL
PEAK HOUR LINK TRAFFIC VOLUMES

Figure 6.4

LEGEND	
63	AM D-Factor (%)
← (63)	PM D-Factor (%)
6.10 —	AM K-Factor (%)
(7.27)	PM K-Factor (%)



US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

1995 (K) AND (D) VALUES

Figure
 6.5

**Table 6.1
Existing Conditions**

Segment Between		Number of Lanes	Direction	1995 AM Peak Hour Volume	D-Factor	AM Peak to Daily Ratio	1995 PM Peak Hour Volume	D-Factor	PM Peak to Daily Ratio	Unadjusted ⁽¹⁾ 1995 Daily Volume
From	To									
SR 44	E. EDEN DR	4/2 ⁽²⁾	NB	775	0.63	0.0610	635	0.56	0.0727	20,071
			SB	450			824			
E. EDEN DR	INVERNESS BLVD	2	NB	524	0.60	0.0605	478	0.57	0.0762	14,434
			SB	349			622			
INVERNESS BLV	AIRPORT RD	2	NB	518	0.62	0.0630	441	0.57	0.0764	13,317
			SB	321			577			
AIRPORT RD	FT. COOPER RD	2	NB	519	0.64	0.0676	421	0.57	0.0824	11,915
			SB	287			561			
FT. COOPER RD	WATSON ST	2	NB	474	0.63	0.0674	389	0.57	0.0819	11,106
			SB	274			521			
WATSON ST	E. GOBBLER DR	2	NB	447	0.64	0.0695	363	0.59	0.0885	10,075
			SB	253			529			
E. GOBBLER DR	E. SUNRAY LN	2	NB	372	0.61	0.0539	322	0.59	0.0690	11,406
			SB	243			465			
E. SUNRAY LN	E. KABRICH LN	2	NB	366	0.61	0.0628	306	0.59	0.0785	9,591
			SB	236			447			
E. KABRICH LN	E. JULIA ST	2	NB	330	0.63	0.0605	267	0.60	0.0770	8,697
			SB	196			403			
E. JULIA ST	E. ORANGE ST	2	NB	333	0.64	0.0655	266	0.60	0.0838	7,971
			SB	189			402			
AVERAGE					0.63	0.0632		0.58	0.0786	

⁽¹⁾Axle factor adjusted

⁽²⁾4 lanes on the south approach at SR 44, narrowing to 2 lanes with a two-way left-turn lane on the north approach of East Eden Drive. A 3-lane cross section exists for the majority of the segment length.

Table 6.2
K₃₀ and K₁₀₀ Values From
Permanent FDOT Count Stations

<u>Count Station Number</u>	<u>Location</u>	<u>K₃₀</u>	<u>K₁₀₀</u>	<u>Percent Difference</u>
13	US 41 North of Lutz in Pasco County	7.51	7.23	3.87
44	US 19 North of SR 480 in Citrus County	11.66	10.53	10.73
79	US 301 in Pasco County	9.38	8.90	5.39
118	US 301/441 North of Ocala in Marion County	10.48	9.15	14.54
	Average	9.76	8.95	9.05

These data indicate that within Citrus County and the surrounding counties on similar major arterial roadways, the K₃₀ value is approximately 9.0 percent higher than the K₁₀₀ value for existing conditions. Therefore, the existing K₃₀ values on US 41 between East Orange Avenue and SR 44 can be estimated by multiplying the existing K₁₀₀ values (K values calculated using daily and peak hour values obtained from the counts, adjusted to average annual conditions) by 1.0905. Table 6.3 shows the estimated K₃₀ values for each of the ten study segments on US 41 between East Orange Avenue and SR 44 for the afternoon peak hour. The average estimated K₃₀ for the ten roadway segments is 8.6 percent.

The traffic characteristics within the study corridor are not expected to change significantly through the 2020 design year. The anticipated diversion of some through trips to the North Suncoast Expressway should slightly increase the percentage of local work and shopping trips during the peak hours, in proportion to the daily volumes, and slightly increase the K₃₀ value. Therefore, a K₃₀ value in the 2020 design year of 9.0 percent should be reasonable.

Table 6.3

Estimated Existing K_{30} Values on US 41

Segment From	To	Existing K_{100} PM Peak Hour	Estimated K_{30}
SR 44	E. Eden Drive	0.0727	0.0793
E. Eden Drive	E. Inverness Blvd	0.0762	0.0831
E. Inverness Blvd	S. Airport Road	0.0764	0.0833
S. Airport Road	Fort Cooper Road	0.0824	0.0899
Fort Cooper Road	Watson Street	0.0819	0.0893
Watson Street	E. Gobbler Drive	0.0885	0.0965
E. Gobbler Drive	E. Sunray Lane	0.0690	0.0752
E. Sunray Lane	E. Kabrich Lane	0.0785	0.0856
E. Kabrich Lane	E. Julia Street	0.0770	0.0840
E. Julia Street	E. Orange Avenue	0.0838	0.0914
	Average	0.0786	0.0857

The AM and PM peak period turning movement counts included the identification of truck traffic.

These counts indicate that the existing average truck volume factor (T) expressed as a percentage of the total traffic volumes on US 41 between East Orange Avenue and SR 44 is approximately 4.1 percent during the AM peak hour and 2.8 percent during the PM peak hour. Therefore, a T-factor in the 2020 design year of 3.5 percent would be

assumed. The peak period turning movement counts were evaluated to define the appropriate Peak Hour Factor (PHF) for use in the study analysis. The PHF is defined as the ratio of the total hourly traffic volume to four-times the highest 15-minute flow rate within the hour. Figure 6.6 shows the existing PHF for each approach at the eleven intersections within the study area for the AM and PM peak hours. These data indicate that a design PHF of 0.95 would be appropriate for use in the year 2020 design analysis.

Based on the preceding evaluations and comparisons, the following factors were used to define the traffic characteristics used in the traffic volume forecast and level of service analyses:

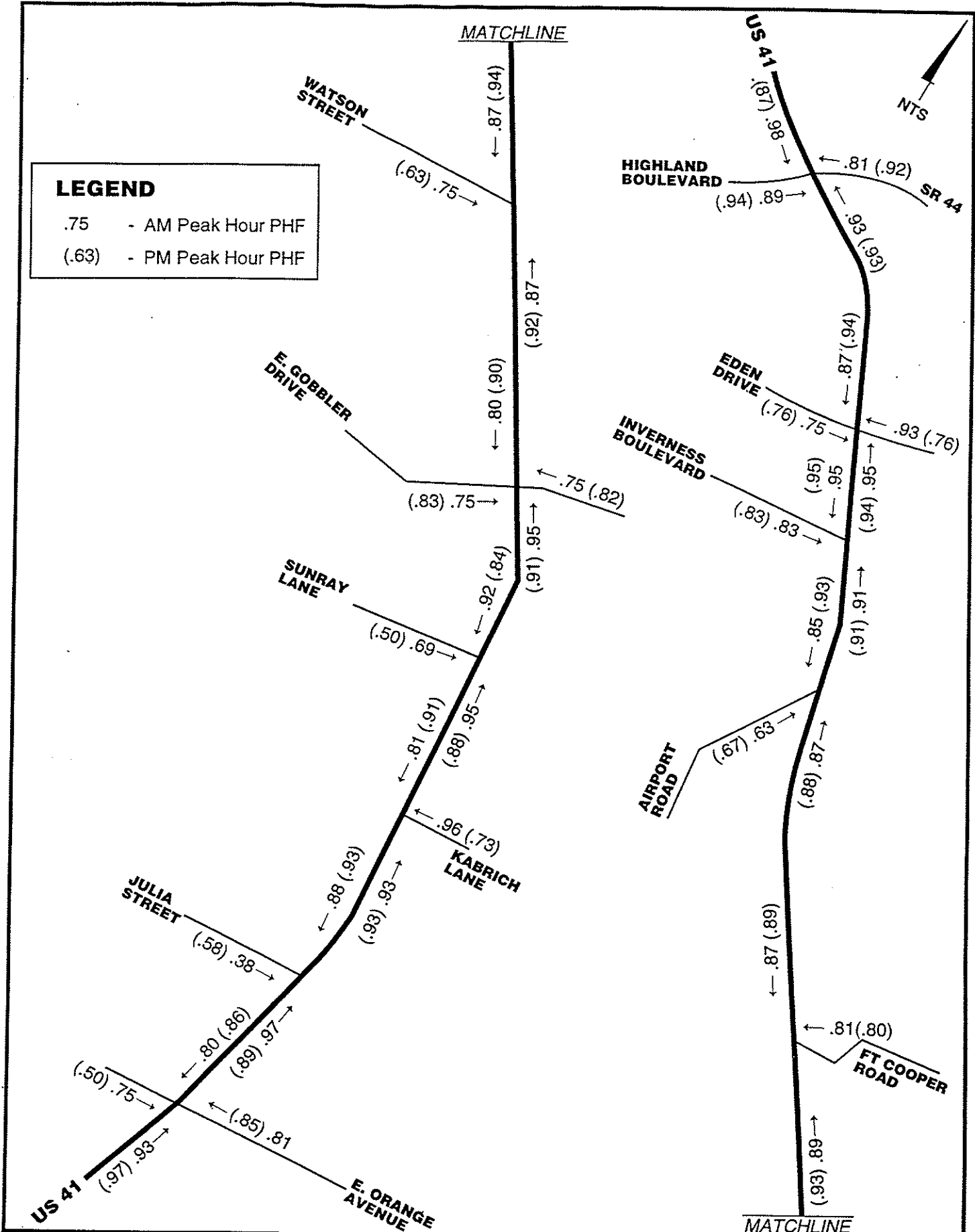
- K_{30} - factor = 9.0 percent
- D-factor = 60 percent
- T-factor = 3.5 percent peak hour
- Peak Hour Factor (PHF) = 0.95

These factors are slightly higher than existing values, and reflect a more urbanized area in the 2020 design year, which is consistent with the Future Land Use Element of the Citrus County Comprehensive Plan.

6.1.4 Existing Level of Service

A review of Figure 6.3 shows that the PM peak hour traffic volumes on US 41 are significantly higher than the AM peak hour volumes. Since the PM peak hour represents the worst case condition relative to traffic volume, the PM peak hour traffic volumes were used in the level of service analysis for existing conditions. The PM peak hour turning movement volumes shown on Figure 6.3 were adjusted to design hour volumes by multiplying the volumes by 1.0905, as calculated in Table 6.2. The 1995 PM design hour turning movement volumes at the eleven intersections are illustrated on Figure 6.7. Using the PM design hour turning movement volumes illustrated on Figure 6.7, and the existing intersection geometry, illustrated on Figure 6.1, the existing level of service at the three signalized intersections within the corridor was calculated. For this analysis, Version 2.2 of the 1994 Highway Capacity Manual (HCM) software was used. The analyses used the optimized traffic signal timing and phasing contained in the FDOT report, Traffic Memorandum, Existing Conditions, US 41, Citrus County Florida, May, 1995. This recent study by FDOT District Seven concluded that many of the existing signal cycle lengths were excessive, and recommended optimized timing and phasing patterns. The peak hour factors for each approach of the intersection, as determined by the peak period traffic volume counts, were used in the analyses. The results of these analyses are graphically summarized in Figure 6.8.

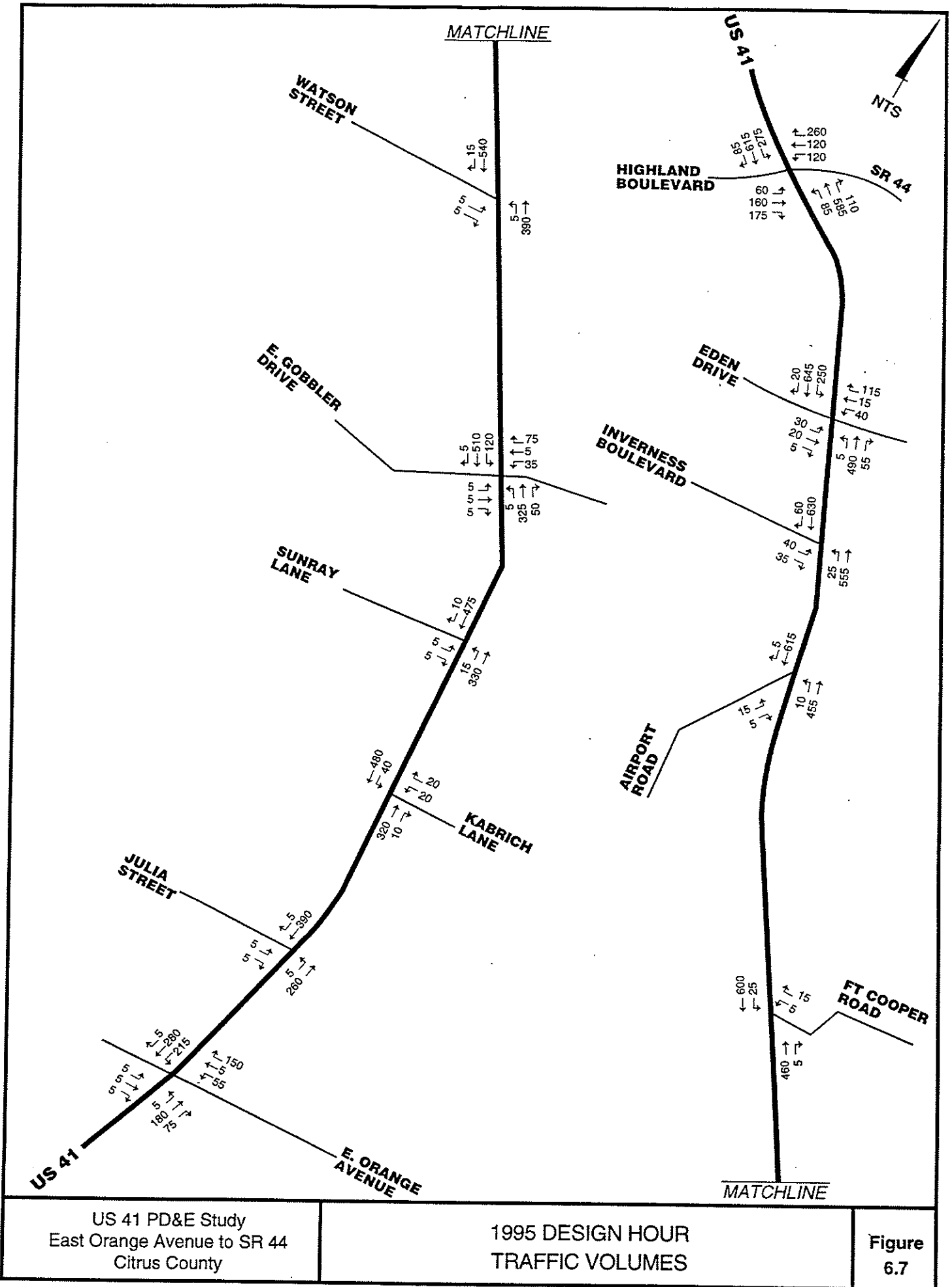
LEGEND
 .75 - AM Peak Hour PHF
 (.63) - PM Peak Hour PHF

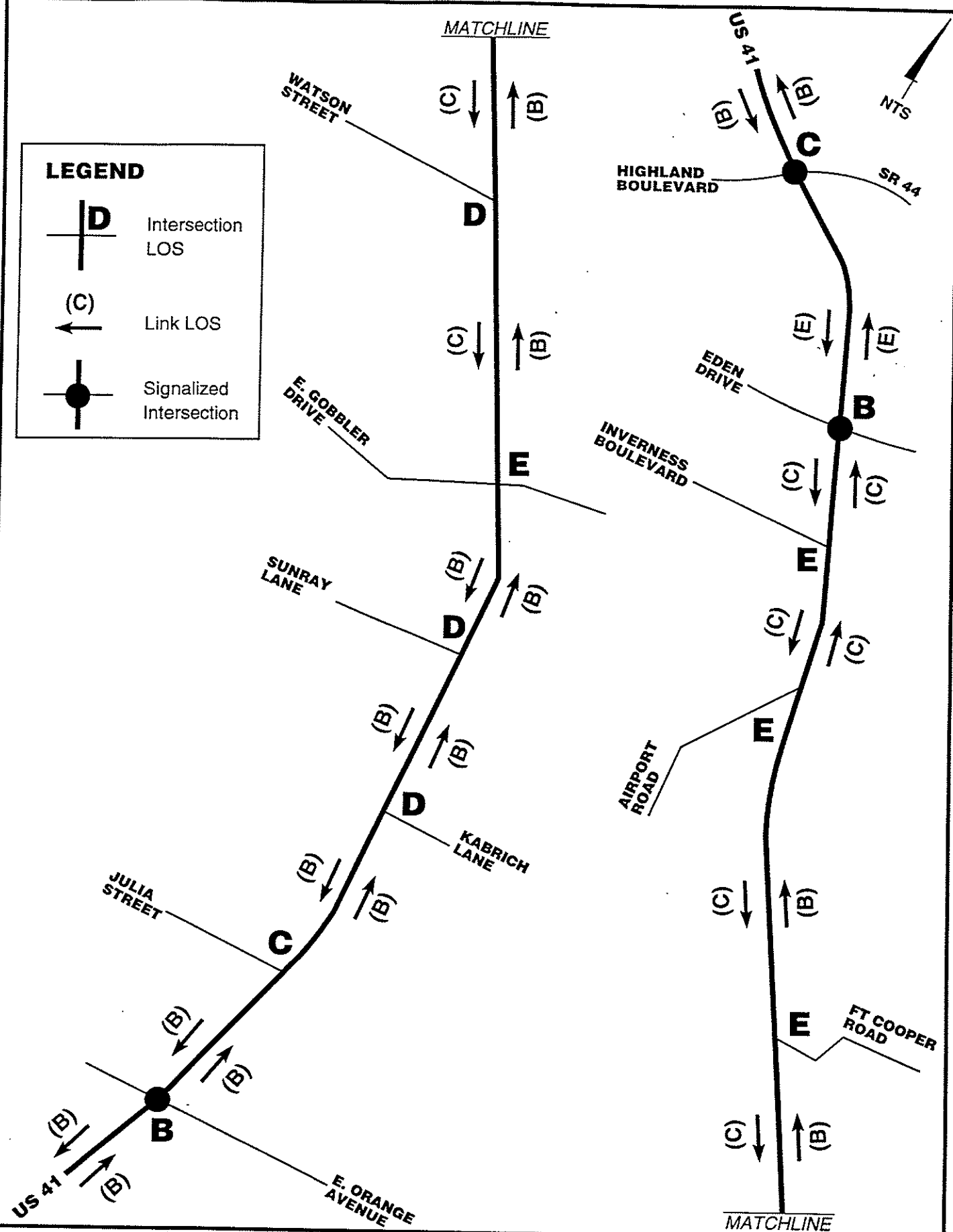
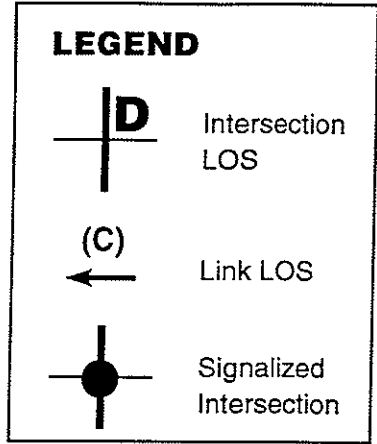


US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

1995 PEAK HOUR FACTORS
 (PHF)

Figure
 6.6





US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

RESULTS OF INTERSECTION AND LINK
 LOS ANALYSES/1995 DESIGN HOUR

Figure
 6.8

Link level of service analyses for the ten roadway segments within the study area were conducted using the PM design hour directional link volumes calculated using the data illustrated in Figure 6.7, and the FDOT Generalized Peak Hour Directional Volume Table contained in Appendix D, from the FDOT Manual, Florida Level of Service Standards and Guidelines Manual For Planning, Topic Number: 525-000-005-6, April 12, 1992. The results of this link level of service analysis of existing conditions are summarized in Table 6.4, and illustrated on Figure 6.8.

An arterial analysis using the HCM software was not conducted because traffic signal interconnect does not exist. There are only three traffic signals on the 10.1 km (6.3 miles) study corridor, and the closest spaced signalized intersections (SR 44 and East Eden Drive) are 1.3 km (0.8 mile) apart. This distance is beyond the limit at which traffic signal coordination would be effective on a two-lane undivided roadway.

6.1.5 Existing Deficiencies

As the data displayed on Figure 6.8 indicates, the three signalized intersections along US 41 currently operate at level of service C or better with the existing lane geometry. However, three of the eight unsignalized intersections presently operate at level of service D during the PM design hour, with four of the eight operating at level of service E. Julia Street is the only unsignalized intersection operating at level of service C. The primary reason for the level of service D and E conditions is the high traffic volume on US 41, which result in an insufficient number of acceptable gaps in the traffic stream. The link level of service analysis (summarized in Table 6.4), indicates that nine links in both the northbound and southbound travel directions currently operate at level of service C or better. The roadway link between SR 44 and East Eden Drive currently operates at level of service E during the PM design hour.

6.2 MULTIMODAL TRANSPORTATION SYSTEM CONSIDERATIONS

The project is located in an area with both urban and rural characteristics. The automobile is the predominant mode of travel. Descriptions of other modes of travel follow.

6.2.1 Transit

Citrus County does not provide mass transit bus service within or adjacent to the study area. Although a mass transit system was attempted several years ago, it was not successful. Presently, Citrus County offers handicapped and senior citizens in the area door-to-door bus service through a demand responsive service. There are no common stops or pick-up points within the study area.

Table 6.4
Results of Link Level of Service (LOS) Analysis
Existing Conditions

SR 45 From	To	Direction	Volume	LOS C Capacity	Existing Link LOS
SR 44	E. Eden Dr.	N	780	710	E
		S	915	710	E
E. Eden Dr.	E. Inverness Blvd.	N	595	740	C
		S	690	740	C
E. Inverness Blvd.	S. Airport Rd.	N	580	740	C
		S	665	740	C
S. Airport Rd.	Ft. Cooper Rd.	N	475	740	B
		S	625	740	C
Ft. Cooper Rd.	Watson St.	N	465	740	B
		S	605	740	C
Watson St.	E. Gobbler Dr.	N	405	740	B
		S	635	740	C
E. Gobbler Dr.	E. Sunray Ln.	N	380	740	B
		S	550	740	C
E. Sunray Ln.	E. Kabrich Ln.	N	345	740	B
		S	520	740	B
E. Kabrich Ln.	E. Julia St.	N	330	740	B
		S	500	740	B
E. Julia St.	E. Orange Ave.	N	335	740	B
		S	500	740	B

6.2.2 Rail

There are no existing or proposed railroad crossings on US 41 within the study area.

6.2.3 Air

The Inverness Municipal Airport is within the study area. This airport is classified as a General Aviation Utility Airport. It is a non-controlled airport (i.e., no control tower) with one runway. The airport can accommodate planes with a capacity of up to approximately ten persons in size. It is estimated that there are about 17,000 arrivals and departures per year at Inverness Municipal Airport. Therefore, it was concluded that other forms of transportation including transit, rail, and other modes cannot meet the needs of the project corridor.

6.3 FUTURE TRAFFIC CONDITIONS

The traffic volume projections in this report were prepared in accordance with the Project Traffic Forecasting Guidelines developed per Section 334.044(10)(a) and 334.044(12) of the Florida Statutes.

Project traffic forecasting is required in developing improvements involving reconstruction, additional lanes, new roadways, and major intersection improvements. Project traffic forecasting is required for determining the number of lanes needed to meet the anticipated future traffic demands.

The purpose of this section is to document an analysis of forecasted traffic conditions using planning level evaluation procedures to define the system laneage requirements for design year conditions on the study segment of US 41. The design year alternatives evaluated for this study area are limited to the current route alignment and include the existing facility (i.e., the No-Build alternative), as well as the provision of additional through lanes. Modifications to the existing intersection turn-lane geometry (i.e., the provision of exclusive left-turn lanes, dual left-turn lanes, and/or exclusive right-turn lanes) are also evaluated as part of this study. The design hourly volumes (DHV), the vehicle type composition, and the directional distribution are all essential to the development and design of a transportation improvement project. Design hour volumes are based on the 30th highest hour (K_{30}) projected to occur twenty years after a project opens to traffic. While traffic projections used in this study are based on growth projections and a travel forecast model developed for the Suncoast Parkway (Project 2 Feasibility Study in Hernando and Citrus Counties), an analysis of the historic traffic growth within a corridor was needed to check the reasonableness of the forecast.

