PRELIMINARY ENGINEERING REPORT

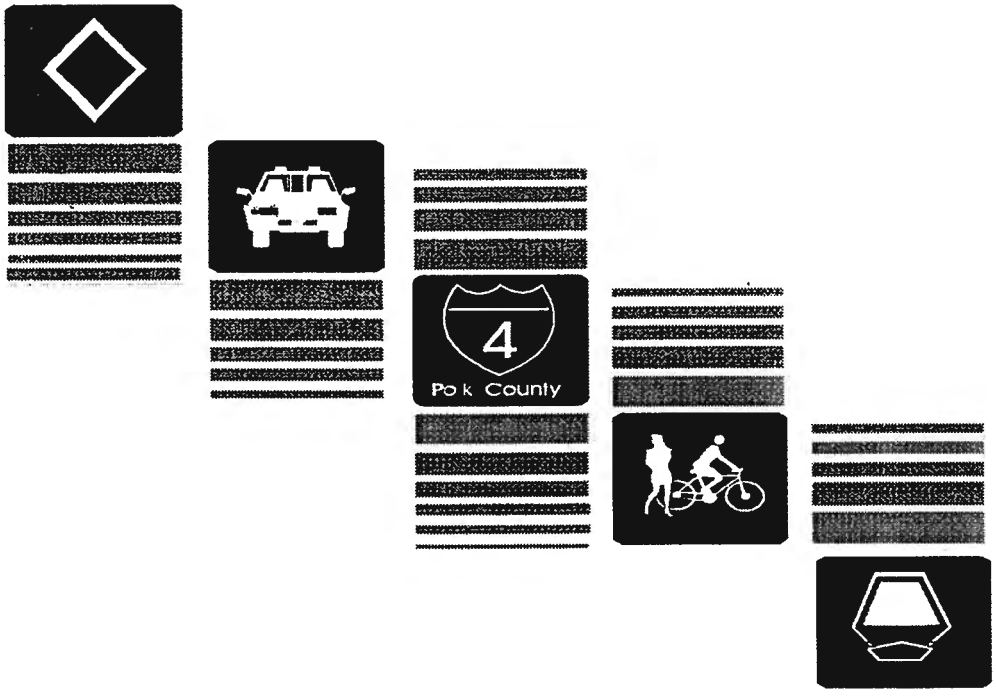
Florida Department of Transportation
District One Bartow, Florida

INTERSTATE 4

(State Road 400)

from West of Memorial Boulevard (State Road 546)
to the Polk/Osceola County Line

Financial Project Number: 201210
Federal Project Number: 0041 130
State Project Number: 16320-1402
Work Program Item Number: 1147948
Federal-Aid Project Number: ACDH-4-1(130)25



The proposed action consists of upgrading I-4 from a four-lane to a ten-lane divided highway for approximately 47.4 km (29.5 mi)

June 1998
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Prepared by:

Michael Baker Jr., Inc.
Consulting Engineers
Tampa, FL

June 1998
Revised August 1998

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the state of Florida practicing with Michael Baker Jr., Inc, a corporation authorized to operate as an engineering business, EB0000069 by the State of Florida Department of Business and Professional Regulation, Board of Professional Engineers, and that I have prepared or approved the evaluation, findings, opinions, conclusions, or technical advice hereby reported for:

PROJECT: Interstate 4 (State Road 400) PD&E Study - Preliminary Engineering Report

STATE PROJECT NUMBER: 16320-1402

WORK PROGRAM ITEM NUMBER: 1147948

FEDERAL AID PROJECT NUMBER: ACDH-4-1(130)25

FINANCIAL PROJECT NUMBER: 201210

FEDERAL PROJECT NUMBER: 0041 130

LOCATION: Polk County, Florida

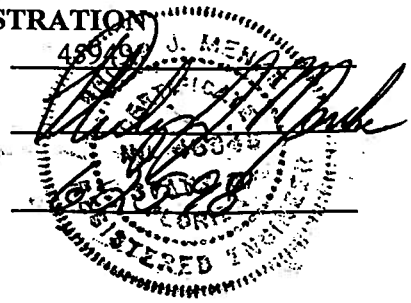
CLIENT: Florida Department of Transportation

This report includes the following sections: Executive Summary, Introduction, Need for Improvement, Existing Conditions, Roadway Design Criteria, Traffic, Corridor Analysis, Alternatives Analysis, Preliminary Design Analysis, Concept Plans and an Appendix. I acknowledge that the procedures and references used to develop the results contained in this report are standards to the professional practice of transportation engineering and planning as applied through professional judgment and experience.

NAME: Philip J. Menke, P.E.

FLORIDA REGISTRATION NUMBER: 48949

SIGNATURE:



DATE: 6/30/16

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LIST OF ACRONYMS

AADT ..... Average Annual Daily Traffic
AASHO ..... American Association of State Highway Officials
AASHTO ..... American Association of State Highway and Transportation Officials
ACOE ..... United States Army Corps of Engineers
BFE ..... Base Flood Elevation
BT ..... Buried Telephone
CAC ..... Citizens Advisory Committee
CATV ..... Cable Antenna Television
CBC ..... Concrete Box Culvert
CFRPC ..... Central Florida Regional Planning Council
CR ..... County Road
CSER ..... Contamination Screening Evaluation Report
dBA ..... Leq(h) expressed in "A" Weighted Decibels
DDHV ..... Directional Design Hour Volume
DOA ..... Section 4(f) Determination of Applicability
DRI ..... Development of Regional Impact
EAG ..... Environmental Advisory Group
EB ..... Eastbound
EDB ..... Ethylene Dibromide
EMP ..... Ecosystem Management Plans
EPA ..... Environmental Protection Agency
ERP ..... Environmental Resource Permitting
ESBA ..... Endangered Species Biological Assessment
FAC ..... Florida Administrative Code
FDA ..... Florida Department of Agriculture
FDEP ..... Florida Department of Environmental Protection
FDOT ..... Florida Department of Transportation
FEMA ..... Federal Emergency Management Agency
FGFWFC ..... Florida Game and Fresh Water Fish Commission
FGT ..... Florida Gas Transmission Company
FHWA ..... Federal Highway Administration
FIRM ..... Flood Insurance Rate Map
FIS ..... Flood Insurance Study
FPPA ..... Farmland Protection Policy Act
FSF ..... Florida Site File
GPL ..... General Purpose Lane
GTE ..... General Telephone Company
HCM ..... Highway Capacity Manual
HOV ..... High Occupancy Vehicle
IMR ..... Interchange Modification Report
LAMTD ..... Lakeland Area Mass Transit District
Leq(h) ..... Hourly Equivalent Sound Levels
LOS ..... Level of Service
LRE ..... Long Range Estimate
MOT ..... Maintenance of Traffic
MP ..... Mile Post
MSSW ..... Management and Storage of Surface Waters

LIST OF ACRONYMS (Cont'd)

NAAQS ..... National Ambient Air Quality Standard
NAC ..... Noise Abatement Criteria
NGVD ..... National Geodetic Vertical Datum
NRHP ..... National Register of Historic Places
OT ..... Overhead Telephone
OUC ..... Orlando Utilities Commission
OVA ..... Organic Vapor Analyzer
TPO ..... Transportation Planning Organization
PCBs ..... Polychlorinated Biphenyls
pcphpl ..... Passenger Cars per Hour per Lane
PCTS ..... Polk County Transportation System
PD&E ..... Project Development and Environment
ppm ..... Parts Per Million
RCP ..... Reinforced Concrete Pipe
SAP ..... Select Area Plan
SCS ..... United States Soil Conservation Service
SFWMD ..... South Florida Water Management District
SHPO ..... State Historic Preservation Officer
SHW ..... Seasonal High Water
SIA ..... Structure Inventory Appraisal
SJRWMD ..... St. Johns River Water Management District
SLD ..... Straight Line Diagram of Road Inventory
SOV ..... Single Occupant Through Vehicle
SPN ..... State Project Number
SPT ..... Standard Penetration Test
SR ..... State Road
SSC ..... Species of Special Concern
SUL ..... Special Use Lane
SWFWMD ..... Southwest Florida Water Management District
TAC ..... Technical Advisory Committee
TECO ..... Tampa Electric Company
TCP ..... Traffic Control Plan
TPO ..... Transportation Planning Organization
TSM ..... Transportation System Management
USDA ..... United States Department of Agriculture
USFWS ..... United States Fish and Wildlife Service
USGS ..... United States Geological Survey
V/C ..... Volume to Capacity Ratio
WB ..... Westbound
WER ..... Wetland Evaluation Report
WQIE ..... Water Quality Impact Evaluation

1.0 EXECUTIVE SUMMARY

1.1 Purpose

The purpose of this Preliminary Engineering Report is to document the alternatives analysis performed for the Project Development and Environment (PD&E) Study for the Interstate 4 (I-4) corridor in Polk County. The PD&E study identifies and evaluates potential corridor, typical section and alignment alternatives that will adequately provide for present and future traffic demands of the I-4 corridor in Polk County. Alternatives were considered in a logical step-by-step sequence and assessed for practicality and cost effectiveness at appropriate stages of the study to identify which alternatives warrant further evaluation in the environmental analysis stage of the project. This report is meant to aid the Florida Department of Transportation (FDOT) and the Federal Highway Administration (FHWA) in identifying 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. Concept plans are appended and should be reviewed along with this report, particularly where more corridor detail is desired. In addition to the construction alternatives evaluated in this report, the advantages and disadvantages of the no-project alternative are discussed. The no-project alternative will remain as a viable alternative until after the public hearings when the final recommendation for the preferred alternative will be made.

The Interstate 4 Multimodal Interstate Master Plan for Polk County, November 1994 (1994 I-4 Master Plan), has been completed and concurred with by the FHWA (see letter dated February 9, 1995 in Section 5 of the Appendix). The FHWA letter also grants approval for the addition of one lane in each direction. The 1994 I-4 Master Plan analyzed the existing I-4 corridor in Polk County from the Hillsborough/Polk County line to the Polk/Osceola County line, a distance of 52.3 km (32.5 mi). The 1994 I-4 Master Plan determined the need for the improvements to I-4 through an analysis of projected ultimate transportation demands for the I-4 corridor through the year 2020 and beyond. In support of the FDOT's Interstate Policy, the 1994 I-4 Master Plan was prepared to update and supersede the 1989 I-4 Master Plan, Revised 1991 (1989 I-4 Master Plan) and reflect the change in interstate policy. This included the adoption of a state policy limiting the expansion of interstate highways.

In response to this policy, the FDOT District 1 established the Master Plan Ultimate Typical Section in Polk County, approved by the FHWA, consisting of six general purpose lanes physically separated from four special use lanes with sufficient width to provide for a rail facility in the median (6 + 4 w/ Rail). The phrase "Special Use Lanes" refers to the phrase "Exclusive Through/HOV Lanes" used in the FDOT Interstate Highway System Policy. This then became the core of the typical section alternatives analyzed in this PD&E study for I-4 in Polk County.

1.2 Project Description

The FDOT is proposing improvements to I-4 from west of Memorial Boulevard to the Polk/Osceola County line, a distance of about 47.4 km (29.5 mi) to accommodate present and future traffic demands. These improvements include widening the existing four-lane divided highway to six general purpose lanes, four special use lanes (high occupancy (HOV)/single occupant through vehicles (SOV)) and sufficient right-of-way for future inclusion of rail service in the median. Eight existing interchanges would be improved and one proposed interchange with the Polk County Parkway would be added (by others). Structures at eleven non-interchange locations (including the CSX Railroad overpass) would be replaced to accommodate the proposed I-4 typical section. Future I-4 mainline right-of-way is proposed up to a maximum of 128.8 m (422.6 ft).

I-4 is an east-west limited access freeway connecting the urban centers of Tampa, Orlando and Daytona Beach across central Florida. The existing facility is a four-lane divided highway constructed within the standard interstate right-of-way width of 91.4 m (300 ft) with the exception of four bifurcated median areas in the eastern portion of the project where the right-of-way widens to a maximum of 162.8 m (534.0 ft). Additional right-of-way and easements are provided at grade separations, interchanges, rest areas, and some drainage channels.

The I-4 PD&E study is comprised of eight segments (numbered 2 through 9). The project segment limits and numbers have been arranged corresponding to the anticipated future design contracts for I-4 and are described below in geographical order from west to east.

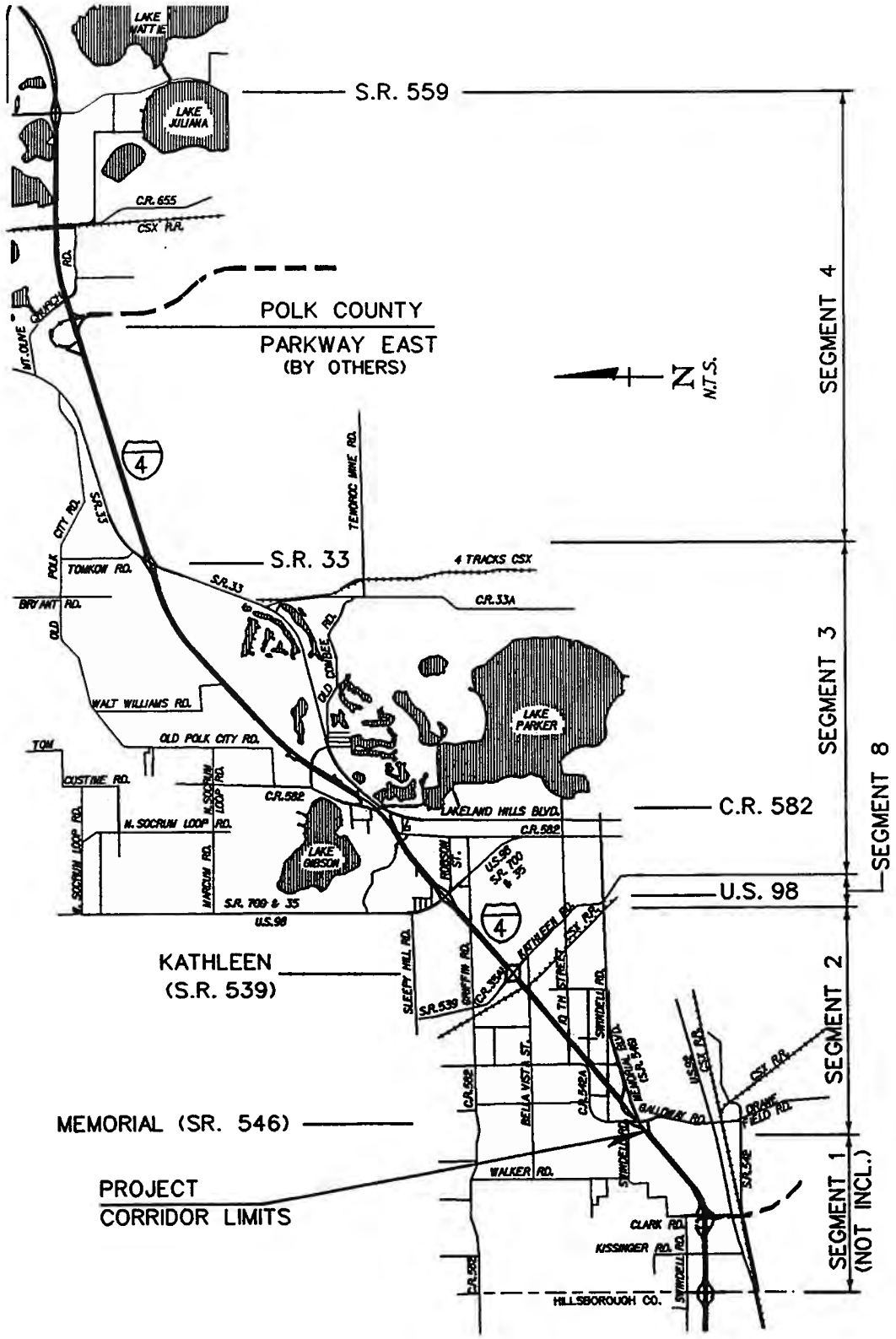
Segment Number	Length	Description
2	5.8 km (3.6 mi)	West of Memorial Boulevard (MP 2.565) to West of US 98 (MP 6.150)
8	0.8 km (0.5 mi)	US 98 Interchange, from West of US 98 (MP 6.150) to East of US 98 (MP 6.680)
3	9.5 km (5.9 mi)	East of US 98 (MP 6.680) to East of State Road (SR) 33 (MP 12.608)
4	9.8 km (6.1 mi)	East of SR 33 (MP 12.608) to East of SR 559 (MP 18.669)
5	6.4 km (4.0 mi)	East of SR 559 (MP 18.669) to East of County Road (CR) 557 (MP 22.647)
6	10.0 km (6.2 mi)	East of CR 557 (MP 22.647) to West of US 27 (MP 28.838)
9	1.1 km (0.7 mi)	US 27 Interchange, from West of US 27 (MP 28.838) to East of US 27 (MP 29.501)
7	3.9 km (2.4 mi)	East of US 27 (MP 29.501) to Polk/Osceola County line (MP 32.022)

The project corridor location map is shown in Figure 1-1.

1.3 Need for Improvement

I-4 is the only existing major east/west expressway route through Polk County and central Florida. According to the Polk County 2020 Long-Range Transportation Plan, adopted on November 9, 1995, Polk County's population was projected at 721,863 for the year 2020. This equates to a population growth of 316,219 over a thirty-year period (1990-2020) and a simple annual growth rate of approximately 2.5%. With the type of growth projected for Polk County, the traffic service on I-4 must be improved to meet the expected demand. The economic and social development of Polk County is directly related to the improvements of I-4. The western end of the I-4 corridor in Polk County is rapidly developing as a regional distribution center with the addition of several trucking and warehouse facilities in recent years. This type of development would benefit significantly from the improved roadway transportation service provided by the proposed improvements to I-4.

Central Polk County is rapidly developing as a population support area for the major metropolitan areas of Tampa and Orlando. Improved access to and from Polk County will enhance access to the overall



(1 of 2)

Project Corridor Location Map	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 1-1

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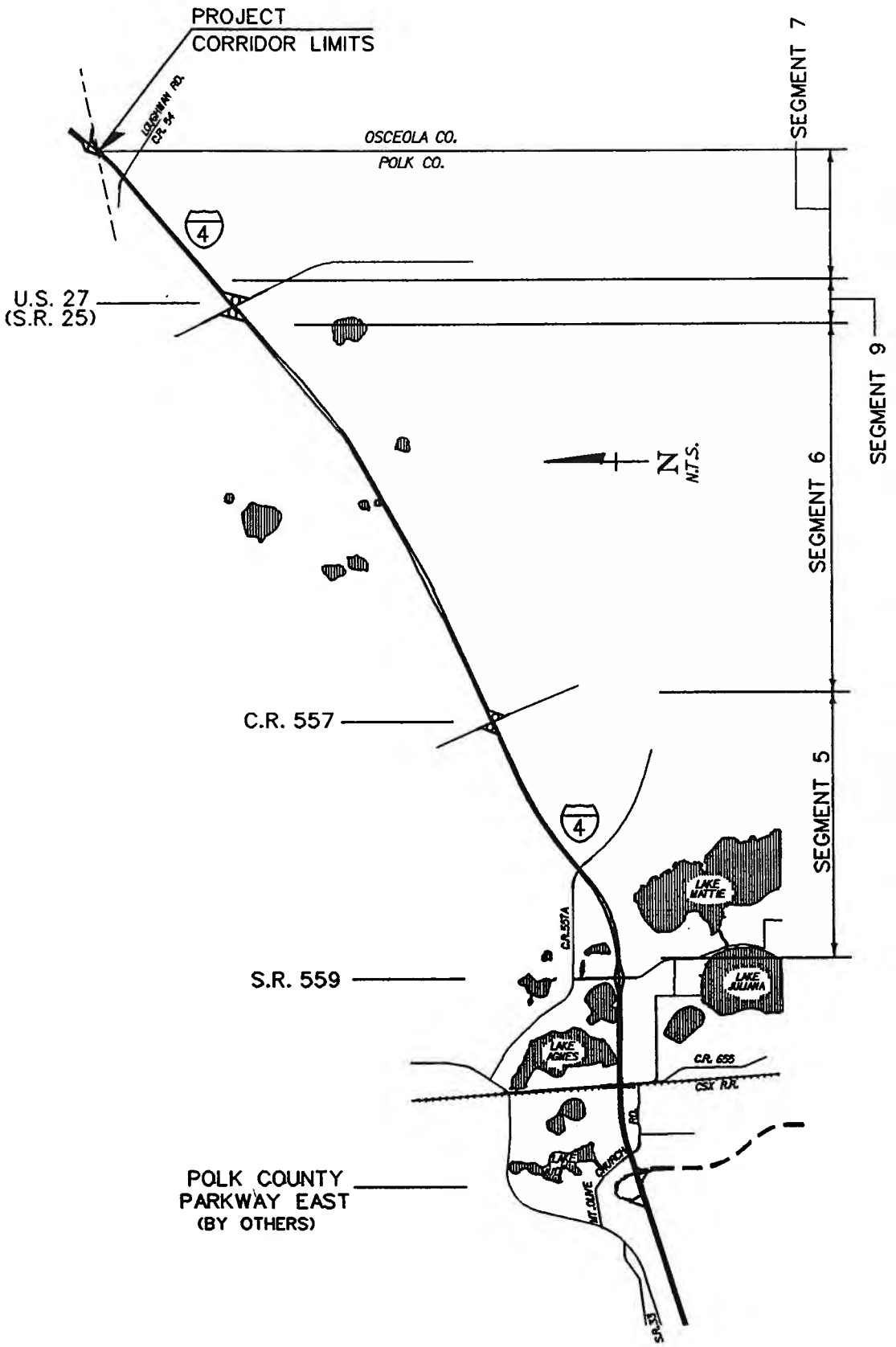

(2 of 2)

Project Corridor Location Map	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 1-1

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transportation network for residential, agricultural, commercial, industrial and office activities. The proposed addition of SOV/HOV lanes would allow tourists desiring to travel to and from the major resort areas of Orlando and the west coast beaches to pass through Polk County without hampering the traffic service of local tourists or permanent residents. I-4 serves as the major interregional east/west weather emergency evacuation route for and through Polk County. Improvements such as additional capacity, signing and marking, level of traffic service, interchange improvements, special use lanes and provisions for multimodal travel would decrease the potential for accidents. These improvements would provide substantial benefits to the users of the roadway and the surrounding population in general in that I-4 would become more user friendly and aesthetically pleasing.

The City of Lakeland and its surrounding area is and will continue to be a prime residential and resort destination, particularly during the winter season. The Lakeland Square Mall, located immediately north of I-4 at US 98 and its related development, is one of the greatest single traffic attractions to the I-4 corridor in central Polk County. The City of Lakeland added 23,170 new citizens during the 1980s. Among cities with over 70,000 in population, Lakeland was the fourth fastest growing city in Florida. The 1980 to 1990 census figures show a 34 percent increase in population for the region of which 17 percent are age 65 or older. Development of Polk County north of Lakeland has increased dramatically since US 98 was improved to a four-lane facility in the 1970s.

Existing (1993) average annual daily traffic (AADT) ranges from 45,880 to 63,000 vehicles per day. The existing facility (4+0) functions at an average level of service (LOS) C. The I-4 mainline west of Memorial Boulevard and east of US 27 are currently operating at LOS D. The remainder of the I-4 mainline is operating at LOS C or better. Interchange ramps at Memorial Boulevard (eastbound off-ramp and westbound on-ramp) are operating at LOS D and E, respectively. The interchange ramps at US 27 (eastbound on-ramp, westbound off-ramp and westbound on-ramp) are currently operating at LOS E, E and D, respectively. The remainder of the I-4 interchange ramps are operating at LOS C or better.

Without the proposed expansion to a 6+4 typical section, I-4 would operate at LOS F well in advance of the design year 2020. With the addition of one lane in each direction (6+0), I-4 will operate at an acceptable LOS until about the year 2008. The combined general purpose and special use lane AADT projected for the year 2020 ranges from 97,300 to 128,900 vehicles per day. The proposed mainline facility (6+4) is projected to operate at an average LOS between C and D through the design year 2020.

1.4 Corridor Analysis

Evaluation of the project corridor was conducted to assess potential impacts to the human and natural environment. The result of this analysis was the development of an avoidance and minimization strategy designed to eliminate or lessen those impacts. The impact evaluation considered the social, cultural, natural and physical environment. Initially, the corridor analysis for the I-4 project was limited to the existing corridor. It has been determined by the FDOT that relocation of I-4 to an alternate corridor was not a viable option for this project. Improvements to I-4 in its existing location is an integral part of the overall long-range transportation plan for Polk County and the City of the Lakeland. Planned improvements to connecting roadways as well as planned and existing development of the existing corridor are also tied to the improvements to I-4 in its existing location. Factors such as interchange spacing, gross relocations, community disruption, right-of-way costs and environmental impacts were considered by the FDOT in making the determination that alternative corridors were not available.

A Corridor Analysis Report, February 1995, Revised September 1995 (see Section 1 of the Appendix), was prepared for this project (see Sections 7.2 and 8.4.2). The report discusses the character of various segments along the I-4 mainline from west of Memorial Boulevard to the Polk/Osceola County line (Segments 2 through 9) and the potential impacts associated with these segments. The corridor analysis develops an alignment strategy to avoid or minimize potential impacts by shifting the alignment of the proposed improvements left (north), right (south) or center. Typical section and preferred alternative development utilized the alignment strategy recommended in the corridor analysis.

1.5 Environmental Analysis

The alignment strategy developed for the I-4 corridor avoided or minimized environmental impacts to the greatest extent practicable. Additional cost analysis refined and supported the alignment strategy.

1.5.1 Social Impacts

Relocation Potential - A Conceptual Stage Relocation Plan, January 27, 1998, was developed by the FDOT for this project in accordance with Florida Statutes, Chapter 339.09, the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (Public Law 91-646 as amended by Public Law 100-17). The total number of relocations anticipated as a result of the recommended improvements are 20 residences and 6 businesses. No churches, schools or community services would be relocated. Refer to Sections 8.4.2 and 9.5 for additional information regarding relocations.

Churches and Schools - No primary or secondary impacts are anticipated to any of the churches, schools or cemeteries in the I-4 corridor as a result of the recommended improvements. Refer to Sections 4.3.2.C, 4.3.2.D and 8.4.2 for additional information regarding educational and religious institutions.

Utilities - Utilities cross the I-4 corridor at virtually every grade separation and at other locations along the alignment. Natural gas pipelines and electric transmission lines parallel the alignment at various locations. All utility companies with facilities in the I-4 corridor were contacted through the FDOT Utility Request Package process for locational data and relocation cost estimates. Based on the responses from the Utility Request Packages, the cost estimates (in present day dollars) for utility relocations associated with the preferred alternative are estimated to be about $16,965,000. It is anticipated that the FDOT would bear about $5,725,000 of the costs. The remaining $11,240,000 utility relocation cost would be borne by the utility company or municipality. Refer to Sections 4.1.12 and 9.16 for additional information regarding utilities.

Railroads - One existing CSX Railroad crossing would be impacted by the proposed I-4 improvements (west of Kathleen Road in Segment 2). The railroad bridge structure would be replaced immediately west of the existing location to accommodate the horizontal and vertical clearance requirements of the recommended I-4 typical section. The proposed railroad overpass relocation has been coordinated with the CSX Railroad through the FDOT District Railroad Coordinator.

1.5.2 Cultural Impacts

Section 4(f) Lands - Wendell Watson Elementary School, located at 6800 Walt Williams Road, is owned by the Polk County School Board. It is located north of I-4 about 2.7 km (1.7 mi) east of Old Combee Road. The school property is separated from I-4 by Walt Williams Road, but has the potential to be impacted by widening I-4 to the north (left) causing Walt Williams Road to be relocated into the school property. As a result, a Section 4(f) Determination of Applicability (DOA) was submitted for the Wendell

Watson Elementary School describing various possible widening scenarios (typical sections and alignments). After a review of the DOA, on March 22, 1993, the FHWA determined that the provisions of Section 4(f) do not apply to the Wendell Watson Elementary School, stating that "...no right-of-way will be acquired under the preferred Alternate 3, and constructive use is not expected to significantly diminish the school's vital functions." (See FHWA Section 4(f) letter dated March 22, 1993 in Section 5 of the Appendix.) Note: Alternate 3 described in the Wendell Watson Elementary School DOA is the preferred alternative 91.4 m (300 ft) urban interstate typical section (see Figure 1-2 in Section 1.6.1) centered within the existing right-of-way.

Archaeologic and Historic - A Cultural Resource Assessment Survey, Revised May 1995, was conducted for the I-4 corridor. The Florida State Historic Preservation Officer (SHPO) concurred with the determination that none of the historic properties or archaeological sites identified in the I-4 corridor are eligible for listing in the National Register of Historic Places (NRHP), or otherwise of historical or architectural value, by issuing a letter of "no effect" for this project to the FHWA, dated August 2, 1995 (included in Section 5 of the Appendix). Refer to Section 4.3.2.A for additional information regarding archeological and historic sites.

1.5.3 Natural Environment

Wetlands - In compliance with Presidential Executive Order 11990, and using assessment methodology, evaluation procedures and document preparation guidance found in the FHWA Technical Advisory T6640.8A, Title 23, Code of Federal Regulations, Part 777; and Part Two, Chapter 18 of the FDOT's PD&E Manual, Revised 10/01/91, project consideration was given to protect wetland resources.

The proposed improvements are generally concentrated on a centered alignment. This alignment will cause additional impacts to already disturbed systems but minimizes new impacts. To avoid and minimize wetland impacts, individual wetlands were ranked according to their design constraints by project biologists. Project engineers subsequently used the wetland ranking to determine if alignment adjustments were appropriate to minimize impacts. The total wetland impact for the recommended improvements is estimated to be 85.32 ha (210.88 ac).

It has been determined that there is no practicable alternative to the proposed construction in wetlands, and that the proposed action includes all practicable measures to minimize harm to wetlands. Final determination of jurisdictional areas, proposed wetland impacts and mitigation requirements will occur through coordination between FDOT and natural resource regulatory agencies during the design and permitting phases of this project. Refer to Sections 4.3.3 and 9.15.1 for additional information regarding natural environment.

Flood Plains - In compliance with Presidential Executive Order 11988, Flood Plain Management and 23 CFR 650A, Subchapter G, Part 650, Subpart A, Section 650.111, December 9, 1991; and Part Two, Chapter 24 of the FDOT PD&E Manual, August 1, 1996, project consideration was given to the protection of flood plains.

A review of the Polk County and City of Lakeland Flood Insurance Rate Maps (FIRMs) indicate that the proposed I-4 alignment encroaches or borders on the base flood plain at 38 locations. Of the 38 locations identified as having the potential for flood plain encroachment, it is anticipated that the proposed improvements to I-4 would encroach at 30 of the flood plain locations. The estimated total volume of flood plain displacement for the length of this project is 101,625 m^3 (82.39 ac-ft). Subsequent design phases of this project will compensate for this loss of flood plain storage through mitigation coordination

with the Southwest Florida Water Management District (SWFWMD) and the St. Johns River Water Management District (SJRWMD).

Eight of the 38 potential flood plain encroachments are in Evaluation Category 1, fifteen are in Evaluation Category 2 and fifteen are in Evaluation Category 4. The Category 1 encroachments would not involve any work below the 100-year flood elevation. The Category 2 encroachments do not involve the replacement or modification of any drainage structures. The Category 4 encroachments involve the replacement of drainage structures with hydraulically equivalent structures. In all cases, the project would result in no significant adverse impacts on natural and beneficial flood plain values and no significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that these encroachments are not significant.

The proposed improvements to I-4 are consistent with the existing watershed and flood plain management programs for the Lakeland Planning Area and Polk County as defined by the Lakeland Comprehensive Plan: Year 1990-2000 and the Polk County Comprehensive Plan, January 31, 1994, respectively. Refer to Section 9.15.4 for additional information regarding flood plains.

Wildlife and Habitat - The **Florida scrub jay** is listed as Threatened by the Florida Game and Fresh Water Fish Commission (FGFWFC) and the United States Fish and Wildlife Service (USFWS). Two clans of scrub jays exist near the I-4 corridor at CR 54 (Loughman Road). This appears to be the only known occurrence of the scrub jay along I-4 within Polk County. A total of eight birds were observed during the Fall 1994 surveys at this location. Spring surveys conducted in April 1995 revealed a total of six birds. The surrounding area was surveyed for additional clans or territories during both survey periods. No additional sightings or responses were made outside of the identified area. Direct impacts to Type III habitat within 402 m (0.25 mi) of Type I habitat used by scrub jays will occur with the proposed project. No direct impacts to Type II or Type I habitats are proposed. The widening of the road would directly affect Type III habitat within the territories of two clans. Indirect impacts may be incurred as the distance of the roadway from Type II and Type I scrub jay habitat decreases. The FDOT's Highlands County Upland Mitigation Bank property will be used to mitigate for potential scrub jay impacts at a 2:1 ratio for the 1.28 ha (3.17 ac) of impact.

Pedestrian surveys were conducted for **bald eagles** in known nest sites within 1.6 km (1 mi) of the I-4 corridor based on information provided by Paul Schulz, Wildlife Biologist with the FGFWFC. Bald eagles are listed as Threatened by the USFWS and the FGFWFC. Bald eagle nest number PO49 was located 2,800 feet south of I-4 and 900 feet west of US 98. The nest tree was documented as lost and the area subsequently cleared by the landowner. The new nest location designated PO49A was constructed during the 93-94 season. PO49A is located 1,900 feet south of Griffin Road (4,100 feet south of I-4) and 400 feet west of US 98. Bald eagle nest number PO50 is located abut 3,700 feet north of I-4. The nest was documented as "down" during the 93-94 nesting season. A new nest was established and is designated as PO50A. Bald eagle nest number PO50A is located in the southeastern portion of the southwestern quarter section of Section 9, Township 27 South, Range 24 East. This location is about 3,800 feet north of I-4. Bald eagle nest number PO64A is located about 1.6 km (1 mi) south of I-4 in Segment 4.

The USFWS has designated primary zones to extend 750 feet in all directions from bald eagle nests PO49, PO49A, PO50A and PO64A and a secondary zone to extend an additional 750 feet from the boundary of the primary zone, for a total distance of 1,500 feet from each nest.

The proposed project is located outside of the protection zones for bald eagle nests PO49, PO49A, PO50A and PO64A. The USFWS concluded in a letter dated 8-27-97 (see Appendix II - USFWS letter dated 8-27-97) , "That the proposed project is located outside of the protection zones for bald eagle nests PO49, PO49A, PO50A and PO64A. Therefore, we conclude that the proposed project is not likely to adversely affect the aforementioned bald eagle nests."

Florida sandhill cranes (listed as Threatened by the FGFWFC) have been observed utilizing suitable habitat areas along the I-4 corridor. A nesting location was reported south of the proposed right-of-way just to the west of CR 54 (Segment 7). Another nesting site is located approximately 2.01 km (1.25 mi) south of I-4 and approximately 2.41 km (1.5 mi) east of the SR 33 interchange. This second area is a multi-species rookery, identified as POLK001040 by the FGFWFC. Potential habitat for nesting cranes does occur along the project corridor, however, no nests were found within or adjacent to the I-4 right-of-way. The nesting areas are not within 457 m (1500 ft) of the roadway, therefore, it is anticipated that scheduling of construction activities will not be affected. A resurvey of the project corridor (or appropriate habitat) may be required prior to construction. Presence of listed species will facilitate coordination with the appropriate resource agency at that time.

Other wading birds including the **little blue heron, snowy egret, tricolored heron** (listed as a Species of Special Concern (SSC) by the FGFWFC), and the **white ibis** may be seen feeding in and among the wetlands of the I-4 corridor. Potential nesting habitat occurs within the project corridor. The wading birds may be seen feeding in and among the wetlands of the I-4 corridor. A multi-species rookery (identified as POLK001040 by the FGFWFC) is located 2.01 km (1.25 mi) south of I-4 and about 2.41 km (1.5 mi) east of the SR 33 interchange. The multi-species rookery is not within 457 m (1500 ft) of the roadway, therefore, it is anticipated that scheduling of construction activities will not be affected. Potential habitat occurs within the project corridor. A resurvey of the project corridor or appropriate habitat may be required prior to construction. Presence of listed species will facilitate coordination with the appropriate agencies.

No **burrowing owls** (listed as a SSC by the FGFWFC) have been sighted in the corridor although potential habitat exists adjacent to the corridor. No **Southeastern American kestrel** (listed as Threatened by the FGFWFC) nesting locations have been found although unidentified kestrels have been sighted foraging in the area. There is currently no evidence or reports of a **wood stork** (listed as Endangered by the USFWS and FGFWFC) rookery in or near the I-4 project corridor.

Several species of reptiles that may occur in the I-4 corridor are listed as Threatened or a SSC by the USFWS and/or FGFWFC including the **American alligator, eastern indigo snake, pine snake** and the **short tailed snake.** None of these reptiles were observed in the I-4 corridor in the surveys performed for this project. It is likely that the American alligator occasionally occurs in the ditches and marshes within the project corridor. Since the alligator is wary of human activity, it would undoubtedly move out of construction areas. Therefore, the project construction and operation will not have an adverse affect on this species. The only possible occurrence of a protected amphibian in Polk County is the **gopher frog** (listed as a SSC by the FGFWFC), which is known to be commensal with the gopher tortoise. None were observed within the project limits.

The **gopher tortoise** is listed as a SSC by the FGFWFC. Gopher tortoise habitat exists in several areas along the I-4 corridor, although no active, inactive or abandoned burrows were identified within the proposed right-of-way. Tortoise burrows have been seen in abandoned citrus groves and improved pasture areas along the I-4 corridor adjacent to this project. Incidental take permits will be required for impacts potentially occurring to individuals which may be found along the linear impact zone of construction.

Surveys of appropriate habitat will occur prior to construction to identify permitting needs. Mitigation, if required, will be accomplished through the use of the FDOT Highlands County mitigation bank.

No critical habitat, with the exception of known eagle nest locations, for any protected species has been identified within the project corridor. Eagle nest areas will require adherence to established guidelines. In the case of the gopher tortoise and potential commensal species, appropriate mitigative measures will be taken only after consultation with the proper authorities and issuance of the necessary permits. The presence of gopher tortoises on most upland areas is possible.

The construction phase of this project is not included in the current FDOT 5-year work program and because of the anticipated delay in construction of the proposed I-4 improvements, a resurvey of the project corridor prior to construction is recommended. Refer to Sections 4.3.3 and 9.15.5 for additional information regarding wildlife and habitat.

1.5.4 Physical Impacts

Noise - A total of 933 existing and planned sensitive sites were identified adjacent to the I-4 corridor as having the potential to be impacted by motor vehicle-related noise with the proposed improvements. These sites include single and multi-family residences, two elementary schools and four churches. Of the 933 sites, 380 are predicted to experience existing and future (year 2020) noise levels that may approach or exceed (65 to 73 dBA) FHWA's Noise Abatement Criteria (NAC). During the design year for the I-4 improvements (year 2020), 626 additional sites are predicted to experience noise levels that may approach or exceed the NAC (65 to 790 dBA). Abatement measures (traffic management, alignment alternatives and noise barriers) were considered for all of the sites predicted to be impacted by noise with the proposed improvements.

Due to the nature of the facility (Interstate Highway) and the capacity constraints caused by such measures, traffic management is not considered a feasible or reasonable mitigation measure for the project.

Further alignment shifts would increase impacts unrelated to noise to the businesses and residences currently located adjacent to the roadway. The preferred construction alternative generally utilizes the existing right-of-way for I-4. While feasible, further alignment shifts are considered to be unreasonable to mitigate predicted noise impacts.

Noise barriers were evaluated at 27 locations adjacent to the improved I-4 roadway. The results of the evaluation indicate that the desired reduction in noise (5 dBA) can not be achieved at 3 of the locations, the cost effective guideline is significantly exceeded at 17 locations. As such, noise barriers are not considered a reasonable noise abatement measure at 20 of the locations evaluated. At the remaining locations (location nos. 2, 6, 7, 11, 15, 16 and 17), the analysis indicates that noise barriers would provide a reasonable reduction in noise levels at a cost below the cost effective guideline. The FDOT is committed to provide these barriers contingent on the following:

- the barrier is subjected to a detailed noise analysis during the design phase of this project and the analysis supports the need for the abatement;
- reasonable cost analyses indicates that the economic cost of the barrier will not exceed the guidelines;
- the affected property owners are surveyed and a positive desire for the barriers (including type, height, location and access requirements) is obtained;

- preferences regarding compatibility with adjacent land uses as addressed by local officials has been noted; and
- all safety and engineering aspects of the barrier are reviewed and approved as they relate to the roadway user and the adjacent property owners.

Refer to Section 9.15.6 for additional information regarding noise.

Air Quality - An Air Quality Study was conducted for the I-4 PD&E study to determine whether project related motor vehicle emissions will cause or contribute to an exceedance of the National Ambient Air Quality Standard (NAAQS) for carbon monoxide. Results of the air quality analysis indicate that the project will not cause or contribute to the NAAQS for carbon monoxide with or without the proposed I-4 improvements. The project is located in an area which has been designated attainment for the ozone standards under the criteria provided in the Clean Air Act Amendments of 1990. This project is in conformance with the State Implementation Plan because it will not cause violations of the NAAQS.

Construction of the proposed project will have a temporary impact on air quality conditions in the vicinity of the roadway during site preparation, with particulate matter (dust) having the greatest impact. Where excess particulate matter is likely to become a problem, the contractor will adhere to the 1998 FDOT Standard Specifications for Road and Bridge Construction and any special provisions in the construction contract which relate to the control of air pollution. Refer to Section 9.15.7 for additional information regarding air quality.

Construction - I-4 construction activities would have minimal, temporary, yet unavoidable noise, air quality, water quality, wetlands, traffic flow, and visual impacts on the residences, businesses, recreational areas, and travelers within the immediate vicinity of the project. Maintenance of traffic and sequence of construction will be planned and scheduled so as to minimize traffic delays throughout the project. Access to all businesses and residences would be maintained to the extent practical through controlled construction scheduling. During final design, a Traffic Control Plan (TCP) (for maintenance of traffic and access) will be developed and approved for use, in accordance with the latest edition of the FDOT Roadway and Traffic Design Standards. Visual impacts associated with the storage of construction materials and establishment of temporary construction facilities would occur, but are not considered significant. These impacts would be minimized on this project by the contractor's adherence to measures discussed in the latest edition of the FDOT Standard Specifications for Road and Bridge Construction, "Prevention, Control, and Abatement of Erosion and Water Pollution" and the project construction contract's Special Provisions. Refer to Section 9.15.8 for additional information regarding construction.

Contamination - A Level 1 Contamination Screening Evaluation Report (CSER) was performed for the I-4 corridor. A total of 54 potential contamination sites were initially identified for this project by windshield survey; examination of historic aerial photography; and a review of the original I-4 construction drawings, the 1989 I-4 Master Plan and the US 98 CSER, November 1993. This was followed by site inspections, reviews of Florida Department of Environmental Protection (FDEP) files, Sanborn Insurance Maps and Lakeland City Directories and interviews with owners. Four (4) hazardous materials sites and sixteen (16) petroleum sites were initially considered to have a MEDIUM or HIGH potential for contamination. Soil boring and organic vapor analyzer (OVA) screenings were completed on June 30, July 3 and July 5, 1995. The OVA screenings did not encounter significant hydrocarbon vapors at any of the sites tested.