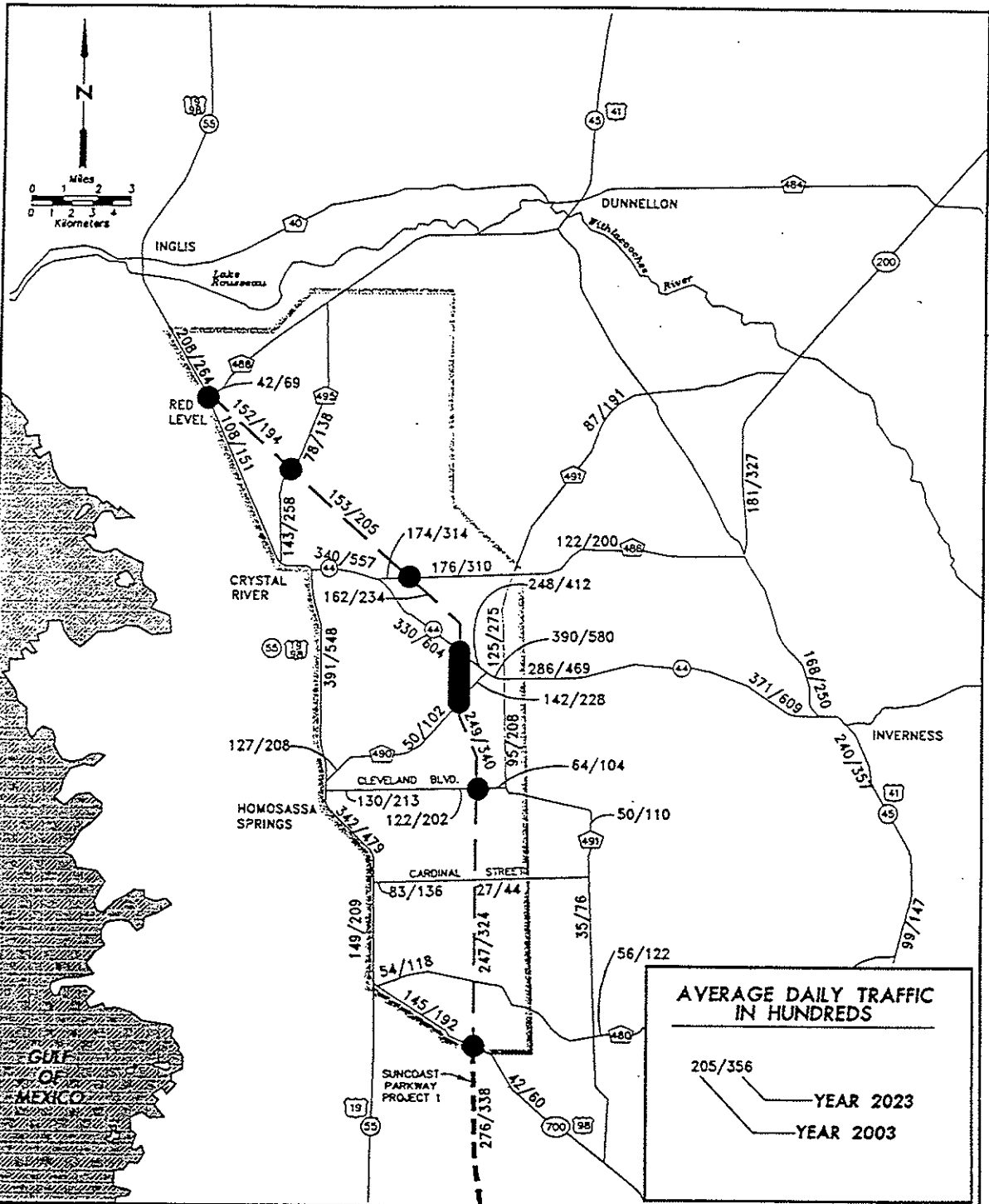
Future major land use changes are incorporated in the travel projections based on application of the Suncoast Parkway (Project 2 model). The data inputs and assumptions for all computer traffic assignments are based on this model, developed within the transportation planning process. System traffic is one of the products of the transportation planning process. The system traffic is refined to include factors such as the reallocation of traffic from a central connector point loading to the intersecting street system and the smoothing of traffic among parallel facilities in a particular corridor. The system traffic estimate produced by the Suncoast model represents peak season weekday traffic (PSWT). To develop project traffic which represents AADT, the system traffic was adjusted for the Suncoast Traffic Report by applying a seasonal adjustment factor.

6.3.1 Traffic Forecasting Methodology

Year 2020 travel forecasts for US 41 within the study area were estimated using traffic forecasts for the Suncoast Parkway Project 2, which were derived using a multi-county, regional travel simulation model, which included Citrus County. The development of this traffic forecasting model consisted of the joining and revalidating of two planning models previously used by the Turnpike District to project traffic and revenue for the Veterans Expressway in Hillsborough County; the Suncoast Parkway Project 1 in Pasco, Hernando and Citrus Counties; and the Northern Extension of Florida's Turnpike in Marion County. The two model components were the Tampa Bay Regional Planning Model (TBRPM), consisting of Hernando, Hillsborough, Pasco, and Pinellas Counties, and the North Central Regional Planning Model (NCRPM) for Citrus, Levy, Marion, and Sumter Counties. The resulting model has been named the West Central Region Planning Model (WCRPM). Use of the WCRPM provided the ability to simulate future traffic volumes in the eight-county area and more accurately assess the impact of major new transportation facilities, such as the Veterans Expressway, Suncoast 1, and Suncoast 2 (Citrus County) on local and regional travel patterns.

Figure 6.9 shows the year 2003 and 2023 traffic projections for Citrus County for alignment Option A1, presented in the report titled, Corridor Traffic Technical Memorandum, Suncoast Parkway Project 2, April, 1995, prepared by H.W. Lochner, Inc. Seven alternative alignments were evaluated in that study. However, all seven alternatives resulted in the same traffic volume projections on US 41 within this study area. A review of Figure 6.9 shows that 2003 and 2023 traffic volume projections were derived for two locations on US 41 relevant to this study as follows:

1. US 41 south of SR 44
2. US 41 between East Orange Avenue and CR 480



SUNCOAST PARKWAY
PROJECT 2
CITRUS COUNTY

OPTION A1
2003 AND 2023 ADT

EXHIBIT
9

42

These two traffic volume projections on US 41 are sufficient to project 2000, 2010 and 2020 traffic volumes on US 41. The 2020 traffic volume projections are used to determine design year roadway requirements. The 2000 and 2010 volume projections are used to perform air and noise analyses in subsequent PD&E study tasks. The historic traffic growth trend methodology, as described in the FDOT publication, Project Traffic Forecasting Guidelines, was not used to estimate Design Hour traffic volumes because of the potential impact of the extension of the Suncoast Parkway through Citrus County. With this new major roadway assumed to be constructed by the 2020 design year, projected diversions of north-south through traffic volumes from US 41 to the Suncoast Parkway would cause future traffic volumes on US 41 to deviate substantially from the historic traffic volume pattern.

However, historic traffic growth trends were used to project year 2020 daily traffic volumes on US 41 for comparison with the No-Build traffic projections from the Suncoast parkway Project 2 report. The comparison was made to determine if the Suncoast Parkway No-Build 2020 traffic projections within the study area were consistent with the year 2020 traffic volume projections derived using historic traffic growth trends.

Forecasted Years

The mainline and intersecting street AADTs were forecasted for 2000 (the assumed opening year), 2010 (the tenth year of operation), and 2020 (the design year), using forecasted traffic volumes on US 41 contained in the Suncoast Parkway Project 2 traffic technical memorandum. Year 2020 AADTs on US 41 were also forecasted using historic traffic growth trends.

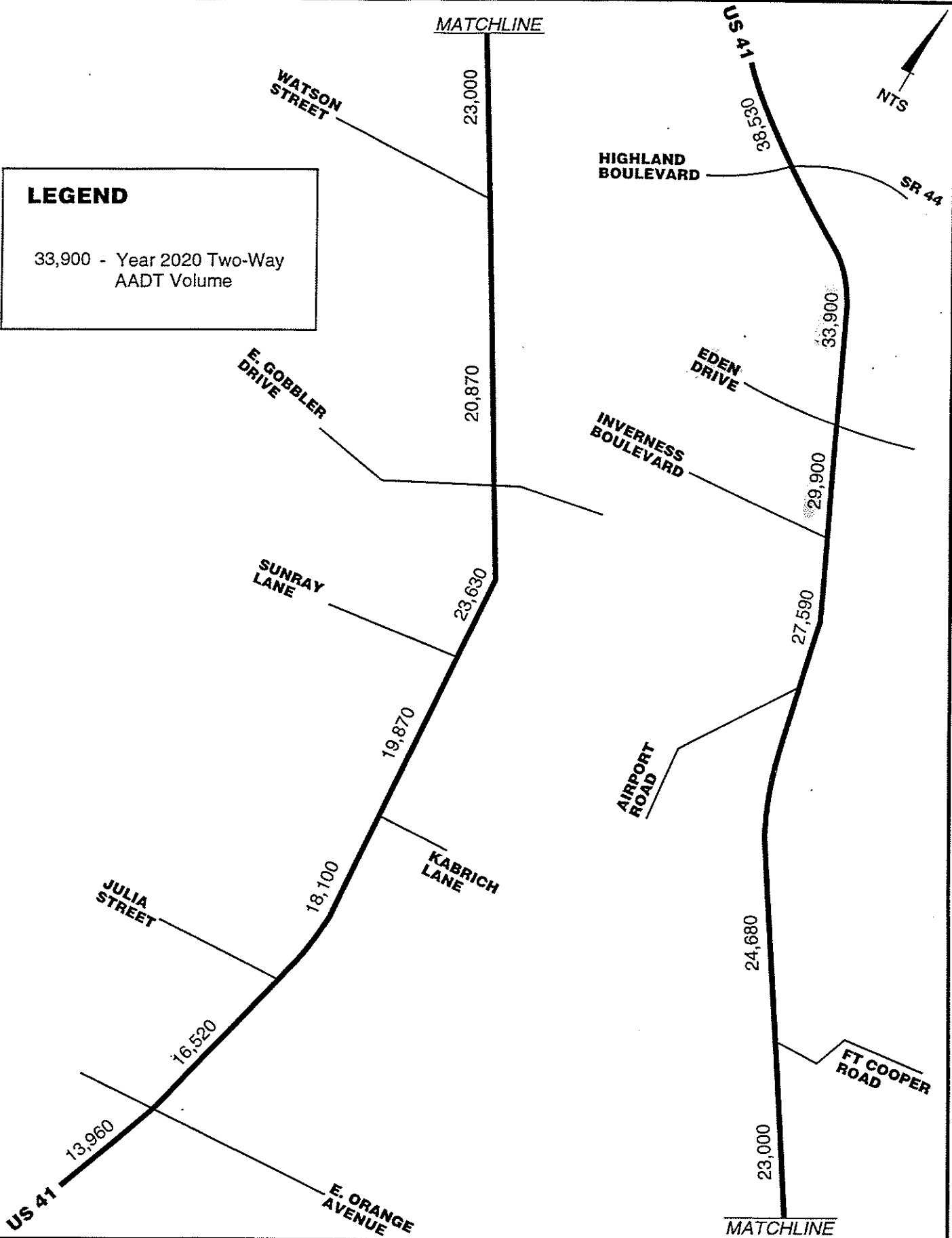
Traffic Volume Projection Methodology

The Suncoast Parkway Project 2 Report contained forecasts on US 41 for 2003 and 2023, as shown on Figure 6.9. Year 2020 projections were derived using straight line interpolation between 2003 and 2023. The resulting 2020 traffic forecasts for US 41 south of SR 44 and south of East Orange Avenue were used to estimate the year 2020 AADT volumes on each of the ten segments of US 41 within the study area using the existing traffic volume pattern within the study area. Directional design hour traffic volumes on each of the ten segments of US 41 were then estimated using the K_{30} and D values previously derived for US 41.

These directional design hour link traffic volumes were then reduced to design hour turning movement volumes at each of the eleven intersections within the study area using the existing turning movement patterns at the eleven intersections shown on Figure 6.3.

LEGEND

33,900 - Year 2020 Two-Way AADT Volume



US 41 PD&E Study
East Orange Avenue to SR 44
Citrus County

YEAR 2020 AADT TRAFFIC
VOLUME PROJECTIONS ON US 41

Figure
6.10

Side street 2020 design hour volumes were assumed to be in proportion to the 2020 design hour volumes on SR 44, as defined by the existing intersection traffic volume patterns. Side streets where geographic and/or environmental constraints could impede growth relative to other areas along the study corridor were identified, and the projected traffic volumes to/from these side streets were adjusted to account for the anticipated lower traffic growth rate on these streets.

6.3.2 Future Traffic Volume Projections

Suncoast Traffic Model Projections

Using the methodology previously described, 2020 AADT volume projections on each of the ten roadway links within the study area were calculated. These volumes are shown in Table 6.5 and illustrated on Figure 6.10.

Design hour directional link traffic volumes were estimated from the 2020 AADT volumes using the K_{30} and D values previously developed. The estimated directional design hour traffic volumes on each of the ten roadway links on US 41 within the study area are shown on Figure 6.11. These directional design hour link traffic volumes were then used to estimate the 2020 design hour intersection turning movement volumes by applying the existing PM peak hour turning movement patterns to the directional design hour link volumes. Side street volumes were assumed to be consistent with existing intersection volume patterns, except where noted. The estimated 2020 design hour intersection turning movement volumes are illustrated on Figure 6.12. Years 2000 and 2010 design hour intersection turning movement volumes were estimated by straight-line interpolation between 1995 existing PM peak hour traffic volumes and the 2020 design hour volumes illustrated on Figure 6.12. The estimated 2000 and 2010 design hour intersection turning movement volumes are illustrated on Figures 6.13 and 6.14, respectively.

Historic Trend Traffic Projections

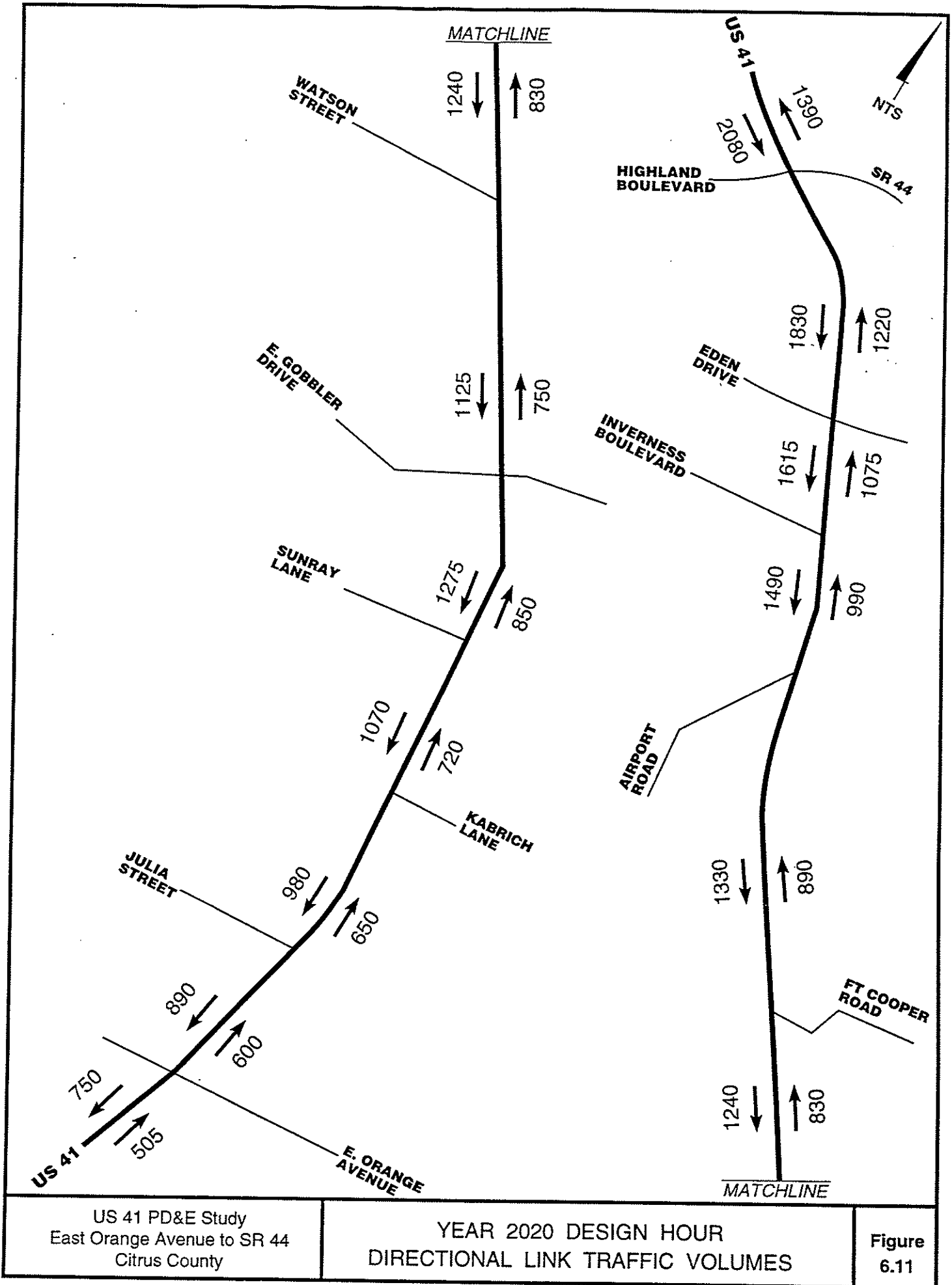
Using historic traffic volume data for US 41 within the study area, 2020 traffic volumes were estimated and compared with the 2020 traffic volume projections developed by straight line interpolation from the Suncoast Parkway Project 2 report for the Suncoast No-Build option, shown on Figure 6.15. Table 6.6 shows the results of this comparison. Since the Suncoast model takes into account future planned improvements to other major arterial facilities, such as US 19 and US 98, the values in Table 6.6 appear to agree within reasonable limits of accuracy.

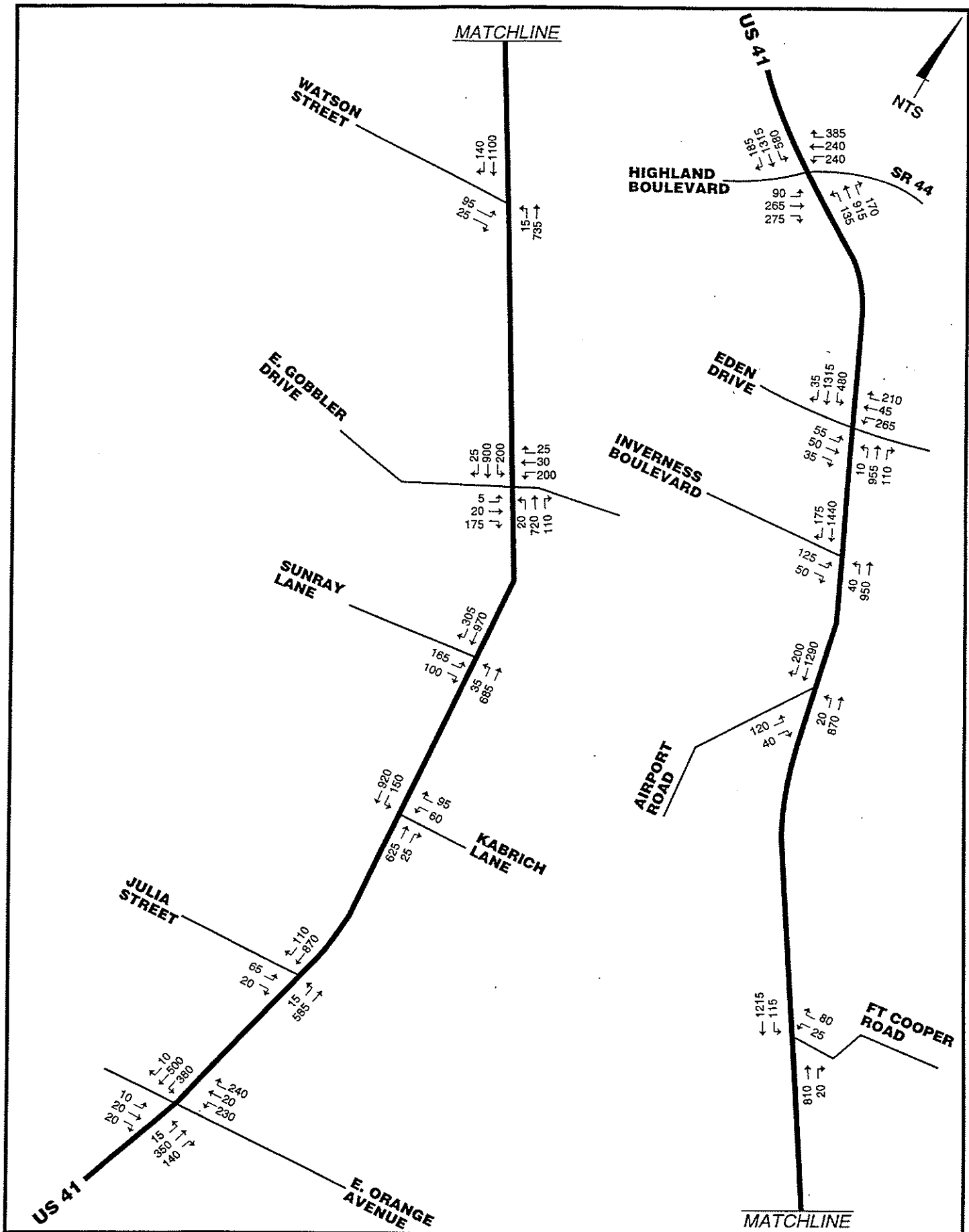
Table 6.5
Year 2020 AADT Traffic
Volume Projections on US 41

Intersecting Street	Direction	1995 AADT ⁽²⁾	2020 AADT	2020 Average AADT
SR 44	N	23,232	38,530	33,900
	S	20,441	33,900 ⁽¹⁾	
E. Eden Dr.	N	20,521	33,900	29,900
	S	14,739	29,920	
E. Inverness Blvd.	N	14,719	29,880	27,590
	S	13,606	27,620	
S. Airport Rd.	N	13,571	27,550	24,680
	S	12,178	24,720	
Ft. Cooper Rd.	N	12,137	24,640	23,000
	S	11,404	23,150	
Watson St.	N	11,261	22,860	20,870
	S	10,459	21,230	
E. Gobbler Dr.	N	10,103	20,510	23,630
	S	11,651	23,650	
E. Sunray Ln.	N	11,626	23,600	19,870
	S	9,900	20,100	
E. Kabrich Ln.	N	9,673	19,640	18,100
	S	9,233	18,740	
E. Julia St.	N	8,514	17,280	16,520
	S	8,604	17,470	
E. Orange Ave.	N	7,666	15,560	13,960 ⁽¹⁾
	S	6,877	13,960 ⁽¹⁾	

⁽¹⁾Derived from 2003 and 2023 project traffic shown on Figure 6.9

⁽²⁾Refer to Figure 6.4

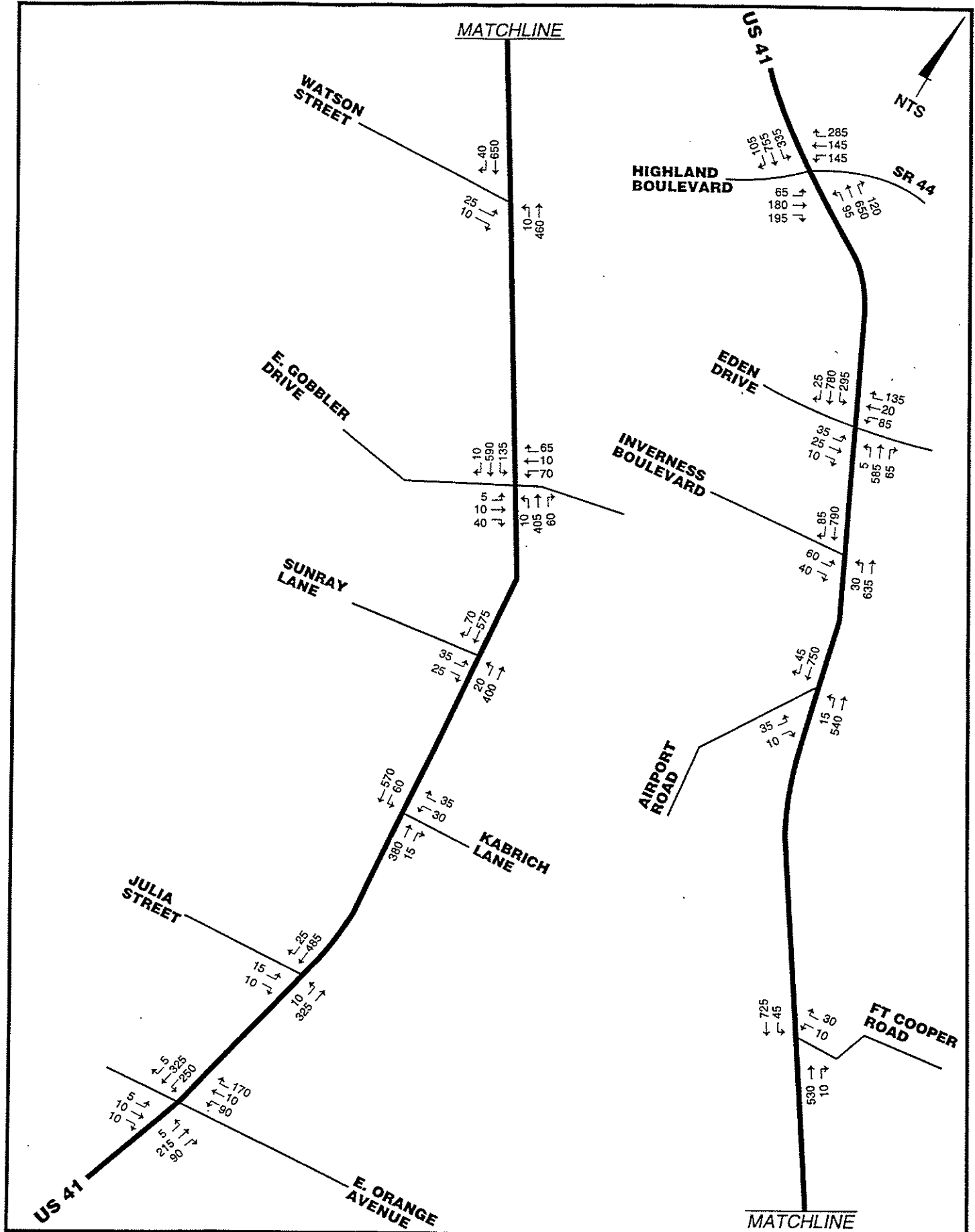




US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

YEAR 2020 DESIGN HOUR
 INTERSECTION TURNING MOVEMENT VOLUMES

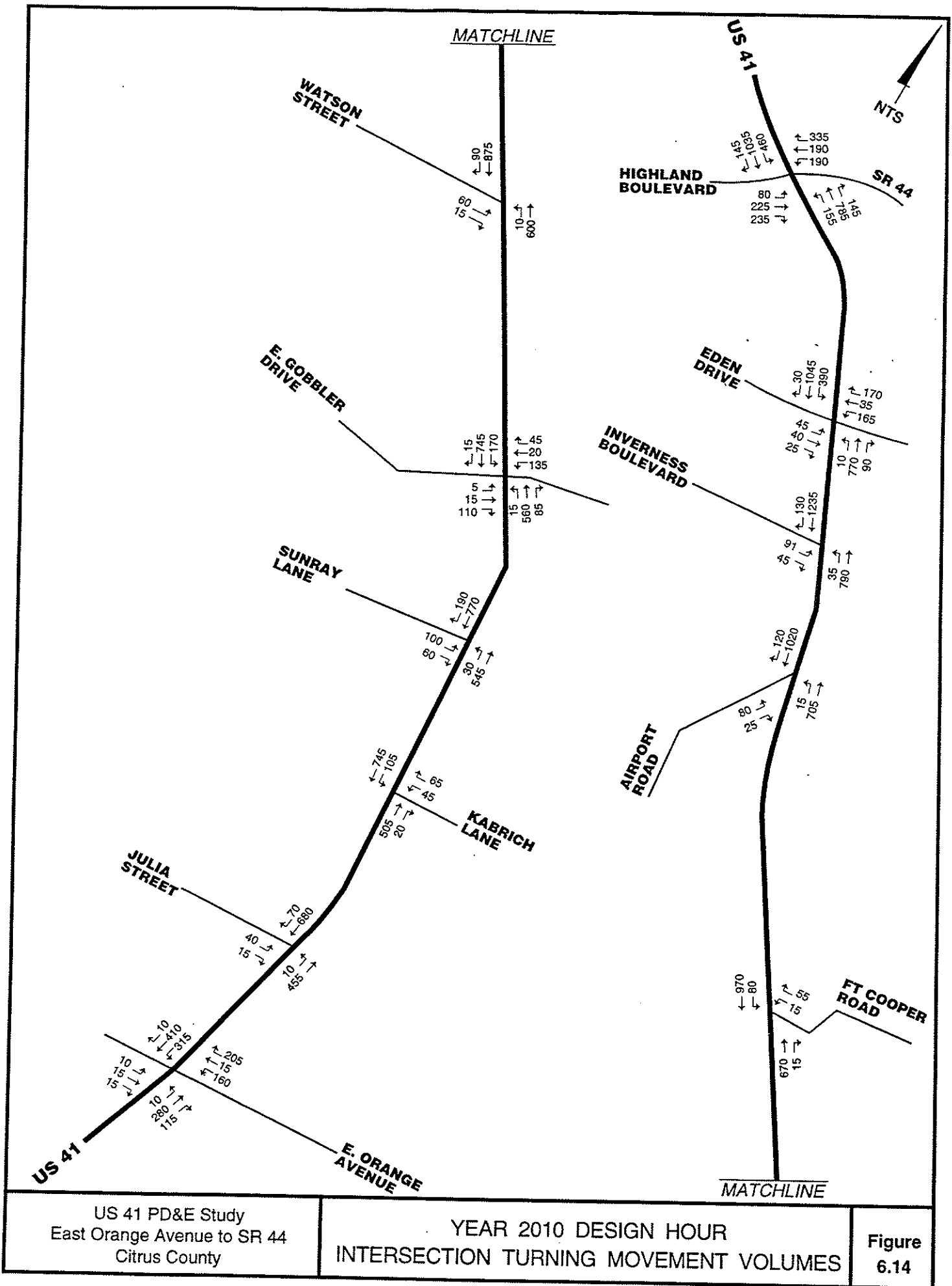
Figure 6.12



US 41 PD&E Study
East Orange Avenue to SR 44
Citrus County

YEAR 2000 DESIGN HOUR
INTERSECTION TURNING MOVEMENT VOLUMES

Figure
6.13



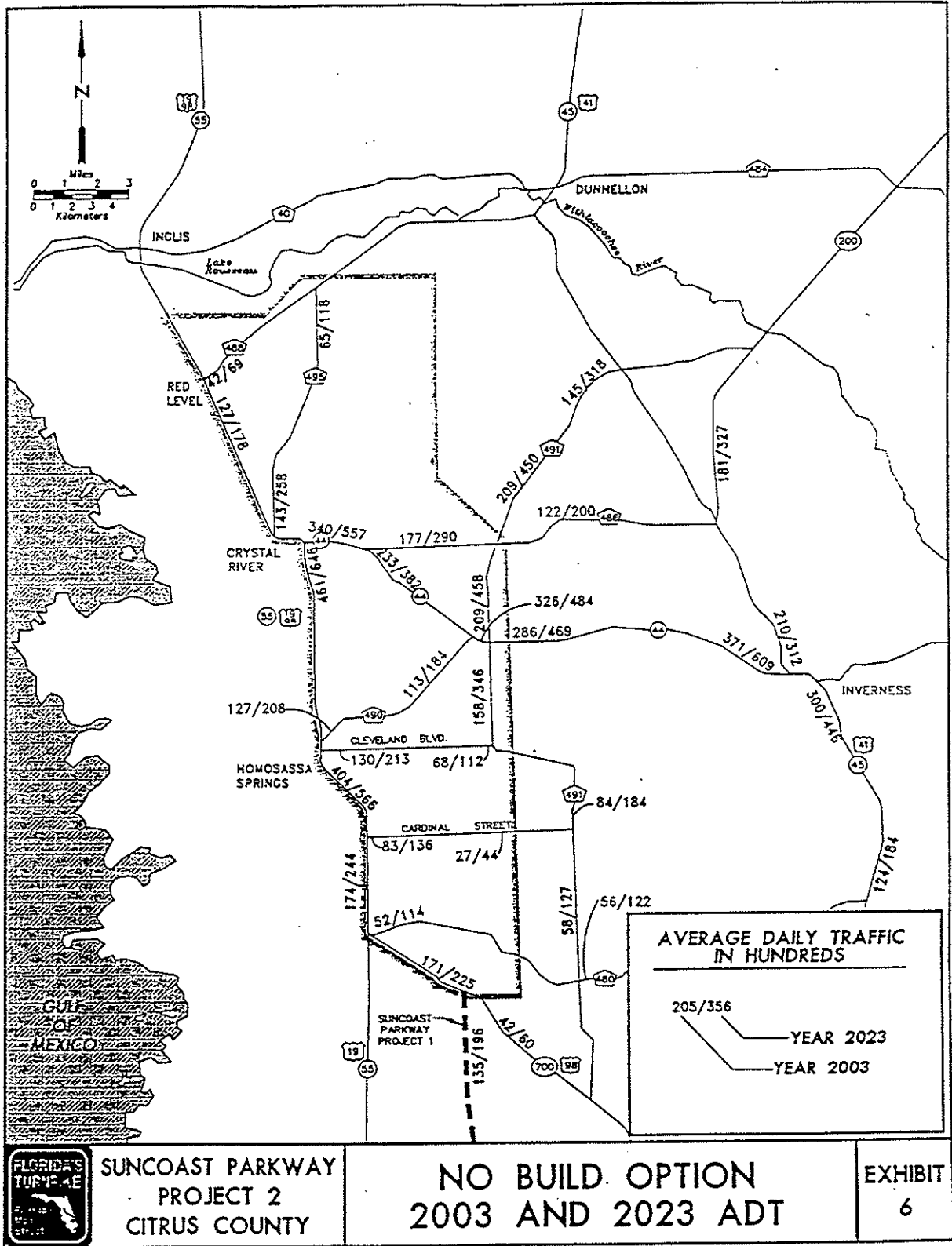


Table 6.6
 Comparison of Model and Historic
 Year 2020 Traffic Volume Projections
 No-Build Alternative

<u>Source of Projection</u>	<u>Year 2020 Projected Volume</u>	
	<u>South of SR 44</u>	<u>South of East Orange Ave</u>
Suncoast Model	41,150	20,284
Historic Trends	<u>54,935</u>	<u>21,123</u>
Percent Difference	32.3%	4.1%

6.3.3 Future Level of Service

Intersection Level of Service

Level of service analyses were conducted for the three existing signalized intersections and eight unsignalized intersections, using the 2020 design hour volumes. The level of service analyses for the signalized intersections were conducted using the HCS procedures from Chapter 9 of the 1994 HCM. The analysis of unsignalized intersections was conducted using the HCS procedures from Chapter 10 of the 1994 HCM. The eight existing stop-sign controlled intersections were analyzed assuming full access median openings (left turn movements permitted from the side streets) and assuming directional median openings (right turn out only from the side streets). The results of the Build Alternative analysis are summarized in Table 6.7, and the results of the No-Build Alternative analysis are summarized in Table 6.8.

As shown in Table 6.7, all seven of the existing stop-sign controlled intersections are projected to operate at LOS F and with full access in the 2020 design year. This results from the failure of the left-turn movements from the side streets because of high through traffic volumes on US 41. Because the left turn volumes from the side streets are relatively low, the high delays (LOS F) for these movements do not significantly impact the overall level of service of these intersections. In addition, the LOS of the left turn movements from the side streets can be improved by the proximity of upstream or downstream signalized intersections that can create gaps in traffic flow on US 41. This is not considered in the HCS module for unsignalized intersections.

Table 6.7

**Results of the 2020 Intersection
Level of Service Analyses
Build Alternative**

Intersection with US 41	Traffic Control	Number of Lanes on US 41	Level of Service ⁽³⁾		
			With Signal	With Side Street Stop ⁽⁴⁾	
				Full Access	Directional Access ⁽⁵⁾
SR 44	Signal ⁽¹⁾	6	C	-	-
E. Eden Dr.	Signal ⁽¹⁾	6	C	-	-
E. Inverness Blvd.	Stop	4	-	F	C
S. Airport Rd.	Stop	4	-	F	C
Ft. Cooper Rd.	Stop	4	-	F	B
Watson St.	Stop	4	-	F	C
E. Gobbler Dr.	Signal ⁽²⁾	4	B	-	-
E. Sunray Ln.	Stop	4	-	F	C
E. Kabrich Ln.	Stop	4	-	F	B
E. Julia St.	Stop	4	-	F	B
E. Orange Ave.	Signal ⁽¹⁾	4	B	-	-

(1) Existing Signal

(2) Existing stop sign control on side street - signal estimated to be needed by year 2020 to accommodate peak hour traffic volumes. However, traffic signal warrants may not be met at this intersection in 2020.

(3) Refer to figure 6.1 for intersection geometry.

(4) LOS for side street only. US 41 would be free flow with LOS C or better. Full access median opening assumed.

(5) Right-turn-in/Right-turn-out only (directional median opening).

Table 6.8
Results of the 2020 Intersection
Level of Service Analyses
No-Build Alternative

Intersection with US 41	Existing Traffic Control	Number of Lanes on US 41	Level of Service
SR 44	Signal	2	F
E. Eden Dr.	Signal	2	F
E. Inverness Blvd.	Stop	2	F ⁽¹⁾
S. Airport Rd.	Stop	2	F ⁽¹⁾
Ft. Cooper Rd.	Stop	2	F ⁽¹⁾
Watson St.	Stop	2	F ⁽¹⁾
E. Gobbler Dr.	Stop	2	F ⁽¹⁾
E. Sunray Ln.	Stop	2	F ⁽¹⁾
E. Kabrich Ln.	Stop	2	F ⁽¹⁾
E. Julia St.	Stop	2	F ⁽¹⁾
E. Orange Ave.	Signal	2	F

⁽¹⁾ LOS for side street only. US 41 would be free flow, restrained only by link LOS conditions, see Table 6.9.

An LOS F for left-turn movements from stop-sign controlled side streets can indicate that the safety of these movements is questionable. However, an accurate determination of the safety of these movements must be made through an analysis of actual operating conditions. Therefore, the stop-sign controlled intersections should be constructed with full median openings, and monitored as traffic volumes increase, to determine if safety and/or operational considerations warrant revisions to the median openings at some point between the opening year and the design year.

Link Level of Service

Link level of service analyses for the ten roadway segments within the study area were conducted using the 2020 design hour directional link traffic volumes (illustrated on Figure 6.11), and the FDOT Generalized Peak Hour Directional Volume Table, (from the FDOT manual, Florida Level of Service Standards and Guidelines Manual for Planning, April 12, 1992), to determine the number of lanes that will be required on US 41 to provide LOS C, at a minimum. (The existing roadway geometry illustrated on Figure 6.1 was used for the No-Build analysis.) The results of this link level of service analysis of 2020 projected traffic volumes are summarized on Table 6.9 for the Build and No-Build Alternatives. The results summarized in Table 6.9 show that unacceptable levels of service (LOS F) are projected to occur along US 41 in 2020 with the No-Build Alternative.

6.3.4 Future Roadway and Traffic Control Requirements

Year 2020 Lane Requirements on US 41

Figure 6.16 illustrates the laneage estimated to be required to provide level of service C or better on US 41 within the study area in the 2020 design year for the Build Alternative. This indicates the need for a four-lane facility from East Orange Avenue to East Eden Drive, and a six-lane facility from East Eden Drive to SR 44.

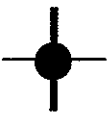

Year 2020 Intersection Geometry Requirements

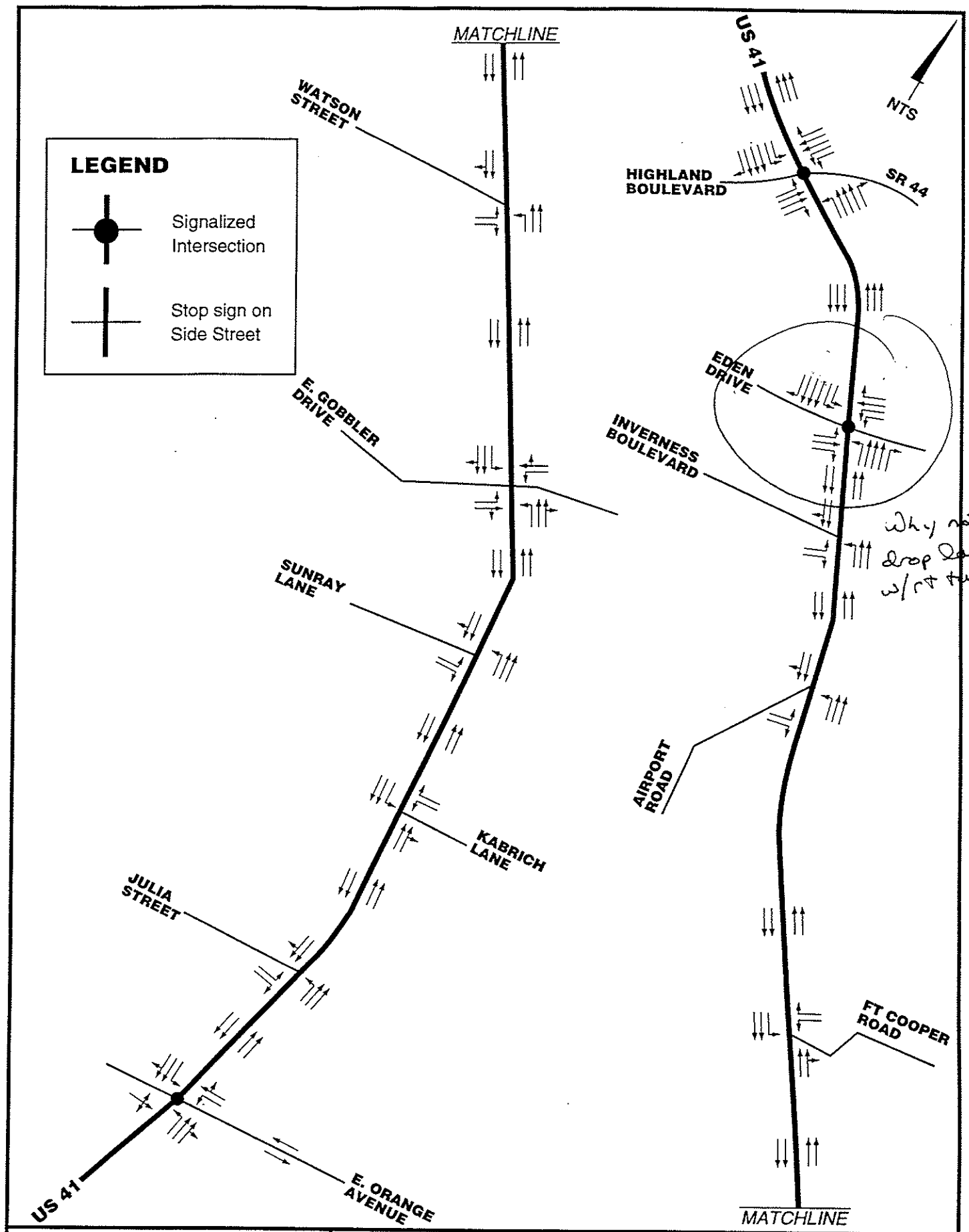
Figure 6.16 defines the intersection lane geometry needed at each of the eleven intersections to achieve level of service C, at minimum, for projected 2020 design hour traffic volumes.

Table 6.9
Results of Link Level of Service Analysis
Build and No-Build Alternatives

US 41 From	To	Dir.	Design Hr. Vol.	LOS C Capacity		No. of Lanes on US 41		Level of Service	
				Build	No-Build	Build	No-Build	Build	No-Build
SR 44	E. Eden Dr.	N	1220	2330	710	6	2	A	F
		S	1830	2330	710	6	2	B	F
E. Eden Dr.	E. Inverness Blvd.	N	1075	1790	740	4	2	B	E
		S	1615	1790	740	4	2	C	F
E. Inverness Blvd.	S. Airport Rd.	N	990	1790	740	4	2	B	E
		S	1490	1790	740	4	2	C	F
S. Airport Rd.	Ft. Cooper Rd.	N	890	1790	740	4	2	B	D
		S	1330	1790	740	4	2	B	F
Ft. Cooper Rd.	Watson St.	N	830	1790	740	4	2	B	D
		S	1240	1790	740	4	2	B	F
Watson St.	E. Gobbler Dr.	N	750	1790	740	4	2	B	D
		S	1125	1790	740	4	2	B	F
E. Gobbler Dr.	E. Sunray Ln.	N	850	1790	740	4	2	B	D
		S	1275	1790	740	4	2	B	F
E. Sunray Ln.	E. Kabrich Ln.	N	720	1790	740	4	2	B	C
		S	1070	1790	740	4	2	B	E
E. Kabrich Ln.	E. Julia St.	N	650	1790	740	4	2	B	C
		S	980	1790	740	4	2	B	E
E. Julia St.	E. Orange Ave.	N	600	1790	740	4	2	B	C
		S	890	1790	740	4	2	B	D

LEGEND

-  Signalized Intersection
-  Stop sign on Side Street



US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

YEAR 2020
 LANE REQUIREMENTS

Figure
 6.16

7.0 CORRIDOR ANALYSIS

This section summarizes the corridor analysis performed for the study. It contains a description of potential corridors, the analysis and evaluation of each corridor's viability as an effective corridor, and a recommendation of the most feasible corridor for further study.

7.1 IDENTIFICATION OF POTENTIAL CORRIDORS

There are no continuous or major parallel north-south roads in the immediate vicinity that could be improved to accommodate the projected traffic growth on US 41. The possibility of a completely new corridor to the east of US 41 is not feasible because of the Tsala-Apopka chain of lakes and the high level of residential development. The prospect of a new corridor to the west of US 41 was investigated concurrently with feasibility analyses of improving the existing corridor.

7.2 DESCRIPTION OF ALTERNATE CORRIDORS

The two corridors examined were:

1. the existing corridor and
2. a new corridor to the west of US 41, beginning approximately 1.2 km (0.7 mi) south of East Orange Avenue to converge with the existing facility just south of the airport.

The existing corridor would be widened from an undivided two-lane facility to a divided four-lane roadway between East Orange Avenue and East Eden Drive. From East Eden Drive to SR 44, a six-lane divided roadway is proposed. An urban typical section would be used in the Floral City area (from East Orange Avenue to East Julia Street). Both an urban and suburban typical section were evaluated for the segment from East Julia Street to SR 44. The urban typical section would require 30.5 m (100 ft) of right-of-way and the suburban typical section would require between 53.7 m (176 ft) and 60.9 m (200 ft) of right-of-way (typical sections are more completely described in Section 8.0).

The new corridor would involve construction on a new alignment from 1219.2 m (4000 ft) south of East Orange Avenue to just south of the Inverness Municipal Airport. Due to the adjacent land uses, it was determined that a rural typical section would be appropriate within this new corridor. The proposed typical would require 61 m (200 ft) of right-of-way.

The new segment of the corridor would be situated approximately 0.8 km (0.5 mi) west of and parallel to the existing roadway. From the Inverness Municipal Airport to the northern terminus of the proposed project, both alternatives would share the existing US 41 alignment.

Conditions of each corridor are more fully described below.

7.2.1 Existing Corridor

Land uses fronting the existing corridor include commercial at the termini and transition to mixed use along the central section of the project. Mixed uses include commercial, light industrial, institutional, public/semi-public, recreational, and residential land uses. Land use in the project area is more completely discussed in Section 4.2.1.

Section 106 and Section 4(f) surveys have been performed for the existing corridor. The Withlacoochee State Trail and Fort Cooper State Park are recreational facilities in the project vicinity. Neither of these properties would be directly affected. No Section 106 properties on or eligible for listing in the National Register of Historic Places were identified in the project area.

Right-of-way along the existing corridor ranges from 15.2 m (50 ft) to 21.3 m (70 ft) from south of East Orange Avenue to East Jane Lane. From East Jane Lane to Relief Street, the existing right-of-way is 30.5 m (100 ft). From Relief Street to SR 44, the existing right-of-way is 61 m (200 ft). Refer to Figure 4.1 for a depiction of the existing typical sections and right-of-way widths.

Typical sections analyzed for use along the existing corridor were urban and suburban, requiring between 30.5 m (100 ft) and 53.6 m (176 ft) of right-of-way.

There was some concern early in the study that widening the existing facility would impact the Hills of Rest Cemetery in Floral City, because of the existing narrow right-of-way of approximately 19.8 m (65 ft). Further study indicated that use of an urban typical section in this segment of US 41 would not impact the cemetery.

The existing corridor has no provisions for either bicyclists or pedestrians along the roadway. Both the urban and suburban typical sections proposed include design elements that would improve the safety of the existing roadway. Both typical sections propose a raised median which would provide a refuge for pedestrians crossing the roadway as well as providing a barrier between opposing travel lanes. The urban section includes sidewalks and bike lanes.

Currently, the posted speed limit for the majority of the project is 55 mph (90 km/h).

Design speed for the urban typical section is 45 mph (70 km/h). Posted speed limit will range from 35 mph to 45 mph (55 km/h to 70 km/h).

Land uses along the existing US 41 corridor transition from commercial at the ends of the study limits (Inverness and Floral City) to mixed use along the central segment. Mixed uses include residential (low and medium density), commercial and industrial. A small portion of the land use is institutional/public/semi-public, and transportation/communication/utilities.

Future land use is anticipated to transition from open space to low and medium density residential areas and commercial land use in conjunction with the ongoing growth and economic development in Citrus County. By utilizing the existing corridor and improving US 41, there will be few changes in land use and development patterns.

Existing neighborhood boundaries defined by the existing corridor and community cohesion will not be impacted by improvements. The existing corridor will require a minimal amount of right-of-way acquisition in comparison to a facility developed on a new alignment. Relocations and business damages will result from widening the existing facility.

Environmental impacts are expected to be minor because of the degree of development that already exists along the corridor. There is one disturbed wetland that may be affected by the widening of the existing roadway. The site is associated with Magnolia Lake and is within and adjacent to the western right-of-way of US 41.

7.2.2 New Corridor

Land uses along the route of the new corridor include residential, agricultural, open space, and public land uses. Single family homes are situated to the east of the proposed corridor at its southern terminus. The future land use for the land west of US 41 is low density residential. Land use changes are likely to occur as a result of this corridor since a new roadway would improve access to undeveloped land.

From south to north, the corridor traverses agricultural fields, pristine natural communities and other open areas. At its northern terminus, this alignment would traverse the Citrus County Wastewater Treatment Plant's effluent spray field, southeast of the airport. Section 106 and Section 4(f) resources are not anticipated to be encountered along the alternative corridor.

Based on the analysis of existing traffic counts and projections, approximately 50 percent of traffic on US 41 within the project limits is through traffic. Thus, reduced congestion on the existing roadway would be achieved by routing through traffic on a

new corridor. The reduced number of vehicles would allow for improved ingress and egress to homes and businesses. Conversely, routing 50 percent of the traffic away from US 41 may be financially damaging to businesses on the existing facility.

Several socioeconomic and environmental issues are associated with the new corridor. Three residential and one business relocation would be required. The proposed alternative corridor traverses improved pasture and rural land at its southern end and undeveloped forested land to the north. Habitat types in the forested area are sandhill and oak hardwood hammock, which provide substantial habitat for a variety of wildlife. Potential for the presence of protected plant and animal species is high because of the undisturbed and relatively pristine condition of this area and the proximity of Fort Cooper State Park and the Withlacoochee State Forest.