Two areas within the I-4 project corridor were documented by the FDEP as having known groundwater contamination stemming from the past use of the pesticide ethylene dibromide (EDB) including the area around the SR 559 interchange in Segment 4 and the area around the US 27 interchange in Segment 9 (including the eastern end of Segment 6). Soil samples were obtained from existing or former citrus grove areas where there is concern for possible EDB or other pesticide/herbicide contamination at a depth of less than one foot after the removal of surface vegetation and roots. The results of the laboratory analysis of soil samples indicate that none of the constituents for which analysis was performed were found above the laboratory detection limit for that constituent.

Although the OVA screenings and soil sampling for pesticides did not reveal the presence of contamination, based on the historic nature of the businesses conducted (e.g. gasoline service stations), the additional right-of-way required from the site, known past incidents of contamination, and/or the close proximity of the underground storage tanks to the proposed right-of-way, four (4) sites were rated as having a MEDIUM potential for the presence of contamination. The four sites include:

Site No.	Name (Project Segment)	Final Rating
61S	Amoco/Lung Ho Ventures, Inc. (Segment 4)	Medium
68N	Speedway Station #8179 (Segment 9)	Medium
72S	Exxon #45536 (Segment 9)	Medium
75S	Amoco #17 (Segment 9)	Medium

Because of the negative results of the OVA screenings, EDB soil sample analysis and of the lack of known contamination, no contamination cleanup costs have been developed for the sites identified for this project. Refer to Sections 4.3.4 and 9.15.9 for additional information regarding contamination potential.

1.6 Recommended Improvements

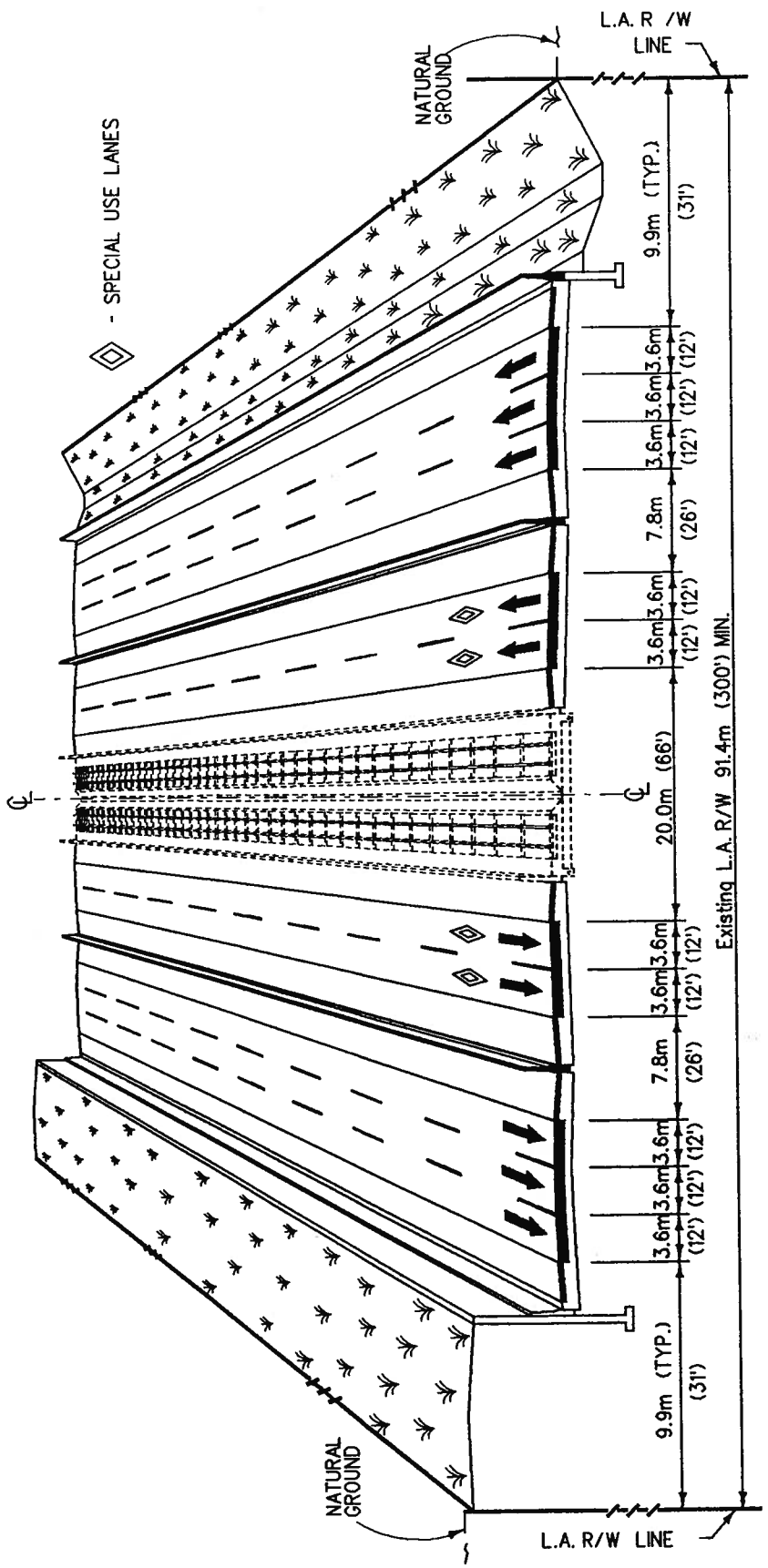
The recommended improvements to I-4 consist of upgrading the existing four-lane roadway to a ten-lane divided interstate facility in accordance with the FDOT District One policy typical section described above and based on the environmental avoidance and minimization strategy developed for the I-4 corridor.

1.6.1 I-4 Mainline Typical Sections

The core of the recommended typical sections for this project consists of three 3.6 m (12 ft) general purpose travel lanes each way, two 3.6 m (12 ft) special use travel lanes each way and a minimum 20.0 m (66 ft) median to provide for the future inclusion of rail service. The special use lanes would be separated from the general purpose lanes by two shoulders and a barrier wall totaling 7.8 m (26 ft). The differences in the two recommended typical sections are the classification (rural or urban) and the border dimensions to the right-of-way. See Section 9.2.

1. An urban interstate typical section to be constructed within the existing 91.4 m (300 ft) right-of-way is recommended from west of Memorial Boulevard to east of the SR 33 interchange (Segments 2, 8 and 3). See Figure 1-2.

2. A rural interstate typical section contained within a minimum 128.8 m (422.6 ft) right-of-way is recommended from east of the SR 33 interchange to the Polk/Osceola County line (Segments 4, 5, 6, 9 and 7). See Figure 1-3.



RECOMMENDED I-4
URBAN INTERSTATE TYPICAL SECTION
(WEST OF MEMORIAL BLVD. TO EAST OF S.R. 33)
6 GENERAL PURPOSE LANES
4 SPECIAL USE LANES
RAIL ENVELOPE

Recommended I-4 Mainline 91.4m (300 Ft.) Urban Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 1-2

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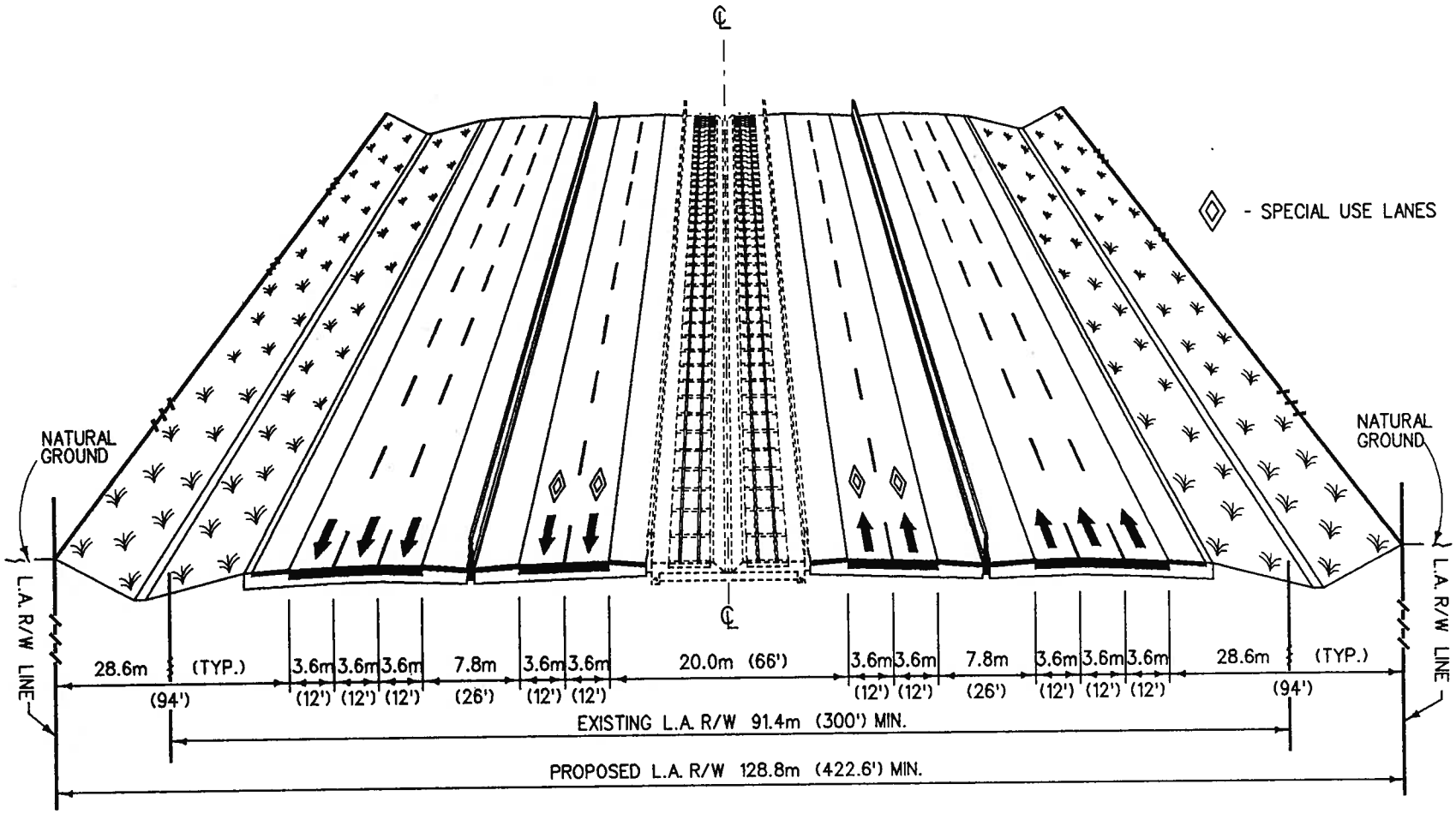


RECOMMENDED I-4
RURAL INTERSTATE TYPICAL SECTION
(EAST OF S.R. 33 TO THE POLK/OSCEOLA COUNTY LINE)
6 GENERAL PURPOSE LANES
4 SPECIAL USE LANES
RAIL ENVELOPE

Recommended I-4 Mainline
128.8m (422.6 Ft.)
Rural Typical Section

I-4 Preliminary
Engineering Report
State Project No. 16320-1402

Polk County 4

FIGURE
1-3

1.6.2 I-4 Mainline Alignment

Generally, the preferred alignment recommended for the improvements to I-4 is described as follows:

Segment 2 - Begin widening to the right to match the design of I-4 west of Memorial Boulevard. Transition from right to a centered alignment immediately east of the Memorial Boulevard interchange and remain centered to west of the Kathleen Road interchange. The alignment should shift to the left between Kathleen Road and US 98 to avoid impacts to the well heads along the right right-of-way. The alignment should transition back to the center west of the US 98 interchange.

Segment 8 - Segment 8 should be a centered alignment through the US 98 interchange.

Segment 3 - This segment should begin on a centered alignment east of the US 98 interchange and transition to the right west of the CR 582/Socrum Loop Road interchange. Segment 3 should remain widened to the right through the CR 582 interchange then transition back to a centered alignment for the remainder of the segment to east of SR 33.

Segment 4 - Segment 4 should be centered on the existing alignment from east of SR 33 to east of CR 655. The alignment should transition to the right after the CR 655 overpass and remain to the right through the SR 559 interchange. Segment 4 should transition back to a centered alignment east of SR 559.

Segment 5 - The improvements to I-4 should be centered on the existing alignment for the length of this segment.

Segment 6 - The improvements to I-4 should be centered on the existing alignment for the length of this segment.

Segment 9 - The improvements to I-4 in Segment 9 should be centered on the existing alignment through the US 27 interchange.

Segment 7 - The improvements to I-4 should be centered on the existing right-of-way at the western end of Segment 7. The alignment should shift to the left within the existing right-of-way in the bifurcated median area. The improvements should transition to a centered alignment west of the CR 54 (Loughman Road) overpass and remain centered for the remainder of the project.

The recommended preferred alignment was developed as a result of the avoidance and minimization strategy described above, the alternatives analysis documented in Section 8.0, the environmental impacts evaluation and the cost analysis documented in Section 8.5. The recommended preferred alignment is shown on the Concept Plans.

1.6.3 Interchange Configurations

In Polk County, the I-4 PD&E study contains eight interchanges. All of the existing interchanges require modifications to conform to the recommended improvements to I-4 and the cross roads, provide for an acceptable LOS and meet current design and safety standards. As such, all of the interchanges will have to be completely reconstructed. The following interchange configurations have been selected for use in this study.

Memorial Boulevard (SR 546) - The existing trumpet style limited directional interchange (eastbound I-4 exit ramp and a westbound I-4 entrance ramp only) would be reconstructed to accommodate the I-4 mainline improvements. In addition, an eastbound I-4 entrance ramp would be provided. The I-4 ramp termini would not be signalized.

Kathleen Road (SR 539) - The existing rural type diamond interchange would be modified to a tight diamond urban type interchange. The limited access right-of-way would be extended north and south along Kathleen Road requiring the closure of two intersections and the addition of access roads in the southwest quadrant. The I-4 ramp intersections with Kathleen Road would be signalized.

US 98 - The existing rural type diamond interchange would be modified to a single point diamond urban type interchange (Alternate US98-2). The I-4 ramp intersections with US 98 would be signalized.

Socrum Loop Road (CR 582) - The existing modified diamond would be reconstructed into a modified diamond type interchange with ramps connecting I-4 with CR 582 to the north and loop ramps connecting to SR 33 further east. The I-4 ramp termini would be signalized.

SR 33 - The existing rural type diamond interchange would be modified to a tight diamond urban type interchange. The limited access right-of-way would be extended north and south along SR 33 requiring the realignment of the Tomkow Road intersection. The I-4 ramp intersections with SR 33 would be signalized.

SR 559 - The existing rural type diamond interchange would be modified to a tight diamond urban type interchange. The limited access right-of-way would be extended north and south along SR 559. The I-4 ramp intersections with SR 559 would be signalized.

CR 557 - The existing full service partial cloverleaf would be modified to a rural diamond type interchange eliminating the existing ramp loops. Additional limited access right-of-way would be extended north and south along CR 557 to accommodate the proposed ramps. The I-4 ramp intersections with CR 557 would be signalized.

US 27 - The existing interchange is a full service partial cloverleaf with ramp loops in the northwest and southeast quadrants. The proposed configuration is a full service expanded loop partial cloverleaf interchange (Alternate US27-4). Additional limited access right-of-way would be required in the northwest and southeast quadrants to accommodate the expanded loop ramps. The ramp intersections with US 27 would be signalized.

The recommended interchange concepts are discussed in Section 8.4.3 and are shown on the Concept Plans.

1.6.4 Cross Road Typical Sections

The recommended improvements to the I-4 corridor include upgrading the existing eighteen cross roads in the area of the interstate. All cross road structures would have to be replaced to accommodate horizontal and vertical clearance requirements of the recommended I-4 typical sections. All cross road improvements should include bicycle, pedestrian and handicapped accommodations, as appropriate.

FDOT District One directed that the US 98, CR 582, SR 33 and US 27 cross roads at interchanges be designed to ultimately accommodate six lanes and provide a minimum 9.0 m (30 ft) median. The Kathleen Road (SR 539) overpass will be designed for four lanes but will ultimately accommodate six lanes and a 6.7 m (22 ft) median because of the narrow right-of-way south of I-4. The 1995 PD&E study for US 98 recommended that US 98 be improved to six lanes south of I-4 and eight lanes north of I-4. US 27 will be designed for six lanes. The cross road typical section recommendations in this study are based on the improvements necessary to satisfy the traffic demand through the 2020 Design Year and to be consistent

with the adopted long range transportation planning of Polk County and the City of Lakeland. Sufficient right-of-way for the ultimate six-lane or four-lane configuration should be purchased initially.

All non-interchange crossroad improvements will retain the same basic configuration as the existing roadways (overpass or underpass) except CR 655. A Value Engineering recommendation to change CR 655 from an underpass to an overpass is included in the proposed I-4 improvements. The change will not require additional right-of-way and will not inhibit the future expansion of CR 655 to a four-lane facility. See Section 9.19.3 for additional information.

The recommended basic typical section requirements for each cross road are described below.

Cross Road Name	Existing Lanes	Proposed Lanes	Median Width	Ultimate Lanes	Roadway Type
Swindell Road	2	2	N/A	2	Rural
10th Street	2	2	N/A	2	Rural
Bella Vista Street	2	2	N/A	2	Rural
SR 539 (Kathleen Road)	2	4	14.0 m (46 ft)	6	Urban
CR 582 (Griffin Road)	2	4	9.0 m (30 ft)	4	Urban
US 98	4	6S & 8N	9.0 m (30 ft)	6S & 8N	Urban
Carpenter's Way Road	2	2	N/A	2	Rural
CR 582 (Socrum Loop Road)	4	6	16.5 m (54 ft)	6	Urban
Old Combee Road	2	2	N/A	2	Urban
SR 33	2	4	9.0 m (30 ft)	6	Rural
Mt. Olive Church Road	2	2	N/A	2	Rural
CR 655	2	2	N/A	2	Rural
SR 559	2	4	9.0 m (30 ft)	4	Urban
CR 557A	2	2	N/A	2	Rural
CR 557	2	2	N/A	4	Rural
US 27	4	6	9.0 m (30 ft)	6	Urban
CR 54 (Loughman Road)	2	2	N/A	2	Rural

The recommended cross road typical sections are discussed in Sections 9.2.2 and 9.21.

1.6.5 Special Features

Slip Ramps - Slip ramps are connections constructed at grade between the special use lanes and general purpose lanes. The slip ramp minimum design criteria selected for the recommended improvements consist of: no deceleration lane, 2^0 exit divergence angle, 152 m (498 ft) parallel merge lane, 11.4 m (38 ft) median, 329 m (1,080 ft) barrier wall opening and a 70:1 252 m (827 ft) entrance taper.

The locations for the proposed slip ramps were selected based on the recommendations of the 1994 I-4 Master Plan and adjusted based on physical and environmental constraints, weaving lengths and I-4 mainline geometry. Location No. 1 is between the CR 582 and SR 33 interchanges (Segment 3). This location serves the special use demand generated by the Kathleen Road, US 98, CR 582 and SR 33 interchanges. Location No. 2 is west of the proposed Polk County Parkway East interchange and east of the SR 33 interchange (Segment 4). This location serves the anticipated demand created by the proposed Polk County Parkway East interchange. Location No. 3 serves the demand created by the Polk County Parkway and US 27 interchanges. Physical, geometric and environmental constraints required that Location No. 3 be separated into Location No. 3a and Location No. 3b. Location No. 3a (the eastbound special use lane entrance slip ramp) is in Segment 4 between the CR 655 underpass and the SR 559

interchange. Location No. 3b (the westbound special use lane exit ramp) is in Segment 6 east of the CR 557 interchange.

The proposed design criteria and locations of the slip ramps were reviewed and accepted by the FHWA on April 11, 1996.

The slip ramp design criteria and general configuration are further described in Section 9.22.1. The locations of the slip ramps are shown on the Concept Plans.

Wildlife Undercrossings - Two recommended wildlife undercrossing locations are proposed in the vicinity of the Green Swamp between the CR 557 and US 27 interchanges (Segment 6), an area of habitat concern that is in need of protection. The proposed habitat connections would coincide with two proposed low-level bridges spanning areas of unsuitable geological stability (deep muck deposits). These locations are about 3.5 km (2.2 mi) and 6.8 km (4.2 mi) east of the CR 557 interchange, respectively. A third I-4 wildlife undercrossing location was identified in the vicinity of Saddle Creek and the Tenoroc Management Area (an area poised for restoration activity in conjunction with the phosphate industry in coordination with FGFWFC). This undercrossing, located about 3.7 km (2.3 mi) east of the SR 33 interchange, would provide a wildlife corridor link within the Peace River drainage basin on either side of I-4. This wildlife undercrossing would also be a low-level bridge spanning a drainage way connecting a series of wetlands north of I-4 to a reclaimed strip mining area south of I-4.

The following minimum design criteria for wildlife undercrossings were established at a coordination meeting with the FGFWFC on May 26, 1995. An American Association of State Highway and Transportation Officials (AASHTO) girder type structure would be preferable to a flat slab type structure because it should be less noisy and would provide a more open, less restricted area underneath. Span lengths of less than 12.2 m (40 ft) should not be used. The vertical underclearance should not be less than 2.4 m (8 ft) above seasonal high water (SHW) or existing ground (whichever is higher). The right-of-way line is typically fenced for all interstate, limited access facilities. It is recommended that the right-of-way fencing break at the locations of the wildlife undercrossings and channel to the undercrossing opening. The angle of channelization, fence height, size and height of mesh, and length of "animal proof" fencing will be determined during the design phase of this project. Fencing will be provided in the median to control wildlife movement through the undercrossing.

For the structures in Segment 6, the bridge abutments will have normal slope protection to within 0.3 m (1 ft) above SHW. At that elevation a 3.0 m (10 ft) wide level (or only slightly sloped to drain) bench will be constructed. From the bench the fill will slope to the water and/or existing ground at a slope no steeper than 10 horizontal to 1 vertical.

For the structures in Segment 4, the bridge abutments will have normal slope protection to existing ground (since SHW is below ground level in this area). The distance between the bottom of the abutment slopes will not be less than 30 m (about 100 ft). A channel will be constructed under the bridges to accommodate the existing drainage. The side slopes of the channel will be as flat as hydraulically possible down to the normal water level. The existing roadway embankment between the bridges will be removed down to match the existing ground levels at the north and south right-of-way lines.

The locations of the proposed wildlife undercrossings are shown on the Concept Plans.

1.7 Consistency with Transportation Plans

The 1994 I-4 Master Plan was presented to the Polk County Transportation Planning Organization (TPO), formerly the Metropolitan Planning Organization for the Lakeland-Winter Haven Urbanized Areas (MPO), on January 12, 1995. The TPO passed Resolution 95-01 to include the 1994 I-4 Master Plan in future updates of the Polk County Transportation Plan. The proposed improvements to I-4 in Polk County (six general purpose lanes and four special use lanes) are also consistent with the Polk County 2020 Long-Range Transportation Plan, adopted November 9, 1995.

The recommended improvements are consistent with the City of Lakeland, Polk County and the TPO long range transportation planning.

1.8 Project Costs

The total estimated project costs for the preferred alternative are listed below. Estimated costs by project segment are listed in Sections 9.5 through 9.9.

Item	Estimated Cost
Design (@15% of Construction +MOT)	$58,320,000
Right-of-Way (Roadway)	$48,940,000
Right-of-Way (Storm Water Management)	$7,030,000
Business Damages and Relocations	$1,020,000
Construction (LRE)	$385,160,000
Additional Maintenance of Traffic	$3,630,000
Major Utility Relocation	$5,730,000
Mitigation	$15,840,000
Total Estimated Project Cost	**$525,670,000**

1.9 Commitments

To minimize the impacts of this project on the human and natural environment, the Department is committed to the following measures:

1. Wetland Mitigation - It is anticipated that about 85.32 ha (210.88 ac) of wetlands would be impacted by the proposed improvements to I-4. The FDOT is committed to provide compensation for wetland losses as a result of the implementation of the proposed improvements to I-4. Final determination of jurisdictional areas, proposed wetland impacts and mitigation requirements will occur through coordination between the FDOT and natural resource regulatory agencies during the design and permitting phases of this project.

   In accordance with FHWA policy as contained in 23 CFR 777.11, the full range of mitigation options were considered in developing the project, including avoidance, minimization, restoration, enhancement and creation. Mitigation options include restoration, enhancement, creation and the use of S. 373.4137 F.S. (The Bronson Bill), which allows payment of $75,000 per acre to the Water Management Districts for their use in mitigating the impacts.

The FDOT is committed to minimize the temporary impacts to wetlands within the right-of-way due to clearing activities associated with the construction of the proposed improvements. Refer to Section 9.15.1 for additional information regarding wetlands.

2. Storm Water Ponds Site Evaluation Before Construction - The FDOT is committed to locating and assessing suitable land areas for storm water pond sites based on hydraulic, environmental and economical analysis prior to construction. Subsequent design phases of this proposed action will assess and determine the actual hydraulic and environmental suitability for locations of storm water management facilities.

3. Water Quality - The FDOT will continue coordination efforts with the SWFWMD and the SJRWMD concerning storm water treatment systems. The FDOT is committed to provide storm water management design which will conform to Florida Administrative Code (F.A.C.) Chapter 62-25, regulations of storm water discharge and other applicable Federal, State and local requirements. Subsequent design phases of this proposed action will assess and determine the actual hydraulic and environmental suitability for locations of storm water management facilities.

4. Wildlife and Habitat - The FDOT is committed to provide the opportunity for wildlife corridor enhancement by constructing low-level bridges at three locations in Polk County. The locations are shown on the Concept Plans. These structures will be designed in accordance with the criteria established through coordination with the USFWS and the FGFWFC to allow for their use as **wildlife undercrossings**. The locations of these structures were determined through a cooperative effort of regulatory and advisory agencies, local environmental interest groups, private consultants, local, state and regional government and the FDOT.

   The FDOT is committed to mitigate for potential loss of habitat of the **Florida scrub jay** through the use of the Highlands County Upland Mitigation Bank property at a ratio of 2:1 for impacts which may occur to scrub jay territories at the time of construction.

   No off-site improvements, including construction of storm water retention/detention facilities will be recommended or approved without future analysis for the presence of listed species and critical habitat. The analysis will be coordinated with the USFWS and the FGFWFC.

   The FDOT is committed to follow through on the recommendations that:

   A. Temporal considerations be made during construction to avoid disturbances to nesting **bald eagles**.

   B. Temporal considerations be made and appropriate **sandhill crane** nesting habitat be surveyed immediately prior to construction if this should coincide with the nesting season.
   C. Temporal considerations be made during construction to avoid disturbance of nesting **wading birds** and **identified rookeries** and that appropriate habitat be surveyed according to FGFWFC recommended guidelines immediately prior to construction if initiated during the nesting season.

   D. Since the right-of-way and construction phases of this project are not included in the current FDOT 5-year work program and because of the anticipated resulting delay in right-of-way

acquisition and construction of the proposed I-4 improvements, a resurvey of the project corridor for the presence of listed species will be made prior to the construction phase of this project.

E. The **eastern indigo snake** (Drymarchon corais couperi) could be present in the project area. To satisfy agency concerns regarding this species, the FDOT will notify the U.S. Army Corps of Engineers (ACOE) of the potential for involvement with this Threatened Species so that a formal Section 7 consultation through the ACOE dredge and fill permitting process may be conducted, and a Biological Opinion issued. In addition, the standard protection measures will be implemented, as previously approved.

1.10 Recommendations

To minimize the impacts of this project on the human and natural environment, the FDOT recommends the following measures:

1. I-4 Mainline Typical Sections - The recommended improvements to I-4 consist of upgrading the existing four-lane roadway to a ten-lane divided interstate facility. The recommended typical sections consist of three 3.6 m (12 ft) general purpose travel lanes each way, two 3.6 m (12 ft) special use travel lanes each way and a minimum 20 m (66 ft) median to provide for the future inclusion of rail service. The special use lanes would be separated from the general purpose lanes by two shoulders and a barrier wall totaling 7.8 m (26 ft). An urban interstate typical section to be constructed within the existing 91.4 m (300 ft) right-of-way is recommended from west of Memorial Boulevard to east of the SR 33 interchange. A rural interstate typical section contained within a minimum 128.8 m (422.6 ft) right-of-way is recommended from east of the SR 33 interchange to the Polk/Osceola County line. The recommended typical sections are shown in Figures 1-2 and 1-3 and are described in detail in Section 9.2.

2. I-4 Mainline Alignment - The recommended I-4 mainline alignment is described in Section 1.6.2 and is shown on the Concept Plans.

3. I-4 Interchange Concepts - The recommended interchange concepts are described in Section 1.6.3 and are shown on the Concept Plans.

4. Cross Road Typical Sections - The recommended cross road typical sections are described in Section 1.6.4 and are shown on the Concept Plans.

5. Relocations - As a result of the shifts in roadway alignment 6 businesses, 20 residential and zero non-profit relocations would be required for the proposed I-4 improvements. It is recommended that the Conceptual Stage Relocation Plan be updated as the project progresses through design, right-of-way and construction.

6. Contamination - It is recommended that the four (4) properties identified as having MEDIUM potential for contamination be further assessed during the remaining preconstruction phases of this project to verify or refute the contamination concerns. It is recommended that these investigations include visual inspections, monitoring of any ongoing cleanups and possibly more subsurface testing, if deemed appropriate. This information would be provided to the contractor through drawings and

specifications. If necessary, remediation plans would be developed. Remediation would take place during, or possibly prior to construction, if feasible. Special provisions for handling unexpected contamination discovered during construction would be included in the construction plans package. The four sites with a MEDIUM potential for contamination are listed in Section 1.5.4.

No off-site improvements, including construction of storm water retention/detention facilities, will be recommended or approved without future analysis for the presence of contamination. Close coordination will be effected between the FDOT, the property owner and the appropriate regulatory agency to insure that the assessment and potential remediation is accomplished in a timely manner, relative to the production schedule.

7. Visual and Aesthetics - It is recommended that a continuous aesthetic theme be provided throughout the length of the I-4 corridor. A theme which harmoniously blends the transportation facilities with the nature of the land use and aesthetically pleases the local community and interstate traveler alike. The aesthetic theme is decscribed in the "Aesthetic Guidelines for the I-4 Corridor", June 1996, developed specifically for this project.

2.0 INTRODUCTION

This Preliminary Engineering Report is prepared in accordance with the FDOT's PD&E Manual, Part One, Chapter 9, and is consistent with the appropriate editions of the standard publications listed in Section 9-2.3.1 of the PD&E Manual.

The English conversions from metric units in this report are nominal rather than exact. The conversions from metric units reflect former equivalent English standards (where former standards exist). If no former equivalent English standard exists, the conversion from metric units has been rounded to the appropriate proposed level of precision.

2.1 Purpose

The purpose of this PD&E study is to document the preliminary engineering concept for the improvements to the I-4 (SR 400) corridor from west of Memorial Boulevard (at the eastern edge of the North Galloway Road crossing of I-4), MP 2.565 in Polk County to the Polk/Osceola County line (MP 32.022) that will reflect and be consistent with federal, state and local guidelines and planning. This report documents information necessary to confirm the need for this project and develops and evaluates various improvement alternatives after consideration of socioeconomic, cultural and environmental impacts.

The objectives of this report are stated as follows:

a) identify, research and analyze the various factors which will be instrumental in the formulation of a design concept for the proposed interstate improvements,
b) analyze alternate preliminary engineering concepts,
c) document the public involvement program, and
d) document the recommendation of a specific preliminary engineering concept and specify why the recommended concept was selected.

2.2 Project Description

I-4 is an east-west limited access freeway connecting the urban centers of Tampa, Orlando and Daytona Beach across central Florida. The existing facility is a four-lane divided highway constructed within the standard interstate right-of-way width of 91.4 m (300 ft) with the exception of four bifurcated median areas in the eastern portion of the project where the right-of-way widens to a maximum of 162.8 m (534.0 ft). Additional right-of-way and easements are provided at grade separations, interchanges, rest areas, and some drainage channels.

The FDOT is proposing improvements to I-4 from west of Memorial Boulevard to the Polk/Osceola County line, a distance of about 47.4 km (29.5 mi) to accommodate present and future traffic demands. These improvements include widening the existing four-lane divided highway to six general purpose lanes, four special use lanes (HOV/SOV) and sufficient right-of-way for future inclusion of rail service in the median. Eight existing interchanges would be improved and one proposed interchange with the Polk County Parkway would be added (by others). Structures at eleven non-interchange locations

(including the CSX Railroad overpass) would be replaced to accommodate the proposed I-4 typical section. Future I-4 mainline right-of-way is proposed up to a maximum of 128.8 m (422.6 ft).

The I-4 PD&E study is comprised of eight segments (numbered 2 through 9). The project segment limits have been arranged corresponding to the anticipated future design contracts for I-4 and are shown in Table No. 2-1.

Table No. 2-1
PROJECT SEGMENTS
I-4 Project Development and Environment Study

Segment Number	Length	Description
2	5.8 km (3.6 mi)	West of Memorial Boulevard (MP 2.565) to West of US 98 (MP 6.150)
8	0.8 km (0.5 mi)	US 98 Interchange, from West of US 98 (MP 6.150) to East of US 98 (MP 6.680)
3	9.5 km (5.9 mi)	East of US 98 (MP 6.680) to East of SR 33 (MP 12.608)
4	9.8 km (6.1 mi)	East of SR 33 (MP 12.608) to East of SR 559 (MP 18.669)
5	6.4 km (4.0 mi)	East of SR 559 (MP 18.669) to East of CR 557 (MP 22.647)
6	10.0 km (6.2 mi)	East of CR 557 (MP 22.647) to West of US 27 (MP 28.838)
9	1.1 km (0.7 mi)	US 27 Interchange, from West of US 27 (MP 28.838) to East of US 27 (MP 29.501)
7	3.9 km (2.4 mi)	East of US 27 (MP 29.501) to Polk/Osceola County line (MP 32.022)

The project corridor location map is shown in Figure 1-1 in Section 1.2.

Segment 1 of I-4 in Polk County is not included in this PD&E study. Segment 1 covers the area from the Hillsborough/Polk County line to west of Memorial Boulevard, a distance of 4.1 km (2.5 mi). Segment 1 was included as part of the Design Reevaluation for the Polk County Parkway conducted in January 1994 which evaluated the impacts of the proposed Polk County Parkway West interchange (by others) on I-4 in the vicinity of Clark Road. This Preliminary Engineering Report excludes Segment 1 of I-4 in Polk County from the Hillsborough/Polk County line to North Galloway Road.

The Interstate 4 Multimodal Interstate Master Plan for Polk County, November 1994 (1994 I-4 Master Plan), has been completed and concurred with by the FHWA (see letter dated February 9, 1995 in Section 5 of the Appendix). The FHWA letter also grants approval for the addition of one lane in each direction. The 1994 I-4 Master Plan analyzed the existing I-4 corridor in Polk County from the Hillsborough/Polk County line to the Polk/Osceola County line, a distance of 52.3 km (32.5 mi). The 1994 I-4 Master Plan determined the need for the improvements to I-4 through an analysis of projected ultimate transportation demands for the I-4 corridor through the year 2020 and beyond. This determination resulted in a staging plan for the construction of the Master Plan Ultimate Typical Section.

The development of the 1994 I-4 Master Plan was required to provide documented information necessary to maintain and improve interstate travel integrity on I-4 in Polk County. The preparation of a multimodal interstate master plan is an integral part of the continuing process for the development of the interstate components of the Florida Intrastate Highway System. In support of the FDOT's Interstate Policy, the 1994 I-4 Master Plan was prepared to update and supersede the 1989 I-4 Master Plan, Revised 1991 (1989 I-4 Master Plan) to reflect the change in interstate policy. Factors related to design and location such as transportation needs, economic factors, social and environmental impacts and engineering analysis were considered to address future needs of this corridor. Some of the prevalent factors justifying the need for the 1994 I-4 Master Plan include the adoption of a state policy limiting the expansion of interstate highways, and the less than satisfactory LOS and imminent deterioration of the existing pavement which is over thirty years old. The primary goal of the 1994 I-4 Master Plan was to assess the feasibility of a multimodal corridor. Rail transit as well as HOV demands were assessed.

The major purpose of the 1994 I-4 Master Plan was to develop an integrated multimodal transportation system which is economically efficient, environmentally sound and moves people and goods in an energy-efficient manner. The means of achieving this goal was to produce a master plan which identifies the appropriate staging of the ultimate typical section (satisfying the 2020 horizon year traffic needs) and the year in which the Master Plan Ultimate Typical Section would be needed.

The FDOT District 1 established the Master Plan Ultimate Typical Section in Polk County, approved by the FHWA, consisting of six general purpose lanes physically separated from four special use lanes with sufficient width to provide for a rail facility in the median (6 + 4 w/ Rail). The phrase "Special Use Lanes" refers to the phrase "Exclusive Through/HOV Lanes" used in the FDOT Interstate Highway System Policy. After analyzing several staging alternatives to the Master Plan Ultimate Typical Section, a six general purpose and no special use lanes (6 + 0) staging alternative was selected, however the LOS analysis indicated that this alternative would only satisfy the traffic demand through year 2008 and have an unacceptable LOS through the year 2020. The next favorable alternative was the six general purpose and four special use lanes (6 + 4) staging alternative which would satisfy traffic demands beyond the year 2020. It was concluded that the 6+0 staging alternative does not meet the performance specifications for the 2020 design year, but as a pragmatic and financial matter, it is a logical step in the staging sequence to the Master Plan Ultimate Typical Section. The right-of-way for the full typical section would be preserved and the outer six general purpose lanes would be built utilizing the existing four lanes for maintenance of traffic, where possible, until the outer six lanes are constructed. After the outer six lanes are constructed, the existing four lanes would be removed. When the LOS in the 6 + 0 typical section degrades, the four special use lanes would be built.

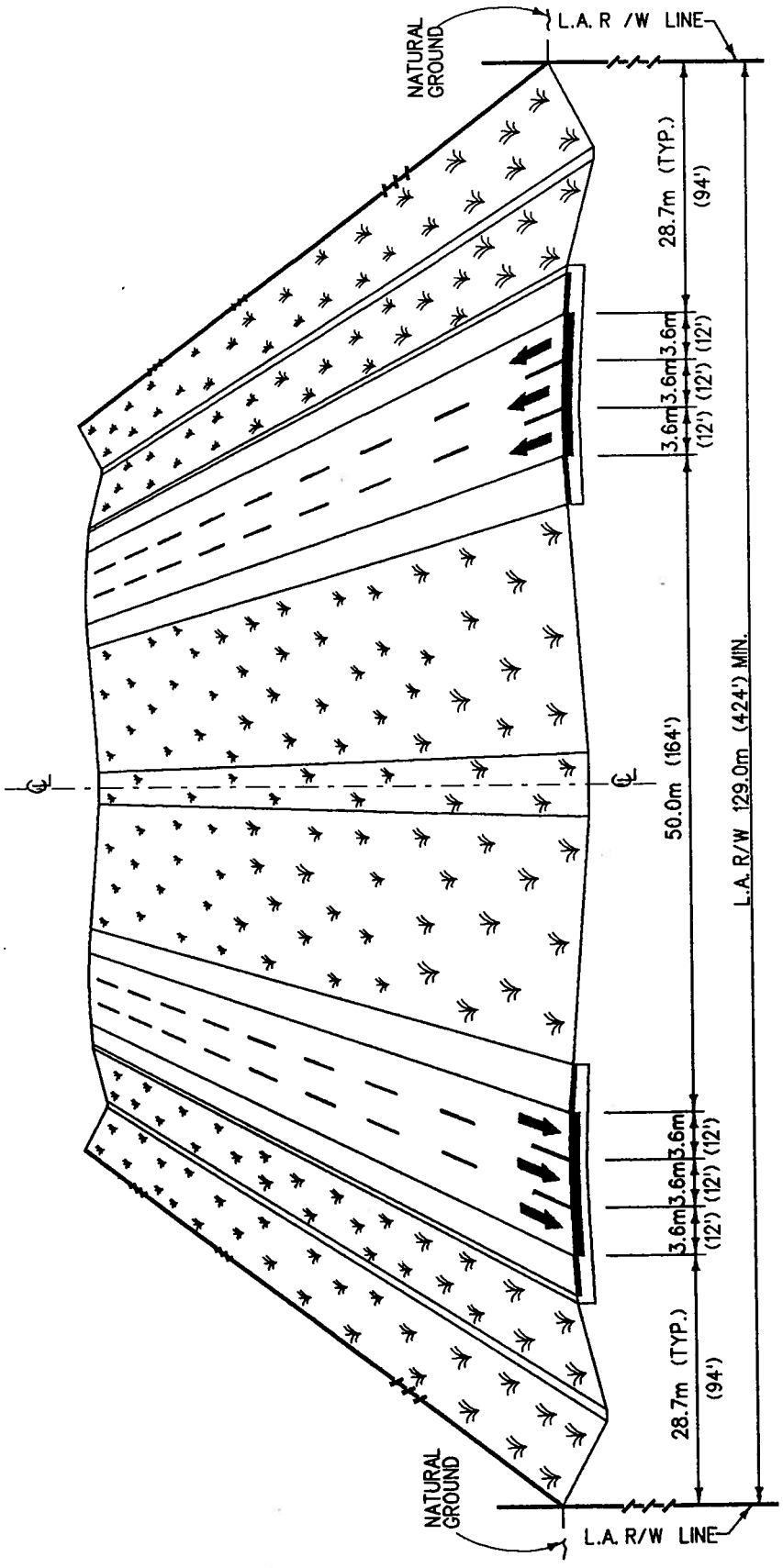
The transition of alternatives at the project limits was analyzed during the 1994 I-4 Master Plan using the Master Plan Ultimate Typical Section (6 + 4). FDOT District 7 (Hillsborough County) is planning to construct six general purpose lanes which do not align with the proposed general purpose lanes in Polk County. The District 7 general purpose lanes would be separated by a 26 m (88 ft) median. The general purpose lanes in District 1 (Polk County) are separated by a 20 m (64 ft) median between four 3.6 m (12 ft) special use lanes and 7.8 m (26 ft) shoulders and barriers between the special use lanes and general purpose lanes, a total of 50.0 m (164 ft). The transition to the 6 + 0 typical section planned for I-4 in District 7 would require that the two westbound special use lanes merge into the inside westbound general purpose lane in District 7 and the three westbound general purpose lanes in District 1 merge into the outer two westbound general purpose lanes in District 7. Eastbound, the opposite would occur. The

inside eastbound general purpose lane in District 7 would split into two special use lanes in District 1. The two outside general purpose lanes in District 7 would widen to become three general purpose lanes in District 1. This is only one transition alternative. Other alternatives could show general purpose lane or special use lane encouragement. The transition to the District 7 typical section would take place in Hillsborough County, outside the limits of this project.

The I-4 ultimate typical section in Osceola County (as of the date of this report) has not been selected. One alternative consists of a 6+2 configuration (with a preserved rail envelope in the median). In this alternative neither the special use lanes or the general purpose lanes align with the proposed typical section in Polk County. The eastbound outside special use lane in Polk County would merge into the eastbound inside special use lane. The single eastbound special use lane would shift towards the median and transition into the single special use lane in the 6+2 configuration in District 5. The general purpose lanes in District 1 would shift towards the median to transition into the general purpose lanes in District 5. Westbound, the opposite would occur. The transition to the District 5 typical section would take place in Osceola County, outside the limits of this project. Another alternative in District 5 is a 6+4 w/Rail configuration identical to the District One typical section and requires no transition.

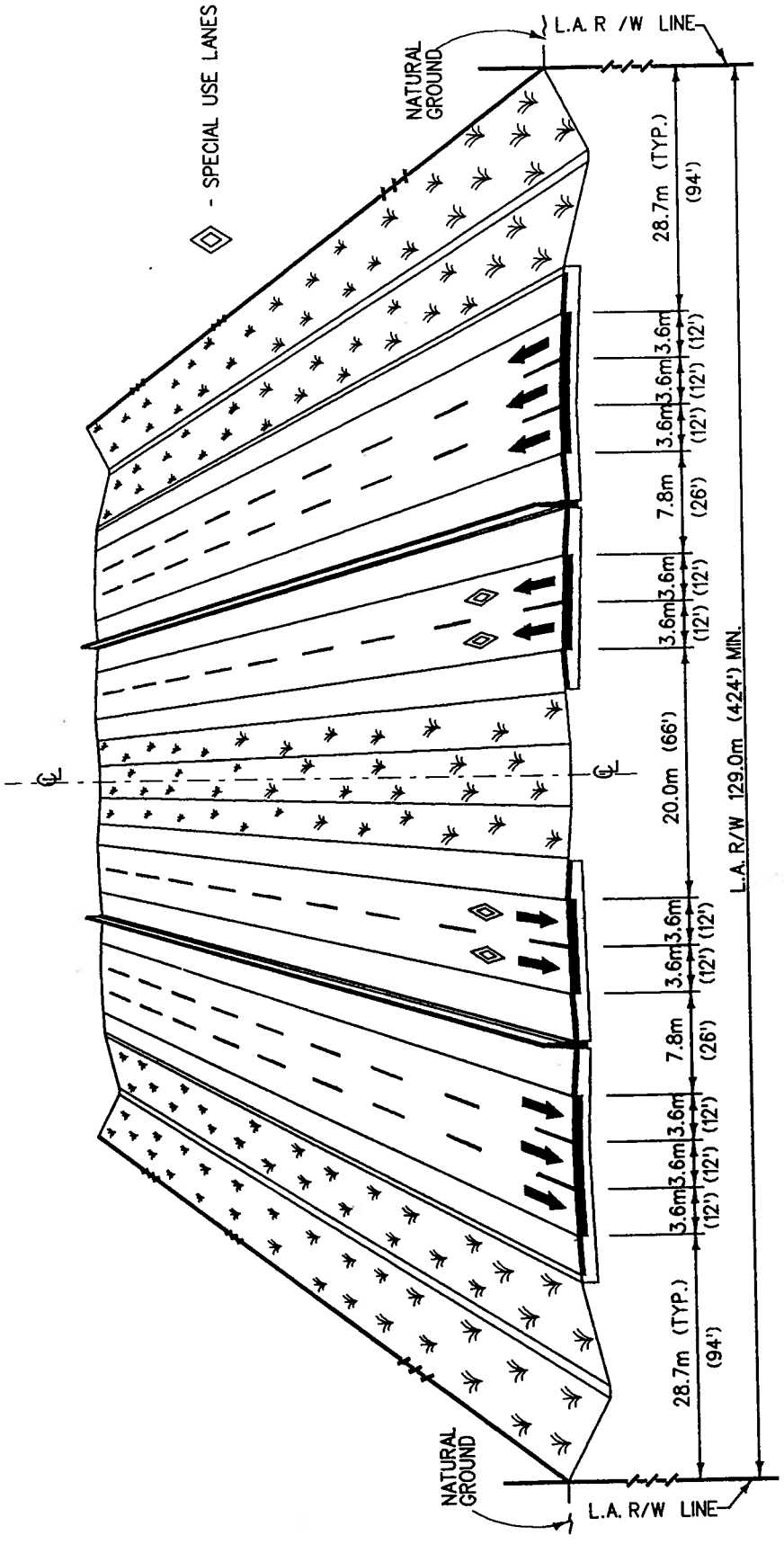
The construction staging of the I-4 Master Plan Staging Typical Section is shown in Figures 2-1, 2-2 and 2-3.

Reference is made throughout this Preliminary Engineering Report to the analyses conducted for the 1994 I-4 Master Plan.



I-4 MASTER PLAN STAGING TYPICAL SECTION (6+0)
(WEST OF MEMORIAL BLVD. TO THE POLK/OSCEOLA COUNTY LINE)
6 GENERAL PURPOSE LANES

I-4 Master Plan Staging Typical Section (6+0)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 2-1



I-4 MASTER PLAN STAGING TYPICAL SECTION (6+4)
(WEST OF MEMORIAL BLVD. TO THE POLK/OSCEOLA COUNTY LINE)
6 GENERAL PURPOSE LANES
4 SPECIAL USE LANES

I-4 Master Plan Staging Typical Section (6+4)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 2-2

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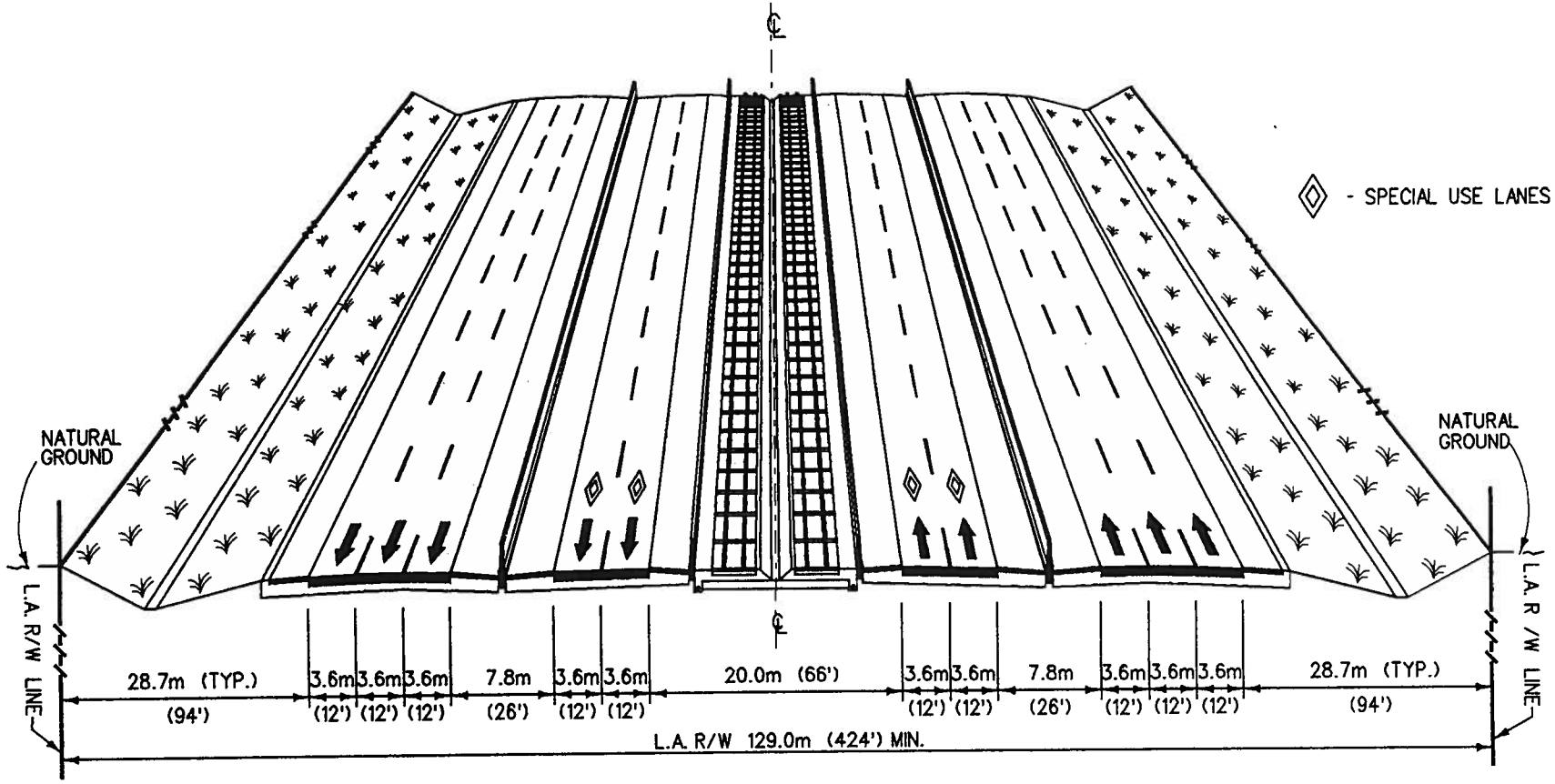


I-4 MASTER PLAN ULTIMATE TYPICAL SECTION (6+4 W/ RAIL)
(WEST OF MEMORIAL BLVD. TO THE POLK/OSCEOLA COUNTY LINE)
6 GENERAL PURPOSE LANES
4 SPECIAL USE LANES
RAIL ENVELOPE

I-4 Master Plan Staging
Typical Section (6+4 w/Rail)

I-4 Preliminary
Engineering Report
State Project No. 16320-1402

Polk County 4

FIGURE
2-3

3.0 NEED FOR IMPROVEMENT

I-4 is the only existing major east/west expressway route through Polk County and central Florida. According to the Polk County 2020 Long-Range Transportation Plan, adopted November 9, 1995, Polk County's population was projected at 721,863 for year 2020. This equates to a population growth of 316,219 over a thirty-year period (1990-2020) and a simple annual growth rate of approximately 2.5%. With the type of growth projected for Polk County, the traffic service on I-4 must be improved to meet the expected demand. The economic and social development of Polk County is directly related to the improvements of I-4. The western end of the I-4 corridor in Polk County is developing as a regional distribution center with the addition of several trucking and warehouse facilities in recent years. This type of development would benefit significantly from the improved roadway transportation service provided by the proposed improvements to I-4.

Central Polk County is developing as a population support area for the major metropolitan areas of Tampa and Orlando. Improved access to and from Polk County will enhance access to the overall transportation network for residential, agricultural, commercial, industrial and office activities. The proposed addition of special use lanes would allow tourists desiring to travel to and from the major resort areas of Orlando and the west coast beaches to pass through Polk County without hampering the traffic service of local tourists or permanent residents. I-4 serves as the major interregional east/west weather emergency evacuation route for and through Polk County. Improvements such as additional capacity, signing and marking, level of traffic service, interchange improvements, special use lanes and provisions for multimodal travel would decrease the potential for accidents. These improvements would provide substantial benefits to the roadway users and the surrounding population in general in that I-4 would become more user friendly and aesthetically pleasing.

The City of Lakeland and its surrounding area is and will continue to be a prime residential and resort destination, particularly during the winter season. The Lakeland Square Mall, located immediately north of I-4 at US 98 and its related development, is one of the greatest single traffic attractions to the I-4 corridor in central Polk County. The City of Lakeland added 23,170 new citizens during the 1980s. Among cities with over 70,000 in population, Lakeland was the fourth fastest growing city in Florida. The 1980 to 1990 census figures show a 34 percent increase in population for the region of which 17 percent are age 65 or older. Development of Polk County north of Lakeland has increased dramatically since US 98 was improved to a four-lane facility in the 1970s.

3.1 Deficiencies

The existing I-4 corridor was compared against current minimal desirable interstate design criteria (1990 AASHTO standards).

3.1.1 Typical Section

The existing I-4 mainline was constructed as a four-lane divided rural freeway from 1958 to 1964. The roadway was designed in accordance with 1954 American Association of State Highway Officials (AASHO) standards. The existing I-4 typical section contains four 3.6 m (12 ft) travel lanes, a 19.5 m (64 ft) depressed median, 3.0 m (10 ft) outside shoulders (2.4 m (8 ft) paved), and 2.4 m (8 ft) inside shoulders (1.2 m (4 ft) paved). The existing I-4 typical section is deficient in shoulder widths and clear

zone requirements according to current interstate design standards. The existing I-4 typical section is shown in Figure 3-1. Refer to Section 4.1.2 for additional information regarding the existing I-4 typical section.

3.1.2 Horizontal and Vertical Alignment

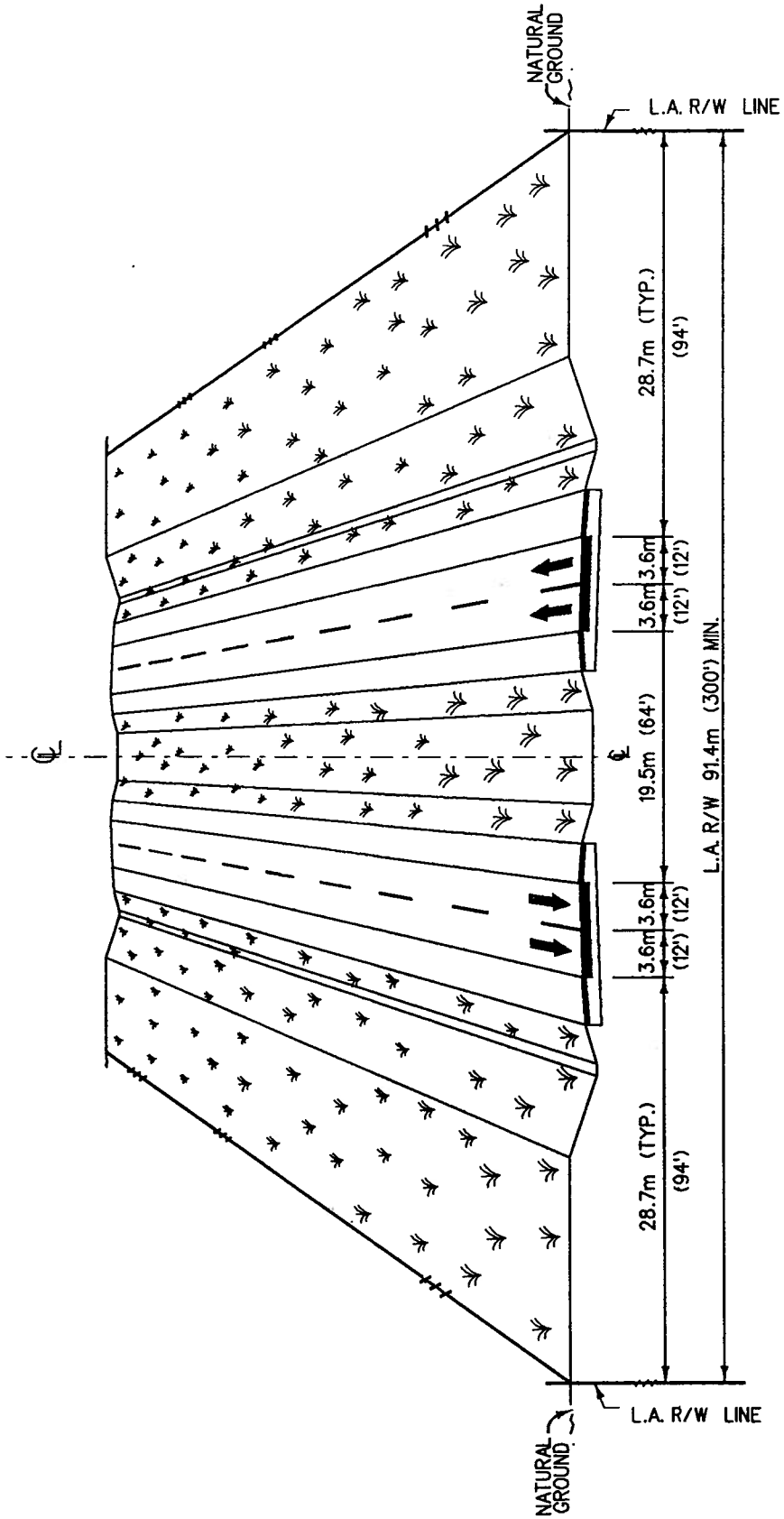
Horizontal Alignment - The area of I-4 from west of Memorial Boulevard to SR 33 (Segments 2, 3 and 8) is classified as an urban interstate facility and was compared to current urban interstate design criteria. Two reverse horizontal curves on the westbound roadway in Segment 2 within the interchange area at Memorial Boulevard (P.I.s at Stations 614+52.55 and 625+33.94) were found to be inadequate according to current urban interstate design standards. I-4 from SR 33 to the Polk/Osceola County line is classified as a rural interstate facility and was compared to current rural interstate design criteria. More than half of the 22 mainline horizontal curves in this area were found to be inadequate according to current design standards. None of the eight existing interchanges fully meet current criteria for entrance or exit ramp terminal geometry. The majority of the deficiencies at the interchanges were found in the acceleration/deceleration lane lengths and the ramp taper lengths.

Vertical Alignment - Profile grades vary from 0 to 6 percent on the mainline roadway of I-4, which exceed the recommended 3 percent maximum for current interstate design. The crest vertical curves along the project corridor were designed for 105 km/h (65 mph) or greater by 1954 AASHO standards. Nearly all of the I-4 mainline vertical curves for the length of the project do not meet current design standards.

The acceleration/deceleration lanes along the study corridor were designed to the required standards of their time (circa 1960). These lanes lack sufficient length for necessary speed adjustments and are deficient according to current interstate design standards. The exit and entrance ramps at the existing interchanges were evaluated against current design standards. All of the interchanges had some form of deficiency. Most were inadequate K values or insufficient vertical curve lengths. Of the sixteen grade separation structures along I-4, only six structures meet or exceed the current required vertical clearance of 5.0 m (16.5 ft). Refer to Sections 4.1.5 and 4.1.6 for additional information regarding horizontal and vertical alignment.

3.1.3 Capacity: Existing and Future Levels of Service

The proposed action addresses the existing and anticipated traffic conditions along I-4 from west of Memorial Boulevard to the Polk/Osceola County line. Existing (1993) AADT ranges from 45,880 to 63,000 vehicles per day. The existing facility (4+0) functions at an average LOS C. The I-4 mainline west of Memorial Boulevard and east of US 27 is currently operating at LOS D. The remainder of the I-4 mainline is operating at LOS C or better. Interchange ramps at Memorial Boulevard (eastbound off-ramp and westbound on-ramp) are operating at LOS D and E, respectively. The interchange ramps at US 27 (eastbound on-ramp, westbound off-ramp and westbound on-ramp) are currently operating at LOS E, E and D, respectively. The remainder of the I-4 interchange ramps are operating at LOS C or better.



I-4 EXISTING TYPICAL SECTION (4+0)
4 GENERAL PURPOSE LANES
(WEST OF MEMORIAL BLVD. TO THE POLK/OSCEOLA COUNTY LINE)

Existing Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 3-1

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The combined general purpose and special use lane AADT projected for the year 2020 ranges from 97,300 to 128,900 vehicles per day. The proposed mainline facility (6+4) is projected to operate at an average LOS between C and D.

Refer to Section 6.4 for additional information regarding projected traffic and LOS.

3.1.4 Pavement Structural Conditions

I-4 is constructed of rigid pavement for the western 9.20 km (5.72 mi) of this project (MP 2.57 to MP 8.29). The rigid pavement extends from west of the Memorial Boulevard interchange to east of the Socrum Loop Road interchange (Segments 2, 8 and the western portion of 3). The FDOT Rigid Pavement Condition Survey - 1993 shows that I-4 has defect ratings of 6 for the right (eastbound) roadway and 8 for the left (westbound) roadway and ride ratings of 7 for the left roadway and 8 for the right roadway (structural ratings range from 0 to 10 with ratings below 6 being considered critical). Generally, this indicates that the I-4 rigid pavement is in good condition. Thirty-plus years of use has shown some wear and tear. This is reflected in the deflect and ride ratings (all above the critical level but less than the ultimate rating).

I-4 is constructed of flexible pavement for the eastern 38.18 km (23.73 mi) of this project (MP 8.29 to MP 32.02). The flexible pavement extends from east of the Socrum Loop Road interchange to the Polk/Osceola County line (eastern portion of Segment 3 and Segments 4, 5, 6, 9 and 7). The FDOT Flexible Pavement Condition Survey - 1993 shows that I-4 has ride ratings ranging from 6 to 9. Defect ratings range from 4 to 9 for cracks and 8 to 9 for ruts. The crack rating of 4 is for the western most 122 m (400 ft) of Segment 7. Generally, this indicates that the I-4 flexible pavement is in good condition. The western end of Segment 7 has a critical rating for cracking. Otherwise, the ride and defect (cracks and ruts) ratings are above the critical rating.

A windshield survey and a review of construction plans was conducted to visually identify areas where existing I-4 mainline pavement conditions indicate the possible presence of unsuitable subsurface conditions (e.g. peat, muck) beneath the roadway.

Segment 2 - The concrete pavement appears to be in generally good condition. Some patches are present.

Segment 3 - The overall condition of the pavement surface appears to be good. No areas of significant pavement distress were noted.

Segment 4 - The overall condition of the pavement surface appears to be good. No areas of significant pavement distress were noted.

Segment 5 - Generally, the pavement condition appears to be good.

Segment 6 - Several areas of minor pavement subsidence, probably associated with the presence of organic soils underneath the roadway embankment, were noted. One minor pavement subsidence in the eastbound lane appears to be associated with the presence of pipe culvert backfill, resulting in roadway settlement.

Segment 7 - Overall pavement condition appears to be good. Some shoulder sloughing in the westbound lane, probably associated with organic soils still in place underneath the roadway.

Segment 8 - The concrete pavement appears to be in good condition. One area of moderate cracking was noted near the westbound off-ramp at the US 98 interchange.

Segment 9 - Overall, the pavement appears to be in good condition.

Refer to Section 4.1.8 and to the Geotechnical Report, February 1994, prepared as a separate document, for additional information regarding geotechnical and generalized soils data.

3.1.5 Bridge Structural Conditions

Of the twenty-five (25) bridge structures associated with this project, all but one show acceptable appraisal ratings for structure condition, while twenty-four (24) show deficient ratings in one or more of the rating capacities including deck geometry, vertical and horizontal underclearance or safe load capacity. Of the sixteen (16) bridges which pass over I-4, only six (6) of the existing structures meet or exceed the current minimum vertical clearance of 5 m (16.5 ft). See Section 4.2.

3.1.6 Evacuation Routes and Emergency Services

I-4 has been designated as an interregional evacuation route in the "Central Florida Regional Hurricane Evacuation Study Update", Central Florida Regional Planning Council, 1995. The highly populated counties of Hillsborough and Pinellas (to the west) use I-4 in Polk County as one of the primary evacuation routes during a weather emergency. In the event of a short notice Category 4 or 5 hurricane threatening the Tampa Bay area, a 1989 survey estimated evacuees would be using up to 190,000 vehicles. The FDOT currently classifies I-4 as having a level of service C which accommodates 47,100 vehicles per day. If a substantial percentage of these evacuees intend to use the I-4 corridor as their route of egress, traffic flow will be severely congested.

Without any improvements to I-4, opening the existing two eastbound lanes to four lanes by using the shoulders would not be an option due to the substandard shoulder widths and narrow bridges. Therefore, the capacity for an evacuation using only two lanes would be severely inadequate. The ultimate typical section, however, would include three general purpose lanes and two special use lanes with shoulder widths capable of being utilized in an evacuation situation. A total of nine lanes in the eastbound direction would facilitate a more controlled and efficient evacuation compared to only two lanes without any improvements to I-4.

Because of its inland location, Polk County has no requirements to evacuate specific geographic areas in the event of severe weather. Consequently, there are no established evacuation zones, as is common in coastal counties. Evacuation is ordered or recommended based on an assessment of each emergency situation. The primary reason for evacuating residents of Polk County is in anticipation of a hurricane or other extreme weather. Evacuation routes along the project corridor (I-4, US 98 and US 27) are regional routes which traverse Polk County. For local evacuation movement within Polk County during an emergency, use of these routes is not recommended. These routes may become impassable in low

areas due to heavy rains. Extensive evacuation from the South Florida area is expected to create severe congestion on all highways in this area.

I-4 is a limited access facility and, as such, does not lend itself for use by local emergency vehicles except for vehicle accidents on I-4 itself. I-4 is used on occasion for interregional medical emergency transport (e.g. Lakeland-Tampa or Lakeland-Orlando). I-4 is patrolled regularly by the Florida Highway Patrol. The Florida Highway Patrol estimates the average response time along the I-4 corridor to be about eighteen minutes, depending on the day and the available personnel on duty. The response time can be as short as five minutes. Refer to Section 4.3.2.B for additional information regarding evacuation routes and emergency services.

Polk County evacuation routes are shown in Figure 3-2.

3.2 Safety

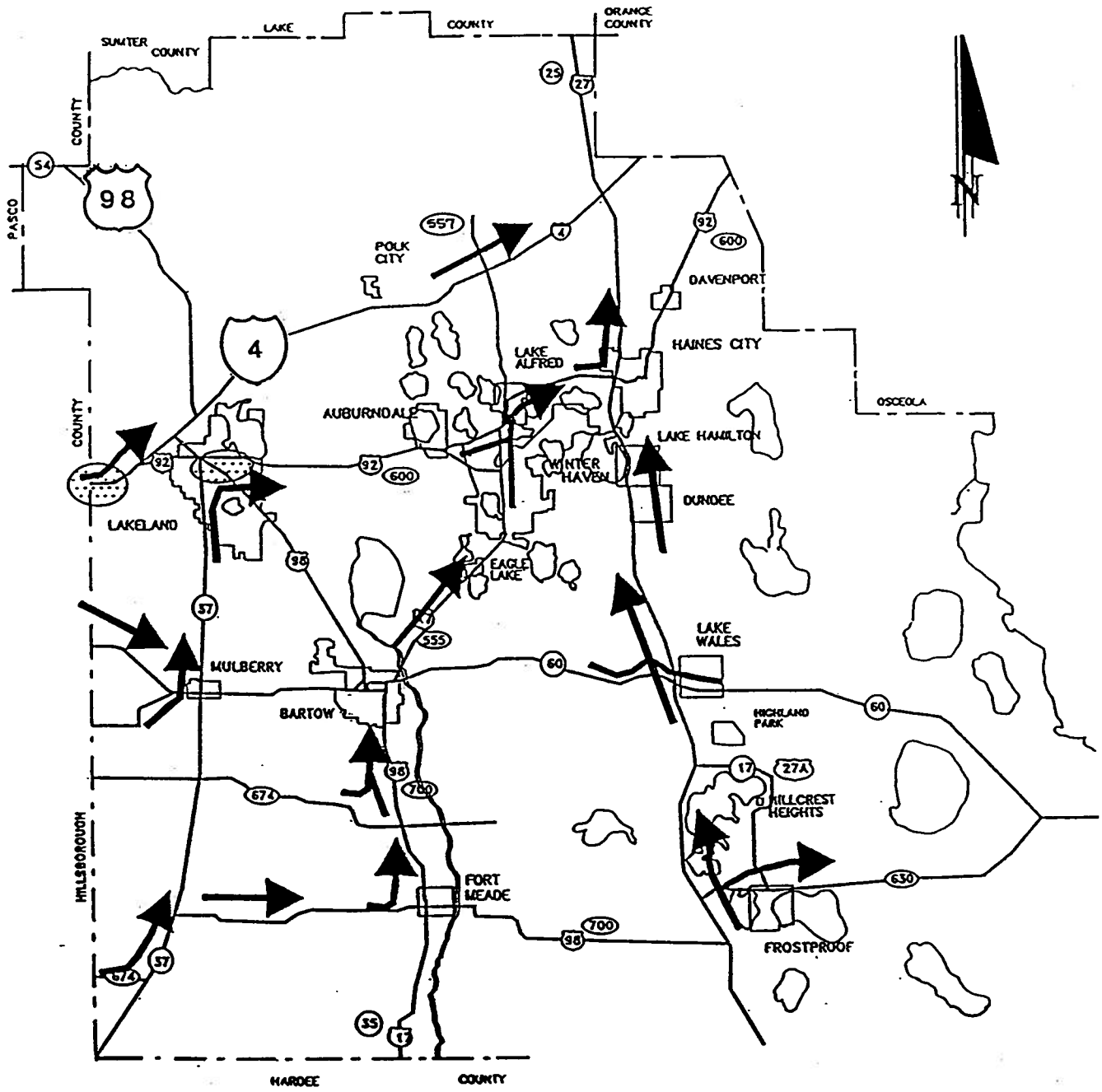
During the five year period from 1988 to 1992, 637 accidents along the mainline I-4 project corridor caused 651 injuries and 28 fatalities. The majority of these accidents (57 percent) occurred during the daylight hours. Thirty-nine percent of the accidents were either rear end, side swipe, angle or head on collisions of which rear end collisions were the most prevalent accident type (60 percent).

Segment 2 had 99 crashes with 5 fatalities; Segments 3 and 4 had 119 crashes each with 5 and 4 fatalities, respectively; Segment 5 had 96 crashes with 3 fatalities; Segment 6 had 85 crashes with 2 fatalities; Segment 7 had 54 crashes with 6 fatalities; Segment 8 had 24 crashes and 0 fatalities; and Segment 9 had 41 crashes with 3 fatalities.

Accident data was also obtained from reports available through the FDOT computer resources for the following cross roads which interchange with I-4: Memorial Boulevard (SR 546), Kathleen Road (SR 539), US 98 (SR 35 & 700), Socrum Loop Road (CR 582/SR 33), SR 33, SR 559, CR 557 and US 27 (SR 25). The information used in the analysis includes the years 1988 through 1992 and was incorporated in Table No. 4-9 in Section 4.1.9. US 98 had the highest number of accidents and fatalities being 221 and 3, respectively. This could be attributed to the breakdown of US 98 itself rather than the degradation of I-4. US 98 is currently being widened from a four-lane divided highway to an eight-lane divided highway north of the I-4/US 98 interchange to Carpenter's Way Road. The US 98 PD&E study recommends widening US 98 to a six-lane divided highway south of the I-4/US 98 interchange. These improvements have the potential to substantially decrease the number of accidents in this area. Socrum Loop Road had the second highest number of accidents with 126 followed by US 27 with 92.

The majority of the accidents at the cross roads which interchange with I-4 were angle, left turn and right turn accidents. These are the types of accidents associated with turning movements. Another significant portion of accidents were rear end collisions. This type of accident is generally associated with reduced LOS during peak periods. The proposed improvement to both I-4 and the interchanges associated with the interstate would improve the LOS thereby reducing the potential for accidents.

Refer to Section 4.1.9 for additional information on accident data.



Source: Inland Hurricane Shelter Study
Technical Data Report Update, October 1989

LEGEND

Potential Roadway Inundation

Inter-Regional Evacuation

POLK COUNTY EVACUATION ROUTES	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 3-2

3.3 Consistency with Transportation Plans

The proposed improvements to I-4 in Polk County (six general purpose lanes and four special use lanes) are consistent with the Polk County 2020 Long-Range Transportation Plan, adopted November 9, 1995. The Polk County and Lakeland 2020 Adopted Long-Range Transportation Plans are shown in Figures 3-3 and 3-4.

The 1994 I-4 Master Plan was presented to the TPO on January 12, 1995. The TPO passed Resolution 95-01 to include the 1994 I-4 Master Plan in future updates of the Polk County Transportation Plan. The resolution states:

1. That multimodal alternatives were appropriately analyzed for improvements in the Interstate 4 corridor; and

2. That the TPO was involved in the development of the Interstate 4 Master Plan; and

3. That the identified ultimate improved typical section for Interstate 4 (6+4) and the preferred staging alternative (6+0) will be made part of the highway network alternatives and incorporated in the 2020 Long-Range Transportation Plan Update subject to forecasted financial resources reasonably expected to be available as required by 23 USC Part 450.318 and the USC Part 450.322.

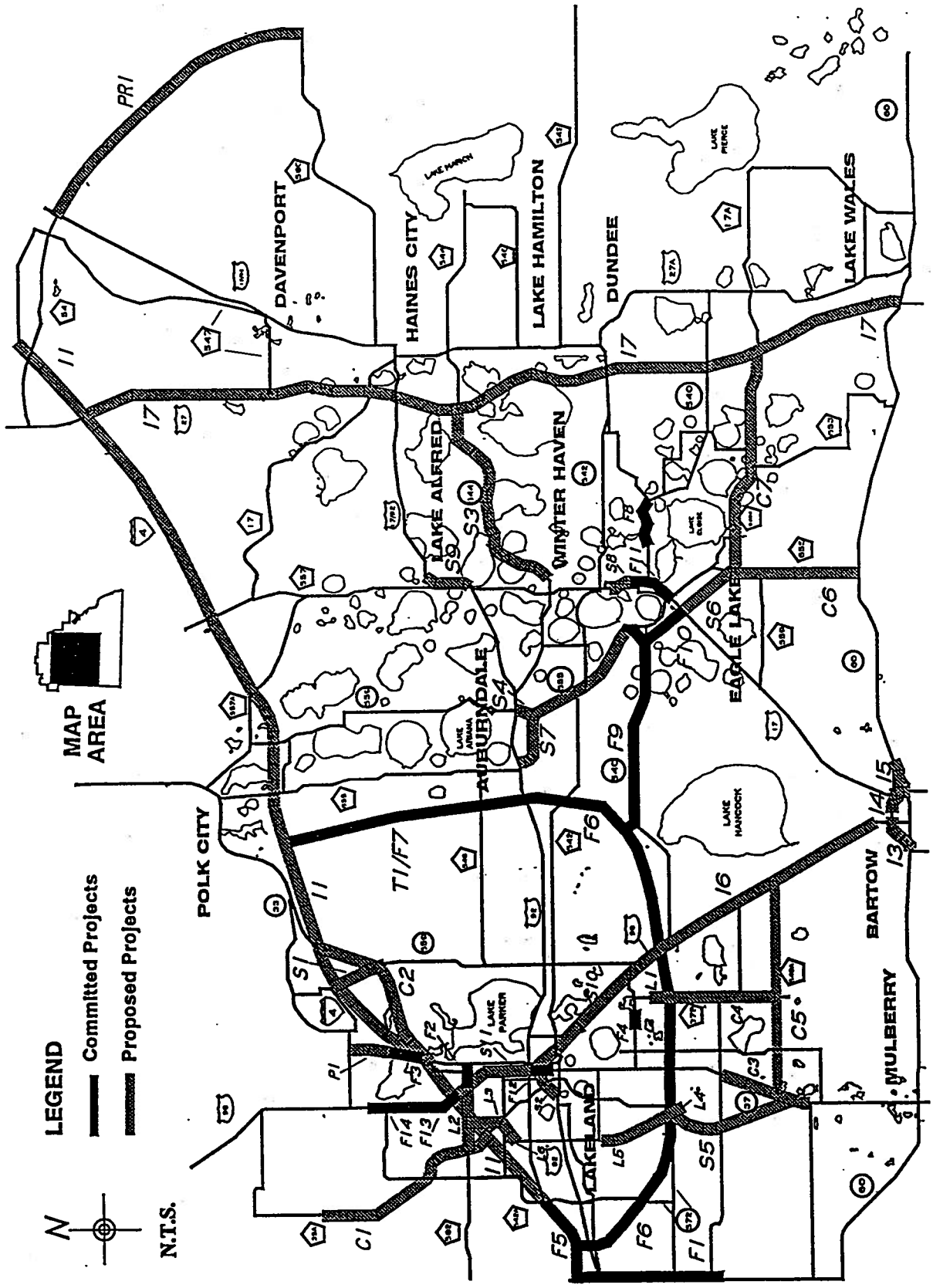
3.4 Social/Economic Demands

The proposed improvements to I-4 would enhance community assets and the quality of life in Polk County. Improved level of traffic service, compatibility with projected land use and growth management plans, consistency with future transportation plans, improved emergency evacuation, improved highway safety and peace of mind for the local travelers on the Polk County road network due to a decreased accident potential and freedom of movement on I-4 are all amenities which contribute to the overall public acceptability of the proposed improvements.

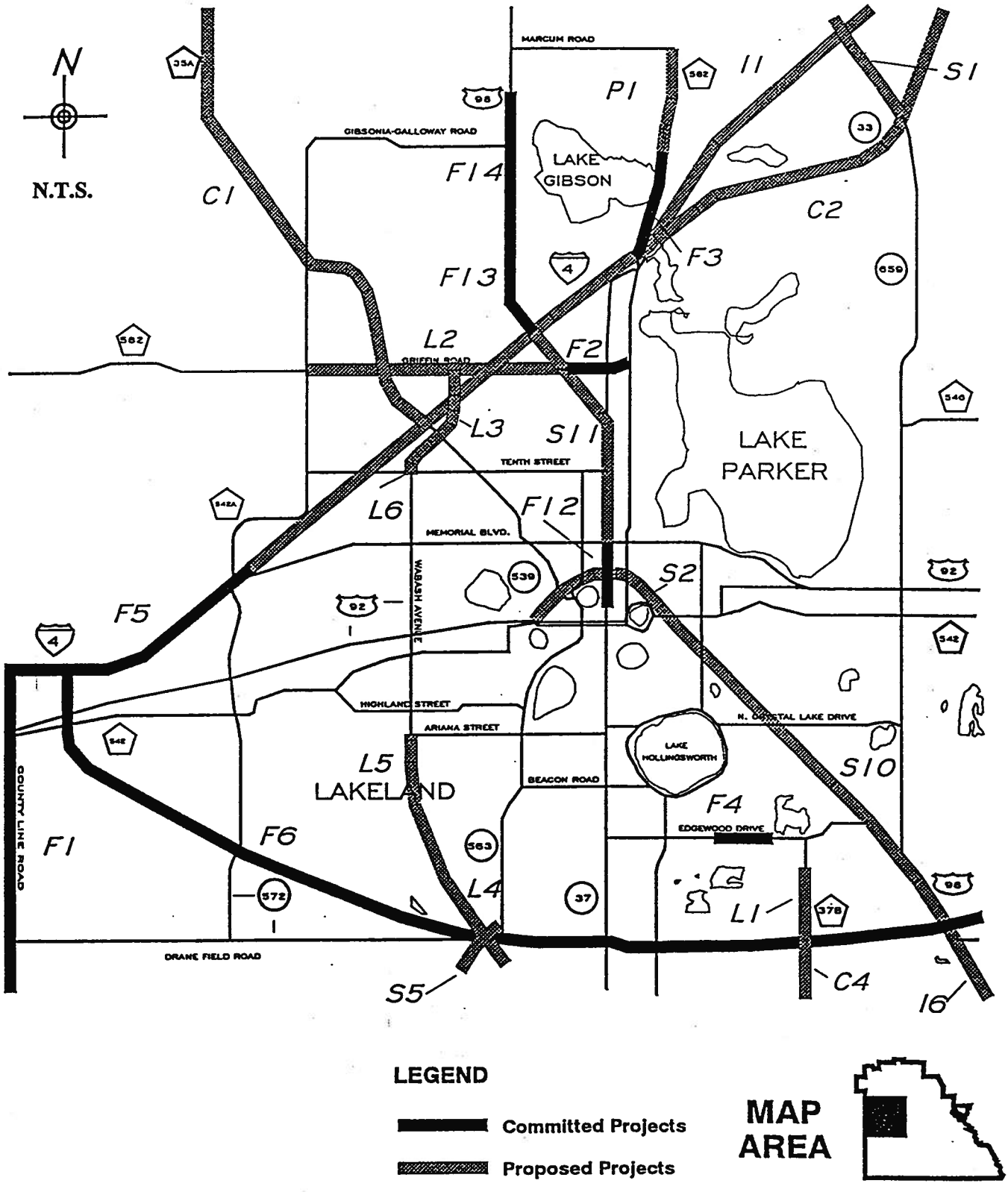
The Polk County 2010 Future Land Use Maps, April 20, 1992; November 18, 1992; January 31, 1994; and October 4, 1994; and the Lakeland Year 2000 Land Use Plan, 1991 show that land use would remain predominantly commercial from County Line Road to Memorial Boulevard. Residential land uses would replace the agricultural land uses from Memorial Boulevard to Kathleen Road and the area from Kathleen Road to US 98 would become predominantly a business park center. Residential land use would continue to dominate from US 98 to SR 33. From SR 33 to SR 559, residential land use would replace the agricultural uses and is also designated as a Regional Activity Center. The Green Swamp area from CR 557 to US 27 would remain as natural/agricultural/rural residential. The US 27 interchange area would remain commercial.

Future land use maps for Lakeland and Polk County are included in Section 2 of the Appendix.

The Future Land Use element of the Polk County Comprehensive Plan, November 1992, Revised October 1994 has identified three areas along the project corridor as Select Area Plans (SAPs), a detailed land-use plan for a specific area. The SAPs includes a land-use map and accompanying objective and policies to provide special conditions, restrictions or requirements for activities within the SAP. Three



2020 LONG-RANGE TRANSPORTATION PLAN: POLK COUNTY	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 3-3



2020 LONG-RANGE TRANSPORTATION PLAN: LAKELAND	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 3-4

SAPs are located along the I-4 project corridor, including the I-4/NE Parkway SAP in Segment 4; the North US 27 SAP and the CR 54/Loughman SAP, both in Segment 7.

The Growth Management Plan incorporated into the Lakeland Comprehensive Plan Year: 1990-2000, requires that public facilities, including major roadways such as I-4, and services necessary to support proposed development occur concurrent with the impacts of such development. The proposed improvements to I-4 would benefit the anticipated social and economic demands with this corridor by enhancing travel mobility, limiting traffic diversion (congestion) to parallel residential streets, improving accessibility to the area and providing for the continuous movement of people and goods with increased safety and efficiency. The proposed widening of I-4 would enhance community assets by providing the road network improvements necessary to support the future land use projected for Polk County. The Lakeland - Winter Haven Urban Area is and will continue to be a prime residential and resort destination, particularly during the winter season. The 1980 to 1990 census figures show a 34 percent increase in population for the region of which 17 percent are age 65 or older. Development of Polk County north of Lakeland has increased dramatically since US 98 was improved to a four-lane facility in the 1970s. It is projected that future population growth will continue to increase by about 50 to 60 percent by the year 2010.

4.0 EXISTING CONDITIONS

The existing (1995) conditions of the I-4 corridor have been evaluated by a review of existing plans, documents, coordination with advisory and regulatory agencies and field reconnaissance. The preliminary investigation of the corridor during the 1994 I-4 Master Plan phase of this project formed the basis of the description of the existing conditions. Subsequent and more detailed evaluation of concerns raised during the 1994 I-4 Master Plan phase contributed significantly to the following descriptions.