Habitat for Sherman's fox squirrel exists in the new corridor area, and the squirrel is likely to be present. Sherman's fox squirrel (*Sciurus niger shermani*), is listed by the Florida Game and Freshwater Fish Commission (FGFWFC) as a species of special concern (SSC), and is under review by the US Fish and Wildlife Service (USFWS). Other species that may be present within the corridor area are the eastern indigo snake (*Drymarchon corais couperi*; threatened species, FGFWFC and USFWS), the Florida pine snake (*Pituophis melanoleucus mugitus*; SSC, FGFWFC), and the short tailed snake (*Stilosoma extenuatum*; threatened, FGFWFC).

Field surveys observed several active gopher tortoise (*Gopherus polyphemus*; SSC, FGFWFC) burrows. Many protected species are known to be commensal with the gopher tortoise, and the presence of gopher tortoises implies potential occurrence of these commensals. The gopher frog (*Rana capito aesopus*; SSC, FGFWFC) and the eastern indigo snake are commensal species that may be present.

Mature pine trees are rare, probably due to past logging activity, but the area may provide potential foraging habitat for the red-cockaded woodpecker (*Picoides borealis*). USFWS lists the red-cockaded woodpecker as endangered; however, none have been observed in the area.

Small sinkhole and depression isolated wetlands are present in the corridor. The Soil Survey of Citrus County maps the depression wetlands as having hydric soils; however, ground truthing revealed upland vegetation as being commonly present in the majority of these areas. The Florida Land Use/Land Cover Classification System (FLUCCS) classifies the corridor wetlands as hardwood forested and forested mixed wetlands. The new corridor could potentially impact areas classified as wetlands.

The area proposed for the new corridor is large, relatively pristine and currently supports healthy ecological relationships between ecosystems (for example, wetlands

and uplands). Direct impacts as a result of development of the alternative corridor will be to upland habitat (oak hardwood hammocks) and some wetland areas. Wildlife may suffer impacts from habitat loss. The Withlacoochee State Forest is located just to the west of the study area, and although CR 581 lies between the state forest and the new corridor area, wildlife movement and migration are probable. Bisecting the area by another roadway, at the least, would impose barriers to wildlife and would likely separate existing habitats creating additional fragmentation of wildlife habitat.

Impacts to the physical environment resulting from a new corridor include increased noise levels and changes to air quality. Noise sensitive sites include single family residences composed largely of mobile homes situated to the east of the proposed corridor. However, some of these noise sensitive sites are currently affected by noise from the existing alignment.

The new corridor would not provide as direct a route between Floral City and Inverness as the existing corridor. For example, westbound motorists on East Orange Avenue would have to proceed south on US 41 to access the bypass route in order to travel north.

During construction, maintenance of traffic would be easier for on a new corridor since the new facility would be constructed largely without disruption to the existing roadway.

7.3 SELECTION OF PREFERRED CORRIDOR

The corridor analysis assumed desirable standards for roadway improvements to provide a more accurate determination of impacts. The new corridor would be less expensive than the existing in terms of right-of-way costs, but not by a significant amount. However, after analysis of a wide array of considerations such as environmental issues, construction, and engineering, improving the existing corridor is preferable overall, as discussed below and in Table 7.1.

The existing US 41 corridor appears to be the most practical corridor for improvements. The majority of the corridor already has the necessary *minimum* right-of-way width of 30.5 m (100 ft) to accommodate an urban typical section, although acquisition of additional right-of-way would be required along some portions of the roadway for the wider suburban typical section.

Fewer land use changes would be incurred by improving the existing corridor since the new corridor may lead to land use changes. Currently there is very little development in the vicinity of the new corridor, but a new roadway has the potential to encourage new growth and development along the new corridor. Future land use plans indicate that

Table 7.1
Corridor Evaluation Matrix

Estimated Costs		NEW CORRIDOR	
ITEM	EXISTING CORRIDOR	Typical Section	Cost
Estimated Costs (in millions)	Urban		\$11.50
	Suburban		
Construction	Urban		\$14.63
	Suburban		\$11.30
Right-of-way	Urban		\$5.99
	Suburban		\$27.20
Engineering	Urban		\$1.54
	Suburban		\$1.10
ESTIMATED TOTAL COSTS			\$27.7-36.7
Anticipated Environmental Affects		NEW CORRIDOR	
ITEM	EXISTING CORRIDOR	Typical Section	Cost
Land Use	No change		May serve as a catalyst to growth
Air	Increased level of service will reduce traffic congestion		Change in ambient air quality would occur
Noise	Minimal increase at certain receptors		Noise levels would increase for those areas adjacent to the road
Habitat	Minimal remaining natural habitat		Corridor would traverse valuable wildlife habitat
Wetlands	Minimal impacts		Minimal Impacts (Slightly higher than existing)
Section 4(f) and 106 Involvement	None		None

with or without improvements to the existing US 41, land uses are not expected to change notably.

Improving the existing corridor would involve minimal environmental impacts. Very little natural habitat remains along the existing corridor, whereas land proposed for the new corridor is almost wholly undeveloped and unsegmented. From a wildlife viewpoint, there is little restriction of movement between wetland and upland areas.

A new roadway would cause fragmentation of habitat areas and could potentially sever wildlife corridors between upland and wetland habitats. Improvement of the existing corridor would minimize habitat segmentation and disturbance relative to constructing a new corridor.

Existing travel patterns would be maintained by improving the existing facility and would preserve US 41 as the most direct route between Floral City and Inverness. Along the US 41 corridor, existing businesses may suffer loss of economic activity if a bypass route were constructed. A new corridor would divert a large number of vehicles away from existing businesses.

A new roadway would subject an existing area with low noise levels to increased noise levels. Noise levels along the existing corridor would not increase greatly as a result of proposed improvements.

As a result of the analysis of potential impacts and the above discussion, it is concluded that the existing US 41 corridor is the most viable corridor.

8.0 ALTERNATIVE ALIGNMENT ANALYSIS

A No-Build Alternative, a Transportation System Management (TSM) Alternative, five build alternatives, and one sub-alternative were developed and analyzed in the PD&E study process. Each is described in this section.

8.1 NO-BUILD ALTERNATIVE

Under the No-Build Alternative, no action would be taken with respect to improving US 41. The advantages of the No-Build Alternative include:

- No right-of-way acquisition;
- No construction costs;
- No relocations;
- No environmental impacts;
- No inconveniences to the motoring public due to construction; and
- No inconveniences to the adjacent property owners due to construction.

The No-Build Alternative would have no provisions to accommodate the anticipated growth in traffic volumes. Without improvements, US 41 would become congested, fail to meet minimum levels of service (LOS) along all segments, and eventually cause a decrease in the existing air quality. Traffic delays would be extended and accident rates would increase. There would also be costs associated with the maintenance of an under-sized roadway facility.

8.2 TRANSPORTATION SYSTEM MANAGEMENT ALTERNATIVE

The TSM Alternative involves minor intersection improvements, increased turn lane storage, improvement of existing lane configuration marking, and signalization sequencing. The Traffic Technical Memorandum prepared for this project documented that unacceptable levels of service are projected to occur along US 41 in the year 2010 with the TSM Alternative. All of the existing signalized intersections are projected to operate at LOS F in the year 2020 with volume-to-capacity ratios exceeding 1.00. Queuing problems would be expected to occur at numerous locations along US 41 with the TSM Alternative. The TSM Alternative has, therefore, been discounted as a viable alternative.

8.3 BUILD ALTERNATIVES

Five build alternatives and one sub-alternative were developed and are described in this section. The alternatives were the result of combinations of typical sections within the roadway segments. Preliminary alternatives included two urban and two suburban typical sections. Alignments considered for the project all follow the existing US 41 alignment, with the exception of two short segments of new alignment in the sub-alternative within Segment A. This sub-alternative is discussed in Section 8.3.3, Identification of Design Alternatives.

Right-of-way (ROW) impacts resulting from typical section and alignment alternatives are an important factor in the determination of viable alternatives for the project. Right-of-way impacts were determined for each alignment alternative (refer to Section 8.5).

8.3.1 Project Study Segments

The length of the project is approximately 10.1 km (6.3 mi). Based on typical section options and adjacent land use, the project was divided into three segments, as illustrated on Figure 8.1.

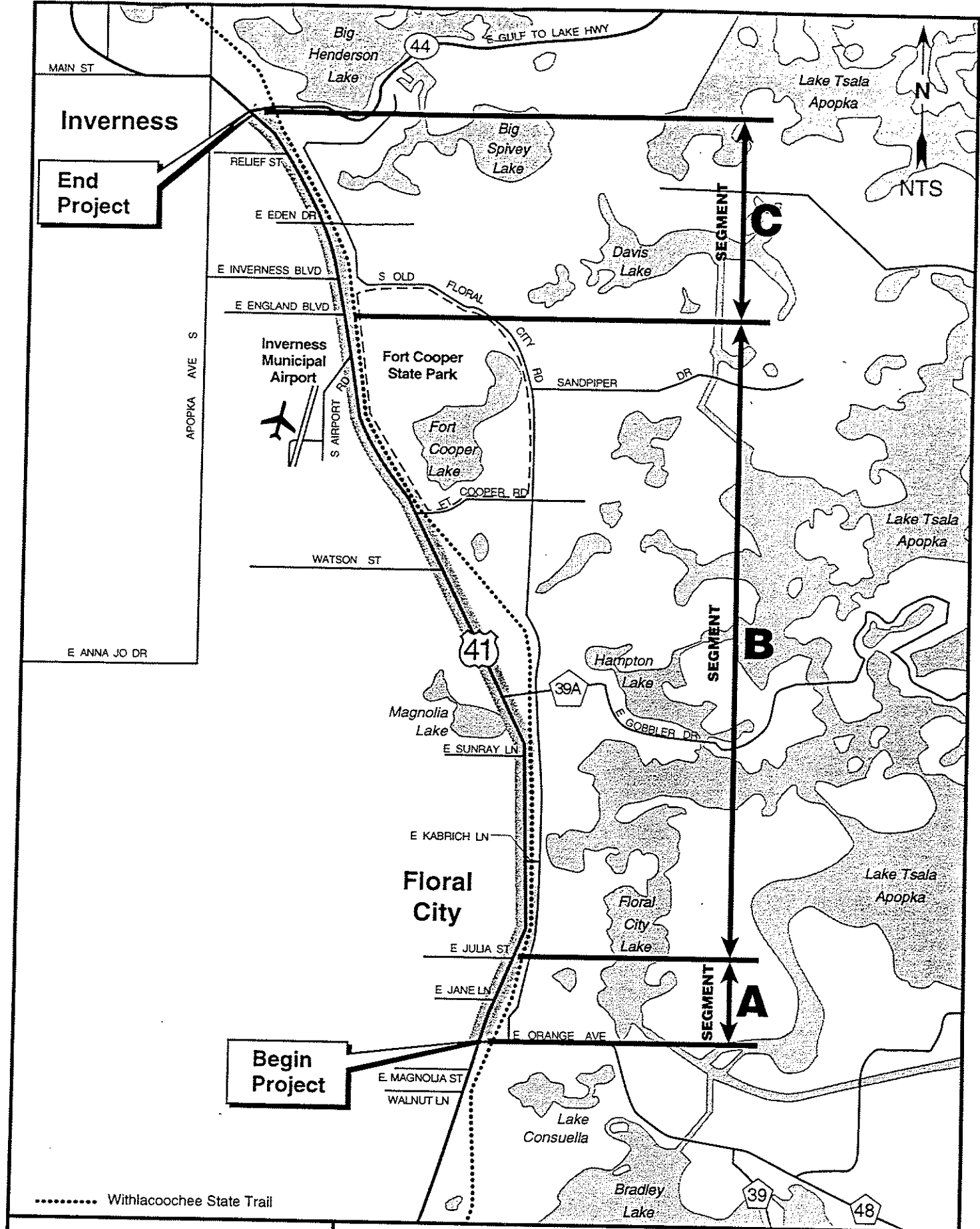
Segment A: US 41 from East Orange Avenue north to East Julia Street. This segment is characterized by primarily commercial land use.

Segment B: US 41 from East Julia Street north to East England Boulevard, approximately 1,112.5 m (3,650 ft) south of East Eden Drive. This segment is characterized primarily by mixed land use (low density residential and commercial).

Segment C: US 41 from East England Boulevard north to SR 44. This segment is characterized by commercial land use.

8.3.2 Typical Sections

A review of the existing and future traffic volumes and land uses indicated that the existing facility will need to be improved to four lanes from East Orange Avenue north to East Eden Drive (Segment A, Segment B, and part of Segment C). The typical section will increase to six lanes from East Eden Drive to SR 44 (remainder of Segment C) because of forecasted traffic demands. To develop the five build alternatives, the typical sections were used in various combinations in the three segments (for example urban vs. suburban, and four lanes vs. six lanes).



US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

STUDY SEGMENTS

Figure
 8.1

The four typical sections are defined below and illustrated on Figures 8.2 and 8.3.

1. Four-lane urban, see Figure 8.2

- two 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalks on both sides
- 3.5 m (11.6 ft) border width
- 70 km/h (45 mph) design speed
- curb and gutter
- 30.5 m (100 ft) minimum right-of-way

2. Six-lane urban, see Figure 8.2

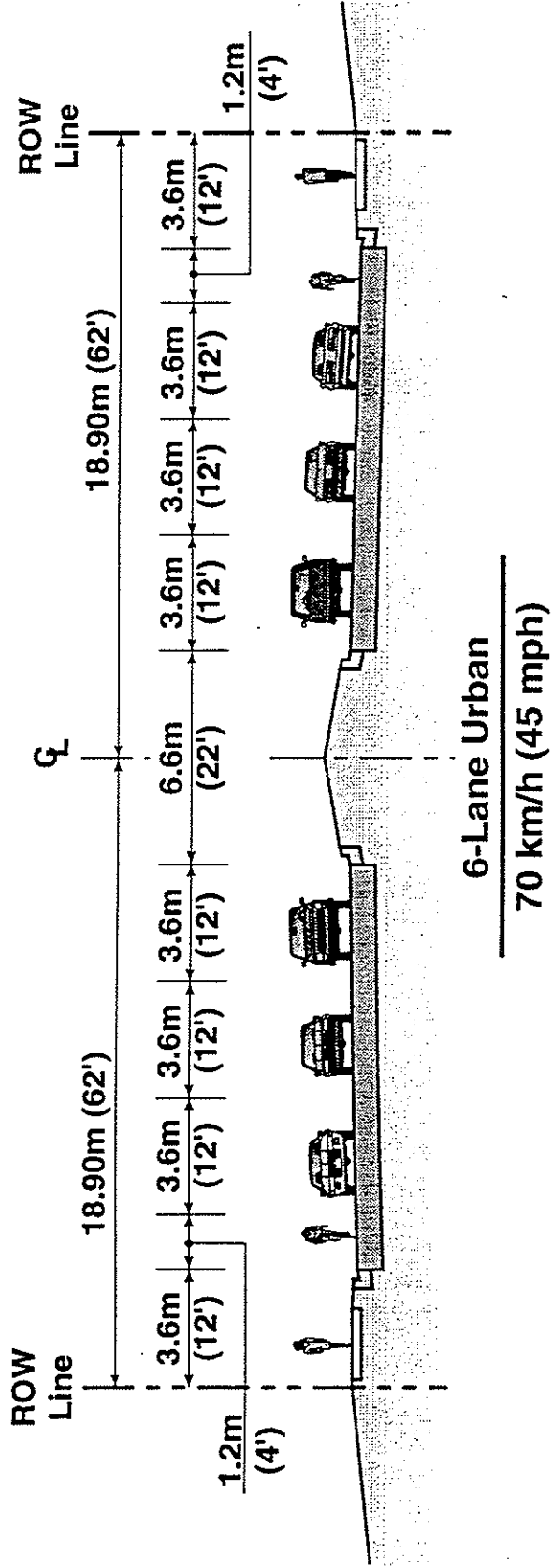
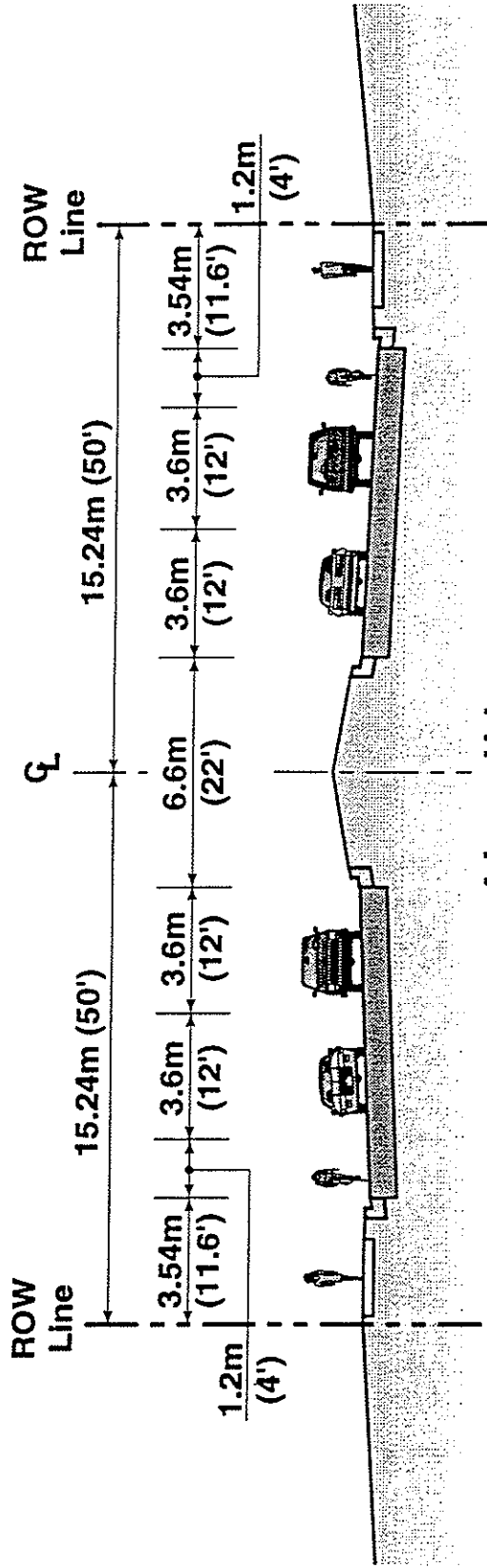
- three 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalk on both sides
- 3.6 m (12 ft) border width
- 70 km/h (45 mph) design speed
- curb and gutter
- 37.8 m (124 ft) minimum right-of-way

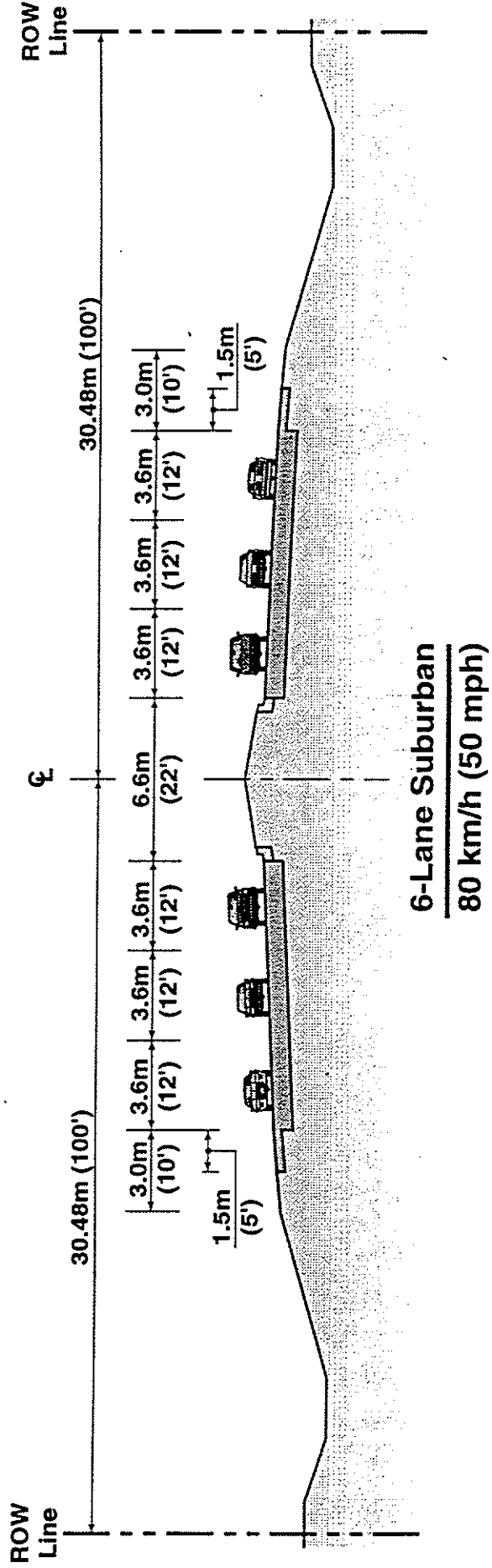
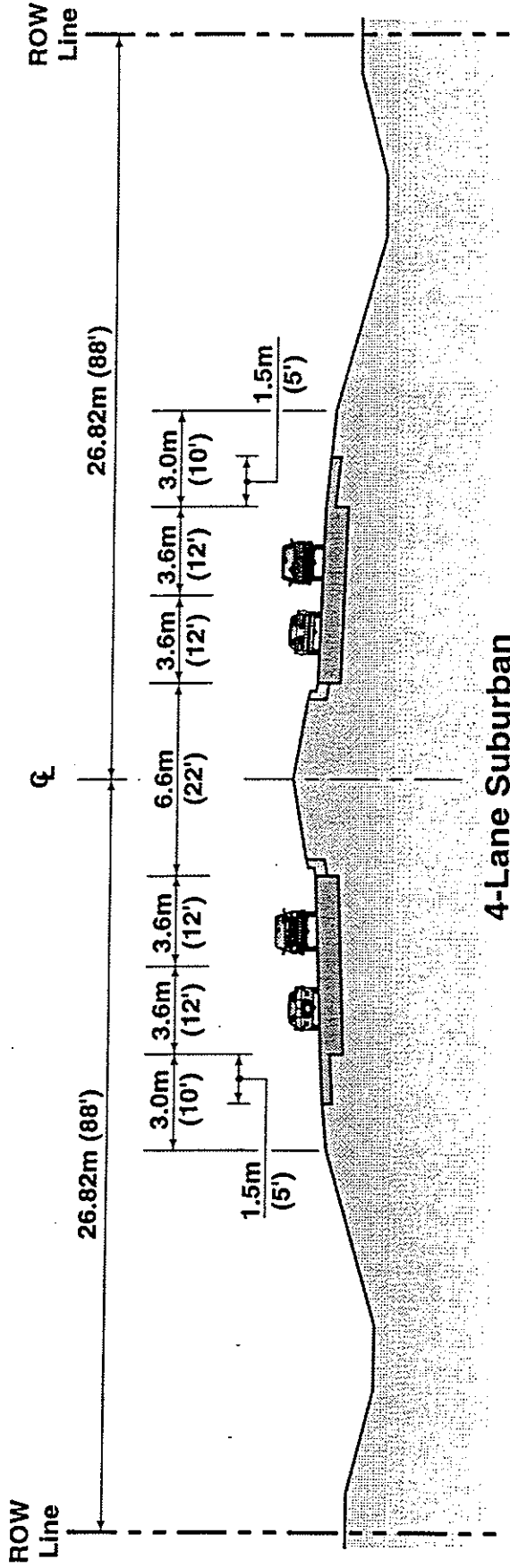
3. Four-lane suburban, see Figure 8.3

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width
- 80 km/h (50 mph) design speed
- 53.6 m (176 ft) right-of-way
- road side swales

4. Six-lane suburban, see Figure 8.3

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width
- 80 km/h (50 mph) design speed
- road side swales
- 60.9 m (200 ft) minimum right-of-way





8.3.3 Identification of Design Alternatives

Five design alternatives were developed for the study. The alternatives were derived using the four typical sections described above, and by widening the roadway to the west, east, or centering within the existing right-of-way. The sub-alternative was developed as an option for Segment A (see description below). Table 8.1 identifies each design alternative by widening option and typical section used within each segment.

Table 8.1
Design Alternatives

Alternative	Segment A	Segment B	Segment C	
	E. Orange Ave. to E. Julia St.	E. Julia St. to E. England Blvd.	E. England Blvd. to E. Eden Dr.	E. Eden Dr. to SR 44
1	Urban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
2	Urban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (6-lane)
3	Urban-West (4-lane)	Suburban-East (4-lane)	Suburban-East (4-lane)	Suburban-East (6-lane)
4	Urban-West (4-lane)	Suburban-West (4-lane)	Urban-Center (4-lane)	Urban Center (6-lane)
5	Urban-West (4-lane)	Suburban-East (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
Sub-Alternative*	Bifurcated Urban-West (4-lane total)			

*The sub-alternative can be used only in Segment A and involves a bifurcated roadway in Floral City. This sub-alternative could be used in Segment A as part of any of the five alternatives. See text description.

Segment A As previously discussed, existing right-of-way in Segment A varies from 15.2 m to 21.3 m (50 ft to 70 ft). Land use fronting US 41 in Segment A is predominantly commercial. Active businesses are found on both the east and west

sides of US 41, and one residence exists on the west side of US 41 in this segment. Business development is more concentrated on the east side of US 41.

Use of an urban typical section and widening the road to the west would minimize the number of relocations in Segment A because ROW would need to be acquired on the western side of the road only. Widening US 41 to the east side in Segment A was analyzed, and it was found that because of the existing alignment, ROW would need to be acquired to both the east and west sides to accommodate an eastern shift. ROW cost for an eastern shift in Segment A was estimated to be \$3.0 million, while ROW cost for a western shift was estimated at \$1.9 million.

A suburban typical section was not analyzed for Segment A. Existing ROW is constrained and a suburban typical section would require acquisition of up to 38.4 m (126 ft) in Segment A, which would severely disrupt existing land uses. Additionally, present and future zoning is commercial and an urban typical section is more appropriate for Segment A.