4.1 Existing Roadway Conditions

Existing roadway conditions described in the following sections of this report were derived from a review of the original I-4 construction drawings, 1988 and 1991 FDOT Straight Line Diagrams of Road Inventory (SLDs), 1989 and 1994 I-4 Master Plans, the Geotechnical Report prepared for this project and field reconnaissance. In addition to routine maintenance, minor safety improvements including shoulder and pipe endwall improvements and overlay work (resurfacing) to the mainline, two significant construction projects have been completed to improve I-4 since its original construction. The westbound bridge over CR 582 (Bridge No. 160177) was widened to 14.63 m (48 ft) in 1988 to accommodate the acceleration lane from the westbound I-4 on-ramp; the US 27 eastbound on-ramp to I-4 was widened to two lanes and the acceleration lane was extended.

4.1.1 Functional Classification

As shown on the SLD, May 17, 1990, I-4 is listed on the Federal-Aid Primary System and is classified on the State System as an Urban Interstate Highway from west of Memorial Boulevard to east of SR 33 and a Rural Interstate Highway from east of SR 33 to the Polk/Osceola County line. The SLDs are included in Section 3 of the Appendix. This Preliminary Engineering Report evaluates the area of I-4 from west of Memorial Boulevard to the Polk/Osceola County line. In this section of I-4 there are eighteen existing cross roads (eight at interchanges including: Memorial Boulevard, Kathleen Road, US 98, Socrum Loop Road, SR 33, SR 559, CR 557, and US 27). There is also one proposed interchange (by others), the Polk County Parkway East (at approximate MP 15), located between the SR 33 and SR 559 interchanges. The classifications, mileposts and laneage for the existing cross roads are shown in Table No. 4-1.

The Polk County 2020 Long-Range Transportation Plan, Adopted November 9, 1995 recommends improvements to the roadway projects connecting to this project. These recommendations are shown in Table No. 4-2.

Polk County seeks to achieve an acceptable LOS on all road segments which are "backlogged facilities" (a road which is not operating at an acceptable LOS, is not constrained, and is not scheduled for capacity improvement which will result in acceptable operating conditions). Polk County shall implement 110 percent Maintain as the LOS for the purpose of issuing development permits for US 98 from I-4 to the Lakeland Mall and 105 percent Maintain for I-4 from US 27 to the Polk/Osceola County line. The 105 percent and 110 percent Maintain is a standard that establishes that the number of vehicle trips on a road segment shall not exceed 105 percent or 110 percent of the vehicle trips on that segment at such time it is identified as a backlogged or constrained facility.

Table No. 4-1
EXISTING CROSS ROADS
I-4 Project Development and Environment Study

Name	Mile Post	Classification	Lanes
Memorial Boulevard (SR 546)	2.565	Urban Principal Arterial	4
Swindell Road	3.182	Urban Local	2
10th Street	3.971	Urban Major Collector	2
Bella Vista Street	4.771	Urban Local	2
Kathleen Road (SR 539)	5.091	Urban Major Collector - North Urban Minor Arterial - South	2
Griffin Road (CR 582)	5.932	Urban Major Collector	2
US 98 (SR 35 & 700)	6.425	Urban Principal Arterial	4
Carpenter's Way Road	7.352	Urban Local	2
Socrum Loop Road (CR 582)	7.864	Urban Major Collector	2
Old Combee Road	8.885	Urban Major Collector	2
SR 33	12.260	Urban Minor Arterial	2
Mt. Olive Church Road	15.871	Rural Local	2
CR 655	16.938	Rural Major Collector	2
SR 559	18.410	Rural Major Collector - North Rural Minor Arterial - South	2
CR 557A	20.070	Rural Minor Collector	2
CR 557	22.421	Rural Major Collector	2
US 27 (SR 25)	29.160	Rural Principal Arterial	4
Loughman Road (CR 54)	31.513	Rural Major Collector	2

Table No. 4-2
2020 HIGHWAY NEEDS / PROPOSED ROAD IMPROVEMENTS
I-4 Project Development and Environment Study

Road	From	To	Improvement
Combee Rd. Extension	SR 33	Walt Williams Rd.	New 2 Lane Divided Arterial
CR 582 (Griffin Rd.)	CR 35A (Kathleen Rd.)	US 98	2 Lane to 4 Lane Divided Arterial
CR 35A (Kathleen Rd.)	I-4	Duff Rd.	2 Lane Collector to 4 Lane Divided Arterial
CR 54	US 27	US 17/92	2 Lane to 4 Lane Divided Arterial
I-4 North Frontage	SR 33	Combee Rd. Extension	New 2 Lane Collector
Polk County Pkwy.	US 92	I-4 @ Mt. Olive Rd.	New 4/2 Lane Freeway Arterial
SR 33	CR 582/I-4	I-4	2 Lane to 4 Lane Divided Arterial
SR 539 (Kathleen Rd.)	Wabash Ave. Extension	I-4	4 Lane to 6 Lane Divided Arterial
US 92 (Memorial Blvd.)	I-4	Lincoln Ave.	4 Lane to 6 Lane Divided Arterial
US 27	I-4	Lake County Line	4 Lane to 6 Lane Divided Arterial
US 27	SR 60	I-4	4 Lane to 6 Lane Divided Arterial (Stage Two)
US 98 (N. Florida Ave.)	US 92 (Memorial Blvd.)	I-4	4 Lane to 6 Lane Divided Arterial
US 27	SR 60	I-4	4 Lane to 6 Lane Divided Arterial (Stage One)

According to the FDOT District One Draft Tentative Work Program, Fiscal Years 97/98 - 01/02, dated November 22, 1996, highway improvements (other than landscaping, lighting and resurfacing) directly connected to this project include:

Road Name	From / To	Type of Work
Fiscal Year 1996/1997		
US 98	I-4 to Carpenter's Way Road	Multi-Lane Reconstruction
Fiscal Year 1997/1998		
US 98	SR 546 to I-4	Multi-Lane Reconstruction
US 27	SR 544 to I-4	Multi-Lane Reconstruction
Fiscal Year 2000/2001		
Polk County Parkway	N. Of CR 546 to I-4@Mt. Olive Rd.	New Construction
Polk County Parkway	N. Of US 92 to I-4@Mt. Olive Rd.	Toll Plaza Construction

Note: A section of I-4 from CR 582 to SR 33 (Segment 3) is scheduled to be milled and resurfaced in Fiscal Year 1998/1999.

4.1.2 Typical Section

The existing I-4 mainline was constructed as a four-lane divided rural freeway from 1958 to 1964. The existing I-4 mainline roadway section contains four 3.6 m (12 ft) travel lanes, a 19.5 m (64 ft) depressed grassed median, two 3.0 m (10 ft) outside shoulders (2.4 m (8 ft) paved), two 2.4 m (8 ft) inside shoulders (1.2 m (4 ft) paved), and grassed outside drainage swales, typically contained within a 91.4 m (300 ft) right-of-way. The typical section was taken from construction drawings for existing I-4 (State Project Nos. 16320-3401, -3402, -3403, -3405, -3406 and -3407). Access to the facility is provided at eight existing interchanges and the posted speed limit is 65 mph throughout the study area. The existing roadway typical section for I-4 is shown in Figure 3-1 in Section 3.1.1.

4.1.3 Pedestrian, Handicapped and Bicycle Facilities

The I-4 corridor is a limited access interstate facility on which State statute prohibits bicycle and pedestrian traffic. Bicyclist and pedestrian accommodations are present on some of the cross roads at the I-4 interchanges. To accommodate bicycle traffic, 4.3 m (14 ft) outside lanes are provided at the US 98 interchange, south of I-4.

Pedestrian pathways (sidewalks) are provided on both sides of Kathleen Road (SR 539) south of I-4. Pathways are provided on both sides of US 98 through the I-4 interchange. Pathways are provided on both sides of SR 33 (west of Socrum Loop Road) from Florida Avenue to Carol Drive. An unsignalized crosswalk is located south of the CR 582 interchange along SR 33 at Edward Street. Signalized intersections with pedestrian indicators are located at the US 98 interchange north of I-4 at Crevasse Street. Crosswalks are not provided at any of the I-4 interchange ramp terminals.

Major pedestrian generators and employers in the vicinity of the I-4 project include Interstate Bowling Lanes, Country Hearth Bakery, Winston Elementary School, Watkins Motor Lines, Pepperidge Farms, Owen Illinois, Cardinal Industries, US 98 commercial corridor, Lakeland Square Mall, Lakeland Auto Auction and the US 27 commercial corridor.

There are no designated school crosswalks immediately adjacent to the I-4 interchanges; however, several school bus routes and public transit routes use the cross roads in the project corridor. School bus stops and school crosswalks and public transit route stops are described in Sections 4.3.2.D and 6.2.1.

The Lakeland Area Mass Transit District (LAMTD) operates a Coordinated Transportation Provider (special transportation provider) in the Lakeland Urbanized Area known as the Handy Bus. The Handy Bus is a demand responsive transit service for the elderly and handicapped who are physically unable to use the regularly scheduled service.

Citrus Connection has 13 daily routes scheduled within the Lakeland City area. The Polk County transportation system offers public transportation county-wide in rural and small urban areas. Transportation is offered for persons requiring a lift-equipped vehicle and persons over 60 years old to keep medical appointments and to multi-purpose senior centers.

No handicapped facilities (e.g. curb cut ramps) are present at any of the I-4 cross road interchanges.

The City of Lakeland is developing a comprehensive pedestrian and bicycle system plan to address the current deficiencies, as required by Florida Statutes, Chapters 234 and 335.065 and DCA Rule 9-J5.007, Comprehensive Plan Update. The objective of the Comprehensive Plan is to increase the linear feet of routes for non-motorized travel by one percent by the year 2000. The objective also includes installation of new pathways and continuing maintenance of existing pathways near arterial and collector roads within 3.2 km (2 mi) of public schools.

The Polk County Bicycle Map, prepared for the TPO by the Polk County Planning Division, 1992, designates the Memorial Boulevard, Kathleen Road, Griffin Road, US 98, Socrum Loop Road, SR 33 and CR 557 crossings of I-4 as "roads with moderate to high traffic volumes and/or other conditions which require extra caution and are considered dangerous (for bicyclists)." This map designates the US 27 crossing of I-4 as a "road considered unsuitable for bicycling and should be avoided (by bicyclists)."

Field inspection and review of the original I-4 construction drawings indicates no other provisions or accommodations for pedestrian, bicycle or handicapped traffic on the typical sections for the cross roads.

4.1.4 Right-of-Way

With the exception of one bifurcated area located between SR 559 and CR 557 (Segment 4), two bifurcated areas located between CR 557 and US 27 (Segment 6) and one bifurcated area between US 27 and CR 54 (Segment 7), I-4 was typically built within the standard interstate right-of-way width of 91.4 m (300 ft) from west of Memorial Boulevard to the Polk/Osceola County line. At bifurcated sections, the existing right-of-way increases to a maximum of about 149.4 m (490 ft) in Segment 4, 162.8 m (534 ft) and 131.1 m (430 ft) in the two bifurcated areas in Segment 6 and 117.7 m (386 ft) in Segment 7. Additional right-of-way and easements are provided at grade separations, interchanges, rest areas, and some drainage channels. The existing I-4 right-of-way is shown on the Concept Plans.

4.1.5 Horizontal Alignment

The I-4 horizontal alignment is typical of most Florida interstate facility alignments with long tangent sections connecting long, gradual, flat curves and deflection angles not requiring horizontal curves. I-4 is classified on the Federal-Aid Primary System and the State System as an Urban Interstate Highway from west of Memorial Boulevard to SR 33 and as a Rural Interstate Highway from SR 33 to the Polk/Osceola County line. The two classifications require different sets of criteria.

I-4 Mainline - The urban section was reviewed against a design speed of 100 km/h (60 mph). A minimum curve length of 274.3 m (900 ft) was used, based on the design speed. All of the horizontal curves were found to be adequate with the exception of a westbound reverse curve within the limits of the Memorial Boulevard interchange (P.I.s at Stations 614+52.55 and 625+33.94).

The rural section was reviewed against a design speed of 110 km/h (70 mph). A minimum curve length, based on the design speed of 640.1 m (2,100 ft) was used. More than half of the existing twenty-two horizontal curves were found to be deficient.

Interchanges - The project corridor includes eight grade separation interchanges, ranging from simple diamond interchanges to complex interchanges with multiple ramps and bridges. Of the eight existing interchanges, none fully meet the current criteria for entrance or exit ramp terminal geometry to the mainline roadway. Most deficiencies were found in the acceleration/deceleration lane lengths and the ramp taper lengths.

This analysis was based on the minimum desirable design criteria (AASHTO 1990). Refer to Section 5.0 for additional information regarding design criteria.

4.1.6 Vertical Alignment

The existing profile grade of I-4 is relatively flat and has an average elevation of about 40 m (130 ft) above mean sea level with a low of about 9.1 m (30 ft) and a high of about 70.1 m (230 ft). Elevations are based on the National Geodetic Vertical Datum (NGVD) 1929.

Mainline - Profile grades vary from 0 to 3.1 percent on mainline I-4. The current interstate design standard is a maximum of 3 percent. The crest vertical curves along existing I-4 were designed for 105 km/h (65 mph) or greater by 1954 AASHO standards. Most of these vertical curves occur at the grade separation bridges which would be replaced due to insufficient vertical and horizontal clearances.

The urban section of existing I-4 was reviewed against a design speed of 100 km/h (60 mph). Nearly all of the locations requiring vertical curves do not meet current interstate design standards.

The rural section of I-4 was reviewed against a design speed of 110 km/h (70 mph). As in the urban section, nearly all of the locations requiring vertical curves do not meet current interstate design standards.

Interchanges and Overpasses - The project includes eight grade separation interchanges and eleven grade separation overpasses (including the CSX railroad overpass). Current design standards require a 5.0 m (16.5 ft) vertical clearance between the mainline roadway and the bottom chord of the crossing structure. Of the sixteen structures that I-4 passes under, only six (Bella Vista Street, CSX railroad, Kathleen Road, Griffin Road, Mt. Olive Church Road and CR 557A) meet or exceed the required minimum vertical clearance. Refer to Section 4.2 for additional information regarding bridges on this project.

The entrance and exit ramps at the interchanges were reviewed against current design standards. It was found that all of the interchanges had some form of deficiency. These deficiencies were either inadequate K values or insufficient vertical curve lengths.

This analysis was based on the minimum desirable design criteria (AASHTO 1990). Refer to Section 5.0 for additional information regarding design criteria.

4.1.7 Storm Water Drainage

I-4 was initially designed and constructed in the late 1950s and early 1960s at a time when storm water management requirements were considerably less stringent than current standards. Typically, the grass swale median is drained through a series of inlets and side drains which outlet to the open roadside ditches or directly to the cross drains. Existing roadside ditches are shallow, 0.61 m (2 ft) minimum depth, as opposed to the current standard ditch with a minimum depth of 1.1 m (3.5 ft). Low lying areas of the existing I-4 corridor appear to have the potential for high ground water and with the flat gradients of the existing I-4 vertical alignment have resulted in standing water in some roadside ditches. Based on field inspections performed in 1993 and 1994, it was noted that silt deposition existed in most of the I-4 cross drains, side drains and ditches. Generally, median inlets and side drain outlets were in need of maintenance. Debris and vegetation were present in many of the roadside ditches.

Limited storm water retention/detention facilities exist within the I-4 right-of-way. Storm water retention and detention requirements were substantially less stringent during the time I-4 was initially designed and constructed. Some water quality treatment is provided in the roadside ditches. However, most runoff currently flows into the local drainage basins without treatment or attenuation. Seasonal high water elevations will have to be investigated in subsequent design phases of this proposed action to determine practicable alternatives for storm water treatment. Storm water management ponds have been constructed in the infield areas at some interchanges. In view of the current FHWA stance disapproving of infield ponds, these ponds will have to be evaluated during the design phase to determine their suitability for use with the proposed improvements.

A review of the initial construction plans, 1989 I-4 Master Plan, Preliminary Engineering Drainage Basin Maps for the I-4 PD&E study, SLDs and Federal Emergency Management Agency (FEMA) FIRMs indicated that there are approximately 172 drainage structures within the limits of the I-4 project. The locations of these drainage structures were verified by field inspection. One hundred and twenty-nine (129) of these structures are associated with the right-of-way storm water systems draining the existing roadway. These storm drain systems do not cause encroachments upon the base flood plain. The remaining forty-three (43) drainage structures function as cross drains at thirty-six (36) locations in the project corridor.

The majority of the cross drains in the project area were built during the initial highway construction phases. Additional culverts were added in later years and some of the original cross drains were replaced or modified. The slopes of the culverts are less than 0.5 percent with many at 0.1 percent or less. The combination of flat culvert slopes and relatively flat, poorly maintained receiving channels has resulted in silt deposition in the cross drain culverts.

A field inspection was conducted to identify obvious drainage problems. Additionally, people knowledgeable about local drainage conditions (residents, FDOT maintenance personnel, Lakeland and Polk County operations personnel) were interviewed.

FDOT drainage maps, United States Geological Survey (USGS) Quadrangle maps, SWFWMD topographic maps and FEMA FIRMs were used to identify flood-prone areas within the I-4 corridor. The westbound shoulder of I-4 immediately east and west of Carpenter's Home Road (Golf Course Road) at Flood Plain Encroachment Locations 2 and 3 has experienced minor flooding several times in the past. None of these occurrences have caused disruption of traffic. Interviews with FDOT maintenance personnel, local officials and representatives of the Polk County Engineering Services Division revealed

no other significant problems of excessive backwater associated with existing FDOT drainage structures within the limits of this project.

Of the 38 locations identified as having the potential for flood plain encroachment, it is anticipated that the proposed improvements to I-4 would encroach at 30 of the flood plain locations. Refer to Section 9.15.4 for discussion of impacts to the flood plains.

The existing cross drains are listed in Table No. 4-3. The existing drainage basins and cross drain locations are shown in Figure 4-1.

Table No. 4-3
EXISTING CROSS DRAINS
I-4 Project Development and Environment Study

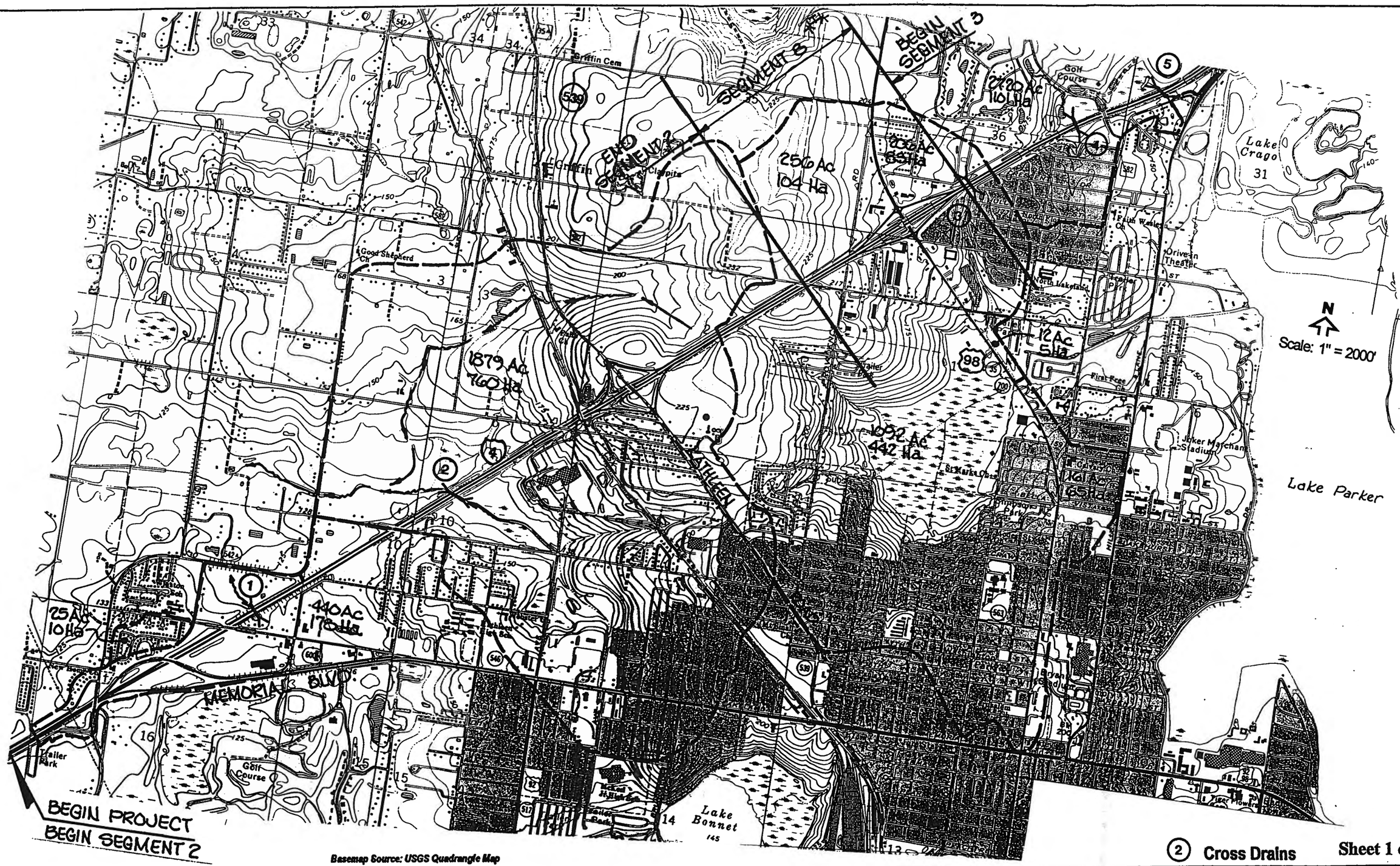
Segment	Cross Drain No.	Flood Plain Encroachment No.	Station	Existing Cross Drain Description
2	1	N/A	643+00	1.5 m x 1.2 m (5 ft x 4 ft) CBC
2	2	1	693+35	1.8 m x 1.8 m (6 ft x 6 ft) CBC
8	3	N/A	826+00	1.5 m x 1.2 m (5 ft x 4 ft) CBC
3	4	2	852+00	(2) 750 mm (30 in) RCP
3	5	3	871+00	1.8 m x 1.2 m (6 ft x 4 ft) CBC
3	6	4	903+60	(2) 3.7 m x 1.2 m (12 ft x 4 ft) Concrete Bridge Culvert
3	7	N/A	957+00	(2) 1050 mm (42 in) Pipe Culverts
3	8	N/A	1059+00	2.4 m x 1.5 m (8 ft x 5 ft) CBC
3	9	N/A	1105+00	(2) 1.8 m x 1.2 m (6 ft x 4 ft) CBC
4	10	N/A	1170+00	2.4 m x 0.9 m (8 ft x 3 ft) CBC
4	11	11	1208+00	(2) 750 mm (30 in) RCP
4	12	11	1227+00	(2) 600 mm (24 in) RCP
4	13	11	1241+00	1.5 m x 0.9 m (5 ft x 3 ft) CBC
4	14	N/A	1277+00	600 mm (24 in) RCP
4	15	13	1383+30	2.4 m x 2.1 m (8 ft x 7 ft) CBC
4	16	15	1421+00	(2) 1050 mm (42 in) RCP
5	17	16	1476+50 RT.	600 mm (24 in) RCP
5	17	16	1476+32 LT.	600 mm (24 in) RCP
5	18	17	1496+11 RT.	1.8 m x 1.2 m (6 ft x 4 ft) CBC
5	18	17	1497+46 LT.	1.8 m x 1.2 m (6 ft x 4 ft) CBC
5	19	17	1523+00 RT.	750 mm (30 in) RCP
5	19	17	1521+00 LT.	750 mm (30 in) RCP
5	20	N/A	1620+00	900 mm (36 in) RCP
5	21	N/A	1639+00	(2) 750 mm (30 in) RCP
6	22	N/A	1684+00	2.4 m x 1.2 m (8 ft x 4 ft) CBC
6	23	N/A	1691+37	2.4 m x 1.2 m (8 ft x 4 ft) CBC

Table No. 4-3 (Cont'd)
EXISTING CROSS DRAINS
I-4 Project Development and Environment Study

Segment	Cross Drain No.	Flood Plain Encroachment No.	Station	Existing Cross Drain Description
6	24	23	1721+00	2.4 m x 1.2 m (8 ft x 4 ft) CBC
6	25	23	1743+00 LT.	1050 mm (42 in) RCP
6	25	23	1743+00 RT.	1050 mm (42 in) RCP
6	26	23	1770+00 LT.	750 mm (30 in) Pipe Culvert
6	26	23	1770+00 RT.	750 mm (30 in) Pipe Culvert
6	27	25	1791+00	900 mm (36 in) RCP
6	28	25	1812+00	900 mm (36 in) RCP
6	29	26	1843+00	1200 mm (48 in) RCP
6	30	26	1871+00	1200 mm (48 in) RCP
6	31	27	1891+00	750 mm (30 in) RCP
6	32	N/A	1908+00 RT.	(3) 1050 mm (42 in) RCP
6	32	N/A	1908+09 LT.	(3) 1050 mm (42 in) RCP
6	33	29	1934+00 RT.	(2) 750 mm (30 in) Pipe Culverts
6	33	29	1934+14 LT.	(2) 750 mm (30 in) Pipe Culverts
6	34	30	1966+00	(2) 750 mm (30 in) RCP
7	35	36	2105+00	(2) 1050 mm (42 in) RCP
7	36	37	2147+00	(2) 900 mm (36 in) RCP

RCP - Reinforced Concrete Pipe, CBC - Concrete Box Culvert
Note: N/A in the above table indicates that there is no FEMA designated 100-year flood plain identified at the location of that cross drain.

Refer to the Location Hydraulics Report, July 1995, Revised August 1998 prepared as a separate document for additional information regarding the impact of the encroachment on the flood plain, flooding problems, and storm water drainage.



Basemap Source: USGS Quadrangle Map

② Cross Drains

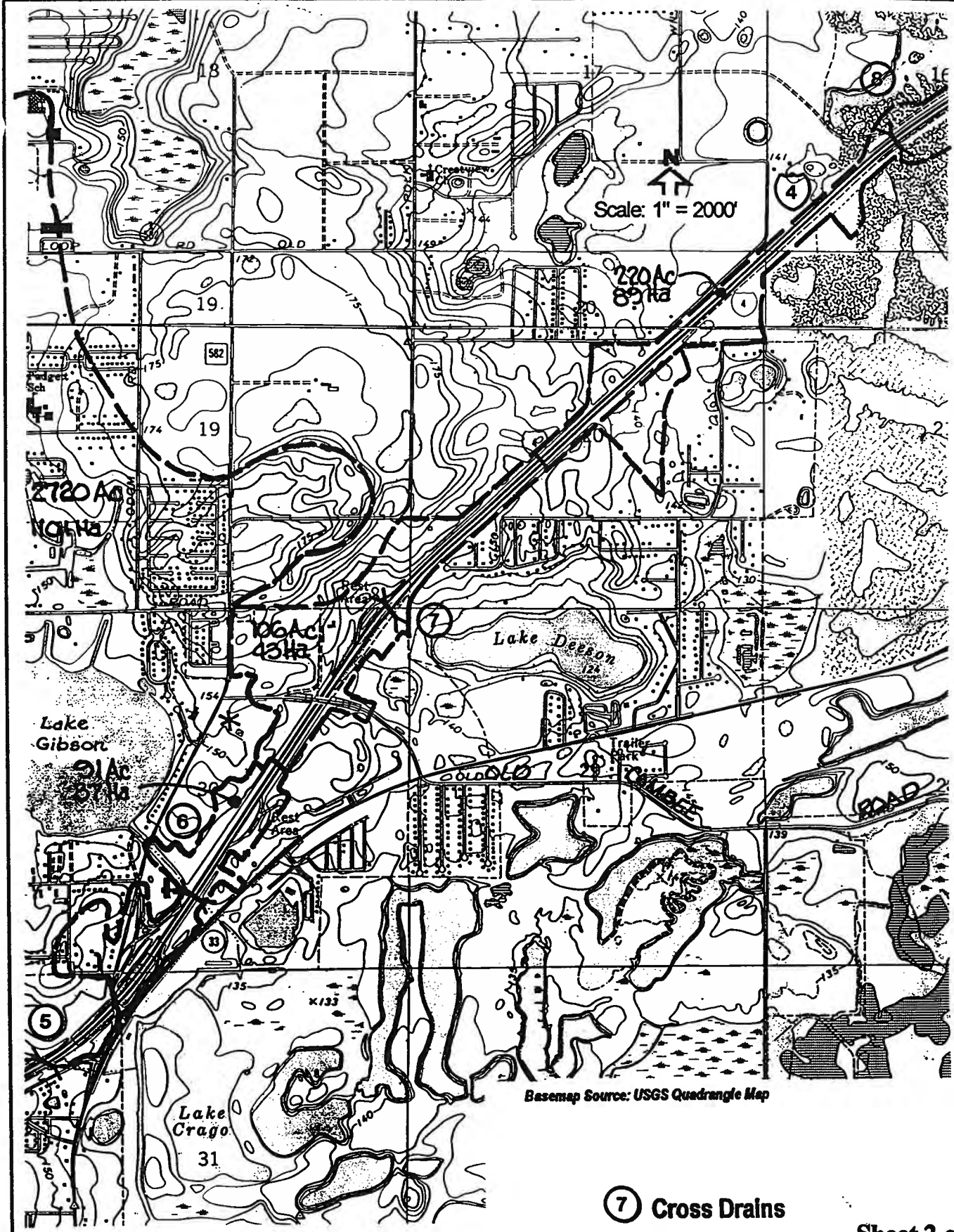
Sheet 1 of 7

Existing Drainage Basins

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 4-1

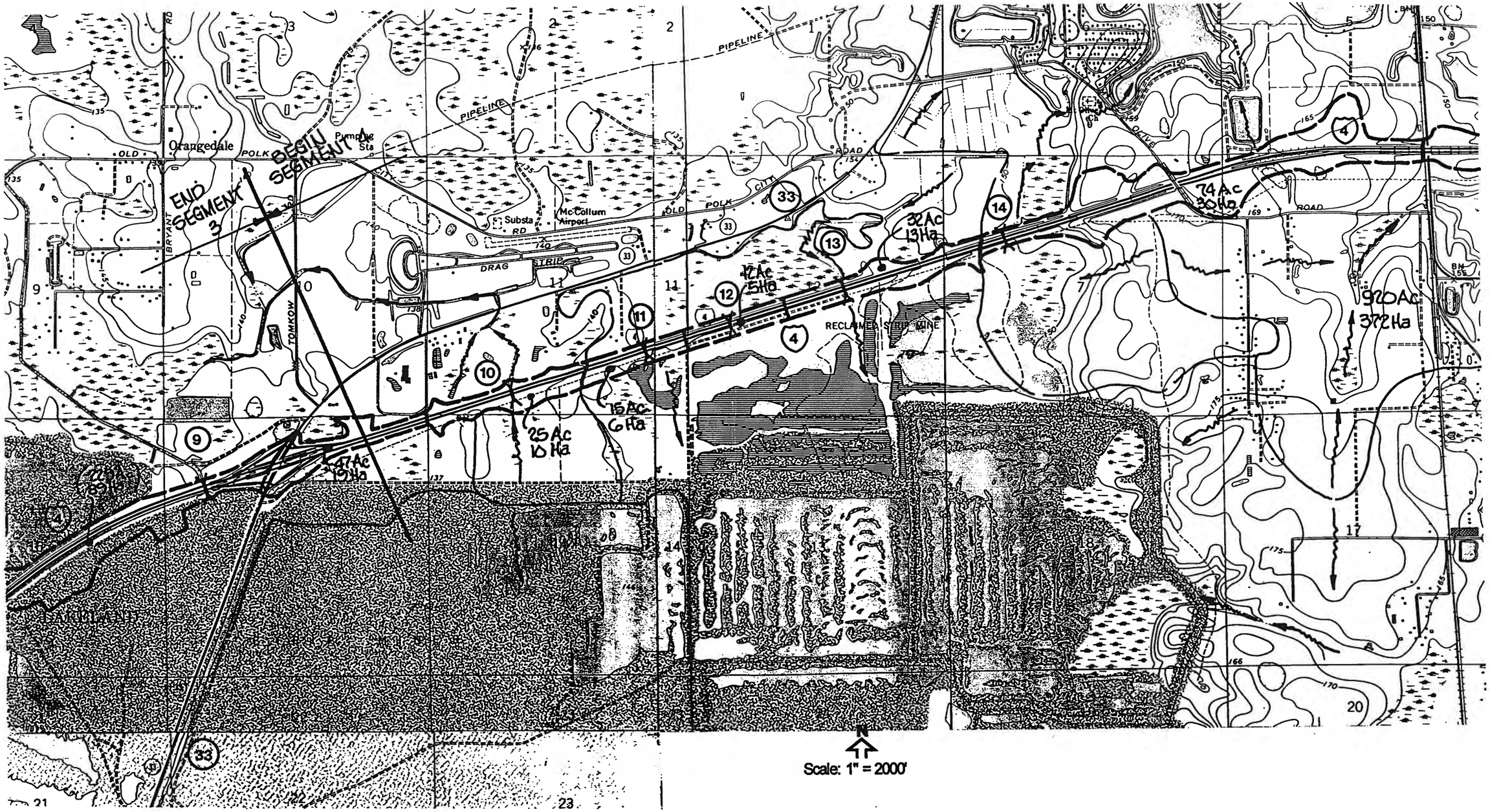


Basemap Source: USGS Quadrangle Map

(7) Cross Drains

Sheet 2 of 7

Existing Drainage Basins	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-1



Basemap Source: USGS Quadrangle Map

⑩ Cross Drains

Sheet 3 of 7

Existing Drainage Basins	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-1

N

Scale: 1" = 2000'

END SEGMENT 4

BEGIN SEGMENT 5

Lake Helene

Lake Agnes

Bay Lake

Polk City

Camp Mohead

Sandpit

239 Ac
97 Ha

81 Ac
33 Ha

24 Ac
10 Ha

34 Ac
14 Ha

18 Ac
7 Ha

86 Ac
35 Ha

6015 Ac
2434 Ha

12191 Ac
4934 Ha

156 Ac
63 Ha

69 Ac
28 Ha

920 Ac
372 Ha

Basemap Source: USGS Quadrangle Map

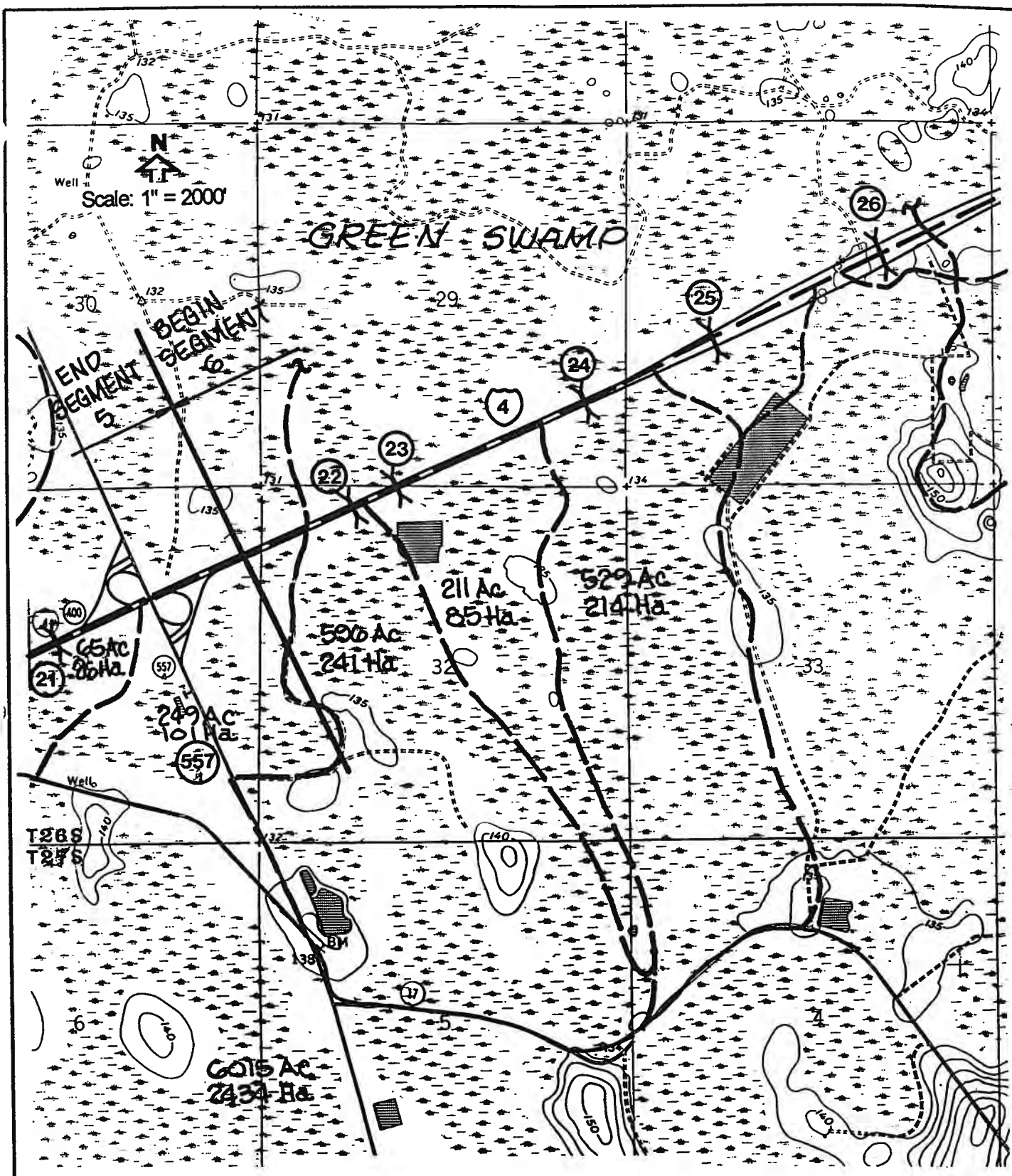
(18) Cross Drains

Existing Drainage Basins

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

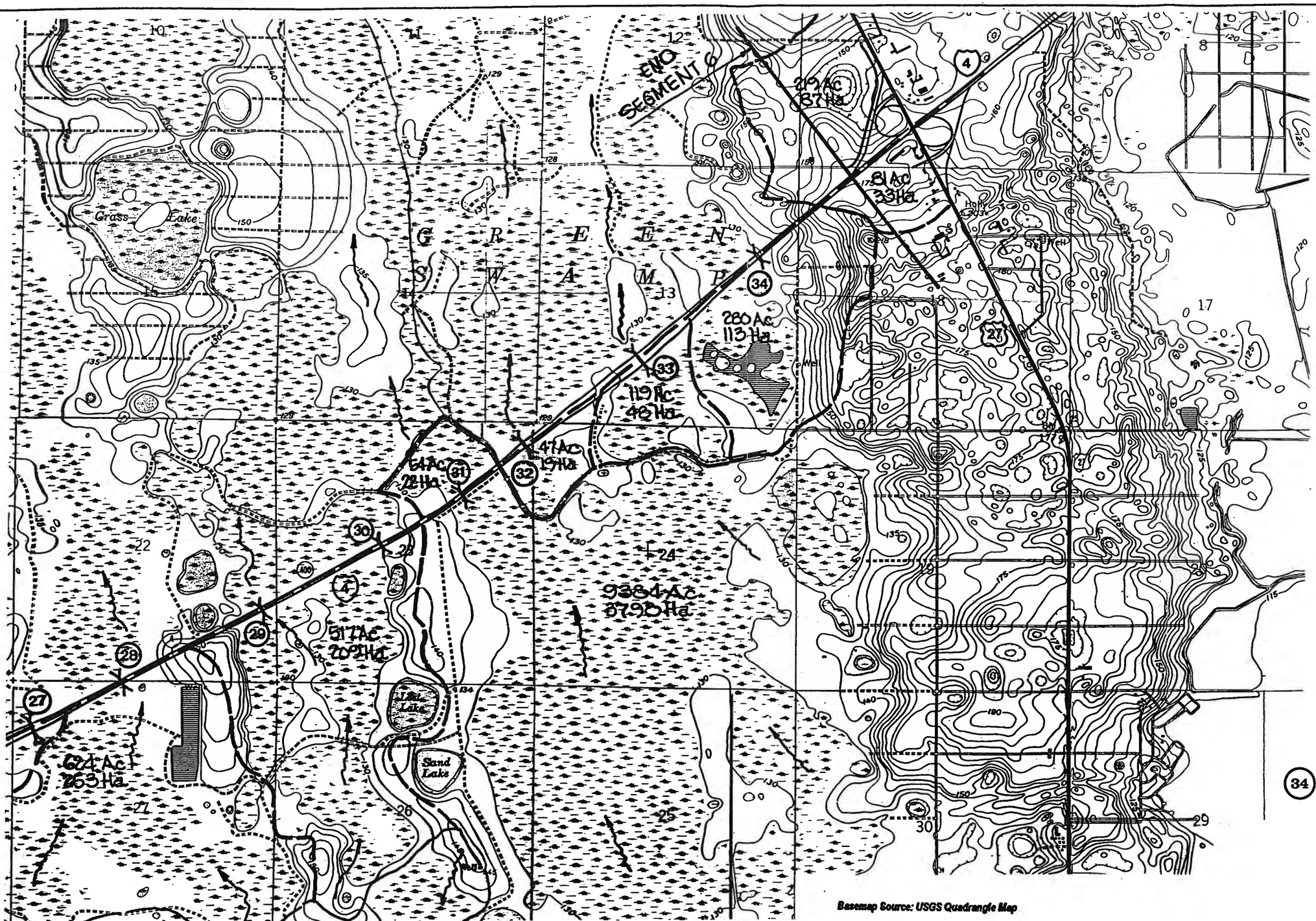
FIGURE 4-1



Basemap Source: USGS Quadrangle Map

Sheet 5 of 7

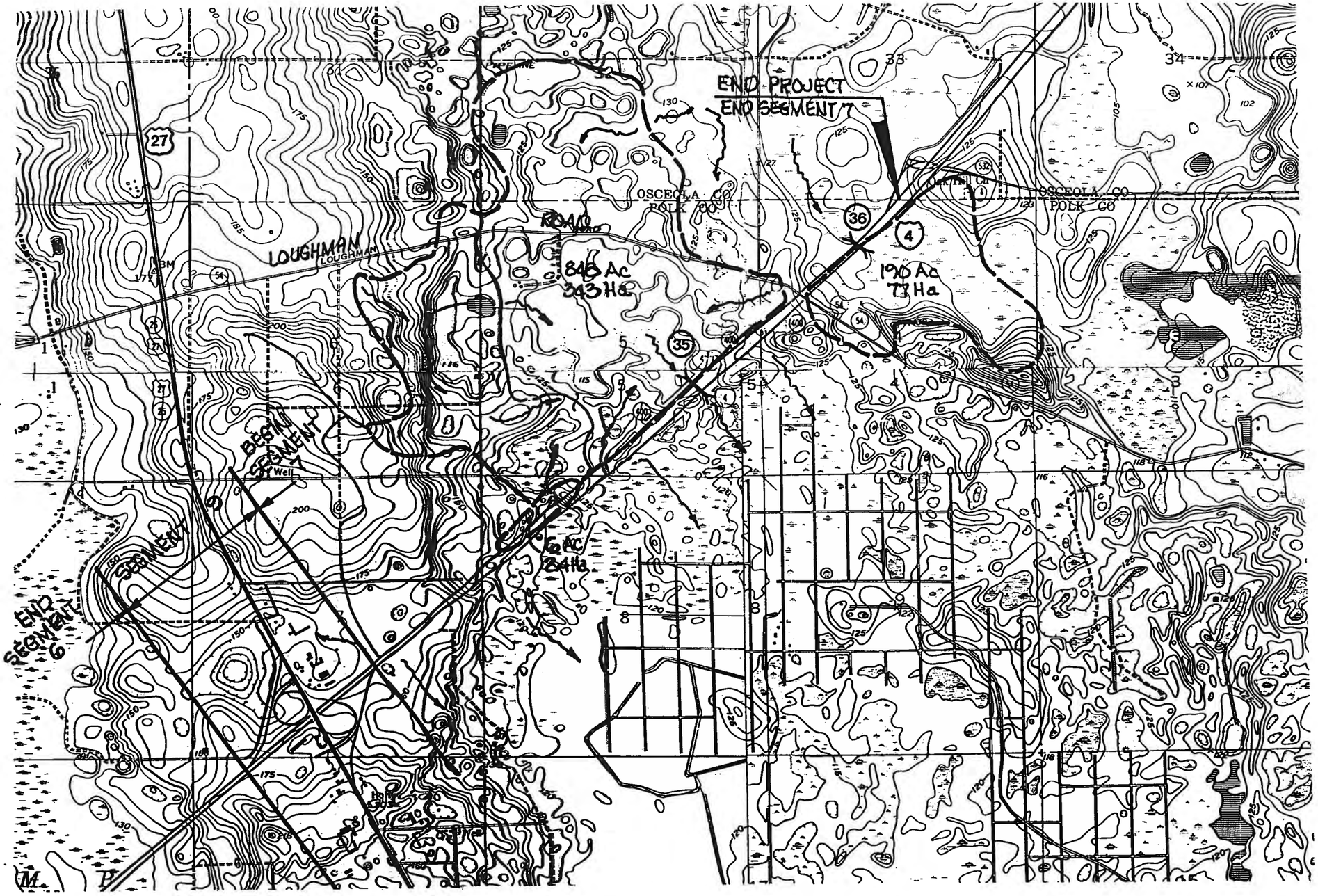
Existing Drainage Basins	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-1



Basemap Source: USGS Quadrangle Map

Sheet 6 of 7

Existing Drainage Basins	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-1



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Scale: 1" = 2000'

Basemap Source: USGS Quadrangle Map

(35) Cross Drains

Sheet 7 of 7

Existing Drainage Basins	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-1

4.1.8 Geotechnical and Generalized Soil Data

The data reviewed for this study includes the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) Soil Survey of Polk County, Florida; USGS Quadrangle Maps; 1987 aerial photographs of the existing alignment; FDOT roadway and bridge construction plans prepared in 1959 for the existing roadway; and FDOT Bridge Inspection Reports. A windshield survey was performed to identify areas where existing pavement conditions indicate the possible presence of unsuitable subsurface conditions (e.g. peat, muck) beneath roadways, to observe general topography, soil and groundwater conditions along the alignment, and to identify areas where significant pavement distress is present within the mainline roadway. To generally verify the geotechnical information contained in the SCS soil survey and FDOT construction plans, limited field investigations consisting of manual muck probes and hand auger borings were performed in selected areas containing compressible organic soil deposits.

The 1959 FDOT construction plans for the existing I-4 roadway and bridges contain cross sections displaying the general subsurface conditions encountered at approximately 30.5 m (100 ft) stations along the alignment.

The SCS Soil Survey of Polk County was reviewed with respect to near-surface soil conditions along the project. It is generally a reliable and comprehensive published source for information regarding near-surface soil and groundwater conditions. The following discussion describes specific soil conditions within the project limits.

West of Memorial Boulevard to East of Socrum Loop Road (CR 582) - The FDOT construction plans indicated the presence of up to 3.7 m (12 ft) of A-8 (Muck) material between approximate Stations 668+00 and 674+00. This information is in conflict with the information presented on the SCS Soil Survey which indicates that the organic soils in this vicinity would be located between approximate Stations 692+00 and through 699+00. Based on site conditions, it is believed that the information shown on the construction plans is inaccurate in this area.

Near Stations 725+00 to 750+00, significant cuts were made in order to achieve the final roadway grade. These cuts encountered "plastic" material which required removal to a depth of 0.6 m (2 ft) below the pavement section. It is understood that an underdrain system is present in the ramp areas of the interchange at SR 539 to control groundwater seepage considering the deep cuts which were made. Another deep cut section is present near Stations 770+00 and 780+00. No chronic groundwater seepage problems appear to exist within this cut section. Removal of "plastic" material for a depth of 0.6 m (2 ft) from beneath the pavement was required in this section.

Additional organic soil deposits were confirmed from the construction plans east of the US 98 interchange near Stations 850+00 and 865+00. Wetland areas are present on the north side of the road in these areas and organic soil deposits up to about 3.6 m (12 ft) were encountered during construction. No other highly organic soil deposits of significance were encountered within this area of the project.
About 95 percent of the soils from west of Memorial Boulevard to east of Socrum Loop Road (CR 582) (Segments 2, 8 and the western portion of Segment 3) consist of non-organic sand, fine sand and urban land. The remaining 5 percent consists of organic and compressible muck and depressional fine sands. Of these, the Samsula and Hontoon muck are the most highly organic, and would be classified as A-8 material by the FDOT. Wet season groundwater is reported to vary (typically with topographic elevation)

and is near the surface (0.3 to 0.6 m (1 to 2 ft)) from west of Memorial Boulevard to west of Bella Vista Street. At that point, ground surface elevations rise and the depth to wet season groundwater is typically below 1.8 m (6 ft) through the US 98 interchange. From that point to east of Socrum Loop Road (CR 582), wet season groundwater is reported between about 0.3 to 0.9 m (1 to 3 ft) below ground (except in wetland areas where it is at or above ground).

Data contained in the FDOT construction plans is in conflict with the information presented in the SCS Soil Survey. Based on site conditions, it is believed that the information shown on the construction plans is inaccurate in this area. The concrete pavement section appears to be in generally good condition in this area. Some patches are present and one area of moderate cracking was observed near the westbound exit ramp for US 98.

East of Socrum Loop Road (CR 582) to West of Polk County Parkway East - About 90 percent of the soils from east of Socrum Loop Road (CR 582) to west of Polk County Parkway East (eastern portion of Segment 3 and western portion of Segment 4) consist of non-organic sand, fine sand and reclaimed phosphate strip mine. The remaining 10 percent consists of organic and compressible muck, depressional mucky fine sands and borrow pits. Of these, the Samsula and Hontoon mucks are the most highly organic, and would be classified as A-8 material by the FDOT. Wet season groundwater levels within this segment vary with the soil type and topography and typically range from about 0.9 to 1.8 m (3 to 6 ft) from east of CR 582 through Station 1050+00 (west of SR 33), and then becomes shallower to about 0.3 to 0.9 m (1 to 3 ft) west of the proposed Polk County Parkway East interchange (except within wetland areas). Inspection of the roadway in this area did not reveal areas of significant pavement distress. The overall condition of the pavement surface appears to be good.

West of Polk County Parkway East to West of US 27 - The area from west of Polk County Parkway East to west of US 27 (eastern portion of Segment 4, Segment 5 and western portion of Segment 6) lies within the Green Swamp. This area contains the largest percentage of organic and compressible muck and depressional soils. About 35 percent of these soils are comprised of muck, mucky fine sands, and depressional fine sands. Of these, the Samsula, Kaliga and Hontoon mucks are the most highly organic, and would be classified as A-8 material by the FDOT. The remaining 65 percent of this area consists of non-organic sands, fine sands and urban land. Wet season groundwater varies with soil type and topography. From west of the proposed Polk County Parkway East interchange through the beginning of the Green Swamp (west of CR 557A - eastern portion of Segment 4 and western portion of Segment 5), the wet season groundwater is typically 0.9 m (3 ft) to deeper than 1.8 m (6 ft) below ground surface. Through the Green Swamp up to west of US 27 (eastern portion of Segment 5 and Segment 6), wet season groundwater is at or above the ground surface in the numerous wetland areas, and varies from about 0.3 m (1 ft) below ground to greater than 1.8 m (6 ft) below ground within the isolated upland areas. West of US 27, the ground surface rises rapidly and wet season groundwater is reported to be below 1.8 m (6 ft).

One minor pavement subsidence in the eastbound lane near Station 1675+00 just east of CR 557 appears to be associated with the presence of pipe culvert backfill and has resulted in roadway settlement. Additional minor pavement subsidence, particularly within the Green Swamp area, is thought to be associated with the presence of organic soils beneath the embankment. It was observed during the site reconnaissance that the outside paved shoulder of the westbound lane between approximate Stations 1825+00 and 1875+00 and near Station 1900+00 which is west of the US 27 interchange had the presence

of organic soils or incomplete demucking beneath the embankment. An isolated area of shoulder sloughing was also observed in the eastbound lane near Station 1855+00. This isolated area has experienced a relatively significant sag estimated at 0.5 m (1.5 ft), presumably resulting from remaining organic soils beneath the roadway.

In general, the pavement condition along this area is good. There are areas of pavement subsidence generally thought to be associated with the presence of organic soils where organic soils may still be in place beneath the roadway or where backfilling of demucked areas was performed without adequate compaction.

West of US 27 to Polk/Osceola County Line - About 80 percent of the soils from west of US 27 to Polk/Osceola County line (eastern portion of Segment 6, Segments 7 and 9) consist of non-organic sand and fine sand. The remaining 20 percent consists of organic and compressible muck, depressional mucky fine sand and depressional fine sand. Of these, the Samsula muck is the most highly organic, and would be classified as A-8 material by the FDOT. The wet season groundwater is reported to be below 1.8 m (6 ft) from US 27 to east of US 27 (beginning near the bifurcated area), then becomes shallower and varies from about 1.8 m (6 ft) below to near the ground surface within the wetland areas to the Polk/Osceola County line.

During the roadway inspection, some shoulder sloughing was observed in the westbound lane near Station 2100+00 (west of CR 54). It is suspected that organic soils are still in place beneath the embankment. The overall pavement condition appears to be good.

The review of the FDOT construction plans for this segment of the project indicates some organic soils were present in the central and east end of Segment 5. Typical organic soil thicknesses are less than about 3.1 m (10 ft) in most locations. A section of the roadway in this area is bifurcated near Stations 2105+00 to 2109+00 and the organic deposits, suspected to be 3.1 m (10 ft) thick, are presumed to still be in place within the median in this area. The partial interchange at the Polk/Osceola County line also is suspected of having organic soils less than 1.8 m (6 ft) thick present within the infield area in the northwest quadrant of the interchange.

For further information regarding the types of soils found, results of analysis and tested structural values, refer to the Geotechnical Report, February 1994, prepared as a separate document.

4.1.9 Accident Data

I-4 Mainline - Accident data was obtained from reports available through the FDOT computer resources. The information used in the analysis includes the years 1988 through 1992 and includes the area from west of Memorial Boulevard to the Polk/Osceola County line along the I-4 mainline. A total of 637 accidents occurred from 1988 through 1992 which resulted in 651 injuries and 28 fatalities. The majority of these accidents (57 percent) occurred during the daylight hours. Thirty-nine percent of the accidents that occurred between 1988 and 1992 on the I-4 mainline were either rear end, side swipe, angle or head on collisions of which rear end collisions were the most prevalent accident type (60 percent).

The trend in the number of accidents and the total economic loss per year has declined. The number of accidents in 1992 has decreased by 42 percent when compared to the number of accidents in 1988. In

addition, the amount of economic loss resulting from these accidents has decreased by 50 percent. The Florida Highway Patrol suggested that one reason for the reduction in accidents could be attributed to the increase in enforcement techniques. Several enforcement tactics have been implemented including an increase in patrol officers along the I-4 corridor during the holidays, and selective enforcement for assigned sections of roadway at particular times of the day which monitor and control speeding through the use of radar in a patrol cars and in air craft. The campaign to "Stay Alert! Survive the I-4 Drive!" has also increased awareness for safety along the I-4 corridor.

Although the majority of I-4 experienced a significantly lower number of crashes than comparable segments of interstate highways statewide, the extremely high fatality rates in Segments 2, 3, 7 and 9 indicates that crashes are more severe than average in these segments. This could possibly be attributed to the higher percentage of heavy trucks in the traffic stream on I-4, many of which travel at excessive speeds. National safety statistics show that crashes involving automobiles and heavy trucks have an extremely high probability of producing fatalities.

The accident data has been summarized and tabulated for the I-4 mainline from west of Memorial Boulevard to the Polk/Osceola County line and is shown in Table Nos. 4-4 through 4-8.

Table No. 4-4
ACCIDENT SUMMARY FOR I-4 MAINLINE - TYPE
I-4 Project Development and Environment Study

Accident Type	1988	1989	1990	1991	1992	Total
Head On	0	0	0	1	0	1
Angle	11	11	10	6	10	48
Rear End	43	32	28	20	28	151
Side Swipe	14	10	4	6	14	48
Other	102	92	72	76	47	389
Total	170	145	114	109	99	637

Table No. 4-5
ACCIDENT SUMMARY FOR I-4 MAINLINE - CONDITIONS
I-4 Project Development and Environment Study

Conditions	1988	1989	1990	1991	1992	Total
Daylight	91	82	68	68	55	364
Dusk	5	6	3	0	2	16
Dawn	5	2	3	1	1	12
Dark w/ Street Light	3	5	2	4	2	16
Dark (No Street Light)	64	50	37	36	39	226
Unknown	2	0	1	0	0	3
Total	170	145	114	109	99	637

Table No. 4-6
ACCIDENT SUMMARY FOR I-4 MAINLINE - CRASHES
I-4 Project Development and Environment Study

	1988	1989	1990	1991	1992	Total
Fatal Crash Statistics:						
Crashes	6	4	7	4	3	24
Fatalities	7	5	7	4	5	28
Injuries	4	1	11	10	5	31
Injury Crash Statistics:						
Crashes	94	80	76	79	62	391
Injuries	155	124	112	140	89	620
Property Damage Crashes:	70	61	31	26	34	222
***Total Economic Loss**	9,952	8,764	6,402	6,044	4,993	36,155
Totals:						
Crashes	170	145	114	109	99	637
Injuries	159	125	123	150	94	651

* x $1,000.00

Table No. 4-7 shows the number of fatalities resulting from accidents on I-4 by segment. Segments 3 and 4 had the highest number of crashes, while Segments 7 and 9 had the highest percentage of fatalities at 11 percent and 7 percent, respectively. Segments 2 and 3 had 5 percent and 4 percent rates, respectively.

Table No. 4-7
CRASHES AND FATALITIES BY SEGMENT
I-4 Project Development and Environment Study

Segment	Crashes	Fatalities	% Fatalities
2	99	5	5
3	119	5	4
4	119	4	3
5	96	3	3
6	85	2	2
7	54	6	11
8	24	0	0
9	41	3	7

Table No. 4-8 shows that all segments on I-4, except Segment 9 (the US 27 interchange) operated safely in 1992. The safety ratio of 1.11 for the US 27 interchange indicates that this segment of I-4 operated at lower levels of safety in 1993 than comparable segments of the interstate within the State of Florida.

Table No. 4-8
SAFETY RATIOS BY SEGMENT FOR THE YEAR 1992
I-4 Project Development and Environment Study

Segment	Crashes	Safety Ratios
2	17	0.639
3	20	0.552
4	21	0.571
5	15	0.592
6	10	0.268
7	7	0.358
8	2	0.429
9	7	1.110

Cross Roads - Accident data was also obtained from reports available through the FDOT computer resources for the following cross roads which interchange with I-4: Memorial Boulevard (SR 546), Kathleen Road (SR 539), US 98 (SR 700), Socrum Loop Road (CR 582/SR 33), SR 33, SR 559, CR 557 and US 27 (SR 25). The information used in the analysis includes the years 1988 through 1992 and was incorporated in Table No. 4-9. US 98 had the highest number of accidents and fatalities being 221 and 3, respectively. This could be attributed to the breakdown of US 98 itself rather than the degradation of I-4. US 98 is currently being designed from a four-lane divided highway to an eight-lane divided highway north of the I-4/US 98 interchange and is proposed to be a six-lane divided highway south of the I-4/US 98 interchange. These improvements have the potential to substantially decrease the number of accidents in this area. CR 582 had the second highest number of accidents with 126 followed by US 27 with 92 accidents. US 27 had the largest economic loss, estimated at $9,042,000.

The majority of the accidents at the cross roads which interchange with I-4 were angle, left turn and right turn accidents. These are the types of accidents associated with turning movements. Another significant portion of accidents were rear end collisions. This type of accident is generally associated with reduced LOS during peak periods. The proposed improvement to both I-4 and the interchanges associated with the interstate would increase the LOS thereby reducing the potential for accidents. Accident data has been summarized and tabulated for the cross roads interchanging with I-4 and is shown in Table No. 4-9.

Table No. 4-9
ACCIDENT SUMMARY FOR THE CROSS ROADS INTERSECTING I-4
I-4 Project Development and Environment Study

Interchanges		Crashes	Injuries	Fatalities	Estimated Economic Loss
Memorial Boulevard (SR 546)		11	17	0	$286,000
Kathleen Road (SR 539)		25	18	1	$650,000
US 98 (SR 700)		221	258	3	$5,746,000
Socrum Loop Road	CR 582	126	77	1	$3,860,000
	SR 33	47	72	1	
SR 33		19	21	2	$425,000
SR 559		7	14	0	$524,00
CR 557		14	10	0	$647,000
US 27 (SR 25)		92	216	1	$9,042,000
Totals		**562**	**703**	**9**	**$21,180,000**

4.1.10 Traffic Signals, Locations and Intersection Design

Signalized intersections exist at the following locations along the study corridor: Kathleen Road at westbound (WB) I-4 off-ramp, US 98 at eastbound (EB) and WB I-4 off-ramps, SR 33 at Socrum Loop Road, Socrum Loop Road at WB I-4 off-ramps, Socrum Loop Road at EB I-4 off-ramps, and US 27 at EB and WB I-4 off-ramps. All of these intersections are channelized. The following seven intersections are channelized but unsignalized: Kathleen Road at EB I-4 on-ramp, SR 33 at EB I-4 on-ramp, SR 33 at WB I-4 on-ramp, SR 559 at EB I-4 on-ramp, SR 559 at WB I-4 on-ramp, CR 557 at EB I-4 on-ramp and CR 557 at WB I-4 on-ramp. Only two cross roads (US 98 and US 27) have four through lanes (two in each direction).

The existing I-4 lane geometry and interchange configurations are shown in Figure 4-2.

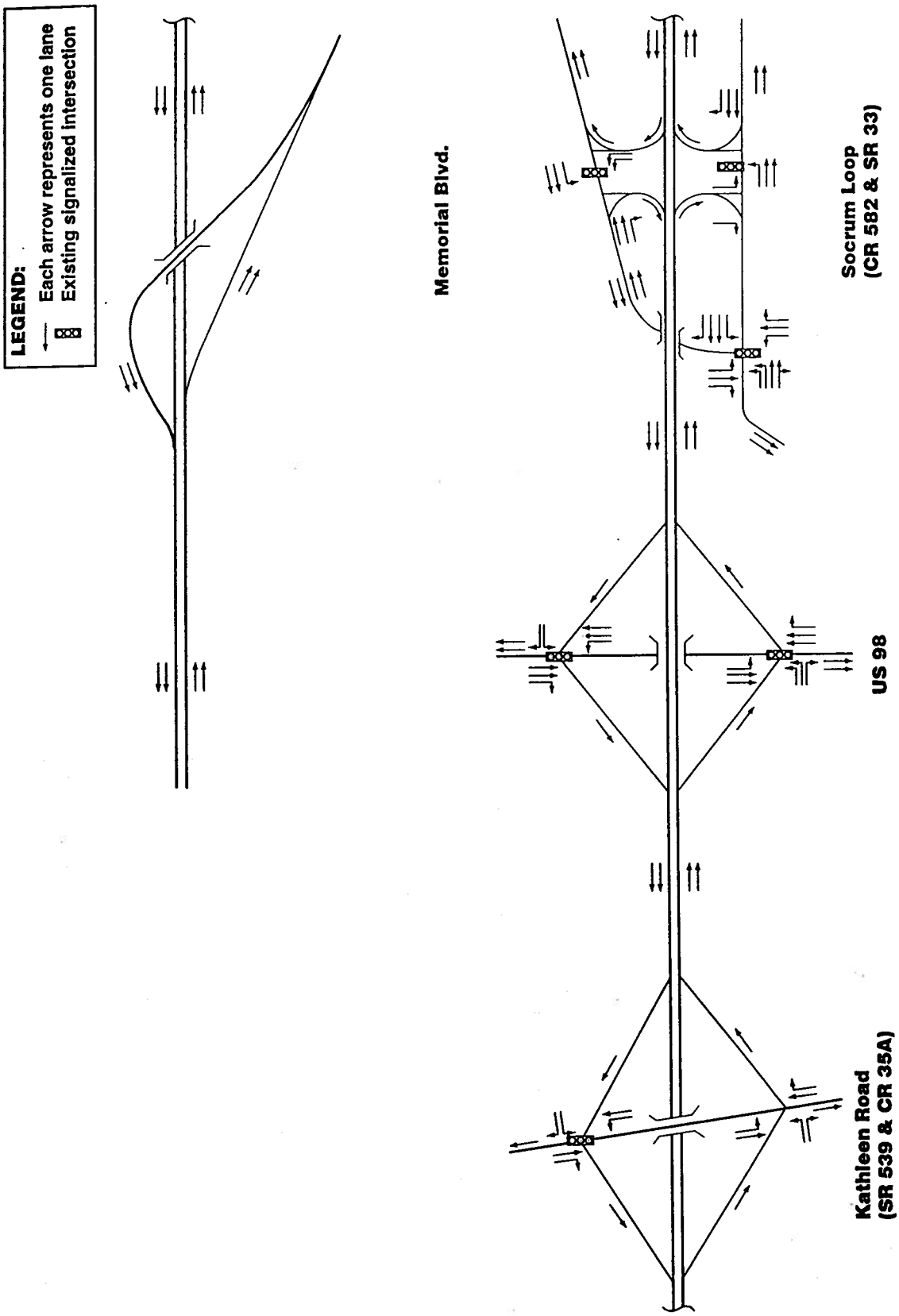
4.1.11 Lighting

Four of the interchanges within the corridor have area lighting. Memorial Boulevard EB ramp is lighted by conventional street lights (cobra head lamps on 7.6 m (25 ft) poles) and is maintained by the City of Lakeland. The US 98 interchange currently has four conventional street lights on approximately 22.9 m (75 ft) poles located in each quadrant of the interchange, but is being replaced with high-mast lighting. High-mast lighting, approximately 36.6 m (120 ft) high with four luminaries on each is utilized at Socrum Loop Road. The US 27 interchange has eighteen 36.6 m (120 ft) masts with eight luminaries on each. The high-mast lighting at the US 98, Socrum Loop Road and US 27 interchanges is maintained by the FDOT Maintenance Department.

4.1.12 Utilities

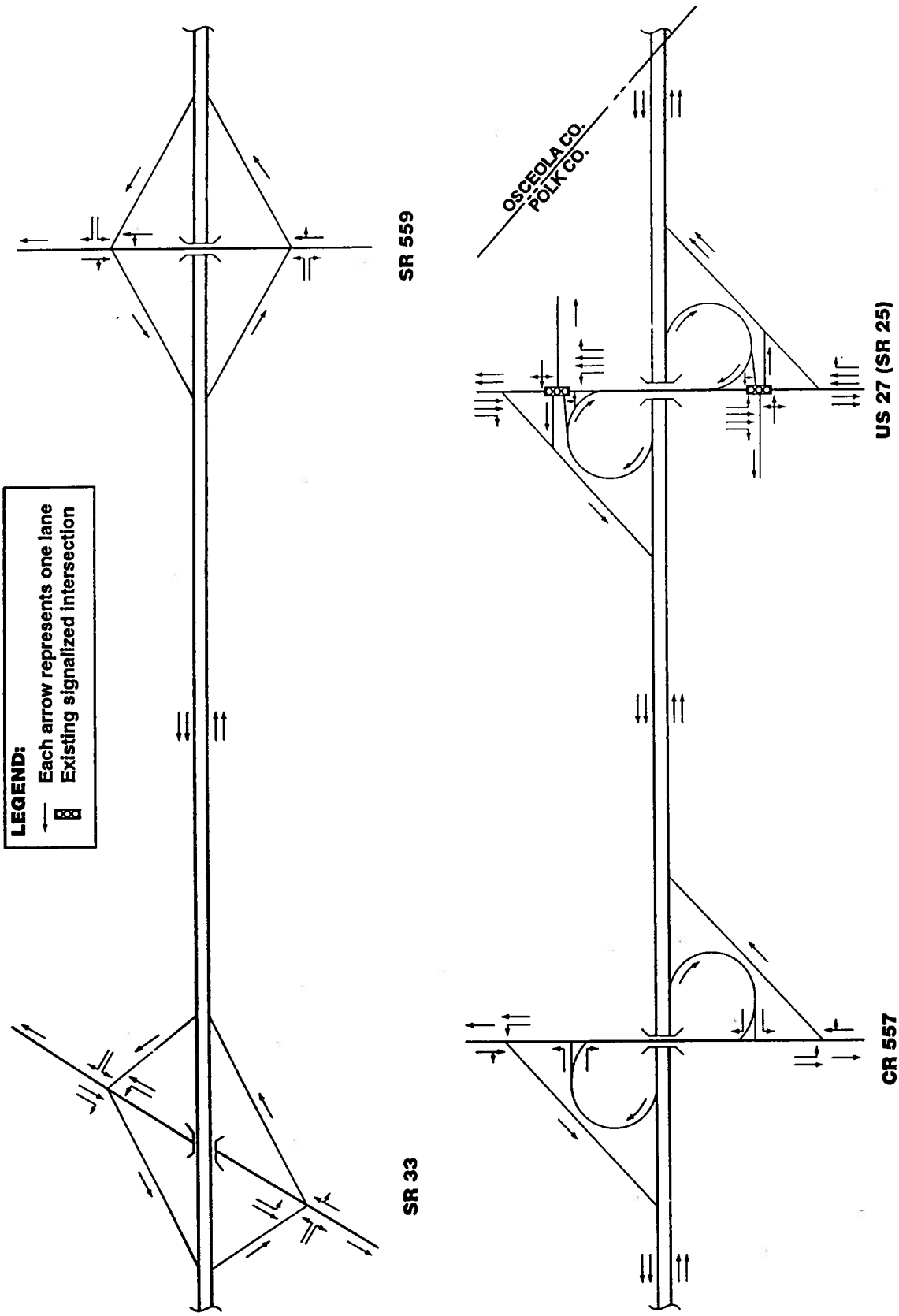
Utilities cross the I-4 corridor at almost every interchange and grade separation. Major electrical transmission lines, gas transmission lines, water mains and cross-country telephone cables parallel the corridor in close proximity to the right-of-way and may require relocation due to the proposed improvements to I-4. Utility locations and relocation costs were obtained using the Utility Request Package processed through the FDOT District Utility Engineer and direct contact with the utility companies. The utility relocation costs associated with the alignment alternatives analyzed for this study are shown in the alternative evaluation matrices in Section 8.5. The utilities affected by the preferred alternative and the associated relocation costs are listed in Section 9.16.

Utility services within the project corridor which have the potential to be affected by the various alternatives analyzed for this proposed action are listed in Table No. 4-10.



Sheet 1 of 2

Existing I-4 Lane Geometry and Interchange Configuration	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-2



Sheet 2 of 2

Existing I-4 Lane Geometry and Interchange Configuration	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-2

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
American Telecasting	CATV microwave tower & receiver, underground TV cable	microwave tower & receiver, north of I-4 at proposed Connector Road (3)
		152 m (500') of underground tv cable within the existing r/w north of I-4, east of the proposed Connector Road at the CR 582 intersection (3)
AT&T Communications	Telephone fiber optic cable	fiber optic cable crossing I-4 and paralleling CR 557 on the east side (5)
Chesapeake Utilities Corp.	Sanitary sewer gravity mains	4" gravity main with 6" gravity main crossing I-4 on the west side of US 27 (9)
		91.4 m (300') of CTD STL crossing I-4 at CR 54 (Loughman Road) (7)
City of Lakeland - Public Works	Sanitary sewer force mains, gravity lines	12" force main attached to Griffin Road bridge (2)
		8" force main paralleling north I-4 r/w about 76 m (250') and crossing I-4 east of Carpenter's Way Road (3)
		12" force main paralleling SR 33 r/w and crossing I-4 at CR 582 (3)
		8" force main crossing I-4 at CR 582 (3)
		12" force main crossing I-4 at SR 33 (3)
		2" force main for FDOT rest stops paralleling the I-4 south r/w, crossing I-4 at Old Combee Road and paralleling the I-4 north r/w (3)
		12" force main paralleling I-4 south r/w for about 76 m (250') at Providence Road and crossing I-4 about 426 m (1400') west of US 98 (8)
		8" gravity lines (2) within US 98 r/w, paralleling either side of I-4 (8)
City of Lakeland -Electric	PVC & DIP water mains, overhead and underground electric distribution	427 m (1400') of 7.2 kV to ground, north of I-4 at Memorial Blvd. (2)
		198 m (650') of 3 phase overhead lines crossing I-4 at Swindell Road (2)
		122 m (400') of 3 phase overhead lines crossing I-4 east of Swindell Road (2)

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
City of Lakeland -Electric	Overhead and underground electric distribution	2926 m (9600') of 3 phase 230 kV transmission lines north of I-4 from west of Bella Vista Street to US 98 (2)
		183 m (600') of 3 phase overhead lines crossing I-4 at Bella Vista Street (2)
		518 m (1700') 3 phase overhead lines, parallels the I-4 westbound exit ramp at the Kathleen Road interchange and crosses I-4 east of Kathleen Road interchange (2)
		274 m (900') of 3 phase overhead lines south of I-4 eastbound entrance ramp at the Kathleen Road interchange (2)
		1097 m (3600') of 3 phase underground lines south of I-4 from Kathleen Road to Griffin Road (2)
		183 m (600') of 3 phase overhead lines crossing I-4 at Griffin Road (2)
		183 m (600') of 3 phase overhead transmission lines crossing I-4 east of Griffin Road (2)
		152 m (500') of 3 phase overhead lines crossing I-4 east of Griffin Road (2)
		1555 m (5100') of 3 phase overhead transmission through the US 98 interchange north of I-4 (8)
		61 m (200') of 3 phase underground electric south of I-4 at the US 98 interchange (8)
		91 m (300') of 3 phase overhead electric transmission lines crossing I-4 east of US 98 (3)
		91 m (300') of 3 phase overhead electric distribution lines crossing I-4 east of Carpenter's Way Road (3)
		1341 m (4400') of transmission lines, south of I-4 at the CR 582 interchange (3)
		91 m (300') of underground electric distribution lines crossing I-4 at the CR 582 interchange (3)
		183 m (600') of overhead electric distribution south of I-4 at the CR 582 interchange (3)

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
City of Lakeland - Electric	Overhead and underground electric distribution	91 m (300') of overhead electric distribution crossing I-4 at Old Combee Road (3)
		122 m (400') of overhead 3 phase transmission/ distribution lines east of existing westbound rest area, crossing I-4 (3)
		91 m (300') of overhead electric distribution lines crossing I-4 west of Wendell Watson School (3)
		213 m (700') of overhead electric distribution lines, south of I-4, west of Wendell Watson School (3)
		427 m (1400') of overhead electric distribution lines north of I-4 east of Wendell Watson School (3)
		701 m (2300') of overhead transmission with underbuilt distribution, south of I-4 at the SR 33 interchange (3)
		182.9 m (600') of overhead transmission with underbuilt distribution, crossing I-4 east of the SR 33 interchange (3)
		610 m (2000') of overhead distribution north of I-4, east of Mt. Olive Road (4)
City of Lakeland - Water	PVC & DIP water mains	91 m (300') of 8" water main north of I-4, crossing I-4 at Memorial Blvd. (2)
		122 m (400') of 6" galv., north of I-4 and crossing at Swindell Road (2)
		152 m (500') of 12" galv., north of I-4 and crossing at 10th Street (2)
		671 m (2200') of 2" water line north of I-4 between east of Bella Vista Street and Kathleen Road (2)
		732 m (2400') of 12" AC water line, north of I-4 between Kathleen Road and Griffin Road, crossing I-4 (2)
		244 m (800') of 20" DIP water main, north of I-4 be-tween Kathleen Road and Griffin Road, crossing I-4 (2)
		183 m (600') of 6" galv. which crosses I-4 east of the US 98 interchange (3)
		76 m (250') of 12" DIP which crosses I-4 east of Carpenter's Way Road (3)

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
City of Lakeland - Water	PVC & DIP water mains	84 m (276') of 10" PVC which parallels the north side of I-4 east of Carpenter's Way Road (3)
		91 m (300') of 8" PVC which crosses I-4 on the west side of CR 582 (3)
		61 m (200') of 6" water line which crosses I-4 east of the CR 582 interchange (south of the Paddock Club Apartment complex) (3)
		61 m (200') of 16" DIP which crosses I-4 east of Old Combee Road (3)
		61 m (200') of 8" water line which crosses I-4 east of the westbound rest area (3)
		224 m (750') of 8" PVC parallels the north side of I-4 east of the westbound rest area (3)
Florida Power Corporation	Overhead electric distribution	overhead distribution lines, north and south of I-4 with crossing on west side of US 27 (9)
Florida Gas Transmission	Buried natural gas mains, high pressure natural gas transmission pipeline	22" high pressure natural gas transmission pipeline located on private easements that parallels I-4 to the north for about 12.9 km (8 mi) from the intersection of Kathleen Road and I-4 to the intersection of SR 33 and I-4 (2, 8, 3)
		6" high pressure natural gas transmission pipeline parallels I-4 to the south, west of the intersection of I-4 and SR 33 and crosses I-4 (3)
		12" high pressure natural gas transmission pipeline parallels SR 559 to the east and crosses I-4 (4)
GTE Florida Incorporated	Telephone buried conduit and fiber optic cable, laterals	north side of I-4 crossing at Swindell Rd., 3 - 3 ½" conduits for 300 m (984.3 ft) (2)
		north side of I-4 at Swindell Rd., overhead telephone (OT) for 298 m (977.7 ft) (2)
		west of I-4, at Swindell Rd., buried telephone (BT) for 76 m (249.3 ft) (2)
		south side of I-4 on the south side crossing at Swindell Rd., 3 - 3 ½" conduits for 300 m (984.3 ft) (2)
		south of I-4 at Swindell Rd., BT for 100 m (328.1 ft) (2)

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
GTE Florida Incorporated	Telephone buried conduit and fiber optic cable, laterals	south of I-4 at Swindell Rd., BT for 100 m (328.1 ft) (2)
		crossing I-4 at 10th St., 3 - 3 ½" conduits for 77 m (252.6 ft) (2)
		south side of I-4 at 10th St., 3 - 3 ½" conduits for 77 m (252.6 ft) (2)
		south side of I-4 at 10th St., BT for 114 m (374 ft) (2)
		south side of I-4 at 10th St., BT for 53 m (173.9 ft) (2)
		south of I-4 and west of Bella Vista, 3 - 4" conduits for 700 m (2,296.6 ft) (2)
		south of I-4 and west of Bella Vista, BT for 100 m (328.1 ft) (2)
		south of I-4 and east of Bella Vista, BT for 100 m (328.1 ft) (2)
		north of I-4 at Bella Vista, 3 - 3 ½" conduits for 100 m (328.1 ft) (2)
		north of I-4 and east of Kathleen Rd. Interchange, 6 - 4" conduits for 350 m (1,148.3 ft) (2)
		south of I-4 and east of Kathleen Rd. Interchange, 6 - 4" conduits for 300 m (984.3 ft) (2)
		north of I-4 and west of CR 582, RIP for 200 m (656.2 ft) (3)
		south of I-4 and east of SR 33, BT for 100 m (328.1 ft) (3)
		north of I-4 at Old Combee Rd., 5 poles (3)
		remote switching Unit Central Office including all new entrance manhole and conduit system (3)
		north of I-4 and west of Mt. Olive Church Rd., BT for 400 m (1,312.3 ft) (4)
		north of I-4 and east of Mt. Olive Church Rd., BT for 500 m (1,640.4 ft) (4)
		south of I-4 and east of Mt. Olive Church Rd., Pole 9 (4)
		north of I-4 and west of CR 655, BT for 200 m (656.2 ft) (4)

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
GTE Florida Incorporated	Telephone buried conduit and fiber optic cable, laterals	north of I-4 and west of CR 655, BT for 200 m (656.2 ft) (4)
		north of I-4 and east of CR 655, BT for 200 m (656.2 ft) (4)
		north of I-4 and east of CR 655, FT for 200 m (656.2 ft) (4)
		north of I-4 and east of CR 655, BT for 200 m (656.2 ft) (4)
		north of I-4 and east of CR 655, BT for 200 m (656.2 ft) (4)
		south of I-4 and west of CR 655, BT for 200 m (656.2 ft) (4)
		south of I-4 and west of CR 655, BT for 200 m (656.2 ft) (4)
		south of I-4 and east of CR 655, BT for 200 m (656.2 ft) (4)
		south of I-4 and east of CR 655, BT for 200 m (656.2 ft) (4)
		south of I-4 and east of CR 655, BT for 200 m (656.2 ft) (4)
		south of I-4 and west of SR 559, BT for 600 m (1,968.5 ft) (4)
		south of I-4 and west of SR 559, OT for 62 m (203.4 ft) (4)
		south of I-4 and west of SR 559, OT for 300 m (984.3 ft) (4)
		south of I-4 and west of SR 559, BT for 300 m (984.3 ft) (4)
		south of I-4 and east of SR 559, BT for 63 m (206.7 ft) (4)
		south of I-4 and east of SR 559, BT for 600 m (1,968.5 ft) (4)
		north of I-4 and west of SR 559, 600 m (1,968.5 ft) (4)
		north of I-4 and west of SR 559, BT for 500 m (1,640.4 ft) (4)
		north of I-4 and east of SR 559, BT for 100 m (328.1 ft) (4)
		north of I-4 and east of SR 559, BT for 600 m (1,968.5 ft) (4)
		south of I-4 and east of SR 559, 18 poles (4)
		south of I-4 and east of SR 559, drop lines for 800 m (2,624.7 ft) (4)
		north of I-4 and east of CR 557A, OT for 400 m (1,312.3 ft) (5)

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
GTE Florida Incorporated	Telephone buried conduit and fiber optic cable, laterals	south of I-4 and east of CR 557A, OT for 500 m (1,640.4 ft) (5)
		north of I-4 at Holy Cow Ranch Rd., BT for 800 m (2,624.7 ft) (5)
		north of I-4 at Holy Cow Ranch Rd., BT for 800 m (2,624.7 ft) (5)
		south of I-4 and the end of Old Haines City Rd., 4 poles (5)
		north of I-4 and west of US 98, 12 - 4" conduits for 275 m (902.2 ft) (8)
		south of I-4 and west of US 98, 12 - 4" conduits for 122 m (400.3 ft) (8)
		crossing I-4, 8 - 4" conduit for 51 m (167.3 ft) (8)
		south of I-4 and west of US 98, BT for 153 m (502 ft) (8)
		south of I-4 and west of US 98, BT for 23 m (75.5 ft) (8)
		south of I-4 and west of US 98, OT for 23 m (75.5 ft) (8)
		south of I-4 and east of US 98, BT for 31 m (101.7 ft) (8)
		south of I-4 and east of US 98, BT for 22 m (72.2 ft) (8)
		crosses I-4 west of US 27, 16 - 4" conduit for 101 m (331.4) (9)
		north of I-4 and east of Waverly Dr., 12 - 4" conduit for 550 m (1,804.5 ft) (9)
		north of I-4 and west of US 27, BT for 366 m (1,200.8 ft) (9)
		north of I-4 and west of US 27, BT for 274 m (899 ft) (9)
		north of I-4 and west of US 27, 3 - 4" conduit for 274 m (899 ft) (9)
		north of I-4 and east of US 27, BT for 550 m (1,804.5 ft) (9)
		north of I-4 and east of US 27, BT for 183 m (600.4 ft) (9)
		south of I-4 and west of US 27, OT for 155 m (508.5 ft) (9)
		south of I-4 and west of US 27, BT for 1,524 m (5,000 ft) (9)

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
LDDS Communications	Telephone fiber optic cable	where Griffin Road (CR 582) crosses I-4 in Segment 2 fiber optic cable runs about 11 m (35') south of the center line of CR 582 - the cable is in the existing r/w (2)
		fiber optic cable where SR 33 crosses I-4 at the border of Segments 3 and 4 - the existing cable runs about 5 m (15') east of the centerline of SR 33 - the cable is in the existing r/w (3)
M.C.I.	Telephone fiber optic cable	fiber optic cable crossing I-4 under the former CSX railroad r/w (now Tampa Electric Company) (4)
Orlando Utilities Commission	Electric transmission lines	about 60 transmission line structures beginning south of I-4 in Segment 3 just west of Lake Luther Road (west of SR 33). The structures are within a utility easement paralleling I-4 and continues through Segment 4 past the proposed Polk County Parkway. The easement then parallels I-4 about 168 m (550') from the I-4 centerline up to west of the SR 559 interchange at which point the easement parallels I-4 south about 351 m (1150') from the I-4 centerline through the SR 559 interchange and into Segment 5. The easement continues south of the proposed eastbound rest area through the CR 557 interchange and into Segment 6 where it continues for most of the segment. (3, 4, 5, 6)
Peoples Gas System, Inc.	Buried gas mains	91 m (300') of carrier pipe crossing under I-4 at Owens Illinois plant just west of Bella Vista Avenue (2)
		91 m (300') of carrier pipe crossing under I-4 at Pepperidge Farm plant, just east of Kathleen Road (2)
		91 m (300') of carrier pipe crossing under I-4 on the east side of US 98 north (8)
		91 m (300') of carrier pipe crossing under I-4 at CR 582 (3)
Polk Co. Utilities	Sanitary sewer force main, water main	sewage force main - exact location is unknown, line runs under road bed at a right angle to centerline of I-4, near Mt. Olive Road (4)
		16" water main, a 14" sewage force main, and a 12" re-use water main crosses under the road bed at right angles to the centerline of I-4, near the US 27 interchange (9)
		8" water main is hung on the east side of the US 27 bridge and runs north and south on US 27 (9)

Table No. 4-10
EXISTING UTILITIES
I-4 Project Development and Environment Study

Utility	Type of Service	General Location/(Segment)
Tampa Electric Company	Electric overhead and underground transmission lines	respan 13.2 kV and 69 kV west of CR 655 (4)
		respan 13.2 kV overhead crossing east of SR 559 (4)
		13.2 kV I-4/SR 559 westbound exit ramp (4)
		13.2 kV pole line south of I-4 from east of SR 559 for about 335 m (1100') (4)
		13.2 kV overhead pole line crossing the CR 557 intersection in a north/south direction (5)
		7.6 kV pole line/underground line located south of I-4 west of CR 557 (5)
		overhead electric lines at rest area to be relocated on rest area project (east of CR 557A) (5)
		13.2 kV overhead north/south crossing at CR 557A (5)
Time Warner Cable	CATV underground fiber optic cable & overhead cable	914 m (3000') of underground cable crossing I-4 at CR 655 (4)
		305 m (1000') of overhead fiber optic cable crossing I-4 at US 27 (9)

4.1.13 Pavement Structural Conditions

As noted in the 1989 I-4 Master Plan, an evaluation of the surface and base condition of the roadway within the corridor indicates that the roadway is suitable for use as part of the proposed facility. The pavement was rated for structural and operational condition and overall engineering. The ratings were obtained from the December 1986 Consolidated Report which was available through the FDOT computer resources. The conditions rating scale ranges from 0-100 with a rating of 60 or below considered critical. The average ratings for the corridor are follows:

Area	Structural	Operational	Engineering
West of Memorial Boulevard to US 98 (Segments 2 and 8)	L 76/R 65	L 55/R 57	L 70/R 65
US 98 to Polk/Osceola County Line (Segments 3, 4, 5, 6, 7 and 9)	L 75/R 74	L 70/R 70	L 73/R 71

L = Left (westbound) roadway, R = Right (eastbound) roadway

According to the 1986 evaluation, the left and right I-4 roadways from west of Memorial Boulevard to US 98 had critical operational ratings of 55 and 57, respectively.