Sub-Alternative - A sub-alternative within Segment A proposes that US 41 bifurcate in the vicinity of the East Orange Avenue and US 41 intersection. This sub-alternative proposes a southbound two-lane, one-way road diverging from the existing alignment to the west just south of the Hills of Rest Cemetery. A short segment of new alignment would connect to Central Street and continue south to converge with US 41 approximately 137.2 m (450 ft) south of Magnolia Drive near Walnut Lane, south of the East Orange Avenue/US 41 intersection. The two northbound travel lanes would follow the existing US 41 alignment. This sub-alternative can be used in any of the five alternatives instead of four-laning the existing roadway in Segment A. Figure 8.4 is an aerial view of the sub-alternative. Figure 8.5 is an aerial view of the four-lane urban typical section at this intersection. Figure 8.6 is a typical cross section of the sub-alternative.

The sub-alternative was developed at the request of a special-interest group in Floral City. The group, the Floral City Heritage Council, a committee of the Citrus County Historical Society, Inc., indicated their concern early in the study for nearby old buildings and large old oak trees in the US 41 right-of-way at the Orange Avenue intersection. This alternative would avoid direct impacts to these buildings and the five mature trees.

Through the cultural resources survey, it has been determined that the old buildings at the Orange Avenue/US 41 intersection are not listed nor eligible for listing in the National Register of Historic Places (NRHP). Coordination with the Citrus County Department of Development Services, Division of Planning indicates that for a state

project, no special permit or mitigation is required in conjunction with removal of trees, per the Citrus County Land Development Code.

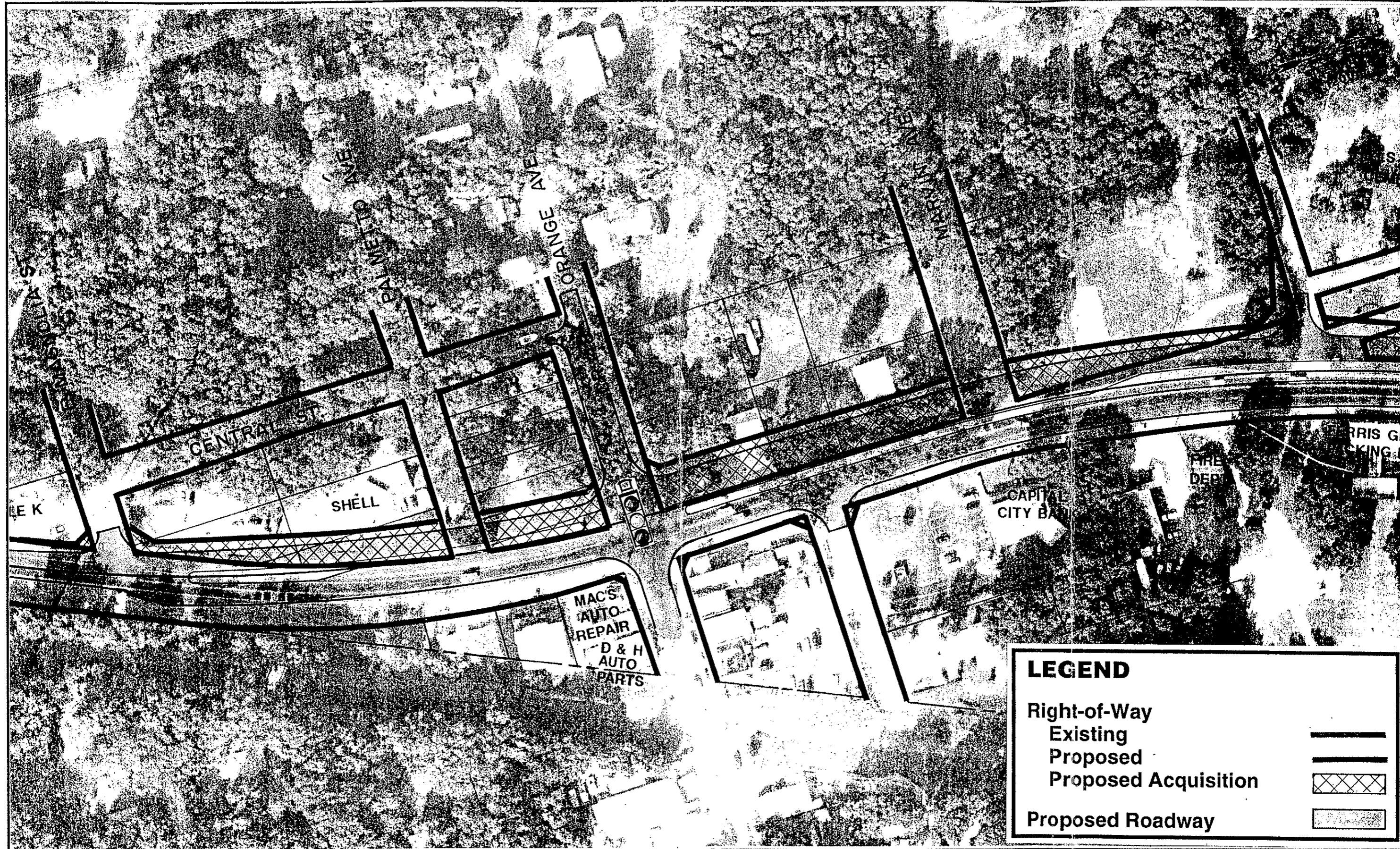
Recent reports indicate that the five large oak trees are "over-mature" live oaks which are beginning to decline, but have relatively healthy canopies. There appears to be no serious problems with the health of the trees. However, in their location, there is a potential for future damage due to utilities installation or maintenance, site development, additional fill, underground tank installations, foundations, paving and general excavation in the root zone. Part of the trees' root zones and drip lines lie within the existing US 41 roadway and right-of-way on one side, and probable future site development on the other. Disturbance within the trees' root zones or drip lines is likely to adversely affect the health of the trees and hasten their decline.

Although the sub-alternative will avoid directly impacting these trees, activities within the root zones or drip lines related to the roadway excavation and construction for the northbound lanes potentially will affect the health of the trees. This alternative protects the trees in the short term only. Additionally, this alternative would also impact 60 smaller trees along the new southbound roadway. Twenty-five of these trees are live oaks, but they are younger than the five mature live oaks at the intersection of US 41 and East Orange Avenue.

The proposed alignment for the sub-alternative would also bring the two southbound lanes of US 41 closer to an historic African-American neighborhood in Floral City than the four-lane urban western shift in Segment A. Although, the neighborhood is not listed nor eligible for listing in the NRHP, it is one of two African-American neighborhoods in Floral City. This alternative would use two short segments of new alignment to connect to Central Street. Central Street is between East Orange Avenue and Magnolia Street, and is currently an unpaved lane.

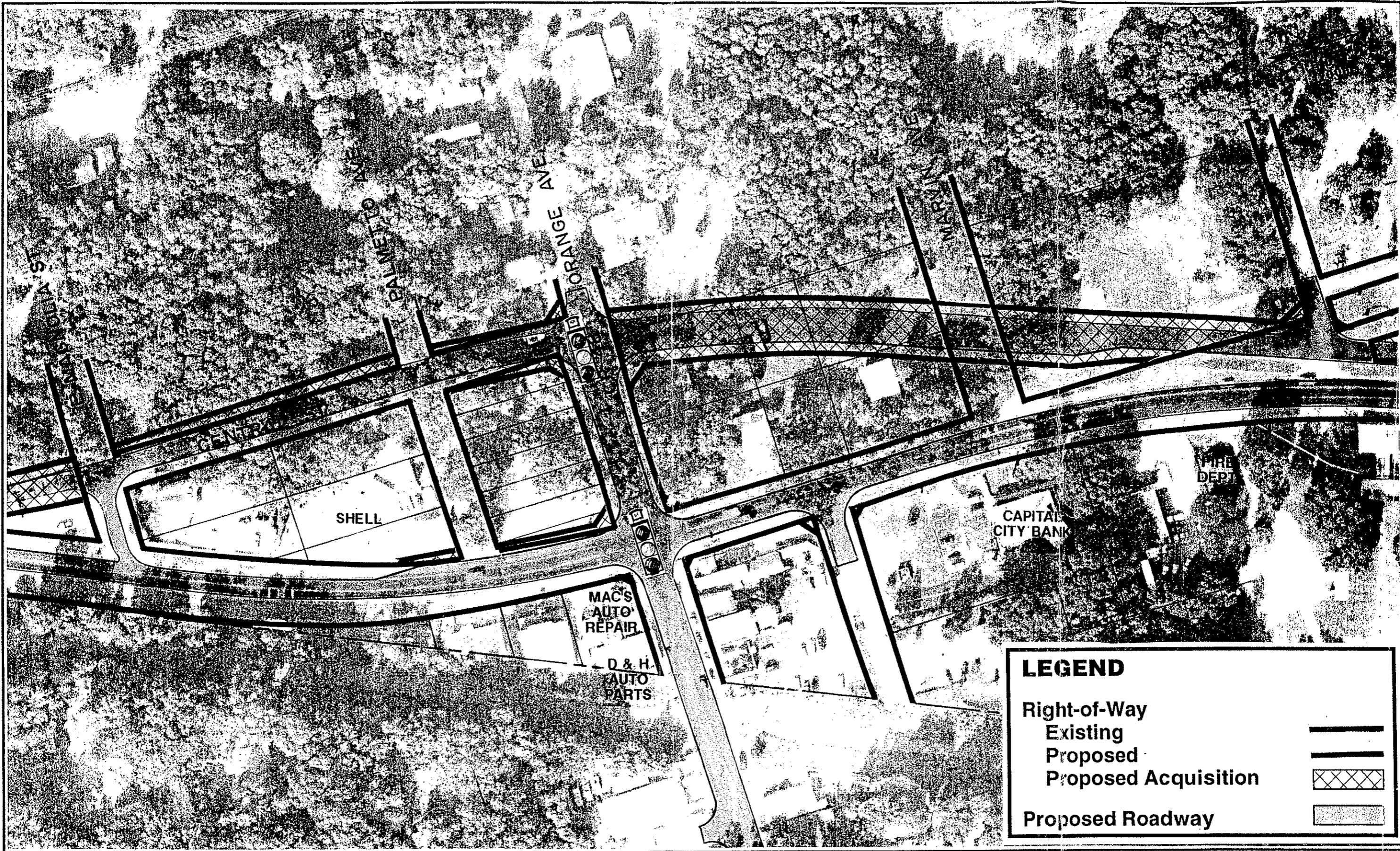
Six residential relocations within the neighborhood are anticipated as a result of the two sections of new alignment. However, the structures themselves are not listed nor eligible for listing in the NRHP. Three business relocations would also be required as a result of this alternative, for a total of nine relocations in Segment A. These relocations are discussed in Section 8.4.

Variation of the Sub-Alternative - A smaller-scale variation of the sub-alternative was examined in an attempt to minimize ROW acquisition and still avoid the oak trees. It was found that more properties would be impacted with the variation than either the urban-west four-lane typical section or the sub-alternative in Segment A, and therefore be significantly more expensive from a right-of-way acquisition aspect. The variation to the sub-alternative was deemed not viable for these reasons and dropped from further evaluation.







LEGEND

Right-of-Way Existing	—————
Right-of-Way Proposed	- - - - -
Proposed Acquisition	XXXXXX
Proposed Roadway	▨▨▨▨



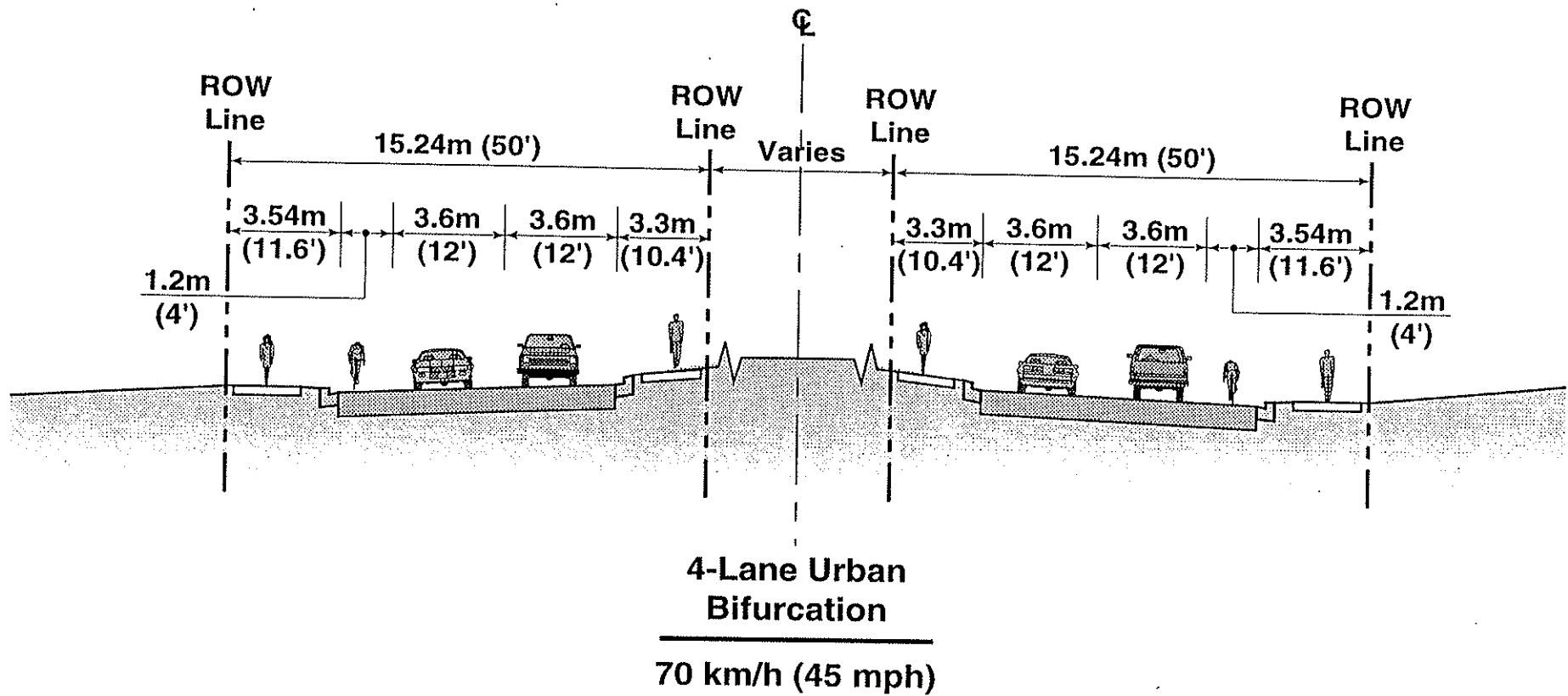
LEGEND

Right-of-Way Existing	
Proposed	
Proposed Acquisition	
Proposed Roadway	

US 41 PD&E Study
 East Orange Avenue to SR 44
 Citrus County

SUB-ALTERNATIVE
 IN SEGMENT A

Figure
 8.4



Segments B and C Because the urban typical section fits within the existing right-of-way in Segments B and C, widening to east or west was not analyzed in these segments. A centered urban typical section will minimize right-of-way acquisition required for the improvements.

A centered suburban alignment would require right-of-way acquisition from both sides of the roadway, which is generally more costly than acquisition of property to one side only. The centered suburban alignment would exceed the existing right-of-way. Therefore, this alternative was not developed or analyzed in anticipation of costs associated with acquiring right-of-way from both sides of US 41.

8.4 VIABLE ALTERNATIVES

Alternatives 1 through 5, the sub-alternative and the No-Build Alternative were considered viable alternatives, and were presented to the public at the Public Workshop on March 25, 1996. Comments received as a result of the workshop indicated a general desire to keep right-of-way acquisition to a minimum. No comments from the Public Workshop were received specifically endorsing the sub-alternative.

Following the public workshop and just prior the First Public Hearing held on April 10, 1997, public support for use of the sub-alternative in conjunction with Alternative 1 was received. This combination of the sub-alternative in Segment A, and Alternative 1 in Segment B and C, is referred to as Alternative 1a.

Section 8.6 describes the development of the preferred alternative; however, following the Public Workshop and as a result of the increased public support, Alternative 1, Alternative 1a, along with the No-Build Alternative were considered viable alternatives to be carried through to the public hearings held.

8.5 ALTERNATIVES EVALUATION MATRIX

An evaluation matrix which includes the No-Build Alternative, the five build alternatives and Alternative 1a is shown in Table 8.2. The matrix quantifies impacts to the human and natural environment and provides a comparison of impacts and costs for the improvements to US 41. The information tabulated in the evaluation matrix quantifies the potential impacts identified in the PD&E Study.

Table 8.2
Evaluation of Impacts by Alternative

Evaluation Factors	Criteria	No-Build	Alternative 1a	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
COSTS¹								
Right-of-Way	\$ in millions	\$ 0	\$ 6.85	\$ 5.99	\$ 27.20	\$ 27.10	\$ 20.10	\$ 20.60
Design	\$ in millions	\$ 0	\$ 1.54	\$ 1.54	\$ 1.21	\$ 1.21	\$ 1.32	\$ 1.32
Construction	\$ in millions	\$ 0	\$ 15.09	\$ 15.07	\$ 12.36	\$ 12.36	\$ 12.80	\$ 12.80
Utility Relocation	\$ in millions	\$ 0	\$ 3.55	\$ 3.55	\$ 3.55	\$ 3.55	\$ 3.55	\$ 3.55
Total	\$ in millions	\$ 0	\$ 27.03	\$ 26.15	\$ 44.32	\$ 44.22	\$ 37.77	\$ 38.27
RELOCATIONS								
Residential	# of parcels	0	6	1	15	12	15	12
Business	# of parcels	0	4	6	71	56	44	41
Total	# of parcels	0	10	7	86	68	59	53
ENVIRONMENTAL IMPACTS								
Wetlands	ha impacted	0	0.02 ha	0.02 ha	0.09 ha	0	0.09 ha	0
Floodplains Encroachment	No. of sites	0	26	26	17	14	19	15
Above NAC*	No. of sites	47	44	47	37	34	37	35
Air Quality Impact	No. of sites	0	0	0	0	0	0	0
Contamination	No. of sites	0	4	4	17	14	14	11
CULTURAL RESOURCES IMPACTS								
Section 4(f) Properties	No. of sites	0	0	0	0	0	0	0
Historic Sites/Districts	No. of sites	0	0	0	0	0	0	0
Archaeological	No. of sites	0	0	0	0	0	0	0

Costs¹ = Costs in 1997 dollars

*NAC = Noise Abatement Criteria

8.5.1 Right-of-Way Cost

Costs for right-of-way acquisition are the least for Alternative 1 because this alternative would require the least amount of property acquisition. Alternative 1a, the sub-alternative would be more costly than the urban four-lane west shift in Segment A by approximately \$860,000.

8.5.2 Design Cost

Design costs for Alternatives 2 and 3 are the least of the five alternatives. Alternative 1 is the most costly of the urban typical sections. The higher cost results from designing curb, gutter, sidewalk, bike lanes, enclosed drainage, etc. which are elements that are not part of a suburban typical section. Alternative 1a, the sub-alternative would be \$2,000 more costly than the urban four-lane west shift in Segment A.

8.5.3 Construction Cost

Construction costs were developed for each roadway typical section. Costs were based on FDOT's 1997 Transportation Costs and did not include those elements that would be the same regardless of the typical section used (i.e., lighting, signalization, etc.). Alternative 1 is the most costly to construct because of the enclosed drainage system which is part of an urban typical section. There is approximately a \$20,000 difference in construction cost for Alternative 1a as compared to Alternative 1, the urban four-lane west shift in Segment A.

8.5.4 Utility Relocation Cost

The estimated cost for utilities based on information received from the utility providers in the study area indicate that all five build alternatives would be equal in terms of utilities relocation costs. All alternatives would require the relocation of utilities within the existing right-of-way estimated to cost \$3.55 million. The sub-alternative would increase the cost by an estimate \$1,500 because of the limited amount of utilities that would be encountered for the bifurcation.

8.5.5 Total Cost Estimate

The total cost estimate indicates that Alternative 1 is the least costly at \$26.15 million. The use of the Alternative 1a would increase the total by about \$880,000.

8.5.6 Relocations

The least amount of relocations would be required for Alternative 1 because right-of-way acquisition is minimized by this alternative. Build Alternatives 2, 3, 4, and 5 would require a total of up to 86 relocations. Alternative 1 would require 1 residential and 6 business relocations for a total of 7. Six of the relocations for Alternative 1 would occur in Segment A where the majority of right-of-way acquisition would be required. Alternative 1a would necessitate a total of 10 relocations for the entire project, nine of which would be in Segment A.

8.6 DEVELOPMENT OF A PREFERRED ALTERNATIVE

8.6.1 Summary

The preferred alternative was developed from analysis of the viable alternatives in conjunction with consideration of the great number of public comments received. Following the Workshop and the lack of public comments received on Alternative 1a, Alternative 1 was taken to the First Public Hearing (April 10, 1997) as the preferred alternative. Due to public input on Alternative 1a, it was shown at the First Public Hearing, although not as the preferred alternative. However, public input received late in the PD&E process (please refer to the Comments and Coordination Report) warranted the need to display both Alternative 1 and 1a as the preferred alternatives at the Second Public Hearing (July 17, 1997).

8.6.2 Description of Preferred Alternative Development

Using traffic data, regional and local traffic patterns, land use and input from the public that attended the Public Workshop, in March 25, 1996 a preferred alternative, Alternative 1, was identified and taken to the First Public Hearing on April 10, 1997.

The following reasons outline the basis for selecting Alternative 1 (an urban four and six-lane roadway) as the preferred alternative.

1. The least amount of environmental impacts and right-of-way acquisition will be incurred through the use of Alternative 1.
2. The overall cost for Alternative 1 is considerably less than the other build alternatives.
3. Public Workshop comments indicated that the majority of local residents preferred Alternative 1.

4. SR 44 will be widened to four lanes which will carry traffic more efficiently to and from I-75. Therefore, it is expected that more motorists will use SR 44 for access to I-75 rather than travel south on US 41. It has been determined that four lanes in Segments A, B and part of C will adequately handle the projected traffic volumes. Thus, there will be no need for a six-lane roadway south of East Eden Drive.
5. Eden Drive brings a significant amount of local traffic to US 41 thus requiring six lanes from Eden Drive north to SR 44. Other reasons include traffic volumes, traffic flow, green time at these two intersections, and their close proximity;
6. It is assumed that the Suncoast Expressway will be built, therefore removing some of the local and regional traffic from US 41;
7. Based on generalized Future Land Use Maps for this area, residential development will occur to the west of US 41. After 2020, it is forecasted that a parallel facility to the west of US 41 will be necessary as another north-south corridor. US 41 could not handle the additional traffic from future residential development due to the existing conditions in the Inverness Central Business District (CBD) as described in 8 below.
8. The Inverness CBD is just north of SR 44 (just north of the project limits). US 41 through the CBD is very congested, as this area is part of an historic district. Traffic studies have determined that traffic through Inverness and the CBD requires two additional through lanes ($x + 2$), relative to Segment B (x). In other words, Segment B will require two less lanes of traffic than that required for US 41 through Inverness and the CBD. Segments B and C will be at maximum feasible cross-section when the proposed four-lane and six-lane improvements are constructed because of constrained cross-sections through Inverness and the CBD.

As a result, Alternative 1 was considered the preferred alternative to be carried through the First Public Hearing (April 10, 1997). Just prior to the First Public Hearing, significant public support was received for the use of Alternative 1a, in order to save the five mature live oak trees. Comments received as a result of the First Public Hearing favored Alternative 1a at a ratio of 10:1.

A Second Public Hearing was held on July 17, 1997 because of a clerical error in the mailing list for the First Public Hearing. Because of the error, some residents of Floral City area were not notified by mail of the First Public Hearing. Both Alternative 1 and

1a, along with the No-Build Alternative, were displayed at the Second Public Hearing because of the increased public support for Alternative 1a.

However, comments from the residents of the African-American neighborhood to be impacted by Alternative 1a, and local business owners who would be affected by Alternative 1a, indicated their support for Alternative 1.

Considering the impacts to the community, it is recommended that **Alternative 1** be carried forward for documentation in a Type II Categorical Exclusion and be presented for Location Design Acceptance by the FHWA. This recommendation takes into consideration the controversy of the tree removal: the large number of comments received at the First Public Hearing (April 10, 1997) which favored Alternative 1a; and comments provided by the neighborhood residents and business owners (the population most affected) who do not favor Alternative 1a.

9.0 PRELIMINARY DESIGN ANALYSIS

This section of the Preliminary Engineering Report presents the results of preliminary design analysis conducted for the preferred alternative.

9.1 DESIGN TRAFFIC VOLUMES

In the proposed design year (2020), US 41 will experience projected AADT volumes ranging from 33,900 between SR 44 and Eden Drive to 38,530 just north of SR 44. These volumes will decline to 16,520 north of East Orange Avenue at the south end of the project. The existing (Year 1995) and proposed (Year 2020) design traffic volumes (AADT) for this project are shown in Table 6.5 in Section 6.3.2.

Complete details of the projected traffic volumes and analyses are provided in the US 41 (SR 45) Traffic Technical Memorandum (Final - October 1995). This information is also presented in summary form in Section 6.0 of this report.

9.2 TYPICAL SECTIONS

A review of the existing and future traffic volumes and land uses indicated that the existing facility will need to be improved to four lanes from East Orange Avenue north to East Eden Drive (Segment A, Segment B, and part of Segment C). The typical section will increase to six lanes from East Eden Drive to SR 44 (remainder of Segment C) because of forecasted traffic demands.

The typical sections for the preferred build alternative, Alternative 1, are shown in Figure 1.1. The proposed typical section for the segment from East Orange Avenue to East Eden Drive is a four-lane urban typical section, and would consist of the following design elements:

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalks on both sides, on the outside of curbs and gutters
- 3.5 m (11.6 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 30.5 m (100 ft) minimum right-of-way

Design elements for the six-lane urban typical section proposed for the segment from East Eden Drive to SR 44 are as follows:

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalks on both sides, on the outside of curbs and gutters
- 3.6 m (12 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 37.8 m (124 ft) minimum right-of-way

9.3 INTERSECTION CONCEPTS AND SIGNAL ANALYSIS

Traffic analysis summarized in Section 6.0 indicates the need for four lanes on US 41 between East Orange Avenue and East Eden Drive. From East Eden Drive to SR 44, a six-lane typical section is required. These basic requirements incorporate the addition of auxiliary left-turn lanes for turning traffic at all of the intersections which were studied to provide operation at acceptable levels of service for the design year. Designated right-turn lanes will also be provided at East Eden Drive and at SR 44.

The analysis indicated the need for auxiliary turn lanes on some of the cross-street approaches as well. The recommended (Year 2020 Lane Requirements) lane geometry requirements appear in Figure 6.16.

Coordination with the Department's Design Section has led to the following agreements regarding the design of the intersection of US 41 and SR 44.

1. Due to the close proximity of the bridge on SR 44 east of the intersection of US 41 and SR 44, the two left turn lane tapers will be established one lane at a time, non-concurrently. This procedure allows the left turn queue distance to be approximately 90.0 m (255 ft).
2. The proposed SR 44 design is:
 - a. Two (2) east bound lanes: one through lane and one lane from US 41 north bound turning right onto SR 44.
 - b. Two (2) west bound lanes at the bridge tapering into two west bound left turn lanes, one (1) west bound through lane and one (1) West bound right turn lane.

3. The SR 44 design should be terminated before the intersection if possible. Since the US 41 project may be constructed soon after this SR 44 project, the public may not want to see the construction taking place twice. This option will be investigated by the Design Section.
4. At Station 1341+40 right (of the SR 44 project), use a 1.8 meter (6 ft) sidewalk adjacent to the curb. This will allow for more ROW room.
5. The offset in the east bound through lane from west of US 41 to east of US 41 is acceptable.
6. The US 41 PD&E Study had indicated that a six-lane typical section would be required for US 41 north of SR 44, while only a five-lane section currently exists in that area. There is an option to taper the six lanes south of SR 44 to the five lanes north of SR 44. This option would operate at acceptable Level of Service only for few years (six to eight) after opening. The option is as follows:

South of SR 44, US 41 would have: three (3) north bound through lanes, one (1) north bound right turn lane, two (2) north bound left turn lanes and three (3) south bound through lanes.

North of SR 44, US 41 would have: three (3) north bound through lanes (SR 44 west bound right turn lane would yield and not be a free flow lane), one (1) south bound left turn lane and three (3) south bound through lanes (the third outside lane would use the current south bound right turn lane). With this option, some widening of US 41 to the west side would be required, but would still be inside existing ROW. The third outside lane (both north bound and south bound) will continue to taper to zero on the north side as it $\uparrow\uparrow$ currently does.

Handwritten notes: $\uparrow\uparrow$

9.4 ALIGNMENT AND RIGHT-OF-WAY NEEDS

The preferred alternative alignment was developed to avoid or minimize impacts to surrounding land uses and environmental features. At the beginning of the project in Segment A, the roadway will be widened to the west of the existing lanes. For the remainder of the project in Segments B and C, the widening will be centered.

The existing right-of-way in Segment A varies from 15.2 m (50 ft) to 21.3 m (70 ft). The proposed four-lane urban typical section requires 30.5 m (100 ft) of right-of-way. Acquisition of right-of-way will be on the west side of US 41 to minimize relocations.

In Segments B and C, the existing right-of-way will be generally adequate for the urban typical section. A minimal amount of right-of-way acquisition will be necessary in these two segments, primarily for improvements to or the addition of turn lanes, for corner "clips" or for transitioning from the four-lane to six-lane typical section in Segment C.

9.5 RELOCATIONS

Construction of the preferred alternative would displace a total of 6 businesses and 1 residence, within Segment A, and seven relocation throughout the entire project. A Conceptual Stage Relocation Plan was developed for the project and will be utilized in further assessing impacts during subsequent development phases. This plan was developed in accordance with Florida Statutes 339.09, the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (Public Law 91-646 as amended by Public Law 100-17), and the PD&E Manual developed by the FDOT.

A DeSoto Trail Marker commemorating the approximate route of Hernando DeSoto's historic trail is about 76.2 m (200 ft) south of Airport Road on the east side of the existing US 41 right-of-way. The marker is approximately 10.7 m (35 ft) from the existing US 41 edge of pavement. This marker does not mark a historic archeological site, nor is it associated with the exact route traveled by DeSoto (the actual route taken by DeSoto is unknown). Several markers have been placed along the trail route throughout the state, and the nearest similar DeSoto Trail Marker is east of Floral City on CR 48.

This marker would require relocation under the preferred alternative. Coordination with the Florida Department of Environmental Protection (FDEP), Office of Park Planning, Division of Recreation and Parks, has concluded that it would be possible to relocate the exhibit marker without harming the overall DeSoto Trail interpretation.

9.6 RIGHT-OF-WAY COSTS

Costs for right-of-way acquisition were estimated to be \$5.99 million. This cost includes right-of-way, administrative and legal fees, support costs, severance and business damages, and relocation costs.

9.7 CONSTRUCTION COSTS

Construction costs were developed for the preferred alternative and are estimated at \$15.07 million. This cost included all construction costs to the facility. Construction Engineering and Inspection (CEI) cost also estimated at 10% of the construction costs, were included in the construction cost estimate. These costs were calculated using the Department's Long-Range Estimate (LRE) method.

9.8 PRELIMINARY ENGINEERING COSTS

The costs of engineering (final design) were estimated based on current experience with per-mile costs for similar type facilities. Design costs for the proposed improvements are estimated at \$1.54 million (estimated at 10% of construction costs).

Table 9.1 provides costs for construction, right-of-way, utility relocation, and design. The total estimated cost is also provided.

9.9 RECYCLING OF SALVAGEABLE MATERIAL

Salvaging the existing roadway was not considered viable for the preferred alternative. However, during construction of the project, to the extent possible, materials such as traffic signal equipment, signs, culverts, guardrail, etc. will be recycled and re-used either in this or other projects.

Table 9.1
Costs of the Preferred Alternative, Alternative 1
(in millions)

Preferred Alternative	Construction	Right-of-Way	Utility Relocation	Design	Total
Alternative 1	\$15.07	\$5.99	\$3.55	\$1.54	\$26.15

9.10 USER BENEFITS

The recommended improvements will provide various benefits to the users of this roadway. It is anticipated that these improvements will reduce the potential for accidents, improve emergency response time, reduce travel time, and reduce roadway user costs.

Widening the existing roadway would benefit motorists, pedestrians, businesses, and emergency services. The additional lanes and the raised median would provide safer ingress and egress. Intersection improvements would also increase the safety of the roadway. Due to the increased capacity of the roadway, congestion will be reduced resulting in decreased travel times.

Pedestrians would benefit by the construction of the raised median. Instead of having to cross four travel lanes at one time, the median will provide a refuge for pedestrians crossing the road.

Emergency vehicles would also benefit from the proposed improvements. Due to reduced congestion and improved traffic flow, response times to emergencies should be reduced.

9.11 PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian and bicycle facilities will be provided throughout the project limits. The preferred alternative will have 1.5 m (5 ft) sidewalks on both sides. Bicycle facilities will include a 1.2 m (4 ft) outside bike lane in each direction.

9.12 SAFETY

The proposed roadway improvements would improve safety due to the implementation of the latest design standards and access management techniques. The improvements will also make the roadway a more efficient transportation facility. Increasing the capacity and improving the design of the roadway would result in more efficient traffic flow, less congestion and less accidents. Access management will limit frequent left and right turns and thereby reduce conflict points. Specific improvements that will enhance safety include the provisions of pedestrian and bicycle facilities throughout the project limits and the raised median.

The design of the roadway will meet applicable safety standards. Adherence to the design speed as it applies to establishing and setting minimum values on critical roadway design features will be closely followed. Roadway design elements including curvature, sight distance, width and clearance will meet FDOT's minimum roadway design standards.

9.13 ECONOMIC AND COMMUNITY DEVELOPMENT

Improvements to US 41 are consistent with the Citrus County Comprehensive Plan 1989-2005 and the City of Inverness Comprehensive Land Use Plan 1989-1999. There is no Metropolitan Planning Organization in this area.

Expected future growth in the area is guided by the governing land use plans developed by Citrus County and the City of Inverness. The proposed improvements are not expected to change existing land use.

9.14 ENVIRONMENTAL IMPACTS

Detailed studies and evaluations were conducted to determine the potential for adverse impacts associated with recommended improvements. Baseline data, evaluation criteria, and the results are contained in the project file and in the following separate reports: Noise Study Report, Air Quality Report, Cultural Resource Assessment Study, Wetland Evaluation Report, Water Quality Technical Memorandum and Contamination Screening Evaluation Report. It is anticipated that environmental impacts will be minimal. The following summarizes those impacts associated with the recommended improvements.

9.14.1 Noise

A noise study was conducted to identify noise sensitive sites adjacent to the proposed project and to compare and evaluate traffic noise levels expected at these sites from the preferred alternative. Existing and future noise levels were predicted and analyzed for 70 noise sensitive sites: 63 single-family residences, 4 churches, 2 private playgrounds, and the Central Motel. One representative receiver was used at each of these noise sensitive sites.

Analysis of data from receivers at these sites indicate that existing (outdoor) peak hour noise levels range from 56 to 70 dBA at the receivers analyzed, with levels approaching the Noise Abatement Criteria (NAC) at 19 receivers and meeting or slightly exceeding the NAC at 4 receivers.

During the year 2020, noise levels for the Preferred Alternative are predicted to range from 58 to 71 dBA, with levels approaching the NAC at 20 of the receivers analyzed and meeting or exceeding the NAC at 24 of the receivers. The receivers predicted to experience noise levels which may approach, meet or exceed the NAC with the improvements include 40 of the single-family residences analyzed, 2 private playgrounds and 2 churches.

As required by FHWA, abatement measures were considered for all of the sites predicted to be impacted by noise with the proposed improvements. These measures were traffic management, roadway alignment alternatives and noise barriers within the project's right-of-way.

Traffic Management - Measures which limit motor vehicle speeds, reduce volumes and prohibit trucks can be effective noise mitigation measures. However, these measures also negate a project's ability to accommodate forecast traffic volumes. Reducing traffic speeds and/or volumes is inconsistent with the goal of improving the ability of the

roadway to handle the forecast traffic volumes. Therefore, this noise abatement measure is considered unreasonable.

Measures which prohibit truck traffic on roadways can also be effective noise mitigation measures. However, the land use along the existing US 41 corridor transitions from commercial at the ends of the study limits (Floral City and Inverness) to mixed uses along the central segment of the project. Mixed uses include residential (low and medium density) and scattered commercial and industrial. Therefore, prohibiting trucks from accessing the commercial/industrial uses on the roadway would not be a reasonable noise abatement measure.

Alignment Modification Alternatives - The preferred alternative was chosen for further analysis because the alignment minimizes right-of-way impacts to the businesses and residences currently located adjacent to the roadway and minimizes the relocation of existing business and residences. Although feasible, further shifts in the alignment of the widening alternative for the US 41 roadway are not considered to be reasonable without substantial economic, social and developmental impacts.

Noise Barriers - To determine if noise barriers were feasible for the single-family residences, playgrounds and churches predicted to experience noise levels approaching, meeting or slightly exceeding the NAC with the proposed project, field surveys were conducted and aerial photographs were reviewed. From East Orange Avenue to East Julia Street, a distance of approximately 0.8 km (0.5 mi), US 41 is intersected by 9 cross streets. North of East Julia Street, access to and from the impacted sites is provided via US 41 with no other alternative access (alleys) available. No areas exist in which barriers of sufficient length could be constructed to abate noise levels for the impacted sites. Therefore, noise barriers are not considered to be feasible for these sites.

9.14.2 Air Quality

An Air Quality Assessment was performed to determine the direct effects the proposed project and the preferred alternative would have on the air environment. Citrus County is a designated air attainment area, indicating that all air quality standards are being met. A screening test was used to determine if projected traffic volumes and speeds would produce carbon monoxide levels that could impact sensitive use areas. Results of the evaluation indicated that no long-term air quality impacts to sensitive land uses would occur.

The project is located in an area where the State Implementation Plan does not contain any transportation control measures. Therefore, the conformity procedures of the Code of Federal Regulations (23 CFR Part 770) do not apply to this project.

9.14.3 Wetlands

The preferred alternative would involve the existing right-of-way wetland area, approximately 0.02 ha (0.05 ac) adjacent to Magnolia Lake. Direct impact to this portion of the wetland system as a result of these alternatives is minimal considering the small area of impact relative to the total wetland, and the disturbed nature of the area from previous excavation activity. No habitat critical to the survival of threatened and endangered species will be directly or indirectly impacted as a result of impacts to this wetland. Improvements to drainage facilities associated with the roadway will compensate for lost storage capacity.

The anticipated mitigation ratio for the preferred alternative is 1.5:1. This ratio is expected for the preferred alternative due to the condition of the wetland within the existing right-of-way. Direct impacts to jurisdictional wetlands will occur to the excavated roadside ditch and maintained wetland adjacent to the main scrub/shrub wetland area. The total area affected by the preferred alternative is 0.02 ha (0.05 ac). Emergent vegetation is the dominant vegetative structure due to the periodic maintenance of the ditch and existing right-of-way.

The preferred alternative would require the creation of 0.03 ha (0.08 ac) of emergent wetland habitat. All mitigation of project impacts should be accomplished adjacently and connected to Magnolia Lake due to the closed basin characteristics of this wetland system.

9.14.4 Contaminated Sites

A Level 1 contamination analysis was performed and a Contamination Screening Evaluation Report (CSER) was prepared pursuant to the FHWA's Technical Advisory T6640.8A, dated October 30, 1987, and in accordance with the FDOT Project Development and Environment (PD&E) Manual, Part 2, Chapter 22, dated February 8, 1994.

The Level I Contamination Assessment for this study did not involve sampling the sites' soil, ground water or surface water and therefore does not preclude those unreported and undiscovered hazardous materials, petroleum products, and other regulated substances that may have occurred on private property or deposited during the construction of residences or parking facilities. The contamination assessment does not provide a certification as to the absence of hazardous materials or petroleum contamination in the project vicinity, but does decrease the chance that unknown contamination will be encountered.

Forty-two (42) sites within the project study corridor were identified as having the potential for contamination. These sites were evaluated and rated as **No**, **Low**, **Medium**, or **High** for having potential petroleum or hazardous materials contamination. Three (3) sites were rated **No**, 36 were rated **Low**, one (1) was rated **Medium**, and two (2) were rated **High**.

The preferred alternative may affect four sites with potential petroleum contamination. Two of the four sites rated **High**, one site rated **Medium**, and the remaining site rated **Low**. The CSER provides more complete details about these sites. All four sites are adjacent to the existing US 41 right-of-way. Locations of these sites are given below.

High Sites:

- Wishing Stone Tavern, 5975 US 41 S., Inverness; on the eastern side of US 41 just south of Sun Ray Lane.
- Circle K #7211, 1224 US 41 S., Inverness; in the southeast quadrant of the US 41/CR 39A intersection.

Medium Site:

- Lil Champ Store #183, 742 US 41 S., Inverness; on the eastern side of US 41 just north of East Eden Drive.

Low Site:

- Citgo #164, 7810 US 41 S., Floral City; approximately one block south of the intersection of US 41 and E. Orange Avenue.

The two sites rated **High** have regulatory agency records that indicate some degree of petroleum contamination on-site. Records indicated that the **Medium** site has a history of petroleum contamination that has been remediated and requires monitoring. At the **Low** site, the current operation has a hazardous waste generator (ID) number, however, based on a review of all available information, there is no reason to believe there would be any involvement with contamination.

These four sites have the potential to be affected by the preferred alternative only because of their proximity to the right-of-way. The degree to which these may be contaminated will not be known until a Level II Contamination Assessment has been completed in later phases of the project. The Level II assessment should include field sampling and quantitative analysis for soils and groundwater.

Resolution of problems associated with contamination will be coordinated with the regulatory agencies, and prior to construction, appropriate action will be taken. Prior to construction, all available assessment and remediation efforts and actions on these sites should be reviewed to substantiate any potential contamination. This project contains no known significant contamination.

For additional information regarding the potential for contamination in the US 41 corridor, refer to Section 4.2.4 of this report and the Contamination Screening Evaluation Report submitted to the Department (May, 1996).

9.15 UTILITY IMPACTS

There are five utility providers with utilities along the project corridor that would be impacted by the preferred alternative. The utilities providers are listed along with estimated relocation costs in the Table 9.2. All existing utilities are within the existing right-of-way and would require relocation.

**Table 9.2
Estimated Utilities Relocation Costs**

Utility Providers	Costs Under the Preferred Alternative
City of Inverness	\$1,300,000
Floral City Water	\$53,000
Florida Power	\$30,000
Sumter Electric Company	\$156,710
Sprint United Telephone	\$2,000,000
Total	\$3,539,710 or \$3.5 million

For a detailed description of utility locations, see Table 4.4 in Section 4.1.12 of this report.

9.16 TRAFFIC CONTROL PLAN

Maintenance of traffic and sequence of construction will be planned and scheduled so as to minimize traffic delays throughout the project by scheduling construction during off peak hours and at night. One lane of traffic in each direction will be maintained during construction. During final design, a Traffic Control Plan will be developed and

approved for use, in accordance with FDOT Roadway and Traffic Design Standards (January 1990).

During the design phase, a traffic control plan will be developed and approved for use during construction. The plan will be prepared in accordance with the FDOT Roadway and Traffic Design Standards (January, 1995). The traffic control plan and sequence of construction will be developed to minimize traffic delays throughout the project. Construction may be scheduled during off peak hours and at night to help minimize traffic delays. Two-way traffic will be maintained on at least one lane in each direction throughout the construction schedule. Existing turn lanes and access to adjacent properties will be maintained whenever possible. Cross sections indicate that some high drop-offs exist in some areas along the project. Therefore, sheet piling and protective barrier may be needed.

The construction sequencing and traffic control will be performed in three phases as described below:

Phase I. Construct new signals at Orange Ave., E. Eden Dr. and US 44 to control traffic during construction of improvements to US 41. Construct temporary pavement along the east side of US 41 between E. England Blvd. and Mossy Oak Dr., and from Relief St. to the end of the project, and elsewhere along the project as needed. Construct Southbound lanes of US 41 improvement maintaining two-way traffic on existing US 41 and temporary pavement. Two southbound lanes will be constructed from beginning of project to south of E. Eden Dr. Three southbound lanes will be constructed from the two-lane transition south of E. Eden Dr. to the end of the project.

Phase II. Shift traffic from existing US 41 and temporary pavement to newly completed southbound lanes (from beginning of project to end of project). Maintain two way traffic (one lane, each direction). Construct northbound lanes and median of US 41 improvement. Two lanes will be constructed from beginning of project to south of E. Eden Dr. Three lanes will be constructed from the two-lane transition south of E. Eden Dr. to the end of the project.

Phase III. Complete signal installations and shift northbound traffic to newly constructed northbound lanes of US 41.

9.17 RESULTS OF PUBLIC INVOLVEMENT PROGRAM

A Comments and Coordination Report has been prepared for this project. A summary of that report is provided below.

To initiate early communication and coordination with government agencies and the general public, the FDOT provided an Advance Notification Package defining the project to federal and state agencies and other interested parties. On June 26, 1995 the Advanced Notification Package was distributed to agency contacts listed in the appendix section of the Public Involvement Plan.

A project kick-off meeting was held on August 31, 1995 in the City of Inverness City Hall. The purpose of this meeting was to apprise government and agency officials of the project scope and schedule.

Agency coordination was accomplished through correspondence and meetings to obtain input on project impacts. Presentations were made to update the Citrus Board of County Commissioners on June 25, 1996; June 3, 1997; and August 26, 1997. A presentation was also made to the Inverness Chamber of Commerce on June 19, 1996.

A Public Workshop was held on March 25, 1996 at the Citrus County Auditorium in Inverness, Florida from 4:00 to 7:00 pm. Representatives from FDOT and key project study team members were in attendance to answer questions and discuss the project with meeting attendees. The format for the meeting was informal. Attendees viewed a slide presentation, aerial photographs of the study area, draft study reports, and board exhibits of existing conditions and proposed improvements and had the opportunity to contribute written comments concerning the project.

General types of comments received from the Public Workshop are:

- In favor of Alternative 1
- In favor of Alternative 2
- Opposed to project
- Access and Safety
- Right-of-way questions
- Environmental concerns
- Requests for further information

The First Public Hearing was held on April 10, 1997 at the Citrus County Auditorium in Inverness, Florida from 4:30 to 7:40 pm. Beginning at 6:05 pm, a formal presentation was given by the FDOT followed by a period for public comment. The purpose of this

hearing was to provide the public with an official forum at which to formally comment on the proposed improvements and potential impact to community resources.

Interested parties, local governments, local elected officials, and the media were notified by mail of the hearing. Meeting notices inviting interested parties to attend the hearing were published in the Citrus County Chronicle and the Citrus Edition of the St. Petersburg Times on March 20, and April 4, 1997.

The sign-in sheet registered 249 persons at the Public Hearing. Thirty-one oral comments were given during the formal portion of the Public Hearing. Eight written or oral comments were received by the court reporter during the hearing, and 1,564 written comments were received during the ten day Public Hearing comment period following the meeting.

Oral comments made during the Public Hearing pertained to:

- One-way pair (Alternative 1a)
- Objections to medians throughout the project

Only one of the 31 speakers at the Public Hearing was opposed to the project.

Public comment received during the ten day period after the meeting included numerous form letters and petitions in favor of and against the one-way pair (Alternative 1a).

Due to a clerical error, some people within the project corridor did not receive written notification of the First Public Hearing. As a result, a Second Public Hearing was held on July 17, 1997 at the Citrus County Auditorium in Inverness, Florida from 4:30 to 7:30 pm. A Question and Answer Sheet was distributed with the public hearing handout to help answer any common questions the public might have about the need for a Second Public Hearing. Beginning at 6:00 pm, a formal presentation was given by the FDOT followed by a period for public comment. The purpose of this hearing was to provide the public with an official forum at which to formally comment on the proposed improvements and potential impact to community resources.

Meeting notices inviting interested parties to attend the hearing were published in the Citrus County Chronicle and the Citrus Edition of the St. Petersburg Times on June 27, July 4, and July 17, 1997.

The sign-in sheet registered 123 persons at the Second Public Hearing. Seventeen oral comments were given during the formal portion of the Public Hearing. Fifteen written or oral comments were received by the court reporter during the hearing, and

eight written comments were received during the ten day Public Hearing comment period following the meeting.

None of the 15 speakers at the Public Hearing were opposed to the project. Oral comments made during the Public Hearing pertained to:

- Median access to Lady of Fatima Church
- No medians throughout project
- One-way pair (Alternative 1a)

Public comment received during the ten day period after the meeting included the same topics listed in the bullets above.

The majority of comments received from the Second Public Hearing were as follows:

- For Alternative 1
- For Alternative 1a
- Against Project
- Opposed to median
- Opposed to median at Our Lady of Fatima Catholic Church

There was some project controversy regarding the selection of Alternative 1 over Alternative 1a, as the local community was split in their support between these two alternatives. However, due to the community and neighborhood impacts of Alternative 1a, as well as increased costs, Alternative 1 was selected as the recommended build alternative.

9.18 VALUE ENGINEERING

A Value Engineering (VE) team composed of FDOT staff reviewed the proposed improvements to US 41, the selection of the preferred alternative, Alternative 1.

In its report the VE team recommended that the proposed six-lane typical section from Eden Drive north to SR 44, on US 41 be substituted for a four-lane divided urban typical section. The VE Team states that over \$600,000 would be saved as a result.

The study team responded to the VE suggestions by pointing out that future traffic projections conducted as part of this study indicated that the area in question will require a six-lane typical section due to the projected increase in traffic volumes. Support and documentation for this conclusion is provided in the Preliminary Engineering Report and the FDOT-approved Traffic Report for this study.

Although the change to a four-lane typical section from the proposed six-lane section would indeed save the Department money, it would be at the expense of roadway capacity, Level of Service, and safety for US 41. There is no traffic or engineering justification for planning or designing this section of the facility as suggested by the VE Team. Therefore, it was recommended that the VE Team revisit these issues and review their findings.

After further study, the VE Team concurred with the study team and agreed that the facility be kept as proposed, in the recommended build alternative, as a six-lane typical section from Eden Drive to SR 44. No other modifications or changes were suggested.

9.19 DRAINAGE

With the increase in the number of travel lanes planned, there will be an increase in stormwater runoff and its pollutant loadings that will need to be collected and managed. Stormwater management sites will be selected during the design phase of this project. Stormwater management systems for the project will be designed in accordance with the FDOT and SWFWMD rules and criteria.

The Federal Emergency Management Agency (FEMA) has developed a floodplain map for the area, which is included as Figures 4.3a through 4.3g. Based on the FEMA map, the entire project is located in Zone C. Zone C refers to areas of minimal flooding that would not be flooded during a 100-year storm. Therefore, according to the FEMA, the entire roadway crosses through areas that are presently above the base floodplain elevation and there are no designated floodways within the project limits.