Structural roadway conditions are currently documented in the Rigid and Flexible Pavement Condition Surveys, available through the FDOT District One computer resources.

I-4 is constructed of rigid pavement for the western 9.20 km (5.72 mi) of this project (MP 2.57 to MP 8.29). The rigid pavement extends from west of the Memorial Boulevard interchange to east of the Socrum Loop Road interchange (Segments 2, 8 and the western portion of 3). The FDOT Rigid Pavement Condition Survey - 1993 shows that I-4 has defect ratings of 6 for the left (eastbound) roadway and 8 for the right (westbound) roadway and ride ratings of 7 for the left roadway and 8 for the right roadway.

I-4 is constructed of flexible pavement for the eastern 38.19 km (23.73 mi) of this project (MP 8.29 to MP 32.02). The flexible pavement extends from east of the Socrum Loop Road interchange to the Polk/Osceola County line (eastern portion of Segment 3 and Segments 4, 5, 6, 7 and 9). The FDOT Flexible Pavement Condition Survey - 1993 shows that I-4 has ride ratings ranging from 6 to 9. Defect ratings range from 4 to 9 for cracks and 8 to 9 for ruts. The crack rating of 4 is for the western most 122 m (400 ft) of Segment 7. Pavement conditions ratings range from 0 to 10 with 6 and below being considered critical.

A windshield survey and a review of construction plans was conducted to visually identify areas where existing pavement conditions indicate the possible presence of unsuitable subsurface conditions (peat, muck) beneath the roadway.

Segment 2 -	The concrete pavement appears to be in generally good condition. Some patches are present.
Segment 8 -	The concrete pavement appears to be in good condition. One area of moderate cracking was noted near the westbound off-ramp at the US 98 interchange.
Segment 3 -	The overall condition of the pavement surface appears to be good. No areas of significant pavement distress were noted.
Segment 4 -	The overall condition of the pavement surface appears to be good. No areas of significant pavement distress were noted.
Segment 5 -	Generally, the pavement condition appears to be good.
Segment 6 -	Several areas of minor pavement subsidence, probably associated with the presence of organic soils underneath the roadway embankment, were noted. One minor pavement subsidence in the eastbound lane appears to be associated with the presence of pipe culvert backfill, resulting in roadway settlement.
Segment 9 -	Overall, the pavement appears to be in good condition.
Segment 7 -	Overall pavement condition appears to be good. Some shoulder sloughing in the westbound lane, probably associated with organic soils still in place underneath the roadway.

For further information on roadway conditions, refer to the Geotechnical Report, February 1994, prepared as a separate document.

4.2 Existing Bridges

There are 24 bridge structures associated with the proposed improvements to I-4 for the length of this project. Eight are I-4 mainline bridges over cross roads (six at interchanges), 15 are cross road overpasses (six at interchanges) and one is a CSX railroad bridge over I-4. The type, condition, year of construction, horizontal and vertical alignment and span arrangement have been tabulated and are shown in the following tables by project segment for each of the bridge structures. The bridges are tabulated in geographical order from west to east in each project segment. The information in this section was obtained from the Structure Inventory Appraisal Sheets (SIAs) (included in Section 4 of the Appendix), review of original I-4 construction drawings, the 1989 I-4 Master Plan, bridge inspection reports and site reconnaissance.

All of the existing bridges along the I-4 corridor, which were originally constructed approximately 30 to 35 years ago, will require replacement to accommodate the horizontal and vertical clearances of the recommended I-4 typical sections.

4.2.1 Types of Structures

The bridge numbers, locations, mileposts and types of I-4 structures are shown in Table Nos. 4-11 through 4-17.

Table No. 4-11
TYPES OF STRUCTURES
Segment 2
I-4 Project Development and Environment Study

Bridge Number	Description	I-4 Milepost	Type
160074	Memorial Blvd. (WB) over I-4	2.907	Prestressed Concrete Multi-Beam
160170	Swindell Rd. over I-4	3.182	Prestressed Concrete Multi-Beam
160171	10th St. over I-4	3.971	Prestressed Concrete Multi-Beam
160172	Bella Vista Dr. over I-4	4.771	Prestressed Concrete Multi-Beam
160173	CSX Railroad over I-4	4.862	Steel Girder and Floorbeam System
160113	Kathleen Rd. (SR 539) over I-4	5.097	Prestressed Concrete Multi-Beam
160112	Griffin Rd. (CR 582) over I-4	5.932	Prestressed Concrete Multi-Beam

Table No. 4-12
TYPES OF STRUCTURES
Segment 8
I-4 Project Development and Environment Study

Bridge Number	Description	I-4 Milepost	Type
160174	I-4 WB over US 98	6.425	Prestressed Concrete Multi-Beam
160175	I-4 EB over US 98	6.425	Prestressed Concrete Multi-Beam

Table No. 4-13
TYPES OF STRUCTURES
Segment 3
I-4 Project Development and Environment Study

Bridge Number	Description	I-4 Milepost	Type
160176	Carpenter's Way Rd. over I-4	7.352	Prestressed Concrete Multi-Beam
160177	I-4 WB over CR 582	7.864	Prestressed Concrete Multi-Beam
160178	I-4 EB over CR 582	7.864	Prestressed Concrete Multi-Beam
160180	Old Combee Rd. over I-4	8.885	Prestressed Concrete Multi-Beam
160181	I-4 WB over SR 33	12.262	Prestressed Concrete Multi-Beam
160182	I-4 EB over SR 33	12.262	Prestressed Concrete Multi-Beam

Table No. 4-14
TYPES OF STRUCTURES
Segment 4
I-4 Project Development and Environment Study

Bridge Number	Description	I-4 Milepost	Type
160183	Mt. Olive Church Rd. over I-4	15.871	Prestressed Concrete Multi-Beam
160184	I-4 WB over CR 655	16.738	Prestressed Concrete Multi-Beam
160185	I-4 EB over CR 655	16.738	Prestressed Concrete Multi-Beam
160115	SR 559 over I-4	18.41	Prestressed Concrete Multi-Beam

Table No. 4-15
TYPES OF STRUCTURES
Segment 5
I-4 Project Development and Environment Study

Bridge Number	Description	I-4 Milepost	Type
160066	CR 557A over I-4	20.07	Prestressed Concrete Multi-Beam
160114	CR 557 over I-4	22.421	Prestressed Concrete Multi-Beam

Table No. 4-16
TYPES OF STRUCTURES
Segment 9
I-4 Project Development and Environment Study

Bridge Number	Description	I-4 Milepost	Type
160141	US 27 (NB) over I-4	29.181	Prestressed Concrete Multi-Beam
160920	US 27 (SB) over I-4	29.169	Prestressed Concrete Multi-Beam

Table No. 4-17
TYPES OF STRUCTURES
Segment 7
I-4 Project Development and Environment Study

Bridge Number	Description	I-4 Milepost	Type
160105	Loughman Rd (CR 54) over I-4	31.513	Prestressed Concrete Multi-Beam

4.2.2 Current Condition and Year of Construction

The information in this section was taken from the SIAs and FDOT bridge inspection reports for each structure. A rating below 6 is considered critical. The bridge numbers, year of construction, date of last inspection, date of last inventory, sufficiency ratings and current conditions of the I-4 structures have been tabulated and are shown for each project segment in Table Nos. 4-18 through 4-24.

Table No. 4-18
CURRENT STRUCTURE CONDITION AND YEAR OF CONSTRUCTION
Segment 2
I-4 Project Development and Environment Study

Bridge Number	Year Const	Date of Last Inspect.	Date of Last SIA	Suffic. Rating	Struct. Cond.	Deck Geom.	Under Clear. Vert/ Horiz.	Safe Load Capac.	Appr. Rdwy Align.
160074	1961	7/19/93	10/3/91	77	8	3	7	4	6
160170	1961	6/16/93	8/4/93	77.2	7	4	3	4	7
160171	1961	8/16/93	11/29/93	80.7	8	5	3	4	7
160172	1961	8/16/93	11/29/93	83.4	8	5	4	4	8
160173	1961	8/16/93	11/24/93	N/A	7	*	N/A	7	9
160113	1961	8/16/93	11/24/93	76.2	8	4	4	2	8
160112	1961	8/16/93	11/24/93	73.2	8	4	3	4	8

* = Not Rated, N/A = Not Applicable

Table No. 4-19
CURRENT STRUCTURE CONDITION AND YEAR OF CONSTRUCTION
Segment 8
I-4 Project Development and Environment Study

Bridge Number	Year Const	Date of Last Inspect.	Date of Last SIA	Suffic. Rating	Struct. Cond.	Deck Geom.	Under Clear. Vert/ Horiz.	Safe Load Capac.	Appr. Rdwy Align.
160174	1961	8/16/93	11/24/93	73.7	7	2	4	6	8
160175	1961	8/16/93	11/24/93	73.6	7	2	4	6	7

Table No. 4-20
CURRENT STRUCTURE CONDITION AND YEAR OF CONSTRUCTION
Segment 3
I-4 Project Development and Environment Study

Bridge Number	Year Const	Date of Last Inspect.	Date of Last SIA	Suffic. Rating	Struct. Cond.	Deck Geom.	Under Clear. Vert/ Horiz.	Safe Load Capac.	Appr. Rdwy Align.
160176	1961	8/16/93	11/24/93	77.2	7	4	2	2	7
160177	1961	8/16/93	11/24/93	87.2	8	4	4	6	7
160178	1961	8/16/93	11/18/93	89.3	7	7	4	6	7
160180	1961	8/16/93	11/29/93	76.9	7	4	2	2	8
160181	1961	6/16/93	8/16/93	79	8	3	6	6	8
160182	1961	6/16/93	7/21/93	79	7	3	6	6	8

Table No. 4-21
CURRENT STRUCTURE CONDITION AND YEAR OF CONSTRUCTION
Segment 4
I-4 Project Development and Environment Study

Bridge Number	Year Const	Date of Last Inspect.	Date of Last SIA	Suffic. Rating	Struct. Cond.	Deck Geom.	Under Clear. Vert/ Horiz.	Safe Load Capac.	Appr. Rdwy Align.
160183	1961	7/9/93	10/7/91	77.2	7	2	9	3	8
160184	1961	7/19/93	10/10/91	76.5	8	3	5	6	8
160185	1961	7/19/93	9/27/93	75.5	8	3	5	6	8
160115	1961	8/12/93	9/30/93	77.6	*	4	2	4	8

* = Not Rated

Table No. 4-22
CURRENT STRUCTURE CONDITION AND YEAR OF CONSTRUCTION
Segment 5
I-4 Project Development and Environment Study

Bridge Number	Year Const	Date of Last Inspect.	Date of Last SIA	Suffic. Rating	Struct. Cond.	Deck Geom.	Under Clear. Vert/ Horiz.	Safe Load Capac.	Appr. Rdwy Align.
160066	1961	10/6/93	11/12/93	76.8	7	4	3	5	9
160114	1961	8/17/93	11/24/93	82	7	4	5	4	8

Table No. 4-23
CURRENT STRUCTURE CONDITION AND YEAR OF CONSTRUCTION
Segment 9
I-4 Project Development and Environment Study

Bridge Number	Year Const	Date of Last Inspect.	Date of Last SIA	Suffic. Rating	Struct. Cond.	Deck Geom.	Under Clear. Vert/ Horiz.	Safe Load Capac.	Appr. Rdwy Align.
160141	1961	8/12/93	9/14/93	77.6	7	3	5	5	7
160920	1961	8/12/93	9/14/93	77.5	7	3	5	5	7

Table No. 4-24
CURRENT STRUCTURE CONDITION AND YEAR OF CONSTRUCTION
Segment 7
I-4 Project Development and Environment Study

Bridge Number	Year Const	Date of Last Inspect.	Date of Last SIA	Suffic. Rating	Struct. Cond.	Deck Geom.	Under Clear. Vert/ Horiz.	Safe Load Capac.	Appr. Rdwy Align.
160105	1961	8/12/93	9/30/93	83.9	*	5	5	4	9

* = Not Rated

4.2.3 Horizontal and Vertical Alignment

The bridge numbers, skew angles and lateral and vertical minimum clearances have been tabulated for each existing structure and are shown in Table Nos. 4-25 through 4-31.

Table No. 4-25
STRUCTURE HORIZONTAL AND VERTICAL ALIGNMENT
Segment 2
I-4 Project Development and Environment Study

Bridge Number	Skew Angle	Minimum Clearance		
		Lateral		Vertical
		Left	Right	
160074	40°00'00"	7.80 m (25.6')	3.81 m (12.5')	4.93 m (16'-2")
160170	50°00'00"	9.14 m (30.0')	2.74 m (9.0')	4.98 m (16'-4")
160171	40°00'00"	9.30 m (30.5')	2.99 m (9.8')	4.95 m (16'-3")
160172	50°00'00"	9.17 m (30.1')	3.11 m (10.2')	5.00 m (16'-5")
160173	10°00'00"	4.24 m (13.9')	0.46 m (1.5')	5.18 m (17'-0")
160113	11°00'00"	9.30 m (30.5')	3.05 m (10.0')	5.00 m (16'-5")
160112	50°00'00"	9.30 m (30.5')	2.74 m (9.0')	5.08 m (16'-8")

Table No. 4-26
STRUCTURE HORIZONTAL AND VERTICAL ALIGNMENT
Segment 8
I-4 Project Development and Environment Study

Bridge Number	Skew Angle	Minimum Clearance		
		Lateral		Vertical
		Left	Right	
160174	02°00'00"	2.19 m (7.2')	3.02 m (9.9')	4.78 m (15'-8")
160175	02°00'00"	2.19 m (7.2')	3.02 m (9.9')	4.78 m (15'-8")

Table No. 4-27
STRUCTURE HORIZONTAL AND VERTICAL ALIGNMENT
Segment 3
I-4 Project Development and Environment Study

Bridge Number	Skew Angle	Minimum Clearance		
		Lateral		Vertical
		Left	Right	
160176	00°00'00"	9.24 m (30.3')	2.93 m (9.6')	4.98 m (16'-4")
160177	35°00'00"	1.01 m (3.3')	2.04 m (6.7')	5.05 m (16'-7")
160178	35°00'00"	1.01 m (3.3')	2.04 m (6.7')	5.05 m (16'-7")
160180	26°00'00"	9.20 m (30.2')	2.80 m (9.2')	4.95 m (16'-3")
160181	45°00'00"	1.83 m (6.0')	5.03 m (16.5')	4.52 m (14'-10")
160182	45°00'00"	1.83 m (6.0')	5.03 m (16.5')	4.52 m (14'-10")

Table No. 4-28
STRUCTURE HORIZONTAL AND VERTICAL ALIGNMENT
Segment 4
I-4 Project Development and Environment Study

Bridge Number	Skew Angle	Minimum Clearance		
		Lateral		Vertical
		Left	Right	
160183	18°00'00"	9.36 m (30.7')	2.93 m (9.6')	5.05 m (16'-7")
160184	02°00'00"	2.44 m (8.0')	2.44 m (8.0')	6.86 m (22'-6")
160185	02°00'00"	2.44 m (8.0')	2.44 m (8.0')	6.71 m (22'-0")
160115	00°00'00"	9.30 m (30.5')	2.93 m (9.6')	4.95 m (16'-3")

Table No. 4-29
STRUCTURE HORIZONTAL AND VERTICAL ALIGNMENT
Segment 5
I-4 Project Development and Environment Study

Bridge Number	Skew Angle	Minimum Clearance		
		Lateral		Vertical
		Left	Right	
160066	00°00'00"	9.30 m (30.5')	3.05 m (10.0')	5.03 m (16'-6")
160114	00°00'00"	9.30 m (30.5')	4.45 m (14.6')	4.85 m (15'-11")

Table No. 4-30
STRUCTURE HORIZONTAL AND VERTICAL ALIGNMENT
Segment 9
I-4 Project Development and Environment Study

Bridge Number	Skew Angle	Minimum Clearance		
		Lateral		Vertical
		Left	Right	
160141	12°00'00"	9.14 m (30.0')	4.24 m (13.9')	4.90 m (16'-1")
160920	12°00'00"	9.14 m (30.0')	4.36 m (14.3')	4.90 m (16'-1")

Table No. 4-31
STRUCTURE HORIZONTAL AND VERTICAL ALIGNMENT
Segment 7
I-4 Project Development and Environment Study

Bridge Number	Skew Angle	Minimum Clearance		
		Lateral		Vertical
		Left	Right	
160105	24°00'00"	9.11 m (29.9')	4.05 m (13.3')	4.93 m (16'-2")

4.2.4 Span Arrangement

The I-4 structure span arrangements showing bridge numbers, span numbers and lengths have been tabulated and are shown in Table Nos. 4-32 through 4-38.

Table No. 4-32
STRUCTURE SPAN ARRANGEMENT
Segment 2
I-4 Project Development and Environment Study

Bridge Number	Span Number / Length				
	1	2	3	4	5
160074	20.37 m (66'-10")	31.37 m (102'-11")	31.50 m (103'-4")	15.44 m (50'-8")	N/A
160170	26.77 m (87'-10")	32.51 m (106'-8")	32.51 m (106'-8")	26.77 m (87'-10")	N/A
160171	17.70 m (58'-1")	32.54 m (106'-9")	32.54 m (106'-9")	17.70 m (58'-1")	N/A
160172	26.67 m (87'-6")	32.39 m (106'-3")	32.39 m (106'-3")	26.67 m (87'-6")	N/A
160173	17.73 m (58'-2")	21.49 m (70'-6")	21.49 m (70'-6")	17.73 m (58'-2")	N/A
160113	11.48 m (37'-8")	20.93 m (68'-8")	20.93 m (68'-8")	11.48 m (37'-8")	N/A
160112	26.52 m (87'-0")	32.18 m (105'-7")	32.18 m (105'-7")	26.52 m (87'-0")	N/A

Table No. 4-33
STRUCTURE SPAN ARRANGEMENT
Segment 8
I-4 Project Development and Environment Study

Bridge Number	Span Number / Length				
	1	2	3	4	5
160174	11.28 m (37'-0")	13.48 m (44'-7")	13.48 m (44'-7")	11.28 m (37'-0")	N/A
160175	11.28 m (37'-0")	13.48 m (44'-7")	13.48 m (44'-7")	11.28 m (37'-0")	N/A

Table No. 4-34
STRUCTURE SPAN ARRANGEMENT
Segment 3

I-4 Project Development and Environment Study

Bridge Number	Span Number / Length				
	1	2	3	4	5
160176	11.28 m (37'-0")	20.57 m (67'-6")	20.57 m (67'-6")	11.28 m (37'-0")	N/A
160177	13.77 m (45'-2")	16.54 m (54'-3")	19.28 m (63'-3")	N/A	N/A
160178	13.67 m (44'-10")	16.38 m (53'-9")	18.41 m (60'-5")	N/A	N/A
160180	18.92 m (62'-1")	22.99 m (75'-5")	22.99 m (75'-5")	18.92 m (62'-1")	N/A
160181	15.49 m (50'-10")	18.49 m (60'-8")	18.49 m (60'-8")	15.49 m (50'-10")	N/A
160182	15.49 m (50'-10")	18.49 m (60'-8")	18.49 m (60'-8")	15.49 m (50'-10")	N/A

Table No. 4-35
STRUCTURE SPAN ARRANGEMENT
Segment 4

I-4 Project Development and Environment Study

Bridge Number	Span Number / Length				
	1	2	3	4	5
160183	11.48 m (37'-8")	21.51 m (70'-7")	21.51 m (70'-7")	11.48 m (37'-8")	N/A
160184	13.13 m (43'-1")	13.13 m (43'-1")	18.01 m (59'-1")	18.01 m (59'-1")	13.11 m (43'-0")
160185	13.13 m (43'-1")	13.13 m (43'-1")	18.01 m (59'-1")	18.01 m (59'-1")	13.11 m (43'-0")
160115	11.28 m (37'-0")	20.57 m (67'-6")	20.57 m (67'-6")	11.28 m (37'-0")	N/A

Table No. 4-36
STRUCTURE SPAN ARRANGEMENT
Segment 5

I-4 Project Development and Environment Study

Bridge Number	Span Number / Length				
	1	2	3	4	5
160066	10.36 m (34'-0")	21.21 m (69'-7")	21.06 m (69'-1")	10.36 m (34'-0")	N/A
160114	10.67 m (35'-0")	22.17 m (72'-9")	22.17 m (72'-9")	10.67 m (35'-0")	N/A

Table No. 4-37
STRUCTURE SPAN ARRANGEMENT
Segment 9
I-4 Project Development and Environment Study

Bridge Number	Span Number / Length				
	1	2	3	4	5
160141	11.58 m (38'-0")	22.86 m (75'-0")	22.86 m (75'-0")	10.06 m (33'-0")	N/A
160920	11.58 m (38'-0")	22.86 m (75'-0")	22.86 m (75'-0")	10.06 m (33'-0")	N/A

Table No. 4-38
STRUCTURE SPAN ARRANGEMENT
Segment 7
I-4 Project Development and Environment Study

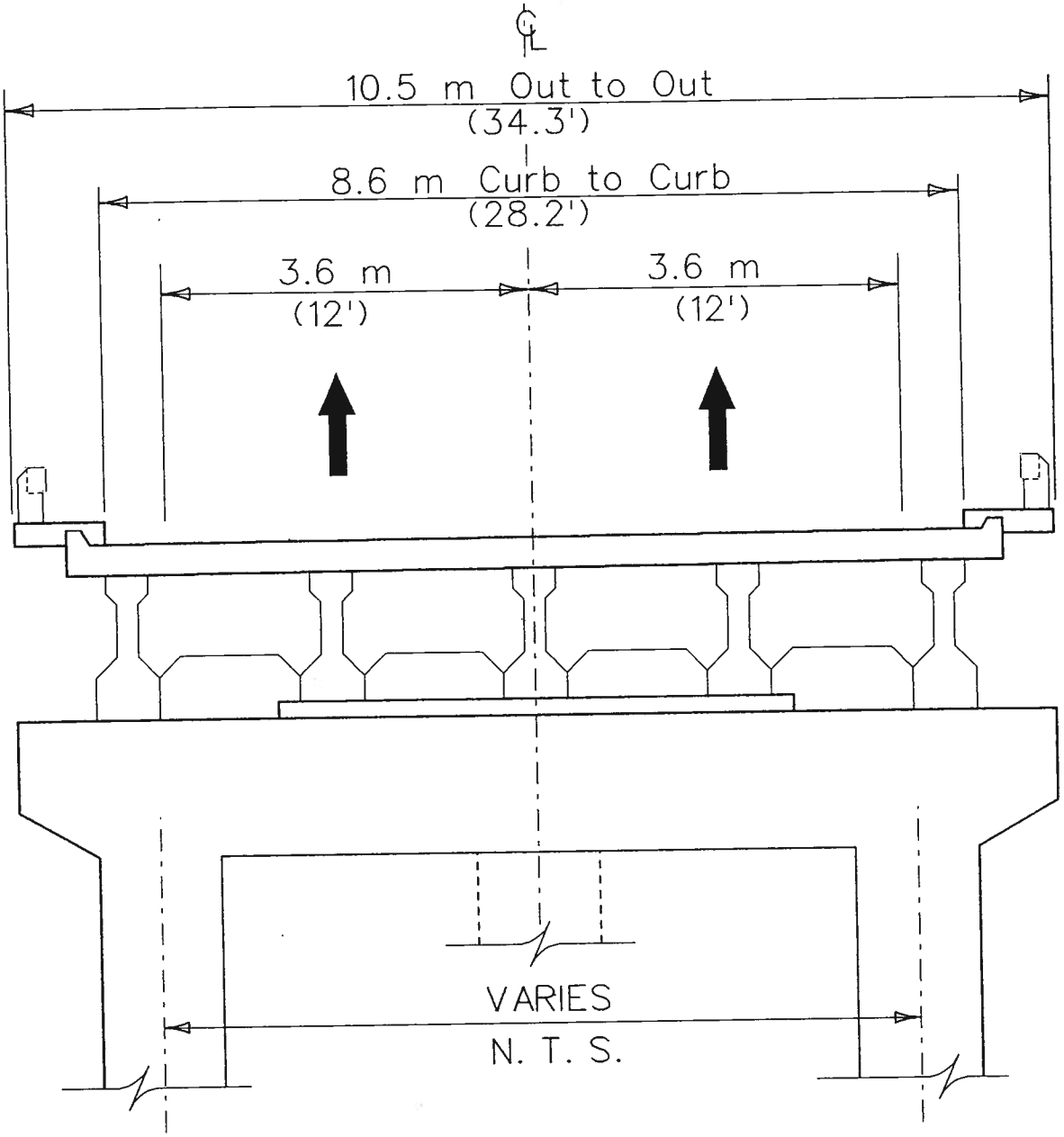
Bridge Number	Span Number / Length				
	1	2	3	4	5
160105	11.58 m (38'-0")	22.71 m (74'-6")	22.71 m (74'-6")	11.58 m (38'-0")	N/A

4.2.5 Channel Data

Channel data is not applicable to this project. There are no bridges over navigable waterways within the I-4 project limits.

4.2.6 Bridge Typical Sections

Existing bridge typical sections are shown in Figures 4-3 through 4-13.



Memorial Boulevard (WB) over I-4

Bridge Number 160074

Existing Bridge Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-3

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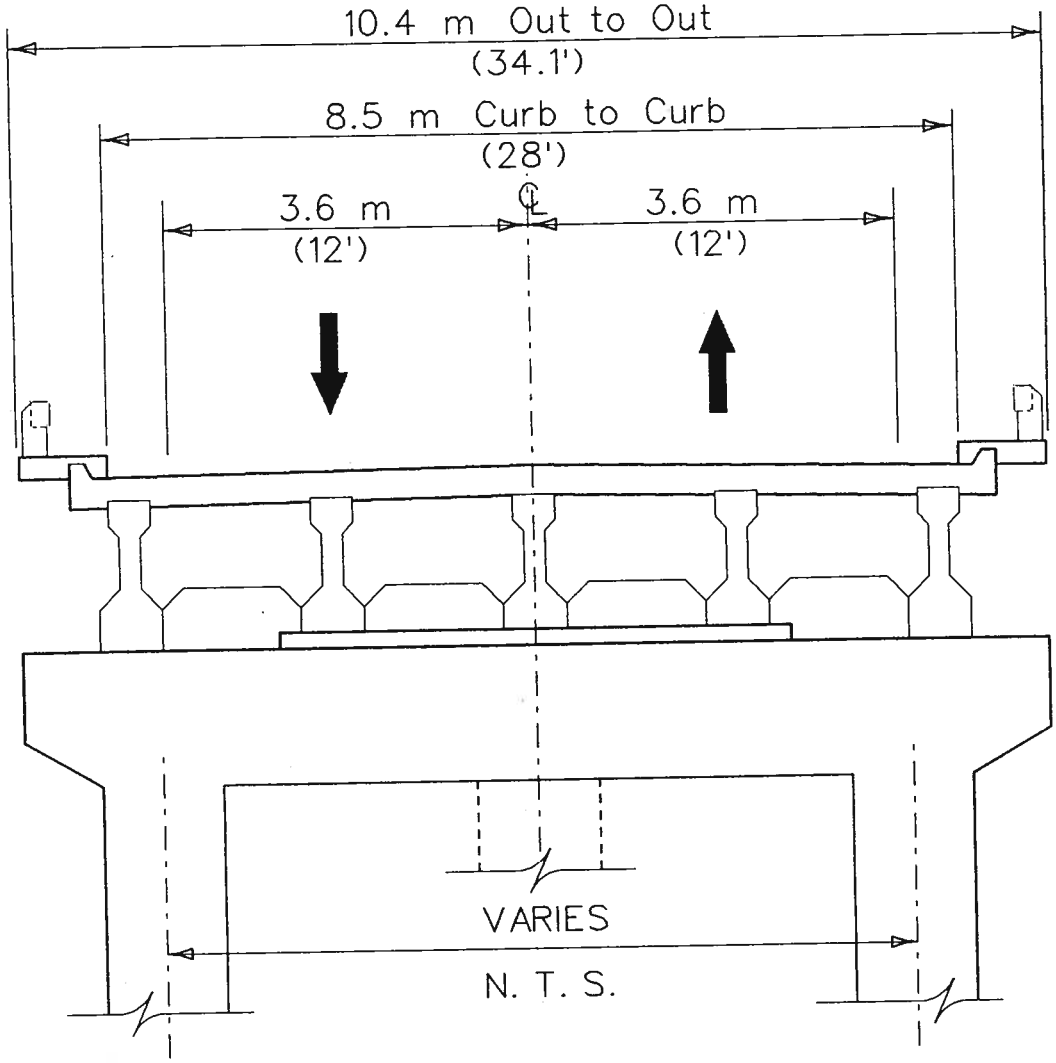

Swindell Road over I-4
Bridge Number 160170

10th Street over I-4
Bridge Number 160171

Bella Vista Street over I-4
Bridge Number 160172

CR 557 over I-4
Bridge Number 160114

Griffin Road over I-4
Bridge Number 160112

Existing Bridge Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-4

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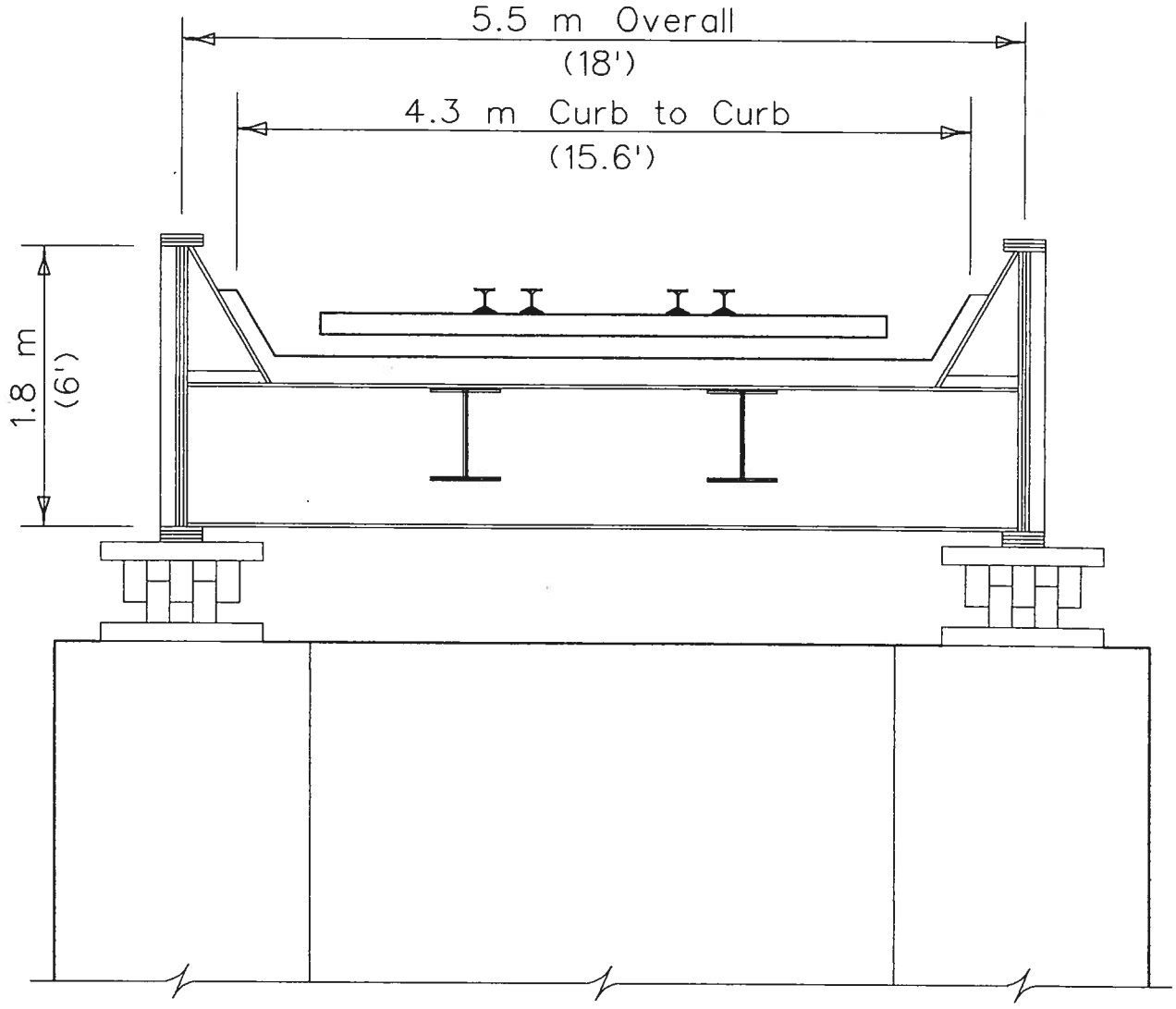

N. T. S.

CSX Railroad over I-4

Bridge Number 160173

Existing Bridge Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-5

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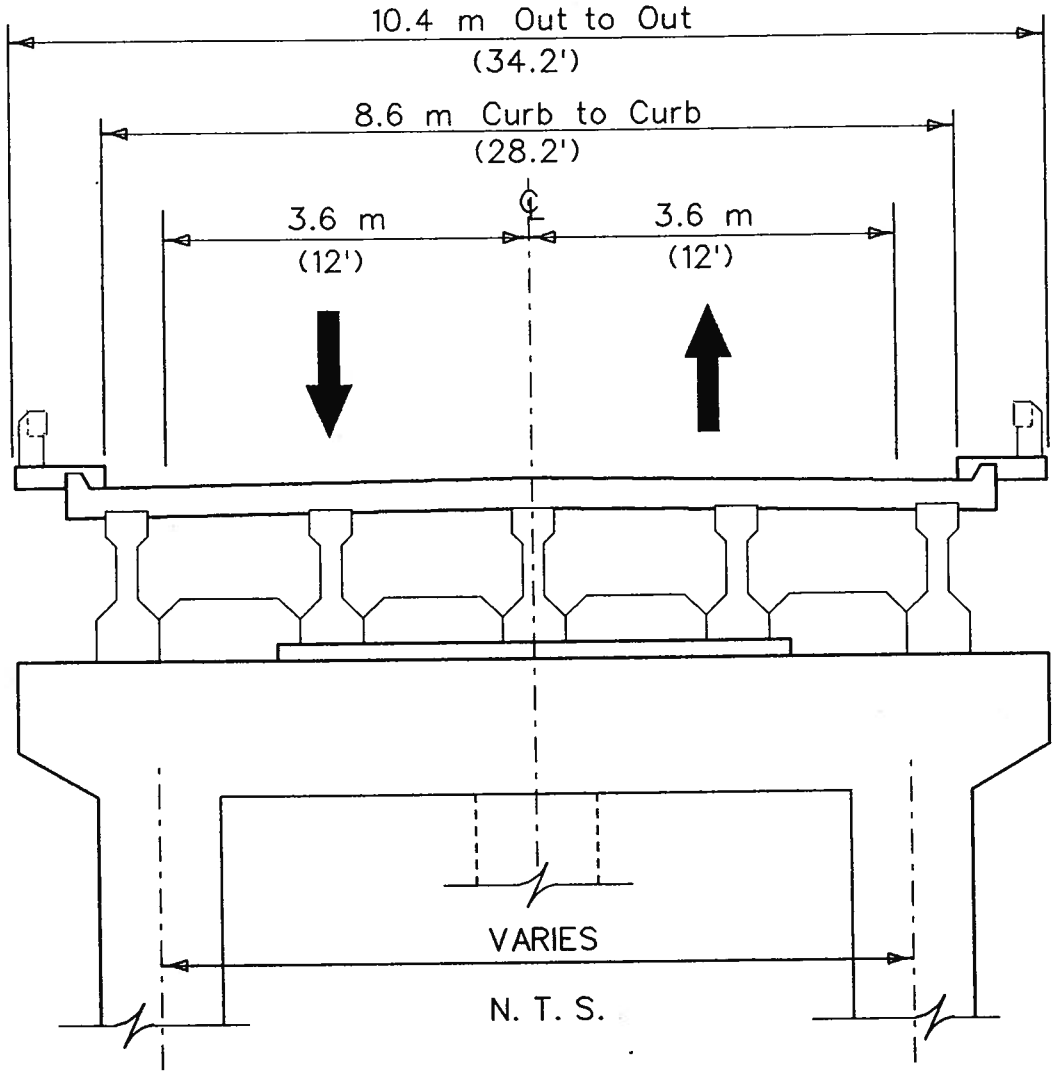


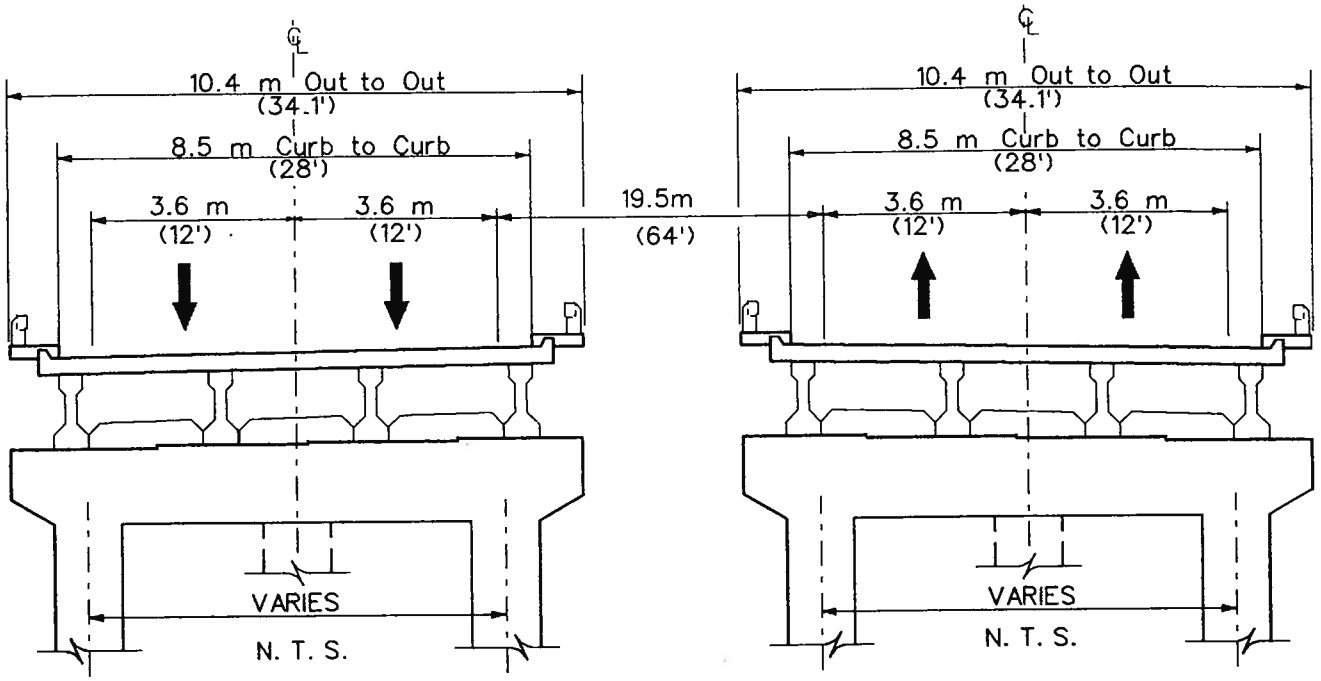
SR 559 over I-4

Bridge Number 160115

SR 539 (Kathleen Road) over I-4

Bridge Number 160113

Existing Bridge Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-6



Westbound

Eastbound

I-4 (WB) over US 98
Bridge Number 160174

I-4 (EB) over US 98
Bridge Number 160175

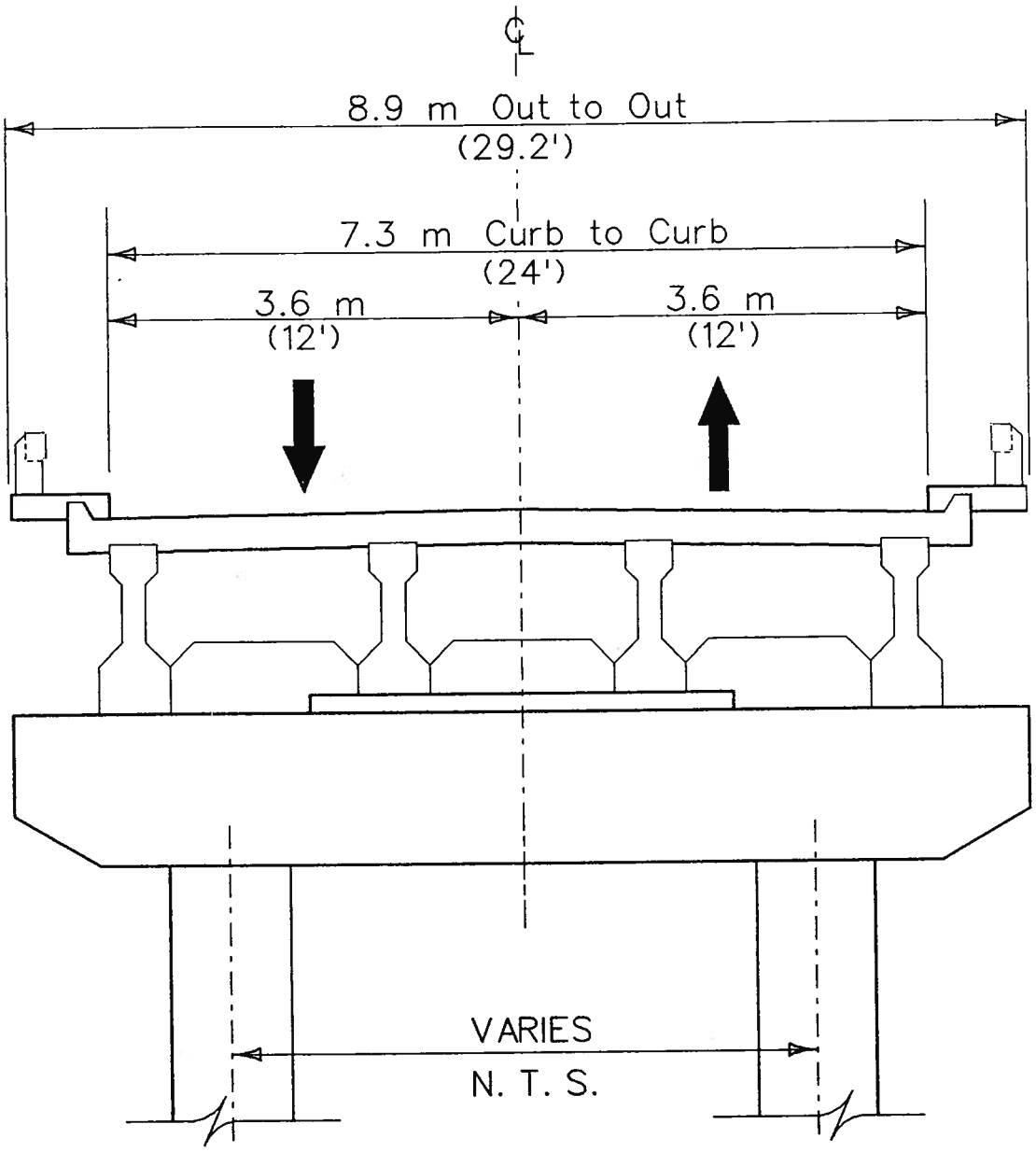
I-4 (WB) over SR 33
Bridge Number 160181