FEMA's analysis for the project area does not appear to be accurate since there is a base floodplain associated with each closed basin. As stated above, depressed areas in many of the closed basins are adjacent to US 41. Therefore, it can be assumed that if the roadway is widened, it will fill a portion of the floodplain associated with the closed basins. Refer to the Location Hydraulics Report, February 1996, for details regarding floodplains associated with the closed basins adjacent to US 41.

9.20 STRUCTURES

No bridge structures currently exist within the project limits. The roadway improvements do not propose addition of bridge structures.

9.21 SPECIAL FEATURES

No special features such as noise barriers, retaining walls, underdrains, etc., are proposed under the preferred alternative.

9.22 ACCESS MANAGEMENT

Minimum spacing requirements for median openings have been established by FDOT for the State Highway System to reduce the number of potential conflicts a motorist will encounter at a given location. These requirements are stated in Rule 14-97 (Chapter 14-97 F.A.C.) which takes into account the design speed of the highway, the type of median, and the existing and potential intensity of development on the property adjacent to the roadway facility.

In compliance with Chapter 335.18, Florida Statutes and FDOT Rule Chapter 14-97, this project will involve an Access Management Corridor Reclassification. FDOT proposes to reclassify US 41 from an Access Management Classification 4 to an Access Management Classification 5, within the project limits. The current classification of 4 requires:

- A non-restrictive median.
- A minimum traffic signal spacing of 805 meters (2,640 feet).
- No restrictions on vehicle movements at intersections, i.e., no median openings or spacing restrictions.

The proposed reclassification is necessary to meet minimum safety standards and predicted increased traffic volumes on U.S. 41. The proposed Class 5 standards require:

- A raised median.
- A minimum traffic signal spacing of 403 meters (1,320 feet).
- A minimum median opening spacing of 403 meters (1,320 feet) for full access.
- A minimum spacing of 201 meters (660 feet) for directional access, if the posted speed is 70 kph (45 mph) or less.

As a result of public comment and input, the access management plan for the proposed typical section was revisited and modified. The following modifications have been made to the recommended typical section and approved by the FDOT Access Management Review Board:

- Jane Lane, full median opening;
- north of Julia Street, relocate directional opening at the Odde Shoppe;
- Stoneridge Drive/Castle Lake Avenue, realignment of the two cross streets, open directional median;
- LaPerle Lane, full median opening;
- Oasis Mobile Home Park, directional opening;

- Fort Cooper Road, consolidate directional openings at Ft. Cooper Baptist Church;
- England Boulevard, full median opening;
- SECO relocation of directional opening, adjacent to Mossy Oak Drive;
- Hill Street, full median opening, and new traffic signal; and
- a new signal at Relief Street, within the next 10 years.

9.23 AESTHETICS AND LANDSCAPING

The propose typical section includes a 6.6 m (22 ft) raised median throughout the project. The median presents landscaping opportunity except in areas where left-turn storage is provided at intersections.

Landscaping between US 41 and the WST was discussed. See the commitments section.

10.0 CONCEPTUAL DESIGN PLANS

The Conceptual Design Plans for Alternative 1 are enclosed in the attached pocket. Alternative 1 is the recommended preferred alternative.

APPENDIX A

Utility Coordination Letters

FLORIDA

LAWTON CHILES
GOVERNOR



DEPARTMENT OF TRANSPORTATION

11201 N. McKinley Drive
Tampa, Florida 33612
(813) 975-6040
April 15, 1996

BEN G. WATTS
SECRETARY

City of Inverness
Mr. Frank DiGiovanni
City Manager
City Hall
212 W. Main Street
Inverness, FL 32650

SECTION: 02010-1541
WPI NO: 7119008
DESCRIPTION: US 41 PD&E STUDY, CITRUS COUNTY/UTILITIES ASSESSMENT

Dear Mr. DiGiovanni,

According to our records, we sent you a letter and plans on March 14, 1996, concerning the disposition of your facilities within the right of way of the above referenced project.

This information has been provided so that you may contribute to the Department's formalization of the final report. Submitting the requested information at this time, will ensure the inclusion of your facilities in the early stages of this project's development. In the long run, this will serve as a benefit.

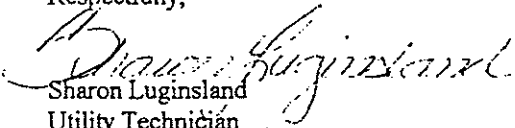
Please submit the following by no later than **April 26, 1996**:

- 1) Location of utilities marked on one set of the provided project plans.
- 2) Preliminary unit cost estimate of utilities relocation.
- 3) Additional right of way that may need to be jointly acquired for utilities relocation.
- 4) Mitigative recommendations which could be jointly taken with the FDOT to minimize community disruption.

Your prompt response to this request is greatly appreciated.

If you have any questions, please contact me at (813) 975-6599.

Respectfully,


Sharon Luginsland
Utility Technician

xc: Niki Whittaker, Parsons Brinckerhoff
Jai Ramkissoon, PD&E, District VII
Project File

FLORIDA

LAWTON CHILES
GOVERNOR

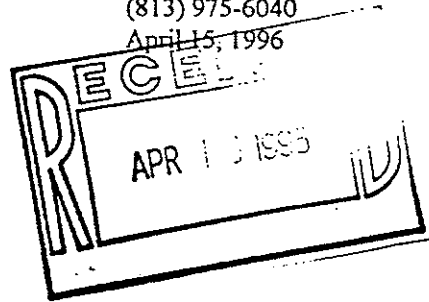


DEPARTMENT OF TRANSPORTATION

11201 N. McKinley Drive
Tampa, Florida 33612
(813) 975-6040
April 15, 1996

REN G. WATTS
SECRETARY

Sumter Electric
Mr. Ted Morris
PO Box 301
293 South US Highway 301
Sumterville, FL 33585-0301



SECTION: 02010-1541
WPI NO: 7119008
COUNTY: CITRUS
DESCRIPTION: US 41 PD&E STUDY, CITRUS COUNTY/UTILITIES ASSESSMENT

Dear Mr. Morris,

According to our records, we sent you a letter and plans on March 14, 1996, concerning the disposition of your facilities within the right of way of the above referenced project.

This information has been provided so that you may contribute to the Department's formalization of the final report. Submitting the requested information at this time, will ensure the inclusion of your facilities in the early stages of this project's development. In the long run, this will serve as a benefit.

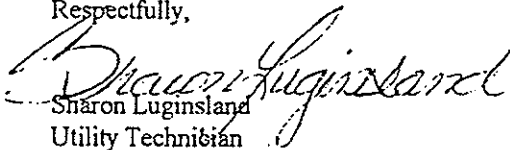
Please submit the following by no later than **April 26, 1996**:

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- 2) Preliminary unit cost estimate of utilities relocation.
- 3) Additional right of way that may need to be jointly acquired for utilities relocation.
- 4) Mitigative recommendations which could be jointly taken with the FDOT to minimize community disruption.

Your prompt response to this request is greatly appreciated.

If you have any questions, please contact me at (813) 975-6599.

Respectfully,


Sharon Luginsland
Utility Technician

xc: Niki Whittaker, Parsons Brinckerhoff
Jai Ramkisson, PD&E, District VII
Project File

FLORIDA

LAWTON CHILES
GOVERNOR



DEPARTMENT OF TRANSPORTATION

BEN G. WATTS
SECRETARY

March 14, 1996

Gary Judd, Superintendent
Floral City Water
P. O. Box 597
Floral City, FL 34436

Re: Utilities Assessment, U.S. 41 PD&E Study, Citrus County
State Project No.: 02010-1541
W. P.I. No.: 7119008

Dear Superintendent Judd:

The Florida Department of Transportation (FDOT) is proposing improvements to U.S. 41 (S.R. 45) from East Orange Avenue in Floral City to East Gulf-to-Lake Highway (S.R. 44) in Inverness and is, therefore, conducting a Project Development and Environment (PD&E) Study for the proposed project corridor. Please find enclosed a project location map and two sets of project plans. The FDOT is requesting from Floral City Water the following information regarding utilities within the study corridor:

- Location of utilities marked on one set of the provided project plans.
- Per unit cost estimate of utilities relocation.
- Additional right-of-way that may need to be jointly acquired for utilities relocation.
- Mitigative recommendations which could be jointly taken with the FDOT to minimize community disruption.

A review of the existing and future traffic and land use indicated that the existing facility will need to be improved to four lanes from Orange Avenue north to Eden Drive. North of Eden Drive, the facility will be improved to six lanes.

Five build alternatives have been selected for study. The five alternatives utilize various combinations of four typical sections: four-lane urban, four-lane suburban, six-lane urban, and six-lane suburban. The following describes the four basic typical sections.

Four-lane urban

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median

- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalks on both sides, provided to the outside of curbs and gutters
- 3.5 m (11.6 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 30.5 m (100 ft) minimum right-of-way

Four-lane suburban

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width on both sides
- 80 km/h (50 mph) design speed
- 53.6 m (176 ft) right-of-way

Six-lane urban

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalk on both sides, provided to the outside of curbs and gutters
- 3.6 m (12 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 37.8 m (124 ft) minimum right-of-way

Six-lane suburban

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width on each side
- 80 km/h (50 mph) design speed
- 60.9 m (200 ft) minimum right-of-way

The project has been divided into three segments based on current and future land uses as designated by the Citrus County Planning Department.

- Segment A: from Orange Avenue north to Julia Street.
- Segment B: from Julia Street north to East England Boulevard.

- Segment C: from East England Boulevard north to S.R. 44. Approximately 1112.5 m (3649 ft) north of East England Boulevard at Eden Drive, the typical section increases to a six-lane typical section for the remainder of the project due to forecasted traffic demands.

The table below summarizes the five alternatives which have been established by using combinations of typical sections and project segments.

Summary of Alternatives

Alternative	Segment A*	Segment B	Segment C	
	East Orange Avenue north to Julia Street	Julia Street north to East England Boulevard	East England to East Eden	East Eden to S.R. 44
1	Urban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
2	Urban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (6-lane)
3	Urban-West (4-lane)	Suburban-East (4-lane)	Suburban-East (4-lane)	Suburban-East (6-lane)
4	Urban-West (4-lane)	Suburban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
5	Urban-West (4-lane)	Suburban-East (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)

*A sub-alternative could be used for any of the five Alternatives within Segment A. This sub-alternative will provide for bifurcated one-way pairs, each with two lanes of traffic in each direction in the vicinity of the East Orange Avenue intersection in Floral City.

FLORIDA

LAWTON CHILES
GOVERNOR



DEPARTMENT OF TRANSPORTATION

BEN G. WATTS
SECRETARY

March 14, 1996

John Saltmarsh, P.E.
Sprint United Telephone
107 Dr. M. L. King, Jr., Ave.
Inverness, FL 34450

Re: Utilities Assessment, U.S. 41 PD&E Study, Citrus County
State Project No.: 02010-1541
W. P.I. No.: 7119008

Dear Mr. Saltmarsh:

The Florida Department of Transportation (FDOT) is proposing improvements to U.S. 41 (S.R. 45) from East Orange Avenue in Floral City to East Gulf-to-Lake Highway (S.R. 44) in Inverness and is, therefore, conducting a Project Development and Environment (PD&E) Study for the proposed project corridor. Please find enclosed a project location map and two sets of project plans. The FDOT is requesting from Sprint United Telephone the following information regarding utilities within the study corridor:

- Location of utilities marked on one set of the provided project plans.
- Per unit cost estimate of utilities relocation.
- Additional right-of-way that may need to be jointly acquired for utilities relocation.
- Mitigative recommendations which could be jointly taken with the FDOT to minimize community disruption.

A review of the existing and future traffic and land use indicated that the existing facility will need to be improved to four lanes from Orange Avenue north to Eden Drive. North of Eden Drive, the facility will be improved to six lanes.

Five build alternatives have been selected for study. The five alternatives utilize various combinations of four typical sections: four-lane urban, four-lane suburban, six-lane urban, and six-lane suburban. The following describes the four basic typical sections.

Four-lane urban

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median

- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalks on both sides, provided to the outside of curbs and gutters
- 3.5 m (11.6 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 30.5 m (100 ft) minimum right-of-way

Four-lane suburban

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width on both sides
- 80 km/h (50 mph) design speed
- 53.6 m (176 ft) right-of-way

Six-lane urban

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalk on both sides, provided to the outside of curbs and gutters
- 3.6 m (12 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 37.8 m (124 ft) minimum right-of-way

Six-lane suburban

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width on each side
- 80 km/h (50 mph) design speed
- 60.9 m (200 ft) minimum right-of-way

The project has been divided into three segments based on current and future land uses as designated by the Citrus County Planning Department.

- Segment A: from Orange Avenue north to Julia Street.
- Segment B: from Julia Street north to East England Boulevard.

- Segment C: from East England Boulevard north to S.R. 44. Approximately 1112.5 m (3649 ft) north of East England Boulevard at Eden Drive, the typical section increases to a six-lane typical section for the remainder of the project due to forecasted traffic demands.

The table below summarizes the five alternatives which have been established by using combinations of typical sections and project segments.

Summary of Alternatives

Alternative	Segment A*	Segment B	Segment C	
	East Orange Avenue north to Julia Street	Julia Street north to East England Boulevard	East England to East Eden	East Eden to S.R. 44
1	Urban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
2	Urban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (6-lane)
3	Urban-West (4-lane)	Suburban-East (4-lane)	Suburban-East (4-lane)	Suburban-East (6-lane)
4	Urban-West (4-lane)	Suburban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
5	Urban-West (4-lane)	Suburban-East (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)

*A sub-alternative could be used for any of the five Alternatives within Segment A. This sub-alternative will provide for bifurcated one-way pairs, each with two lanes of traffic in each direction in the vicinity of the East Orange Avenue intersection in Floral City.

John Saltmarsh, P.E.
March 14, 1996

Page 4

You have been provided with the plan set for Alternative 3 only, which shows the sub-alternative in Segment A. The other alternatives differ only in alignment shifts to the west. Please provide the locations of your facilities within the study limits along both the east and west sides of the U.S. 41 corridor and along the proposed route of the new alignment in Segment A by marking up one set of the enclosed plans and sending them back on or before April 4, 1996. Send all information to the attention of Mr. Steve Tidwell at the following address:

Florida Department of Transportation
Design/Utilities
MS 7-820
11201 N. Malcolm McKinley Drive
Tampa, FL 33612-6403

If you have any questions regarding the alternatives or the requested information, please do not hesitate to contact me at (813) 975-6599, or Mr. Roger Menendez, Parsons Brinckerhoff Quade & Douglas Project Manager, at (813) 289-2968.

Sincerely,

FLORIDA DEPARTMENT OF TRANSPORTATION

Nicole Whittaker

for
Sharon Luginsland
Utility Technician

Enclosures

FLORIDA

LAWTON CHILES
GOVERNOR



DEPARTMENT OF TRANSPORTATION

BEN G. WATTS
SECRETARY

March 14, 1996

Daniel Sawyer, Director of Public Works
City of Inverness Public Works Department
212 W. Main Street
Inverness, FL 34450

Re: Utilities Assessment, U.S. 41 PD&E Study, Citrus County
State Project No.: 02010-1541
W. P.I. No.: 7119008

Dear Mr. Sawyer:

The Florida Department of Transportation (FDOT) is proposing improvements to U.S. 41 (S.R. 45) from East Orange Avenue in Floral City to East Gulf-to-Lake Highway (S.R. 44) in Inverness and is, therefore, conducting a Project Development and Environment (PD&E) Study for the proposed project corridor. Please find enclosed a project location map and two sets of project plans. The FDOT is requesting from the Public Works Department the following information regarding utilities within the study corridor:

- Location of utilities marked on one set of the provided project plans.
- Per unit cost estimate of utilities relocation.
- Additional right-of-way that may need to be jointly acquired for utilities relocation.
- Mitigative recommendations which could be jointly taken with the FDOT to minimize community disruption.

A review of the existing and future traffic and land use indicated that the existing facility will need to be improved to four lanes from Orange Avenue north to Eden Drive. North of Eden Drive, the facility will be improved to six lanes.

Five build alternatives have been selected for study. The five alternatives utilize various combinations of four typical sections: four-lane urban, four-lane suburban, six-lane urban, and six-lane suburban. The following describes the four basic typical sections.

Four-lane urban

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median

- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalks on both sides, provided to the outside of curbs and gutters
- 3.5 m (11.6 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 30.5 m (100 ft) minimum right-of-way

Four-lane suburban

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width on both sides
- 80 km/h (50 mph) design speed
- 53.6 m (176 ft) right-of-way

Six-lane urban

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalk on both sides, provided to the outside of curbs and gutters
- 3.6 m (12 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 37.8 m (124 ft) minimum right-of-way

Six-lane suburban

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width on each side
- 80 km/h (50 mph) design speed
- 60.9 m (200 ft) minimum right-of-way

The project has been divided into three segments based on current and future land uses as designated by the Citrus County Planning Department.

- Segment A: from Orange Avenue north to Julia Street.
- Segment B: from Julia Street north to East England Boulevard.

- Segment C: from East England Boulevard north to S.R. 44. Approximately 1112.5 m (3649 ft) north of East England Boulevard at Eden Drive, the typical section increases to a six-lane typical section for the remainder of the project due to forecasted traffic demands.

The table below summarizes the five alternatives which have been established by using combinations of typical sections and project segments.

Summary of Alternatives

Alternative	Segment A*	Segment B	Segment C	
	East Orange Avenue north to Julia Street	Julia Street north to East England Boulevard	East England to East Eden	East Eden to S.R. 44
1	Urban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
2	Urban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (6-lane)
3	Urban-West (4-lane)	Suburban-East (4-lane)	Suburban-East (4-lane)	Suburban-East (6-lane)
4	Urban-West (4-lane)	Suburban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
5	Urban-West (4-lane)	Suburban-East (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)

*A sub-alternative could be used for any of the five Alternatives within Segment A. This sub-alternative will provide for bifurcated one-way pairs, each with two lanes of traffic in each direction in the vicinity of the East Orange Avenue intersection in Floral City.

Daniel Sawyer, Director of Public Works
March 14, 1996

Page 4

You have been provided with the plan set for Alternative 3 only, which shows the sub-alternative in Segment A. The other alternatives differ only in alignment shifts to the west. Please provide the locations of your facilities within the study limits along both the east and west sides of the U.S. 41 corridor and along the proposed route of the new alignment in Segment A by marking up one set of the enclosed plans and sending them back on or before April 4, 1996. Send all information to the attention of Mr. Steve Tidwell at the following address:

Florida Department of Transportation
Design/Utilities
MS 7-820
11201 N. Malcolm McKinley Drive
Tampa, FL 33612-6403

If you have any questions regarding the alternatives or the requested information, please do not hesitate to contact me at (813) 975-6599, or Mr. Roger Menendez, Parsons Brinckerhoff Quade & Douglas Project Manager, at (813) 289-2968.

Sincerely,

FLORIDA DEPARTMENT OF TRANSPORTATION

Nicole Whittaker
for

Sharon Luginsland
Utility Technician

Enclosures



March 14, 1996

Mr. Ron Whorley
Florida Power and Light Corp.
P. O. Box 14042
St. Petersburg, FL 33731

Re: Utilities Assessment, U.S. 41 PD&E Study, Citrus County
State Project No. 02010-1541
W. P.I. No.: 008

Dear Mr. Whorley:

The Florida Department of Transportation (FDOT) is proposing improvements to U.S. 41 (S.R. 45) from East Orange Avenue in Floral City to East Gulf-to-Lake Highway (S.R. 44) in Inverness and is, therefore, conducting a Project Development and Environment (PD&E) Study for the proposed project corridor. Please find enclosed a project location map and two sets of project plans. The FDOT is requesting from Florida Power and Light Corp. the following information regarding utilities within the study corridor:

- Location of utilities marked on one set of the provided project plans.
- Per unit cost estimate of utilities relocation.
- Additional right-of-way that may need to be jointly acquired for utilities relocation.
- Mitigative recommendations which could be jointly taken with the FDOT to minimize community disruption.

A review of the existing and future traffic and land use indicated that the existing facility will need to be improved to four lanes from Orange Avenue north to Eden Drive. North of Eden Drive, the facility will be improved to six lanes.

Five build alternatives have been selected for study. The five alternatives utilize various combinations of four typical sections: four-lane urban, four-lane suburban, six-lane urban, and six-lane suburban. The following describes the four basic typical sections.

Four-lane urban

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median

Mr. Ron Whorley
March 14, 1996

- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalks on both sides, provided to the outside of curbs and gutters
- 3.5 m (11.6 ft) border width on both sides
- 70 km/h (45 mph) design speed
- 30.5 m (100 ft) minimum right-of-way

Four-lane suburban

- two, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width on both sides
- 80 km/h (50 mph) design speed
- 53.6 m (176 ft) right-of-way

Six-lane urban

- three, 3.6 m (12 ft) travel lanes in each direction
- 6.6 m (22 ft) raised median
- 1.2 m (4 ft) outside bike lane in each direction
- 1.5 m (5 ft) sidewalk on both sides, provided to the outside of curbs and gutters
- 3.6 m (12 ft) border width on both sides
- 70 km/h (45 mph) design speed
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- three, 3.6 m (12 ft) travel lanes in each direction
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- 1.5 m (5 ft) outside paved shoulder with 3.0 m (10 ft) total shoulder width on each side
- 80 km/h (50 mph) design speed
- 60.9 m (200 ft) minimum right-of-way

The project has been divided into three segments based on current and future land uses as designated by the Citrus County Planning Department.

- Segment A: from Orange Avenue north to Julia Street.
- Segment B: from Julia Street north to East England Boulevard.

Mr. Ron Whorley
 March 14, 1996

- Segment C: from East England Boulevard north to S.R. 44. Approximately 1112.5 m (3649 ft) north of East England Boulevard at Eden Drive, the typical section increases to a six-lane typical section for the remainder of the project due to forecasted traffic demands.

The table below summarizes the five alternatives which have been established by using combinations of typical sections and project segments.

Summary of Alternatives

Alternative	Segment A*	Segment B	Segment C	
	East Orange Avenue north to Julia Street	Julia Street north to East England Boulevard	East England to East Eden	East Eden to S.R. 44
1	Urban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
2	Urban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (4-lane)	Suburban-West (6-lane)
3	Urban-West (4-lane)	Suburban-East (4-lane)	Suburban-East (4-lane)	Suburban-East (6-lane)
4	Urban-West (4-lane)	Suburban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
5	Urban-West (4-lane)	Suburban-East (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)

*A sub-alternative could be used for any of the five Alternatives within Segment A. This sub-alternative will provide for bifurcated one-way pairs, each with two lanes of traffic in each direction in the vicinity of the East Orange Avenue intersection in Floral City.

Mr. Ron Whorley
March 14, 1996

You have been provided with the plan set for Alternative 3 only, which shows the sub-alternative in Segment A. The other alternatives differ only in alignment shifts to the west. Please provide the locations of your facilities within the study limits along both the east and west sides of the U.S. 41 corridor and along the proposed route of the new alignment in Segment A by marking up one set of the enclosed plans and sending them back on or before April 4, 1996. Send all information to the attention of Mr. Steve Tidwell at the following address:

Florida Department of Transportation
Design/Utilities
MS 7-820
11201 N. Malcolm McKinley Drive
Tampa, FL 33612-6403

If you have any questions regarding the alternatives or the requested information, please do not hesitate to contact me at (813) 975-6599, or Mr. Roger Menendez, Parsons Brinckerhoff Quade & Douglas Project Manager, at (813) 289-2968.

Sincerely,

FLORIDA DEPARTMENT OF TRANSPORTATION

Nicole Whittaker
Sharon Luginsland *for*
Utility Technician

Enclosures

FLORIDA

LAWTON CHILES
GOVERNOR



DEPARTMENT OF TRANSPORTATION

BEN G. WATTS
SECRETARY

March 14, 1996

Mr. Alan Kimbley
Sumter Electric Cooperative, Inc.
P. O. Box 301
Sumterville, FL 33585

Re: **Utilities Assessment, U.S. 41 PD&E Study, Citrus County**
State Project No.: 02010-1541
W. P.L. No.: 7119008

Dear Mr. Kimbley:

The Florida Department of Transportation (FDOT) is proposing improvements to U.S. 41 (S.R. 45) from East Orange Avenue in Floral City to East Gulf-to-Lake Highway (S.R. 44) in Inverness and is, therefore, conducting a Project Development and Environment (PD&E) Study for the proposed project corridor. Please find enclosed a project location map and two sets of project plans. The FDOT is requesting from Sumter Electric Cooperative, Inc. the following information regarding utilities within the study corridor:

- Location of utilities marked on one set of the provided project plans.
- Per unit cost estimate of utilities relocation.
- Additional right-of-way that may need to be jointly acquired for utilities relocation.
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3	Urban-West (4-lane)	Suburban-East (4-lane)	Suburban-East (4-lane)	Suburban-East (6-lane)
4	Urban-West (4-lane)	Suburban-West (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)
5	Urban-West (4-lane)	Suburban-East (4-lane)	Urban-Center (4-lane)	Urban-Center (6-lane)

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Mr. Alan Kimbley
March 14, 1996

Page 4

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Florida Department of Transportation
Design/Utilities
MS 7-820
11201 N. Malcolm McKinley Drive
Tampa, FL 33612-6403

If you have any questions regarding the alternatives or the requested information, please do not hesitate to contact me at (813) 975-6599, or Mr. Roger Menendez, Parsons Brinckerhoff Quade & Douglas Project Manager, at (813) 289-2968.