I-4 (EB) over SR 33
Bridge Number 160182

I-4 (WB) over CR 655 & TECO R/W
Bridge Number 160184

I-4 (EB) over CR 655 & TECO R/W
Bridge Number 160185

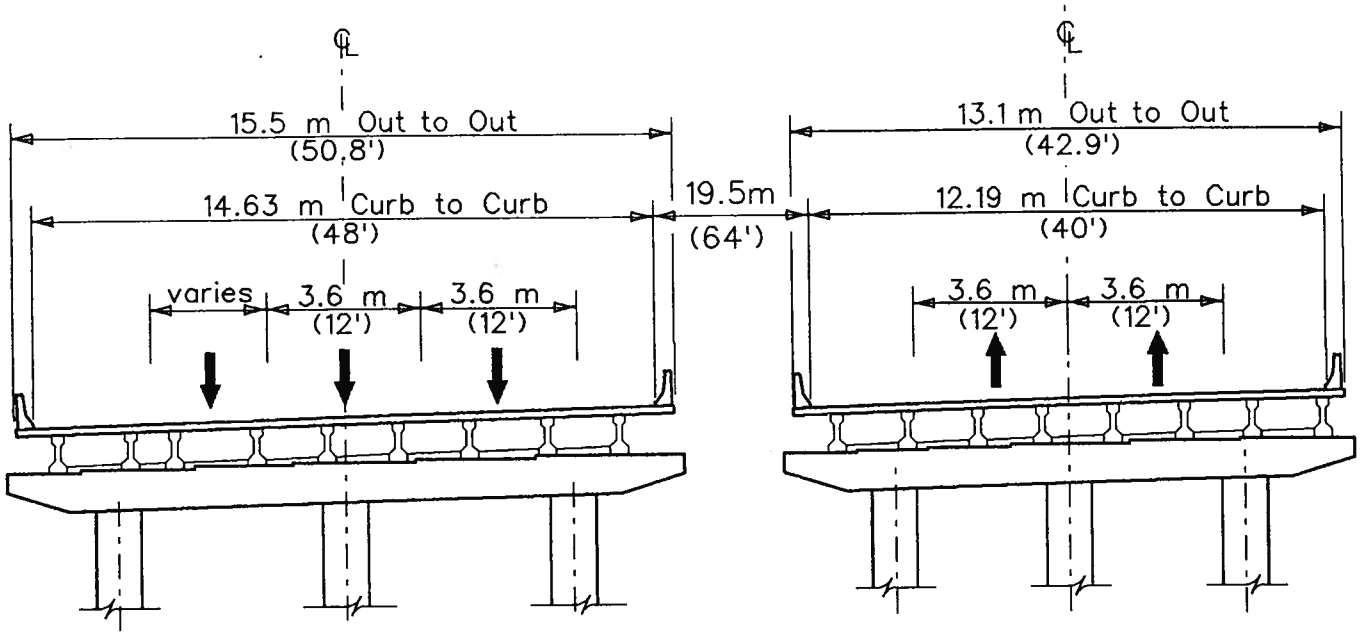
Existing Bridge Typical Sections	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-7



Carpenter's Way Road over I-4
Bridge Number 160176

Mount Olive Church Road over I-4
Bridge Number 160183

Existing Bridge Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-8



N. T. S.

Westbound

N. T. S.

Eastbound

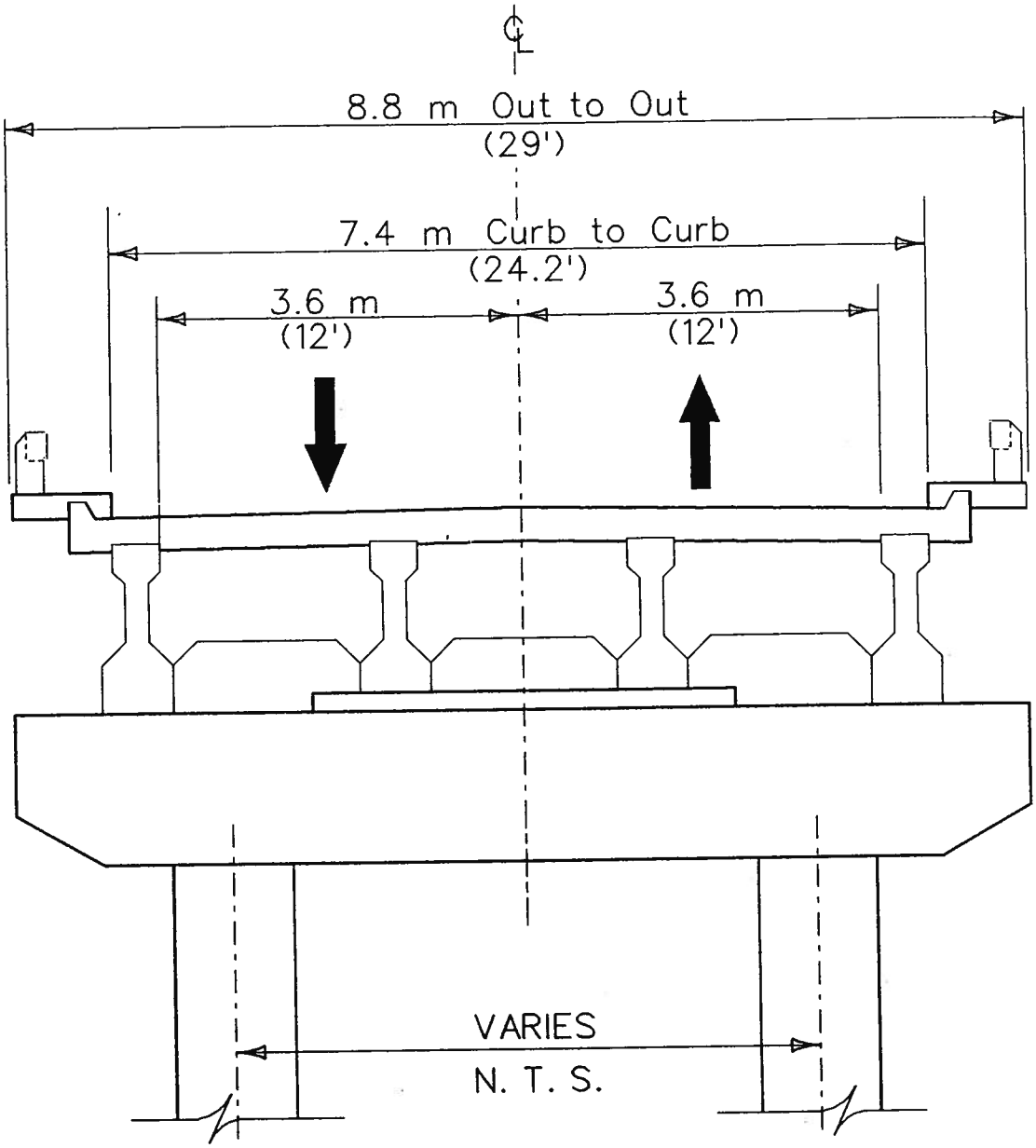
I-4 (EB) over CR 582 (Socrum Loop Road)

Bridge Number 160178

I-4 (WB) over CR 582 (Socrum Loop Road)

Bridge Number 160177

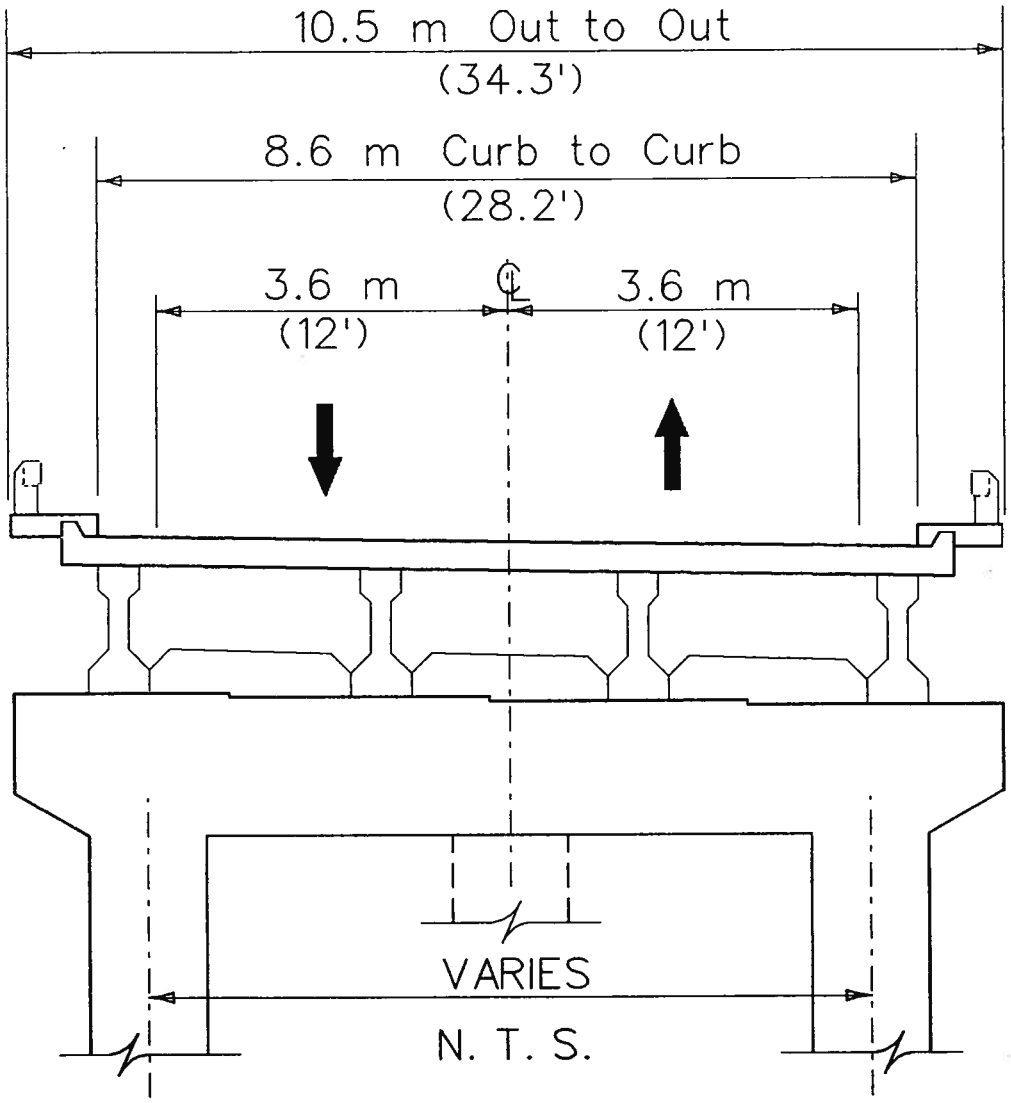
Existing Bridge Typical Sections	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-9



Old Combee Road over I-4

Bridge Number 160180

Existing Bridge Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-10



CR 557A over I-4

Bridge Number 160066

Existing Bridge Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-11

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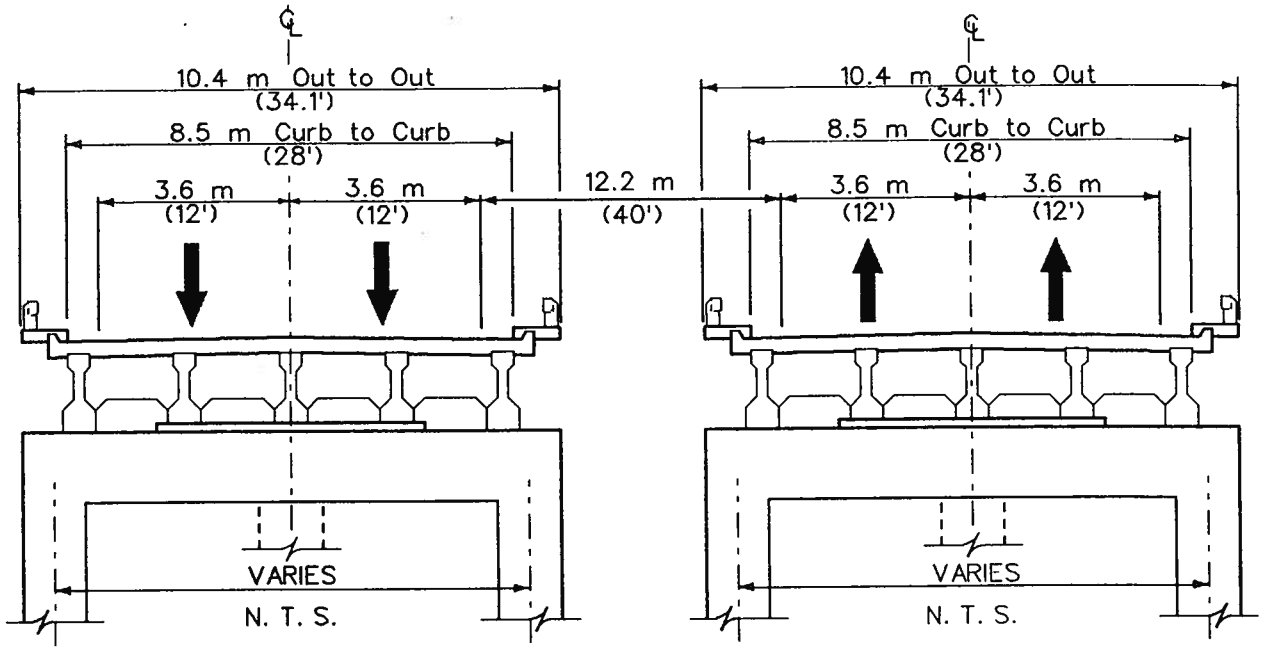

Southbound

Northbound

US 27 (NB) over I-4

Bridge Number 160141

US 27 (SB) over I-4

Bridge Number 160920

Existing Bridge Typical Sections	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-12

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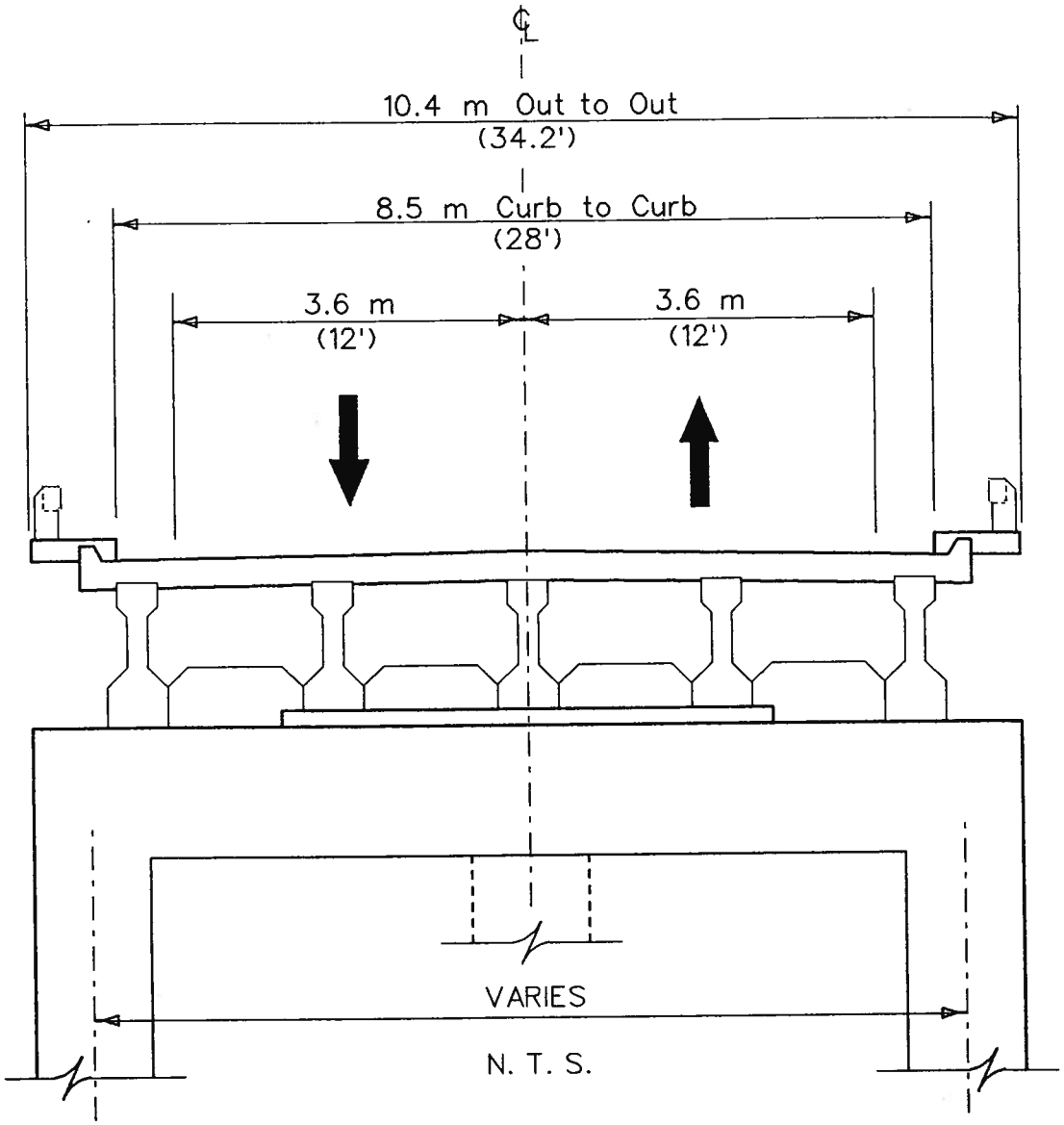


CR 54 (Loughman Road) over I-4

Bridge Number 160105

Existing Bridge Typical Section	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 4-13

4.3 Existing Environmental Characteristics

4.3.1 Land Use Data

Existing Land Use - Existing land use along the I-4 corridor was determined by a review of the 1990 Polk County Existing Land Use Maps, 1993 aerial photography and updated by field reconnaissance. The I-4 corridor has two areas of distinctly different character.

The first area from west of Memorial Boulevard to east of US 98 (Segments 2 and 8) is characterized mainly by residential and agricultural land uses from Memorial Boulevard to Kathleen Road and commercial with scattered residential and agricultural land uses from Kathleen Road to east of US 98. This section of the corridor includes interchanges at Memorial Boulevard (SR 546), Kathleen Road (SR 539) and US 98.

The second area of the I-4 corridor from east of US 98 to the Polk/Osceola County line (Segments 3, 4, 5, 6, 7 and 9) is comprised mainly of residential, agricultural, natural and mining land uses, with scattered commercial. Residential land use dominates from east of US 98 to about 2.4 km (1.5 mi) west of SR 33. Agricultural is the predominant land use from west of SR 33 to SR 559. The area from SR 559 to west of US 27 is primarily natural and mining land uses with scattered agricultural and residential. The US 27 interchange area is commercial. East of US 27 to the Polk/Osceola County line, the land use is mixed agricultural and natural. The interchanges in this section of the I-4 corridor include Socrum Loop Road (CR 582), SR 33, SR 559, CR 557 and US 27.

The following is a brief description of the existing land uses and the general locations of these uses.

Residential - About 10 percent of the I-4 project corridor contains residential areas. Low, medium and high density residential areas are prevalent from west of Memorial Boulevard to Kathleen Road (in Segment 2); scattered residential exists from Kathleen Road to east of US 98 (in Segment 2); and a small residential area is located east and west of Old Combee Road (in Segment 3).

Commercial & Services - About 8 percent of the I-4 project corridor contains commercial uses. Linear commercial corridors (strip commercial areas) are characterized by linear concentrations of all types of commercial, office and institutional uses along a roadway. Linear commercial corridors exist at the US 98 (Segment 8) and US 27 (Segment 9) interchanges. The Lakeland Auto Auction is located north of I-4 at SR 33 (in Segment 4).

Industrial - A small percentage of the I-4 project corridor contains industrial uses, characterized by facilities for the processing, fabrication, manufacturing, recycling, and distribution of goods. An industrial area is located along the south side of I-4 between Memorial Boulevard and Kathleen Road (in Segment 2).

Agricultural - About 40 percent of the I-4 project corridor contains active and passive agricultural uses. Agricultural areas exist north of I-4 from east of 10th Street to west of US 98 (in Segment 2); a small agricultural area is located west of the Socrum Loop Road interchange (in Segment 3); agricultural uses are prevalent from east of SR 33 to the Polk/Osceola County line (Segments 4, 5, 6, 7 and 9).

Vacant & Undeveloped - About 40 percent of the I-4 project corridor contains vacant and undeveloped lands. Vacant areas are scattered from west of Memorial Boulevard to Mount Olive Church Road (Segments 2, 3, 4 and 8). High concentrations of vacant and undeveloped lands exist from west of CR

557 to west of US 27 in the area of the Green Swamp (Segment 6) and from east of US 27 to the Polk/Osceola County line in the area of the Davenport Swamp (Segment 7).

Recreation/Open Space - A small percentage of the I-4 project corridor contains recreation/open space areas. Recreation/open space areas exist south of I-4 at Memorial Boulevard (Segment 2), north of I-4 at Carpenter's Way Road and north of I-4 west of SR 33 (Segment 3).

Existing Special Land Use Conditions - Certain types of land uses are particularly important due to the special conditions surrounding them and the hardships involved in the relocation of such areas. Examples of this found adjacent to the project corridor are one school, four churches, one cemetery and one air strip.

The New Home Baptist Church and Cemetery is located north of I-4 at Memorial Boulevard (Segment 2). The Victory Assembly of God Church is located north of I-4 west of US 98 (Segments 2 & 8). The Lake Gibson Church of Christ is located north of I-4 at Socrum Loop Road and the Apostolic Church of Jesus Christ is located north of I-4 on Walt Loop Road (Segment 3). The Wendell Watson Elementary School is located north of I-4 on Walt Williams Road about 2.7 km (1.7 mi) east of Old Combee Road (Segment 3). The air strip (part of the Fantasy of Flight tourist attraction) is located north of I-4 west of SR 559.

Environmentally sensitive wetlands, and core wildlife habitat areas such as the Green Swamp between CR 557 and US 27 (Segment 6) and the Davenport Swamp between US 27 and the Polk/Osceola County line (Segment 7) are examples of sensitive land uses. The I-4 corridor in northeastern Polk County traverses the Green Swamp which has been designated an Area of Critical State Concern (Segment 6).
Major retail developments and large employers located along the project corridor include Country Hearth and Pepperidge Farm bakeries, Owens Illinois and Cardinal Industries located southeast of I-4 and Kathleen Road (Segment 2) and the Lakeland Square Mall and the US 98 commercial corridor at US 98 (Segment 8). Other traffic generators include the Winston Elementary School north of I-4 (Segment 2), the Lakeland Auto Auction north of I-4 at SR 33 (Segment 3) and the US 27 commercial corridor (Segment 9).

Several apartment complexes, residential subdivisions and mobile home parks are present along the project corridor. Winston Heights subdivision is located at the northwest intersection of I-4 and Galloway Road (Segment 2). Lakeland Harbor Mobile Homes is located southeast of the intersection of I-4 and Socrum Loop Road, the Paddock Club Apartments are located north of I-4 between Socrum Loop Road and Old Combee Road, and the Stoll Manor Mobile Home Park is located north of I-4 at Walt Williams Road (Segment 3).

Wedgewood Golf and Country Club is situated northeast of the intersection of I-4 and Carpenter's Way Road and the Sandpiper Golf and Country Club is located north of I-4 on Walt Loop Road (Segment 3).

The Polk County Comprehensive Plan, Adopted November 18, 1992; Revised January 31, 1994 has identified Boardwalk & Baseball (now Baseball City) as a Development of Regional Impact (DRI). This now defunct facility, located in Segment 9 at the southeast quadrant of the I-4/US 27 interchange, was predominantly a tourist-related development which also contained recreational vehicle and multi-family housing. Located on 840 acres, the theme park and hotel sites on the portion of the development south of I-4 were zoned commercial. The baseball stadium is currently used for spring training games of the Major League Baseball Kansas City Royals and minor league baseball games throughout the summer baseball season.

Future Land Use - A review of the Polk County 2010 Future Land Use Maps, November 18, 1992; January 31, 1994; and October 4, 1994 shows that residential land uses would replace the agricultural land uses from Memorial Boulevard to Kathleen Road (Segment 2) and the area from Kathleen Road to US 98 (Segment 2) would become predominantly commercial. Residential land uses would continue to dominate from US 98 to SR 33 (Segment 3). From SR 33 to SR 559 (Segment 4) residential land uses would replace the agricultural uses and is an area also designated as a Regional Activity Center. The Green Swamp area from CR 557 to US 27 (Segment 6) would remain as natural/agricultural/rural residential. The US 27 interchange area (Segment 9) would remain commercial. The area from US 27 to the Polk/Osceola County line (Segment 7) is shown as a Select-Area Plan on the Polk/Osceola future land use map.

The Bridgewater DRI is a mixed-use development approved for about 1,214 ha (3,000 ac) of property in the northeast section of the City of Lakeland. The property is owned by American Cyanamid Company/Bridgewater Associates, Inc., the DRI applicant, and lies along SR 33 north of Lake Parker both north and south of I-4. The majority of the property is situated on the south side of I-4 between the Socrum Loop Road and SR 33 interchanges with I-4. The DRI planning concept provides for three single-family communities and three multi-family tracts totaling 3,319 dwelling units. The plan also provides for a 95.5 ha (236 ac) tract (Bridgewater Center) in the southeast quadrant of the SR 33 interchange with a variety of office, commercial and industrial uses, including a 150 room hotel and highway commercial areas. Bridgewater Industrial Park is a 110 ha (272 ac) with industrial, office and retail space oriented primarily toward warehouse/distribution activities. Other commercial tracts totaling about 65 ha (161 ac) are planned for a retail mall complex, miscellaneous highway, neighborhood and convenience establishments.

The proposed improvements to I-4 would utilize the existing corridor and land use is not anticipated to change significantly as a result of the improvements. It is predicted that, with or without the I-4 improvements, land use changes would follow the normal transition from rural/agricultural to residential/commercial.

4.3.2 Cultural Features and Community Services

A. State Archaeological and Historic Site Field Surveys

A Cultural Resources Assessment Survey of I-4 from west of Memorial Boulevard to the Polk/Osceola County line in Polk County, Florida was performed to locate and identify any cultural resources within the project impact zone and to assess their significance in terms of eligibility for listing in the National Register of Historic Places (NRHP). The archaeological and historical/architectural components of the survey were conducted in August and September of 1994.

Historic - A preliminary literature search and field inspection of the project corridor revealed eight structures of an age which could be considered historic (50 years or older). A review of the Florida Site File (FSF) indicated that one historic structure located within the project study area (Segment 3) had been previously recorded: the Carpenters Home South Entrance Gateway (8PO1549), also referred to as the "Carpenters Arch." Field survey revealed the relocation of the arch and resulted in the evaluation of this property, as well as the recordation of seven historic structures. Seven of the eight historic structures are located within Segment 3; the other is situated within Segment 4.

The newly recorded historic structures are residences constructed between 1920 and 1940, and most are of the Frame Vernacular style. Exclusive of the Carpenters Arch, the buildings recorded within the study

area represent typical examples of their types for the general Polk County area. Most have undergone extensive modifications. None display unusual or unique architectural characteristics, nor are they associated with significant events or with the lives of persons significant in the past. By these criteria, they do not meet the criteria for listing in the NRHP.

Both the Carpenters Arch and newly recorded residence at 4000 North Florida Avenue (8PO4056) have historic associations with the United Brotherhood of Carpenters and Joiners of America retirement home complex. The Carpenters Arch has been moved and drastically altered. The residence, once the home of the retirement home superintendent, does not display unusual or unique architectural characteristics, nor is it associated with significant events or with the lives of persons significant in the past. By these criteria, they do not meet the criteria for listing in the NRHP.

Archaeological - A review of the FSF indicated that nine previously recorded archaeological sites are located within or adjacent to the I-4 project right-of-way. Several other known archaeological sites are located proximate to, but outside, the study corridor. None of these resources are listed in the NRHP, nor were any considered potentially eligible for listing by their respective recorders. In addition to known sites, several locales, characterized by excessively to moderately drained uplands near potable water, were considered zones of high archaeological potential. Included were well drained knolls or ridges within 100 m (330 ft) of the lakes and other isolated wetland features proximate to the I-4 project study area. Historical research indicated a generally low potential for historic period archaeological sites. As a result of the field survey, a total of 23 archaeological sites were found to be situated within the I-4 study area. Of these, 13 are newly discovered; 10 previously recorded sites were also relocated and assessed. Three sites are located within Segment 2, four within Segment 3, six within Segment 4, seven within Segment 5 and one each within Segments 6, 7 and 8. The majority of these resources are classified as lithic scatters and artifact scatters. All are commonly occurring types of sites for the region, and are considered to have limited research potential. None are eligible for listing in the NRHP.

The Florida State Historic Preservation Officer (SHPO) concurred with the determination that none of the historic properties or archaeological sites are eligible for listing in the NRHP, or otherwise of historical or architectural value, by issuing a letter of "no effect" for this project to the FHWA, dated August 2, 1995 (included in Section 5 of the Appendix).

For further information regarding archeological and historic sites, refer to the Cultural Resources Assessment Survey, March 1995, Revised May 1995, prepared as a separate document.

B. Evacuation Routes and Emergency Services

I-4 has been designated as an interregional evacuation route in the "Central Florida Regional Hurricane Evacuation Study Update", Central Florida Regional Planning Council, 1995. The highly populated counties of Hillsborough and Pinellas (to the west) use I-4 in Polk County as one of the primary evacuation routes during a weather emergency. In the event of a short notice Category 4 or 5 hurricane threatening the Tampa Bay area, a 1989 survey estimated evacuees would be using up to 190,000 vehicles. The FDOT currently classifies I-4 as having a LOS C which accommodates 47,100 vehicles per day. If a substantial percentage of these evacuees intend to use the I-4 corridor as their route of egress, traffic flow will be severely congested.

Because of its inland location, Polk County has no requirement to evacuate specific geographic areas in the event of severe weather. Consequently, there are no established evacuation zones, as is common in

coastal counties. Evacuation is ordered or recommended based on an assessment of each emergency situation. The primary reason for evacuating residents of Polk County is in anticipation of a hurricane or other extreme weather. In such cases, evacuation is recommended only for persons who live in areas which have a history of flooding and residents of mobile homes.

Should evacuation of specific, localized areas in Polk County be required (i.e. in response to a hazardous materials incident) residents will be advised by law enforcement and/or fire department representatives of the required evacuation areas and routes.

Evacuation routes (I-4, US 98 and US 27) along the project corridor are regional routes which transit Polk County. For local evacuation movement within Polk County during an emergency, use of these routes is not recommended. Persons planning to use these routes to evacuate are cautioned to depart well in advance of an approaching hurricane. These routes may become impassable in low areas due to heavy rains. A weather emergency requiring extensive evacuation from the South Florida area can be expected to create severe traffic congestion on all interregional highways in Polk County.

I-4 is a limited access facility and, as such, does not lend itself for use by local emergency vehicles except for vehicle accidents on I-4 itself. I-4 is used on occasion for interregional medical emergency transport (e.g. Lakeland-Tampa or Lakeland-Orlando). I-4 is patrolled regularly by the Florida Highway Patrol. The Florida Highway Patrol estimates the average response time along the I-4 corridor to be about 18 minutes. However, depending on the day and the available men on duty, the response time can be as short as five minutes.

Polk County evacuation routes are shown in Figure 3-2 in Section 3.1.6.

For further information regarding evacuation routes and emergency services refer to Section 3.1.6.

C. Section 4(f) Properties

There is one Section 4(f) resource adjacent to the I-4 corridor that has the potential to be affected by the proposed improvements to I-4.

Wendell Watson Elementary School - Segment 3 - Wendell Watson Elementary School, located at 6800 Walt Williams Road, is owned by the Polk County School Board. It is located north of I-4 about 2.7 km (1.7 mi) east of Old Combee Road in Section 17, Township 26 South, Range 24 East (Segment 3). The property for the school was acquired by Polk County in 1990. The property was a former homestead with no public access or facilities. School facilities include: an open athletic field with a perimeter fence, basketball courts, two base (soft) ball fields, vehicle parking and three classroom buildings. A waste water treatment plant is situated on the school property in the southeast corner adjacent to Walt Williams Road. The school property occupies approximately 8.1 ha (20 ac) and is accessible to automobiles and pedestrians from Walt Williams Road.

The nearest facilities with comparable resources are located about 3.2 km (2.0 mi) to the west. These facilities include: Padgett Elementary School, Lake Gibson Junior High School, Lake Gibson High School and Virgil Ramage Stadium, all located west of Wendell Watson Elementary School on North Socrum Loop Road to the north of I-4. North Lakeland Elementary School is about 4.2 km (2.6 mi) to the southwest, south of I-4 and west of County Road 582.

Widening I-4 to the north would impact the school property by causing Walt Williams Road to be relocated to the north into the school property. The waste water treatment plant would be affected as well as a portion of the open athletic field. Total impacts to the school property could be as much as 0.5 ha (1.3 ac).

A Section 4(f) Determination of Applicability (DOA) was submitted for the Wendell Watson Elementary School. On March 22, 1993, the FHWA determined that the provisions of Section 4(f) do not apply to the Wendell Watson Elementary School property because "...no right-of-way will be acquired under the preferred Alternate 3, and constructive use is not expected to significantly diminish the school's vital functions" (see Section 5 of the Appendix). Note: Alternate 3 of the DOA is the preferred alternative presented in this report (centered alignment, urban typical section constructed within the existing right-of-way).

For more information regarding Section 4(f) properties, refer to Section 9.25 and to the Wendell Watson Elementary School Section 4(f) Determination of Applicability Report, accepted by the FHWA on March 22, 1993 and prepared as a separate document.

D. Educational or Religious Institutions

The project area is served by the School Board of Polk County, comprised of five districts. This project lies within School Districts 1, 4 and 5. School bus stops located immediately adjacent to the I-4 project include, West Bella Vista Street at Compson Place, West Elliott Street at Kathleen Road, North Galloway Road at West 10th Street, Swindell Road at Bryon Court, West Bella Vista Street at Lavon Street, West Bella Vista Street at Kathleen Road, Old Combee Road at Lakeland RV MHP, Griffin Road at Justine Avenue, Walt Williams Road at Stoll Manor MHP, Old Combee Road at Christopher Court, Crevasse Street at Tiki Village Campground, Tomkow Road (turnaround), and Mt. Olive Church Road at Citrus Hill Boulevard. There are no designated school crosswalks located at any of the interchanges throughout the project study area. Pupils are bussed across the Swindell Road, 10th Street and Bella Vista Street bridges from the east side of I-4 to the Winston Elementary School.

There are four churches located adjacent to the I-4 corridor right-of-way. The Victory Assembly of God Church is located west of US 98, the New Home Baptist Church and Cemetery is located at Memorial Boulevard, the Lake Gibson Church of Christ is located at Socrum Loop Road and the Apostolic Church of Jesus Christ is located on Walt Loop Road.

School properties located within a 3.2 km (2 mi) radius of the I-4 project corridor are shown in Table No. 4-39. There are no schools adjacent to the I-4 project in Segments 5, 6, 7 and 9.

E. Other Non-profit Organizations

There are no known non-profit social service centers immediately adjacent to the I-4 project.

Table No. 4-39
EDUCATIONAL INSTITUTIONS
I-4 Project Development and Environment Study

Study Segment	School Name/Address/Phone Number		School District
2	Griffin Elementary 3315 Kathleen Road Lakeland, FL 33809	853-6020	5
	Lakeland Middle Magnet (Formerly Jesse Keen Elem./Middle Magnet) 1810 West Parker Street Lakeland, FL 33801	499-2880	1
	Kathleen Senior High 2600 Crutchfield Road Lakeland, FL 33805	499-2655	5
	Winston Elementary 3415 Swindell Road Lakeland, FL 33809	499-2890	5
3	Lake Gibson Middle/Junior High 6901 North Socrum Loop Road Lakeland, FL 33809	853-6151	5
	Lake Gibson Senior High 7007 North Socrum Loop Road Lakeland, FL 33809	853-6100	5
	North Lakeland Elementary 410 Robson Street Lakeland, FL 33805	499-2850	5
	Padgett Elementary 110 Leelon Road Lakeland, FL 33809	853-6044	5
	Wendell Watson Elementary 6800 Walt Williams Road Lakeland, FL 33809	853-6060	5
4	Polk City Elementary 125 South Bougainvillea Avenue Polk City, FL 33868	984-1332	4
8	Lincoln Avenue Academy 1330 North Highway 17-92 Lakeland, FL 33805	499-2955	5
	Rochelle School of the Arts 1501 Martin Luther King Jr., Avenue Lakeland, FL 33805	499-2810	5

4.3.3 Natural and Biological Features

The sites for the proposed rest areas between SR 559 and CR 557 (not included in this study, but immediately adjacent to this project) were recommended based on the results of the "Evaluation of I-4 Rest Areas and Weigh Station Report," March 1990, (ref. Environmental Determination Form 508-01, SPN 16320-1439). Subsequent to the completion and approval of the environmental determination, a sinkhole was discovered on the north side of I-4 at the proposed westbound rest area and a protected species (burrowing owl) was reported on the south side of I-4 at the proposed eastbound rest area. Because of the close proximity to this I-4 PD&E project limits, the reports of sinkhole activity and presence of burrowing owls were investigated.

Two deep Standard Penetration Test (SPT) borings were performed each to a depth of 33.5 m (110 ft) below the existing ground surface in the vicinity of the reported sinkhole in order to help evaluate the risk. The borings were performed at a distance of approximately 6 m (20 ft) from the outside edge of pavement at the north (westbound) and south (eastbound) sides of I-4. After evaluating the data obtained from the SPT borings, it was concluded that the area under consideration has a low risk for sinkhole occurrence.

Pedestrian surveys for burrowing owls were conducted at dawn and dusk, during the breeding season (March-June), in conjunction with other sampling events and field surveys. No burrowing owls were sighted in the I-4 corridor although potential habitat exists at several locations adjacent to the roadway.

The I-4 corridor passes through a diversity of habitat types and hydrologic regimes. Areas of interest were identified by the lack of development, disturbance or the presence of an unusual or unique features, such as open white sand areas. Pedestrian surveys were conducted on sites where the potential for protected species existed. Refer to Section 9.15.5 for additional information regarding wildlife and habitat.

Unique farmlands such as orange groves exist intermittently throughout the I-4 corridor.

Wetlands - During field inspections conducted in October of 1993 through July of 1994, project ecologists identified and assessed wetlands and surface water features located within the project corridor. The corridor evaluated was about 76 m (250 ft) on either side of the existing right-of-way, which is typically 91.4 m (300 ft), for a typical corridor width of about 244 m (800 ft). Three general types of palustrine wetlands: forested systems, scrub/shrub communities and emergent marshes dominate the project corridor. Other wetland types include lakes, manmade open water features and drainage ditches. The majority of the wetlands have been disturbed by numerous road dissections, phosphate mining and agricultural practices. Wetlands are classified according to USFWS Classification of Wetlands by System, Subsystem, and Class. The wetlands of the corridor are contained within five regional drainage basins, including the Alafia and Hillsborough/Withlacootchee Rivers, Peace, the Green Swamp and the Kissimmee River Basin.

For qualitative and quantitative analysis, the project wetlands were grouped. Two types of groupings were necessary, one for permitting purposes and one for Wet 2 analysis. Permitting considerations take into account whether the wetland will be isolated or contiguous with Waters of the State, and whether the wetlands are forested, non-forested and/or less than 0.20 ha (0.5 ac). Wet 2 considerations involve the dynamics and spatial relationships of the wetland to its surroundings. Both groupings include wildlife and other habitat considerations. Functional grouping allowed for eventual Wet 2 analysis without additional regrouping.

During the master plan phase of this project, it was estimated that about 106 ha (262 ac) of wetlands in the I-4 corridor have the potential to be impacted by this project using the 129.0 m (424 ft) Master Plan Ultimate Typical Section and considering various widening scenarios to the left and right of the existing alignment. Palustrine forested wetlands (PFO) account for about 62% of all wetlands while palustrine scrub/shrub (PSS) environs account for approximately 29%, palustrine emergent wetlands (PEM) account for about 8% and palustrine open water (POWHx) and lacustrine, limnetic, unconsolidated bottom, excavated (L1UBHx) accounts for less than 1%. Wetland impacts for the preferred alternative typical sections are described in Section 9.15.1.

For further information regarding wetlands, see the Wetland Evaluation Report, March 1998, prepared as a separate document.

Wellhead Protection - The City of Lakeland operates the Lakeland Northwest Wellfield within the I-4 corridor between Kathleen Road and CR 582. The Northwest Wellfield contains ten wells. Four well heads lie adjacent to the south right-of-way boundary for I-4, one well head is adjacent to the south right-of-way of Griffin Road and the other five well heads are beyond 305 m (1,000 ft) from the right-of-way.

Article 34.02.00.00, Wellhead and Aquifer Protection, of the City of Lakeland's Natural Resource Protection Regulations establishes a 91.4 m (300 ft) radius wellhead protection zone around all potable drinking water wells that produce one million gallons a day or greater. This protection zone prohibits and restricts activities such as landfills, waste water treatment facilities, dairy farming, petroleum storage, automobile maintenance and chemical processing. The proposed I-4 improvements pass through the wellhead protection zone. The location of the four wells adjacent to the existing I-4 right-of-way and the limits of the Lakeland Northwest Wellfield Protection Zone areas shown on the Concept Plans.