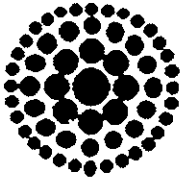
Sincerely,

FLORIDA DEPARTMENT OF TRANSPORTATION

Nicole Whittaker for

Sharon Luginsland
Utility Technician

Enclosures



**Florida
Power**
CORPORATION

RECEIVED DIST. MISC
UTILITIES

96 MAR 29 PM 4:17

March 28, 1996

Mr. Steve Tidwell
District Engineer
Florida Department of Transportation
11201 North Malcolm McKinley Drive, MS 7-820
Tampa, FL 33612-6403

RE: Section; 02010-1541 State Road; 45
County; Citrus Parcel W.P.I. #; 7119008
Desc.: PD&E Study

Gentlemen:

In connection with the above referenced project, we are returning the following items and/or information as requested:

- Aerial Maps
- Construction Plans
- Drainage & Outfall Plans
- Intersection Improvement Plans
- Highway Lighting Plans
- Traffic Signal Plans
- Transmission Involved (Yes No) Alteration Required (Yes No)
- Substation Involved (Yes No) Alteration Required (Yes No)
- Distribution Involved (Yes No) Alteration Required (Yes No)
- Subordination Agreement Required (Yes No)
- Deed Required for Fee-Owned Property (Yes No)
- Reimbursement (Will Will Not) Be Claimed
- Additional Maps Required Due to Involvement _____ set(s)
- Other: Cost Estimate = \$30,000 for Distribution Facilities
- Detail Cost Estimate
- Estimate Summary
- Scope of Work Statement
- Relocation Agreement
- Joint Project Agreement
- Relocation Schedule

If we may be of further assistance, please do not hesitate to call.

Sincerely,

FLORIDA POWER CORPORATION

Ronald K. Worley

Ronald K. Worley
System Permitting & Liaison Agent
System Permitting & Liaison, D2D

RKW:jcf

FKW:#136:MASTER.LS6.W5



Sumter Electric Cooperative, Inc.

April 30, 1996

Sharon Luginsland
Utilities Technician
Florida Department of Transportation
11201 N. McKinley Drive
Tampa, Florida 33612

RECEIVED
UTILITIES
96 MAY 23 AM 8:22

SECTION 02010-1541
WPI NO: 7119008
COUNTY: CITRUS
DESCRIPTION: US 41 PD&E STUDY
CITRUS COUNTY/UTILITIES ASSESSMENT

Dear Ms. Luginsland:

I would like to thank you for the time limit extension you granted us to get the following information to you. The work load has been such that the original deadline was impossible for us to meet.

Listed below are the costs that you requested for this project and the enclosed aerial photos of the location of Sumter Electric Cooperative Inc. facilities along U.S. 41 from Floral City to Inverness.

1. The marked up aerials (attached)
2. Preliminary unit cost estimate of utilities relocation:

Number of units to be relocated	135
Number of units to be located in R/W	82
Number of units located out of R/W	53
Unit cost to relocate	\$1,160.00
Total Estimated Cost	\$156,710.00

The above costs do not reflect the acquisition of additional easements from property owners in the subject area. The easements needed will vary depending on the type of construction that is used.

Thank you for the opportunity to serve you. If there are any questions you may have or if I can be of further assistance, please feel free to call me at (352) 793-3801 Extension 1117.

Sincerely,

A handwritten signature in cursive script, appearing to read "Bart Bartling".

Bart Bartling
Staking Supervisor

Attachment

Floral City Water Association Inc.

RECEIVED DIST. UTILITIES
P.O. Box 597 Floral City, FL 34436
(352) 726-3366 SE&RT (352) 726-6063

27

4/8/96

Mr. Steve Tidwell
Florida Department of Transportation
Design / Utilities
MS 7-820
11201 N. Malcolm McKinley Drive
Tampa, FL 33612-6403

RE: State Project No.: 02010-1541, W.P.I. No.: 7119008

Mr. Mr. Tidwell,

Please find enclosed the project location map, marked with our existing utilities. Due to the small size of water mains required to be relocated, we feel the entire project cost will not exceed \$15,000.00 including permitting and engineering. No additional right-of-way will be necessary for relocation of our water mains. Disruption of service due to this relocation will be minimal. Additional changes may be necessary upon selection, by you, of any of the other alternatives.

I attended your open workshop, at the Citrus County Auditorium on March 25, 1996, concerning this roadway. Please be advised that we have just recently purchased the land outlined in green on pages 12 and 13. This land was bought for the purpose of drilling a new well for our water facility located there. An existing ten inch well is marked on the plan in orange, and the new twelve inch well location is still being decided upon. Jai Ramkissoon felt this was important enough to mention in this letter. If you have any additional questions or need additional information, contact me at (352) 726-3366.

Sincerely,



Gary Judd
Supt. FCWAI



RECEIVED DIST. FILE
UTILITIES

95 APR 24 PM 3:41

Box 610
Ocala, Florida 34478-0610

ST-Sharon

April 18, 1996

Mr. Steve Tidwell
Design/Utilities
Florida Department of Transportation
11201 N. Malcolm McKinley Drive MS 7-820
Tampa, Florida 33612-6403

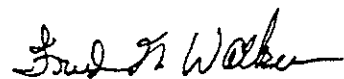
Dear Mr. Tidwell:

Please find enclosed plans marked as requested indicating approximate locations as to existing center line of roadway.

You can see as print is marked, this project will have an enormous impact on our facilities. A total facility relocation will be required with total relocation cost approximately \$2M.

The short time frame for marking plans of this magnitude did not allow an in-depth review. Consideration of expanding response lead time on future projects is greatly appreciated.

Sincerely,


Fred N. Walker
Engineer-OSP

FNW/gc

c: Charles T. Johns
John Saltmarsh
Harold Miller
David McDonald



TO: Sharon Luginsland, FDOT
FROM: Daniel W. Sawyer, Director of Public Works
SUBJECT: Utilities Estimate
DATE: May 14, 1996

This is an estimated approximate cost to relocate the City utilities (water & sewer) on Highway 41 from 44 to Fort Cooper Road, we have utilities on both sides of the road. The estimated cost is \$1.3 million. If you have any questions, please feel free to call me at 352-726-2321, Monday thru Friday, 6:30 a.m. until 2:30 p.m.


Daniel W. Sawyer

FLORIDA

LAWTON CHILES
GOVERNOR



DEPARTMENT OF TRANSPORTATION

11201 N. McKinley Drive
Tampa, Florida 33612
(813) 975-6040
April 15, 1996

BEN G. WATTS
SECRETARY

City of Inverness
Mr. Frank DiGiovanni
City Manager
City Hall
212 W. Main Street
Inverness, FL 32650

SECTION: 02010-1541
WPI NO: 7119008
DESCRIPTION: US 41 PD&E STUDY, CITRUS COUNTY/UTILITIES ASSESSMENT

Dear Mr. DiGiovanni,

According to our records, we sent you a letter and plans on March 14, 1996, concerning the disposition of your facilities within the right of way of the above referenced project.

This information has been provided so that you may contribute to the Department's formalization of the final report. Submitting the requested information at this time, will ensure the inclusion of your facilities in the early stages of this project's development. In the long run, this will serve as a benefit.

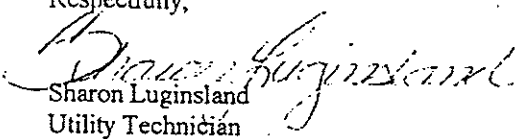
Please submit the following by no later than April 26, 1996:

- 1) Location of utilities marked on one set of the provided project plans.
- 2) Preliminary unit cost estimate of utilities relocation.
- 3) Additional right of way that may need to be jointly acquired for utilities relocation.
- 4) Mitigative recommendations which could be jointly taken with the FDOT to minimize community disruption.

Your prompt response to this request is greatly appreciated.

If you have any questions, please contact me at (813) 975-6599.

Respectfully,


Sharon Luginsland
Utility Technician

xc: Niki Whittaker, Parsons Brinckerhoff
Jai Ramkissoon, PD&E, District VII
Project File

7.1.1.5 043

FLORIDA

LAWTON CHILES
GOVERNOR

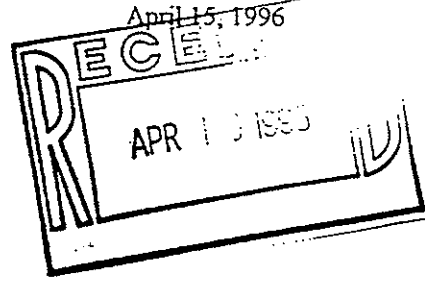


DEPARTMENT OF TRANSPORTATION

11201 N. McKinley Drive
Tampa, Florida 33612
(813) 975-6040

BEN G. WATTS
SECRETARY

Sumter Electric
Mr. Ted Morris
PO Box 301
293 South US Highway 301
Sumterville, FL 33585-0301



SECTION: 02010-1541
WPI NO: 7119008
COUNTY: CITRUS
DESCRIPTION: US 41 PD&E STUDY, CITRUS COUNTY/UTILITIES ASSESSMENT

Dear Mr. Morris,

According to our records, we sent you a letter and plans on March 14, 1996, concerning the disposition of your facilities within the right of way of the above referenced project.

This information has been provided so that you may contribute to the Department's formalization of the final report. Submitting the requested information at this time, will ensure the inclusion of your facilities in the early stages of this project's development. In the long run, this will serve as a benefit.

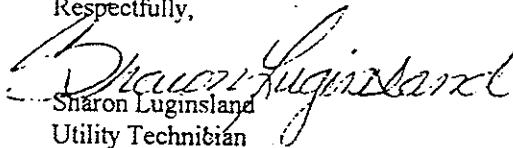
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Your prompt response to this request is greatly appreciated.

If you have any questions, please contact me at (813) 975-6599.

Respectfully,


Sharon Luginsland
Utility Technician

xc: Niki Whittaker, Parsons Brinckerhoff
Jai Ramkissoon, PD&E, District VII
Project File

TELEPHONE CONVERSATION MEMORANDUM

Project US 41 PD&E Citrus Co. Job No. 15434A Date 5-21-96
(Use Complete Number)

From Niki Cribbs Talked to Sharon Luginsland
PD&E Dept. FDOT Dist. 7 975-6599
utilities Dept.

Indicate Department, Field Office, etc., for "In House" calls.
Indicate agency or firm for other than "In House" calls.

Item Discussed Low utilities relocation estimate received from Floral City Water.

Information Obtained After reviewing responses received from utilities companies, Floral City Water's appeared to be underestimated. Sharon Luginsland spoke with Gary Judd of Floral City Water who stated \$15,000 is their actual estimate. We will figure cost of alternatives + cost analysis using this figure.

Action Required _____

Distribution:

File	Neeman	Mendoza		
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By: Nicole Cribbs

Floral City Water Association Inc.

P.O. Box 597 Floral City, FL. 34436

(352) 726-3366

RECEIVED
SEP 17 PM 2:49

April 10th, 1997

To : Mr. Jai Ramkissoon
Project Manager
FDOT
11201 N. McKinley Drive
Tampa FL. 33612-6403

RE: WPI No. 7119008 / SP No. 02010-1541 / FAP No. XA-301-5(12)
U.S. 41 (S.R. 45) from Orange Ave. to S.R. 44, Citrus County

Dear Mr. Ramkissoon,

As mentioned in our telephone conversation on March 21, 1997, Floral City Water Assn. Inc., after reviewing the proposed construction plans, has found a need to revise our cost projections for the relocation of our water mains. Our previous estimate, based on earlier drawings, showed no need to relocate the 1500 foot of 10" mainline servicing our customers in the Stoneridge Landing area. If the need arises, the projected cost of relocation would be in the range of \$53,000.00. Upon further consideration, my Board of Directors has also expressed interest in upgrading the 1500 combined feet 2" and 3" lines following U.S. 41 North of Orange Ave. at an additional cost of \$45,000.00.

These costs are secondary to our main concern however. Our satellite plant located at 8421 E. Jo's Ct. and the recently purchased property extending East to U.S. 41 and South to the Wishingstone Tavern are at risk. The property was purchased as a site for a main supply well for our water Association. In your preliminary engineering report, you wrote that no protection areas existed in this area, however, a Well Head Protection Plan is currently being written that will include this site as well as our primary site in Floral City. Florida Rural Water Association, DEP and SWFWMD as well as my organization will be involved in the plan's development. This plan, when approved, will be submitted for inclusion into the Citrus County Comprehensive Plan. Please be aware of these conditions and keep me advised on all aspects of construction in this critical area. If you have any questions concerning this matter, I can be reached at (352)726-3366.

Thank You,



Gary Judd
Supt. FCWAI

APPENDIX B

WQIE Checklist

WQIE CHECK LIST

Project Name: US 41 Project Development and Environment Study County: Citrus

State Project Number: 02010-1541 WPI Number: 7119008

Federal Aid Project Number: XA-301-5(12)

Short project description: PD&E Study of proposed improvements to a 10.1 km (6.3 mi) length of US 41. Current roadway is rural, two-lane undivided facility. Proposed improvements are to widen to a four- and six-lane urban divided facility from Orange Avenue (CR 48) in Floral City to SR 44 in Inverness.

PART 1: DETERMINATION OF WQIE SCOPE

Does project increase impermeable surface area? Yes No

Does project alter the drainage system? Yes No

If the answer to both questions is no, complete the WQIE by checking Box A in Part 4.

Do environmental regulatory requirements apply? Yes No

If no, proceed to Part 4 and check Box B.

PART 2: PROJECT CHARACTERISTICS

20-year design ADT: South Terminus = 16,250 Expected speed limit: South Terminus = 70 km/hr
Northern Terminus = 33,900 Northern Terminus = 80 km/hr

Drainage area: 54.6 hectares 40.6% Impervious 59.4% Pervious

Land Use: 30% Residential 35% Commercial 15% Industrial

10% Agricultural 5% Wetlands 5% Other Natural

Potential large sources of pollution (identify) : None identified. A Level I Contamination Screening Evaluation Report was prepared for this project.

Groundwater receptor (name of aquifer or N/A) : Floridan Aquifer

Designated well head protection area: Yes No Name: _____

Sole source aquifer: Yes No Name: _____

Groundwater recharge mechanism: Infiltration

(Notify District Drainage Engineer if karst conditions expected)

Surface water receptor (name or N/A): Magnolia Lake (for one basin), otherwise N/A

Classification: I II III IV V

Special designation (check all that apply):

ONRW OFW Aquatic Preserve Wild and Scenic River

Special Water SWIM Area Local Comp Plan MS4 Area

Other (specify): _____

Conceptual stormwater conveyances & system (check all that apply):

Swales Curb and Gutter Scuppers Pipe French Drains

Retention/Detention Ponds Other _____

PART 3: ENVIRONMENTAL REGULATORY REQUIREMENTS

Regulatory Agency (check all that apply)	Reference citation for regulatory criteria (attach copy of pertinent pages)	Most stringent criteria (Check all that apply)
USEPA <input type="checkbox"/>		<input type="checkbox"/>
FDEP <input checked="" type="checkbox"/>		<input type="checkbox"/>
WMD <input checked="" type="checkbox"/> (Specify) SWFWMD	40D-4, 40D-40, 40D-400	<input checked="" type="checkbox"/>
OTHER <input checked="" type="checkbox"/> (Specify) USACOE		<input type="checkbox"/>

Proceed to Part 4 and check Box C.

PART 4: WQIE DOCUMENTATION

- A. Water quality is not an issue.
- B. No regulatory requirements apply to water quality issues.
(Document by checking the "none" box for water quality in Section 6.C.3 of Form 508-01 or Section 5.C.3 of Form 508-05.)
- C. Regulatory requirements apply to water quality issues. Water quality issues will be mitigated through compliance with the quantity design requirements placed by SWFWMD, an authorized regulatory agency.
(Document by checking the "none" box for water quality in Section 6.C.3 of Form 508-01 or Section 5.C.3 of Form 508-05.)

Evaluator Name print: Nicole I. (Whittaker) Cribbs

Office: 1408 N. Westshore Avenue, Ste. 300, Tampa, FL 33607

Signature: *Nicole I. (Whittaker) Cribbs* Date: 16 August, 1996

Certificate: #178

APPENDIX C

Threatened and Endangered Species List

Citrus County
Protected Species List

US = USFWS, FL=FGFWFC, FDA=FL. Dept. of Agriculture, CH= Critical Habitat
T=THREATENED, T(S/A)= THREATENED/ SIMILARITY OF APPEARANCE, P=PROPOSED
LISTING, U=UNDER REVIEW, S=SPECIES OF SPECIAL CONCERN, E=ENDANGERED,
Y=YES, C=COMMERCIALY EXPLOITED

US FL FDA CH SPECIES

AMPHIBIANS

U *Pseudobranchius striatus lustricolus* - Gulf
 Hammock Dwarf Siren
U S *Rana capito aesopus* - Fl. Gopher Frog

BIRDS

U *Aimophila aestivalis* - Bachmans Sparrow
 S *Ajaia ajaja* - Roseate Spoonbill
 Ammodramus maritimus peninsulae - Scott's
 Seaside Sparrow
T T *Aphelocoma coerulescens coerulescens* - Fl.
 Scrub Jay
 S *Aramus guarana* - Limpkin
T T *Charadrius melodus* - Piping Plover
 S *Cistothorus palustris marianae* - Marian's Marsh Wren
 S *Egretta caerulea* - Little Blue Heron
 S *E. thula* - Snowy Egret
 S *E. tricolor* - Tricolored Heron
T E *Falco peregrinus tundrius* - Arctic Peregrine Falcon
U T *F. sparverius paulus* - American Kestrel
 T *Grus canadensis pratensis* - Fl. Sandhill Crane
T T *Haliaeetus leucocephalus* - Bald Eagle
E E *Mycteria americana* - Wood Stork
 S *Pelecanus occidentalis* - Brown Pelican
E T *Picoides borealis* - Red-cockaded Woodpecker
 Speotyto cunicularia - Burrowing Owl
 T *Sterna antillarum* - Least Tern
E E *Vermivora bachmanii* - Bachman's Warbler

FISH

P T *Acipenser oxyrhyncus desotoi* - Gulf Sturgeon

MAMMALS

E	E		<i>Balaena glacialis</i> - Right Whale
E	E		<i>Balaenoptera borealis</i> - Sei Whale
E	E		<i>B. physalus</i> - Finback Whale
E	E		<i>Felis concolor coryi</i> - Fl. Panther
E	E		<i>Megaptera novaeangliae</i> - Humpback Whale
U	S		<i>Podomys floridanus</i> - Fl. Mouse
E	E		<i>Physeter catodon</i> - Sperm Whale
U			<i>Plecotus rafinesquii</i> - S.E. Big-eared Bat
U	S		<i>Sciurus niger shermani</i> - Sherman's Fox Squirrel
U	S		<i>Sorex longirostris eionis</i> - Homosassa Shrew
E	E	Y	<i>Trichechus manatus</i> - West Indian Manatee
U	T		<i>Ursus americanus floridanus</i> - Fl. Black Bear

REPTILES

T(S/A)	S		<i>Alligator mississippiensis</i> - Alligator
T	T		<i>Caretta caretta</i> - Loggerhead Turtle
E	E		<i>Chelonia mydas</i> - Green Turtle
E	E		<i>Dermochelys coriacea</i> - Leatherback Turtle
T	T		<i>Drymarchon corais couperi</i> - E. Indigo Snake
U	S		<i>Gopherus polyphemus</i> - Gopher Tortoise
E	E		<i>Lepidochelys kempii</i> - Kemp's Ridley Turtle
U	S		<i>Pituophis melanoleucus mugitus</i> - Fl. Pine Snake
U	T		<i>Stilosoma extenuatum</i> - Short-tailed Snake

CRUSTACEANS

U			<i>Crangonyx hobbsi</i> - Hobb's Cave Amphipod
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PLANTS

	T		<i>Adiantum capillus veneris</i> - Venus-haired Fern
	T		<i>Adiantum tenerum</i> - Maidenhair Fern
U			<i>Agrimonia incisa</i> - Incised groove-bur
	E		<i>Asplenium auritum</i> - Auricled Spleenwort
U	E		<i>Asplenium plenum</i> - Double Spleenwort
	E		<i>Asplenium pumilum</i> - Dwarf Spleenwort
	E		<i>Blechnum occidentale</i> - Sinkhole Fern
	E		<i>Cheilanthes microphylla</i> - Southern Lip Fern
E	E		<i>Chionanthus pygmaeus</i> - Pygmy Fringe Tree
U	E		<i>Lechea cernua</i> - Nodding Pinweed
	T		<i>Lilium catesbaei</i> - Catesby Lily
U	E		<i>Matela floridana</i> - Fl. Milkweed
	E		<i>Peperomia humilis</i> - Peperomia
U	T		<i>Pteroglossaspis ecristata</i> - Wild coco
	C		<i>Rhapidophyllum hystrix</i> - Needle Palm
	T		<i>Selaginella apoda</i> - Meadow Spikemoss

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Selaginella arenicola - Sand Spikemoss
Selaginella ludoviciana - Spikemoss
Spiranthes polyantha - Green Ladies' Tresses
Trichomanes petersii - Filmy Fern
Trichomanes punctatum - Filmy Fern
Triphora craigheadii - Nodding Caps
Verbena tampensis - Tampa Vervain
Zamia floridana - Fl. Coontie

APPENDIX D

**FDOT Generalized Peak Hour
Directional Volumes Table**

GENERALIZED PEAK HOUR DIRECTIONAL VOLUMES FOR FLORIDA'S URBANIZED AREAS*

STATE TWO-WAY ARTERIALS UNINTERRUPTED FLOW						FREEWAYS					
<p>Group A (less than 0.50 signalized intersections per mile) (Warning: For a specific analysis a facility's uninterrupted portions and the portions subject to capacity constraints should be evaluated separately.)</p>						<p>Group 1 (within urbanized area over 500,000 and leading to or within 5 miles of primary city central business district)</p>					
Lanes/ Divided	A	B	Level of Service		E	Lanes	Level of Service				
2 Undiv	230	620	C	D	1,280	4	A	B	C	D	E
4 Div.	570	1,450	1,900	2,210	2,600	6	1,850	3,000	4,280	5,170	5,560
6 Div.	850	2,180	2,860	3,330	3,890	8	2,580	4,000	5,710	6,890	7,410
8 Div.	1,070	2,760	3,580	4,170	4,870	10	3,240	5,000	7,130	8,610	9,260
12						12	3,780	5,850	8,340	10,070	10,830
						14	4,310	6,640	9,470	11,440	12,300
INTERRUPTED FLOW						<p>Group 2 (within urbanized area and not in Group 1)</p>					
<p>Group B (0.50 to 2.49 signalized intersections per mile)</p>						<p>Group 3 (within urbanized area and not in Group 1)</p>					
Lanes/ Divided	A**	B	Level of Service		E***	Lanes	Level of Service				
2 Undiv.	-	600	C	D	840	4	A	B	C	D	E
4 Div.	-	1,340	1,650	1,770	1,770	6	1,850	2,920	4,170	5,040	5,420
6 Div.	-	2,080	2,500	2,650	2,650	8	2,530	3,900	5,600	6,710	7,230
8 Div.	-	2,580	3,090	3,250	3,250	10	3,160	4,870	6,860	8,380	8,930
						12	3,880	5,680	8,130	9,810	10,550
						14	4,070	6,280	8,960	10,820	11,640
<p>Group C (2.50 to 4.50 signalized intersections per mile)</p>						<p>NON-STATE ROADWAYS MAJOR CITY/COUNTY ROADWAYS</p>					
Lanes/ Divided	A**	B**	Level of Service		E	Lanes/ Divided	Level of Service				
2 Undiv.	-	-	C	D	780	2 Undiv.	-	-	C	D	E
4 Div.	-	-	1,060	1,520	1,670	4 Div.	-	-	1,230	1,520	1,650
6 Div.	-	-	1,620	2,130	2,520	6 Div.	-	-	1,890	2,310	2,470
8 Div.	-	-	1,980	2,880	3,120	<p>OTHER SIGNALIZED ROADWAYS (signalized intersection analysis)</p>					
<p>Group D (more than 4.50 signalized intersections per mile and not within primary city central business district of urbanized area over 500,000)</p>						<p>Level of Service</p>					
Lanes/ Divided	A**	B**	C**	D	E	Lanes/ Divided	A**	B**	C	D	E
2 Undiv.	-	-	-	580	740	2 Undiv.	-	-	270	530	600
4 Div.	-	-	-	1,270	1,600	4 Div.	-	-	600	1,180	1,310
6 Div.	-	-	-	1,940	2,450	<p>ADJUSTMENTS DIVIDED/UNDIVIDED (after corresponding directional volume indicated percent)</p>					
8 Div.	-	-	-	2,400	3,000	Lanes	Median	Left Turn Bays	Adjustment Factors		
<p>Group E (more than 4.50 signalized intersections per mile and within primary city central business district of urbanized area over 500,000)</p>						2	Divided	Yes	+ 5%		
Lanes/ Divided	A**	B**	Level of Service		E	2	Undivided	No	- 15%		
2 Undiv.	-	-	-	650	740	Multi	Undivided	Yes	- 5%		
4 Div.	-	-	-	1,440	1,600	Multi	Undivided	No	- 20%		
6 Div.	-	-	-	2,210	2,450	<p>ONE-WAY (after corresponding directional volume indicated percent)</p>					
8 Div.	-	-	-	2,730	3,000	One-Way Lanes	Corresponding Two-Way Lanes		Adjustment Factor		
						2	4		+ 20%		
						3	6		+ 20%		
						4	8		+ 20%		
						5	8		+ 50%		

* The table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Values shown are hourly directional volumes based on the 1985 Highway Capacity Manual and Florida traffic, roadway and signalization data. To convert to annual average daily traffic volumes, these values must be divided by an appropriate D factor and K100 factor (Warning: do not use a peak to daily traffic ratio; a K100 must be used). The table's input value assumptions and level of service criteria appear on the back.

** Cannot be achieved.
 *** Volumes are comparable because intersection capacities are reached.

Source: Florida Department of Transportation, 1991.

1FHD
04/12/92