The proposed expansion of I-4 through this area could be affected by the Storm Water Contamination sub-section of Article 34.02.00.00 which states that:

> *"Storm water runoff shall be prohibited from direct or indirect discharge into any geological feature possessing unrestricted connection to an aquifer system or any channeling structure that directly achieves this action. Exceptions may be considered pursuant to Chapter 17-25, Florida Administrative Code, if pre-development standards of runoff warrant such an exemption of treated storm water runoff."*

Coordination with the City of Lakeland indicates that surface improvements such as roadway widenings are unlikely to impact the potable water supply wells of the Northwest Wellfield. Since the proposed improvements include water quality treatment of previously untreated roadway storm water runoff in the protection zone and no right-of-way will be taken at the well heads, impacts to the wellfield are considered minimal. The FDOT will continue to coordinate with the City of Lakeland and the US Environmental Protection Agency (EPA) in accordance with Section 14249(e) of the Safe Drinking Water Act to meet the EPA requirements.

Threatened and Endangered Species - The I-4 corridor contains the potential for involvement with Federally and State listed Endangered, Threatened or Species of Special Concern. Of particular concern is the area from SR 33 east to the Polk/Osceola County line (Segments 4, 5, 6, 9 and 7). During the Master Plan phase of this project, biologists observed the project corridor repeatedly for the presence of Threatened and Endangered Species. The project team coordinated with the USFWS and the FGFWFC

directly and through an environmental advisory group established to evaluate the potential for the inclusion of wildlife undercrossings into the proposed improvements to I-4.

Only one species of listed insect (Anomala exigua, probably extinct) has been reported within Polk County once this century (none were identified in the corridor), due to the presence of its commensal host, the gopher tortoise. No guidelines exist for this particular species although mitigative efforts required of the tortoise would probably apply to this species in tandem. The only possible occurrence of a protected amphibian in Polk County is the gopher frog (none were identified in the corridor), which is known to be commensal with the gopher tortoise. Mitigative efforts for the gopher tortoise may apply to this species. The presence of gopher tortoises was noted on October 22, 1993 during a field survey at the proposed rest stop areas east of CR 557A (Segment 5). (The rest area is adjacent to this project, but not within the proposed right-of-way for this project.) Other appropriate gopher tortoise habitats occur within the corridor and were surveyed according to FGFWFC methodology guidelines (none of these areas revealed the presence of gopher tortoises).

The presence of the bald eagle was noted in the area and nesting trees are actively monitored by the USFWS and FGFWFC. Reports of the Florida scrub jay near the Loughman Road (CR 54) overpass were confirmed (Segment 7). Rookery and nesting areas were identified by FGFWFC for wading bird species, in particular the Florida sandhill crane.

The presence of gopher tortoises within the corridor creates the possibility that the Florida mouse is also present. This mammal is known to be commensal with the gopher tortoise and was confirmed to occur in Polk County, although none were observed in the I-4 corridor. Because of the close proximity to the I-4 PD&E Study, the proposed eastbound rest area site (adjacent to this project) was surveyed in October 1994 for the presence of the Florida mouse (none were observed).

Due to the extent of habitat degradation within the project corridor, the possibility of impacting a habitat within the existing corridor that is critical to the survival of relatively mobile creatures such as alligators and snakes is remote.

Coordination with the USFWS and the FGFWFC will continue throughout the project.

For further information on wildlife and habitat in the I-4 corridor, see Section 9.15.5 and the Endangered Species Biological Assessment, I-4 Corridor Study, Polk County, Florida, April 1998, prepared as a separate document.

4.3.4 Hazardous Materials and Petroleum Site Data

A Level 1 Contamination Screening of the I-4 corridor was conducted to determine the potential for contamination of the right-of-way from adjacent properties and business operations. Abutting sites were identified based on regulatory standards as potential sources of hazardous materials and petroleum. Sites with suspect or documented contamination were further evaluated for potential contamination risk with respect to impacts to construction and right-of-way acquisition.

A Contamination Screening Evaluation Report (CSER) has been prepared pursuant to the Federal Highway Administration's Technical Advisory T 6640.8A, dated October 30, 1987, and in accordance with the FDOT's PD&E Manual, Part 2, Chapter 22, dated February 8, 1994, as further modified and clarified by the District Contamination Impact Coordinator. The purpose of this report is to present the

preliminary findings of a literature and file review of the potential for finding hazardous materials, petroleum or pesticide contamination on parcels along the proposed alignment which may be impacted by the proposed improvements. The report identifies and evaluates known and potential hazardous materials, petroleum and pesticide involvement, presents recommendations concerning these involvements, and discusses possible impacts to the proposed alignment and typical sections. The evaluation included document and file research (including historic aerial photography), coordination with the Florida Department of Environmental Protection (FDEP), site reconnaissance, interviews with owners and, where appropriate, subsurface investigations for possible soil and groundwater contamination.

Fifty-four (54) sites (including the seven sites listed in Segment 8 for the US 98 CSER) were initially identified by windshield survey, examination of historic aerial photography, a review of the original I-4 construction drawings, the 1989 I-4 Master Plan and the US 98 CSER, November 1993, as possibly having the potential for contamination. Site inspections, an initial review of local FDEP files, Sanborn Insurance Maps and Lakeland City Directories eliminated three (3) of these sites from further consideration. Of the remaining fifty-one (51) sites, eighteen (18) were suspected hazardous materials sites and thirty-three (33) were suspected petroleum sites. Three (3) of the hazardous materials sites and one (1) of the petroleum sites were initially rated MEDIUM based on their proximity to areas documented by the FDEP as having known groundwater contamination stemming from the past use of the pesticide ethylene dibromide (EDB). Sixteen (16) of the petroleum sites were initially considered to have a MEDIUM or HIGH potential for contamination after the historic document and file research, field inspections and interviews with owners. Of the remaining 14 hazardous materials sites, six were rated as NO INDICATION and eight were rated as LOW. The 17 remaining petroleum sites were rated as having a LOW potential for contamination.

A total of twenty (20) sites with a MEDIUM or HIGH initial rating were field tested for the potential for contamination. Four (4) of the sites had the potential for hazardous materials contamination and sixteen (16) had the potential for petroleum contamination.

Soil Boring and Organic Vapor Analyzer (OVA) screenings were completed on June 30, July 3 and July 5, 1995 for one (1) of the hazardous materials and fifteen (15) of the petroleum sites identified during this study and initially rated as having a MEDIUM to HIGH potential for contamination. The hand auger borings and OVA screenings were performed in areas of suspected petroleum contamination. (The OVA screenings were done for the seven sites at the US 98 interchange in Segment 8 in 1993.)

The OVA screenings revealed no evidence of soil or groundwater contamination in any of the sites tested. However, based on the historic nature of the business conducted (e.g. gasoline service stations), additional right-of-way required, known past incidents of contamination, and/or the close proximity of the tanks to the proposed right-of-way, four (4) of the petroleum sites remained rated as having a MEDIUM potential for the presence of contamination. The ratings of the other sites were revised to LOW.

Two general areas within the I-4 project corridor were documented by the FDEP as having known groundwater contamination stemming from the past use of the pesticide ethylene dibromide (EDB) including the area around the SR 559 interchange in Segment 4 and the area around the US 27 interchange in Segment 9 (including the eastern end of Segment 6).

On September 12, 1995, soil samples were obtained from one (1) potential hazardous materials site and three (3) potential petroleum sites (located in existing or former citrus grove areas) where there is concern for possible EDB or other pesticide/herbicide contamination. Each soil sample was analyzed for Organochlorine Pesticides and PCBs (EPA Method 608), Organophosphorus Pesticides (EPA Method 814), Chlorinated Herbicides (EPA Method 615) and EDB (EPA Method 810). Soil samples were obtained at each of the predetermined locations at a depth of less than one foot after the removal of surface vegetation and roots. The results of the laboratory analysis of soil samples indicate that none of the constituents for which analysis was performed were found above the laboratory detection limit for that constituent.

The list of potential hazardous materials and petroleum sites with their final contamination risk ratings is shown in Table No. 4-40.

For further information regarding potential hazardous materials and petroleum contamination sites and related data, refer to Section 9.15.9 and to the Contamination Screening and Evaluation Report, January 1998, prepared as a separate document.

Table No. 4-40
POTENTIAL HAZARDOUS MATERIALS AND PETROLEUM SITES
I-4 Project Development and Environment Study

	Site No.	Facility	Haz or Pet.	ID #s	Initial Contamination Concern	Tanks Y/N	Risk
Segment 2	32S	Country Hearth Bakery 3355 Memorial Blvd. W Lakeland, FL 33802 941/682-1155	P	DEP-538628278 EPA-FLD981926462 EPA-FLD982103319 GMS-4053P00088	diesel	Y	L
	33S	Gene Hyde Trucking 3315 Swindell Road Lakeland, FL 33805 941/683-1525	H	EPA-FLD984188672 GMS-4053P01645 PCBCC-5328509	waste oil	Y	L
	33AS	Ryder Truck Rental, Inc. 3310 Swindell Road Lakeland, FL 33805 941/688-2677	P	DEP-538623941 EPA-FLD981858038 GMS-4053P80667 PCBCC-5332224	vehicular diesel unleaded gas	Y	L
	34S	Owens Illinois, Inc., Plant #16 2222 Bella Vista West Lakeland, FL 33809 941/680-4828	P	DEP-538628382 DEP-538624462 EPA-FLD009708736 GMS-4053P80897 PCBCC-5313720	vehicular diesel	Y	L
	36S	Pepperidge Farm, Inc. 222 Interstate Drive Lakeland, FL 33805 941/688-4000	H		propane	Y	N
	37S	Cardinal Industries, Inc. 2700 Interstate Drive Lakeland, FL 33805 941/686-3784	H	GMS-4053P40037	hazardous waste	N	N
	39S	Meeks Repair Service 1145 Griffin Road Lakeland, FL 941/683-7584	P	DEP-539200443	hazardous waste petroleum	N	L
Segment 3	49N	Tiki Village Resort 905 Crevasse Street Lakeland, FL 941/858-5364	H	GMS-4053P03480 GMS-4053P39021	domestic waste water	Y	L
	50N	Dan's Auto Beauty Shop 701 Union Drive Lakeland, FL 941/858-1551	P	PCBCC-5327951	hazardous waste	Y	L
	51S	Amoco Station 4225 Lakeland Hills Blvd. Lakeland, FL 33805 941/688-5411	P	DEP-538624335	unleaded gas vehicular diesel	Y	L
	52N	Exxon Station 4655 N Socrum Loop Road Lakeland, FL 33809 941/853-3250	P	DEP-539101831	unleaded gas	Y	L
	52AS	DOT Rest Area I-4 Eastbound Lakeland, FL 33830 941/499-2605	H	GMS-4053801739	domestic waste water	N	L
	53S	Lakeland RV Resorts 900 Old Combee Road Lakeland, FL 33805 941/687-6146	H		propane	Y	N
	53AN	Stoll Manor Mobile Home Park I-4 & Walt Williams Road Lakeland, FL 33805 941/859-2220	H	GMS-4053P10693	domestic waste water	Y	L
	54N	Sandpiper Storage 6001 Sandpiper Drive Lakeland, FL 33809 941/858-8770	H		diesel	Y	L
	54AN	Sandpiper Golf Club 5801 Walt Loop Road Lakeland, FL 33809 941/859-2457	H	EPA-FLD982167157 GMS-4053P00671	hazardous waste	N	L
	55N	Polk Co. Utilities Division Regional Water Supply Sherwood Forest Development 941/534-6039	P		liquid petroleum	Y	L
	55AN	Wendell Watson Elementary School Walt Williams Rd N of I-4 Lakeland, FL 941/534-0500	H	GMS-4053C10802	domestic waste water	Y	L
	56AN	DOT Rest Area I-4 Westbound Lakeland, FL 33830 941/853-6075	H	GMS-4053801740	domestic waste water	N	L

Table No. 4-40 (Cont'd)
POTENTIAL HAZARDOUS MATERIALS AND PETROLEUM SITES
I-4 Project Development and Environment Study

	Site No.	Facility	Haz or Pet.	ID #s	Contamination Concern	Tanks Y/N	Risk
Segment 4	57N	Lakeland Auto Auction 8025 North SR 33 Lakeland, FL 33809 941/984-1551	P	DEP-538628555 EPA-FLD982114415 GMS-4053P00619 GMS-4053P20338	unleaded gas	N	L
	58N	Mr. Drum 8139 SR 33 North Lakeland, FL 33809 941/984-3747	P	DEP-538944934 EPA-FLD984229666 GMS-4053P02417 PCBCC-5332151	vehicular diesel	N	L
	59N	Munday Truck Sales & Service 8161 SR 33 Lakeland, FL 33809 941/984-2774	H	PCBCC-5329069	hazardous waste	N	L
	59AN	Storage Building CSX RR underpass at CR 655 & I-4 941/687-4498	H		contents unknown	?	L
	61S	Amoco/Lung Ho Ventures, Inc. 1547 SR 559 Polk City, FL 33868 941/984-3060	P	DEP-538623710	unleaded gas EDB	Y	M
	62S	Texaco/Dixie Boy #4 1551 SR 559 Polk City, FL 33868 941/984-1918	P	DEP-538842412	unleaded gas EDB	Y	L
5	63S	BP Gas 2550 CR 557 Lake Alfred, FL 33850 941/987-8791	P	DEP-538624352	unleaded gas	Y	L
6	66N	GTE- Wavery Drive Haines City, FL 33844 941/224-4740	P	DEP-538628709	diesel	Y	L
7	There are no potential hazardous materials or petroleum sites in Segment 7.						
Segment 8	40N	*Vacant Lot (Formerly Miami Subs) 3430 Dade City Hwy North Lakeland, FL 33805 941/646-4771	P	DEP-538624218 GMS-4053P20335	gasoline	Y	H
	41N	*Vacant Lot (Formerly Mobil Station #02-CXW) 3440 US Hwy 98 North Lakeland, FL 33809 941/858-5718	P	DEP-538623454 EPA-FLD984205310 GMS-4053P01961	generic gas	Y	H
	42N	*Chevron Station #47445 3437 US Hwy 98 North Lakeland, FL 33809 941/858-7626	P	DEP-538623301 EPA-FLD984218297 GMS-4053P021471	unleaded gas diesel	Y	H
	43S	*Shorty's Amoco #202 3250 Dade City Hwy & I-4 Lakeland, FL 33805 941/682-9319	P	DEP-538623753 EPA-FLD984215277 EPA-FLD984212654 GMS-4053P02073 GMS-4053P02060 PCBCC-5316610	unleaded gas	Y	H
	44S	*Coastal Mart #666 3230 US Hwy 98 North Lakeland, FL 33801 941/686-1577	P	DEP-538624176 PCBCC-5332137	unleaded gas diesel	Y	H
	45S	*Racetrac Petroleum, Inc. #234 3220 US Hwy 98 North Lakeland, FL 33805 941/687-0342	P	DEP-538628364	generic gas gasohol	Y	H
	46S	*Citgo (Formerly Union 76) 3249 US Hwy 98 North Lakeland, FL 33805 941/688-7891	P	DEP-538624431	vehicular diesel	Y	H
	47N	Buddy Gregg RV Sales & Service 940 Crevasse Street Lakeland, FL 33809 941/859-5656	P	EPA-FLD984223545	vehicular diesel	Y	L

Table No. 4-40 (Cont'd)
POTENTIAL HAZARDOUS MATERIALS AND PETROLEUM SITES
I-4 Project Development and Environment Study

	Site No.	Facility	Haz or Pet.	ID #s	Contamination Concern	Tanks Y/N	Risk
Segment 9	64S	Theme World Campground 2727 Frontage Road Lakeland, FL 33809 941/424-1242	H		propane EDB	Y	L
	65S	Fort Summit Camp Sites 2525 Frontage Road Lakeland, FL 33809 941/424-1880	H		propane EDB	Y	L
	67N	Chevron #47334 - Paulines 5500 US 27 Davenport, FL 33837 941/424-1118	P	DEP-538623299	unleaded gas EDB	Y	L
	67AN	Comfort Inn I-4 & US 27 Haines City, FL 941/424-2811	H	GMS-4053C02651	domestic waste water EDB	N	N
	68N	Speedway Station #8179 5404 US 27 Davenport, FL 33837 941/458-8100	P	DEP-538624250	vehicular diesel EDB	Y	M
	68AS	Holiday Inn I-4 & US 27 Davenport, FL 33837 941/424-2120	H	GMS-4053P05969	domestic waste water EDB	N	L
	70S	Shell Station 5215 US 27 Davenport, FL 33837 941/424-1002	P	DEP-538623956	leaded unleaded gas EDB	Y	L
	71S	Texaco #24-203-0010 5205 US 27 North Davenport, FL 33837 941/424-1284	P	DEP-538624129 EPA-FLD984174235	unleaded gas diesel EDB	Y	L
	71AS	Bob Evans Restaurant I-4 & US 27 Davenport, FL 33837 1-800/272-7675	P	DEP-538623838	leaded gas gasohol EDB	N	L
	72S	Exxon #45536 5033 US 27 North Davenport, FL 33450 941/424-1278	P	DEP-538624110 EPA-FLD984185561 GMS-4053P01535	unleaded gas EDB	Y	M
	73S	I-4 Auto Truck Plaza I-4 & US 27 Davenport, FL 33450 941/424-2323	P	DEP-538628441	leaded unleaded gas diesel EDB	N	L
	74S	Chevron #47333 5025 US 27 North Davenport, FL 33837 941/424-1530	P	DEP-538623306	unleaded gas diesel EDB	N	L
	75S	Amoco #17 5021 US 27 North Davenport, FL 33837 941/424-2144	P	DEP-538840533	unleaded gas diesel EDB	Y	M
	75AS	Hardees Restaurant I-4 & US 27 Barnum City, FL 33881 941/293-0860	P	DEP-538623504	leaded unleaded gas diesel EDB	N	L
	77AS	Baseball City (formerly Boardwalk & Baseball) I-4 & US 27 Haines City, FL 33844 941/424-2424	P	DEP-538943624 EPA-FLD981857733 EPA-FLD984230672 GMS-4053P02441 GMS-4053P80644 GMS-4053P01762	unleaded gas diesel EDB	Y	L
	78S	NE Regional Wastewater Treat. Plant I-4/US 27 South 1/4 mi S of I-4 & ½ mi W of US 27	H		domestic waste water	N	N

*These sites are included in the assessment for the Contamination Screening Evaluation Report, November 1993 and the Contamination Screening Evaluation Report for US 98 Pond Sites, July 1995 for State Project Number 16210-1514 - US 98. Soil borings and organic vapor analyzer screenings were conducted for the US 98 project.

DEP- Florida Department of Environmental Protection **EPA** - Environmental Protection Agency
GMS - Groundwater Management Systems Report **PCBCC** - Polk Co Board of County Commissioner

5.0 DESIGN CRITERIA

Table No. 5-1
ROADWAY DESIGN CRITERIA
I-4 Project Development and Environment Study

Design Element	Design Standard	Sources
Design Vehicle	WB-60	FDOT
Design Year	2020	FDOT Scope of Services
Design Speed		
Mainline I-4 - Rural	110 km/h (70 mph)	FDOT Plans
Mainline I-4 - Urban	100 km/h (60 mph)	Preparation Manual
Diamond Ramp	80 km/h (50 mph)	Page I-2-17
Loop Ramp	50 km/h (30 mph) min.	Florida Green Book
Slip Ramp	110 km/h (70 mph)	Page III-4
Crossroad - Urban	70 km/h (45 mph)	
Crossroad - Other	As appropriate	
Maintenance of Traffic		
Mainline I-4	Desirable - Same as normal posted speed on roadway Reduced - Not more than 30 km/h (20 mph) below normal posted speed on roadway	1992 FDOT Roadway and Traffic Design Standards Index 600/614
Crossroads	60 km/h (40 mph)	
Median Width I-4	19.2 m (64 ft) to accommodate future HSR/Commuter Rail	FDOT District 1 Interstate Policy
Maximum Radius (degree of curve)		
Mainline I-4 - Rural	500 m (3°30')	1990 AASHTO, page 154
Mainline I-4 - Urban	335 m (5°15')	Table III-6 and 1992 FDOT
Diamond Ramp	775 m (8°15')	Roadway and Traffic Design
Loop Ramp	70 m (24°45' - 230 ft)	Standards Index 510, 1 of 2
Length of Horizontal Curve		
Mainline I-4 - Rural, Urban	Desirable - 30 (S)[1] Minimum - 15 (S) - 30(S)	FDOT Plans Preparation Manual, Table 2.1,
Crossroad - Urban	Desirable - 15 (S), Min. -122 m (400 ft)	Page I-2-18
Crossroad - Rural	Desirable - 15 (S), Min. -152 m (500 ft)	
Decision Sight Distance		
Mainline I-4 - Rural	305 to 442 m (1,000 to 1,450 ft)	1990 AASHTO,
Mainline I-4 - Urban	305 to 390 m (1,000 to 1,275 ft)	Table III-3,
Crossroad - Urban	221 to 282 m (725 to 925 ft)	Page 127
Crossroad - Other	As appropriate	
Maximum Shoulder "Roll-Over"	7%	1992 FDOT Roadway and Traffic Design Standard Index No. 510, 1 of 2
Maximum Lane "Roll-Over"		
25 to 30 km/h (15 to 20 mph)	5% to 8%	1990 AASHTO, Page 785,
40 to 50 km/h (25 to 30 mph)	5% to 6%	Table IX-14
60 km/h (35 mph) and over	4% to 5%	

Table No. 5-1 (Cont'd)
ROADWAY DESIGN CRITERIA
I-4 Project Development and Environment Study

Design Element	Design Standard	Sources
Superelevation Transition		
Tangent	80%	1992 FDOT Roadway and
Curve	20%	Traffic Design Standards Index
Maximum		No. 510, 511
Mainline I-4 - Rural	0.01 m/m (0.10 ft/ft)	
Mainline I-4 - Urban	0.05 m/m (0.05 ft/ft)	
Crossroad - Urban	0.05 m/m (0.05 ft/ft)	
Crossroad - Rural	0.01 m/m (0.10 ft/ft)	
Entrance - Exit Ramp Design		
Loop Ramps	Parallel Type	1990 AASHTO,
Diamond Ramps	Taper Type	Pages 984 - 991
Entrance Ramp		
Taper Type - Diamond Ramp		
Taper	50:1	1990 AASHTO, Table X-4,
Accel. length 110 km/h (70 mph)	176.8 m (580 ft)	Page 986 and 1992 FDOT
Accel. length 100 km/h (60 mph)	51.8 m (170 ft)	Roadway and Traffic Design
Parallel Type - Loop Ramp		Standards Index No. 525
Taper	91.4 m (300 ft) minimum	
Accel. length 110 km/h (70 mph)	405.4 m (1,330 ft)	
Accel. length 100 km/h (60 mph)	277.4 m (910 ft)	
Exit Ramp		
Taper Type - Diamond Ramp		
Taper	3° to 5°; 4° Desirable	1990 AASHTO, Table X-6
Decel. length 110 km/h (70 mph)	103.6 m (340 ft)	Page 991 and 992 FDOT
Decel. length 100 km/h (60 mph)	73.2 m (240 ft)	Roadway and Traffic Design
Parallel Type - Loop Ramp		Standards Index No.525
Taper	91.4 m (300 ft)	
Decel. length 110 km/h (70 mph)	155.4 m (510 ft)	
Decel. length 100 km/h (60 mph)	131.1 m (430 ft)	
Maximum Profile Grade		
Mainline I-4 - Rural	3%	FDOT Plans
Urban	3%	Page 948
Diamond Ramp	3% to 5%	(Florida Green Book
Loop Ramp	5% to 7%	Page III-19)
Crossroad - Urban	6% to 8%	
Crossroad - Other	As appropriate	

Table No. 5-1 (Cont'd)
ROADWAY DESIGN CRITERIA
I-4 Project Development and Environment Study

Design Element	Design Standard	Sources
Maximum Change in Grade without Vertical Curve		
Mainline I-4 - Rural	0.20%	FDOT Plans Preparation
Mainline I-4 - Urban	0.40%	Manual, Page I-2-21
Diamond Ramp	0.60%	Florida Green Book
Loop Ramp	1.00%	Page III-20
Crossroad - Urban	0.70%	
Crossroad - Other	As appropriate	
Maximum Crest Vertical Curve[2]		
Mainline I-4 - Rural	K = 290 to 540, 304.8 m (1,000 ft) minimum desirable	1990 AASHTO
Mainline I-4 - Urban	K = 190 to 310, 304.8 m (1,000 ft) minimum desirable	Table III-40
Diamond Ramp	K = 110 to 160, 91.4 m (300 ft) minimum desirable	Page 284
Loop Ramp	K = 30	
Crossroad - Urban	K = 80 to 120	
Crossroad - Other	As appropriate	
Minimum Sag Vertical Curve[3]		
Mainline I-4 - Rural	K = 150 to 220, 243.8 m (800 ft) minimum desirable	
Mainline I-4 - Urban	K = 120 to 160, 243.8 m (800 ft) minimum desirable	1990 AASHTO
Diamond Ramp	K = 90 to 110, 61.0 m (200 ft) minimum desirable	Table III-42
Loop Ramp	K = 40	Page 293
Crossroad - Urban	K = 70 to 90	
Crossroad - Other	As appropriate	
Minimum Vertical Clearance		
Bridges over I-4	5.0 m (16'-6")[4]	1987 FDOT Structures Design Guidelines, Pages 2 - 10
Overhead Signs	5.3 m (17'-6") (17'-4" over flexible pavement)	1985 Std. Spec. Structure Supports for Hwy. Signs, Luminaire and Traffic Signal Fig. 1.1.3C
Rail		
High Speed	5.5 m (18'-0")	
Light / Commuter	6.9 m (22'-6") - Desirable 5.5 m (18'-0") - Minimum	
Lane Widths		
Mainline (I-4)	3.6 m (12 ft)	1990 AASHTO
One Lane Ramp	4.5 m (15 ft) - Case I-C	Table X-3
Two Lane Ramp	8.1 m (27 ft) - Case III-C	Page 976
Lane Drop Taper		
Mainline (I-4)	Design Speed : 1	1990 AASHTO, Page 948

Table No. 5-1 (Cont'd)
ROADWAY DESIGN CRITERIA
I-4 Project Development and Environment Study

Design Element	Design Standard		Sources
Shoulder Width - Roadway - Inside	Total	Paved	
Mainline I-4	3.6 m (12 ft)	3.0 m (10 ft) minimum - Based on 3 lane roadway	FDOT Plans Preparation Manual Exhibit I-2-A
One Lane Ramp	1.8 m (6 ft)	0.6 m (2 ft) minimum	Page I-2-9
Two Lane Ramp			
Interstate	2.4 m (8 ft)	1.2 m (4 ft) minimum	
C/D Road (1 lane)	1.8 m (6 ft)	0.6 m (2 ft) minimum	
Shoulder Width - Roadway - Outside	Total	Paved	
Mainline I-4	3.6 m (12 ft)	3.0 m (10 ft)	FDOT Plans
Auxiliary Lane (1 lane terminal)	2.4 m (8 ft)	1.8 m (6 ft)	Preparation Manual
One Lane Ramp	1.8 m (6 ft)	1.2 m (4 ft)	Table 2.3.1
Two Lane Ramp			
Interstate	3.6 m (12 ft)	3.0 m (10 ft)	
C/D Road (1 lane)	1.8 m (6 ft)	1.2 m (4 ft)	
Minimum Spacing Ramp Terminals			
Entrance to Exit[5]	487.7 to 609.6 m (1,600 to 2,000 ft)		1990 AASHTO
Exit to Entrance	152.4 m (500 ft)		Figure X-68
Entrance to Entrance	304.8 m (1,000 ft)		Page 983
Exit to Exit	304.8 m (1,000 ft)		
Turning Roadways	182.9 to 243.8 m (600 to 800 ft)		
Typical Roadway Cross Section Slopes			
Roadways	0.02 ft/ft (2 lane maximum)		FDOT Plans
Inside Shoulder	0.05 ft/ft		Preparation Manual
Outside Shoulder	0.06 ft/ft		Page I-2-14
Clear Zone (Min. from edge of travel way)[6]			
Mainline I-4	10.8 m (36 ft)[7]		1992 FDOT Index
Auxiliary Lane	7.2 m (24 ft)		No. 700
One Lane Ramp	4.2 m (14 ft)		Page 1 of 2
Two Lane Ramp	4.2 m (14 ft)		
Crossroad - Urban - w/C&G	7.2 m (24 ft) @ >70 km/h (45 mph) 1.2 m (4 ft) @ 70 km/h (45 mph) or less		
Crossroad - Other	As appropriate		

Table No. 5-1 (Cont'd)
ROADWAY DESIGN CRITERIA
I-4 Project Development and Environment Study

Design Element	Design Standard	Sources
Shoulder Width - Bridge Structures - Inside		
Mainline I-4		
4 or more lanes	1.8 m (6 ft)	1987 FDOT Structures
6 or more lanes	3.0 m (10 ft)	Design Guidelines
One Lane Ramp	1.8 m (6 ft)	and 1992 FDOT
Two Lane Ramp	1.8 m (6 ft)	Roadway and Traffic
Crossroad - Urban		Design Standards Index
Divided Median	0.8 m (2'-6") to gutter line	No. 700
Divided/Raised Median	0.4 m (1'-4") to gutter line	
Undivided Median	0.4 m (1'-4") to gutter line	
Crossroads - Rural		
Divided		
4 or more lanes	1.8 m (6 ft)	
6 or more lanes	3.0 m (10 ft)	
Undivided	Approach Shoulder Width	
Shoulder Width - Bridge Structures - Outside		
Mainline I-4		
4 or more lanes	3.0 m (10 ft)	1987 FDOT Structures
6 or more lanes	3.0 m (10 ft)	Design Guidelines
Auxiliary lanes	1.8 m (6 ft)	and 1992 FDOT
One Lane Ramp	1.8 m (6 ft)	Design Standard Index
Two Lane Ramp	1.8 m (6 ft)	No. 700
Crossroad - Urban		
Divide Median	0.4 m (1'-4") to gutter line	
Divide/Raised Median	0.4 m (1'-4") to gutter line	
Undivided Median	0.4 m (1'-4") to gutter line	
Crossroads - Rural		
Divided		
4 or more lanes	3.0 m (10 ft)	
6 or more lanes	3.0 m (10 ft)	
Auxiliary lanes	1.8 m (6 ft)	
Undivided	Approach Shoulder Width	

[1] Where S is equal to the design speed of the roadway.
[2] Use mid to upper range of K value as desirable.
[3] Use mid to upper range of K value as desirable.
[4] 16 ft. minimum per AASHTO with 6" allowance for overlay.
[5] Does not apply of cloverleaf ramps.
[6] Applies to recovery slopes and fixed objects. Does not apply to frangible base structures.
[7] Adjust for curves as per 1992 FDOT Roadway and Traffic Design Standards Index 700, sheet 2 of 2.

6.0 TRAFFIC

The technical traffic analysis data in this section of the I-4 Preliminary Engineering Report is a summary of the data contained in the Traffic Technical Memorandum, Interstate 4, Polk County, February 1996 (Traffic Memo), prepared as a separate document. The purpose of the Traffic Memo is to document the methods used to forecast traffic along I-4 in Polk County and to analyze the LOS operation of the alternatives studied under the 1994 I-4 Master Plan. The Traffic Memo also provides existing and forecasted design traffic volumes and operating conditions along I-4 for the following years: 1993 (existing year), 2000 (opening year), 2020 (design year) and 1995, 2005, 2010 and 2015 (interim years). The Traffic Memo covers the area of the 1994 I-4 Master Plan (west of the Hillsborough/Polk County line to the Polk/Osceola County line). The analyses presented in the Traffic Memo are based on the 2020 travel demand forecast from the 1994 I-4 Master Plan.

The analysis method presented in the Traffic Memo reflects the guidelines documented in the Design Traffic Procedure (Traffic Forecasting and 18 Kip Equivalent Single Axle Load) prepared by the FDOT's Transportation Statistics Office. The LOS analyses are based on the most current version of the Florida's Level of Service Standards and Guidelines for Planning and the 1985 Highway Capacity Manual (HCM).

6.1 Existing Traffic Conditions

6.1.1 Previous Traffic Studies

A Traffic Memorandum, I-4 Corridor and Master Plan Study, Hillsborough and Polk Counties, October 1989, was prepared for the 1989 I-4 Master Plan which studied the I-4 corridor from I-75 in Hillsborough County to the Polk/Osceola County line through the year 2010. This report indicated the need for eight lanes from west of Memorial Boulevard to US 98, six lanes from US 98 to US 27 and eight lanes from US 27 to the Polk/Osceola County line.

A Technical Memorandum, Project Traffic and Intersection Analysis Report, December 1991, revised June 1993, was prepared to document the recommended PD&E study improvements to US 98 from Memorial Boulevard (south of I-4) to Daughtery Road (north of I-4) through the year 2015. The results of that analysis show that US 98 should be widened from a four-lane divided arterial to six lanes south of I-4 and six lanes with two auxiliary lanes (eight lanes total) north of I-4.

A Traffic Studies and Analysis Report, April 1994, was prepared to document existing 1993 traffic conditions and recommend intersection geometric improvements for US 98 from the north limits of the I-4 interchange to north of Daughtery Road.

Traffic projections related to the proposed west and east interchanges of the Polk County Parkway were documented in the Project Traffic Report, Polk County Parkway, September 1991, and the Traffic Technical Memorandum for Polk County Parkway, Project Concept Report, revised November 1991.

An Interchange Modification Report, October 1992, was prepared for the County Line Road and the proposed Polk County Parkway West interchange. This report reevaluated the proposed Polk County Parkway interchange due to revised design year traffic volume projections.

The traffic analysis performed for the Bridgewater DRI, located southeast of the Socrum Loop Road (CR 582) interchange with a portion north of I-4, was also reviewed. This development consists of approximately 1,214 ha (3,000 ac) of proposed residential, commercial and industrial land uses. About 80 percent of the property is proposed to be developed between the years 1998 and 2020.

6.1.2 Existing Traffic Volumes and Characteristics

Existing traffic along I-4 in Polk County represents a mix of inter-regional and local trips by SOVs, HOVs and trucks. Existing 1993 average annual daily traffic (AADT) volumes were obtained from counts conducted by the FDOT for all of the mainline links along I-4. These counts were compared to 1988 AADTs obtained from the 1989 I-4 Master Plan and other historical counts obtained from the FDOT. The comparison shows that traffic fluctuates from year to year and does not have a consistent growth rate.

Analysis of LOS was conducted on ramps and mainline links between interchanges for 1993 conditions to estimate the current operating conditions. Volume to capacity (V/C) ratios of estimates of design hour conditions were calculated using the 1985 HCM methodology. LOS was derived by correlating the resulting V/C values to the corresponding LOS thresholds in the HCM for a freeway with 110 km/h (70 mph) design speed, 3.6 m (12 ft) lanes, a minimum of 1.8 m (6 ft) of lateral clearance and level terrain. The capacity of a facility with these characteristics is 2,000 passenger cars per hour per lane (pcphpl).

The 1993 I-4 mainline AADT, directional design hour volumes (DDHV), lane capacity, V/C ratio and LOS are shown in Table No. 6-1.

Table No. 6-1
YEAR 1993 I-4 MAINLINE TRAFFIC CHARACTERISTICS
I-4 Project Development and Environment Study

Roadway Link	1993 AADT	1993 DDHV	1993 DDHV (trucks)	1993 DDHV (pcph)	Lane Group Capacity	V/C Ratio	1993 LOS
West of Memorial Blvd.	63,000	3,309	397	3,586	4,000	0.90	D
Memorial Blvd. to Kathleen Road	47,652	2,323	279	2,517	4,000	0.63	C
Kathleen Road to US 98	52,000	2,668	320	2,891	4,000	0.72	C
US 98 to Socrum Loop Road	47,894	2,135	256	2,313	4,000	0.58	C
Socrum Loop Road to SR 33	47,000	2,316	278	2,509	4,000	0.63	C
SR 33 to SR 559	46,240	1,723	207	1,867	4,000	0.47	B
SR 559 to CR 557	45,880	2,117	254	2,293	4,000	0.57	C
CR 557 to US 27	46,000	2,724	327	2,951	4,000	0.74	C
US 27 to Polk/Osceola County line	57,000	2,882	346	3,123	4,000	0.78	D

Adjustment factors: Peak Hour Factor = 0.95
Basic Capacity = 2,000 pcphpl
Number of Lanes on Mainline = 2 per direction
Capacity of Mainline = 4,000 pcph
Adjustment factors for trucks (fHV):
Design Hour Percent Trucks 12% fHV = 0.923
Passenger Car Equivalent Et = 1.7 (Table 3-3, 1985 HCM)

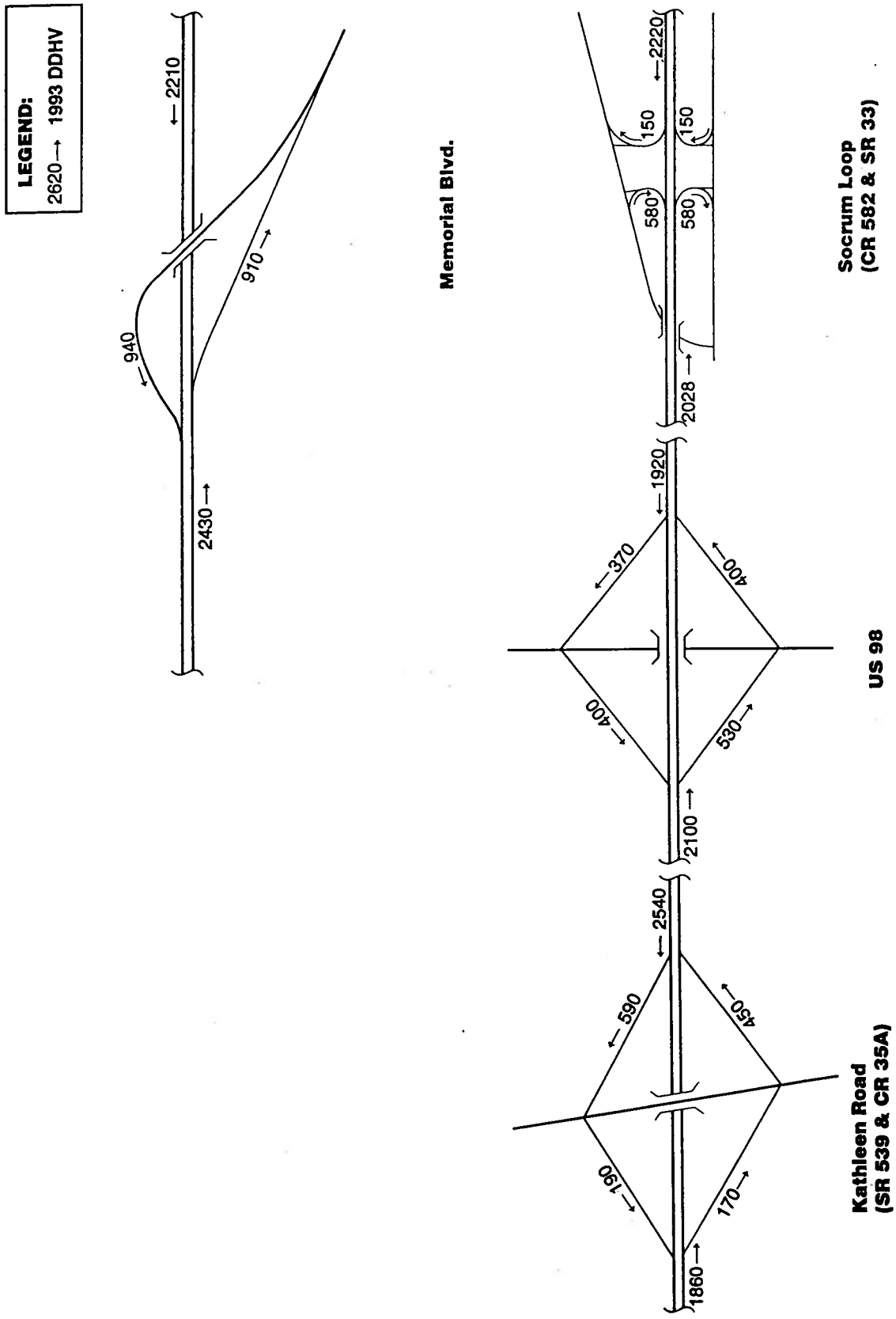
The 1993 LOS at the various existing interchange ramps is shown in Table No. 6-2.

Table No. 6-2
YEAR 1993 INTERCHANGE RAMP LOS SUMMARY
I-4 Project Development and Environment Study

Interchange	Lanes / Movement	LOS	Interchange	Lanes / Movement	LOS
Memorial Blvd.			**SR 33**		
Eastbound Off-ramp	Two-lane/diverge	C/D/C[1]	Eastbound Off-ramp	One-lane/diverge	B
Westbound On-ramp	Two-lane/merge	D/E/D[2]	Eastbound On-ramp	One-lane/merge	C
N/A	N/A	N/A	Westbound Off-ramp	One-lane/diverge	B
N/A	N/A	N/A	Westbound On-ramp	One-lane/merge	C
Kathleen Road			**SR 559**		
Eastbound Off-ramp	One-lane/diverge	B	Eastbound Off-ramp	One-lane/diverge	B
Eastbound On-ramp	One-lane/merge	C	Eastbound On-ramp	One-lane/merge	B
Westbound Off-ramp	One-lane/diverge	C	Westbound Off-ramp	One-lane/diverge	C
Westbound On-ramp	One-lane/merge	C	Westbound On-ramp	One-lane/merge	C
US 98			**CR 557**		
Eastbound Off-ramp	One-lane/diverge	C	Eastbound Off-ramp	One-lane/diverge	B
Eastbound On-ramp	One-lane/merge	C	Eastbound On-ramp	One-lane/merge	C
Westbound Off-ramp	One-lane/diverge	C	Westbound Off-ramp	One-lane/diverge	C
Westbound On-ramp	One-lane/merge	C	Westbound On-ramp	One-lane/merge	C
Socrum Loop Road			**US 27**		
Eastbound Off-ramp	One-lane/diverge	C	Eastbound Off-ramp	One-lane/diverge	C
Eastbound On-ramp	One-lane/merge	B	Eastbound On-ramp	Two-lane/merge	D/E/D[2]
Westbound Off-ramp	One-lane/diverge	C	Westbound Off-ramp	One-lane/diverge	E
Westbound On-ramp	One-lane/merge	C	Westbound On-ramp	One-lane/merge	D

1 = LOS Diverge Area One/Diverge Area Two/Before Diverge
2 = LOS Merge Area One/Merge Area Two/After Merge

The 1993 I-4 DDHVs are shown graphically in Figure 6-1.



Sheet 1 of 2

Year 1993 I-4 Mainline Directional Design Hour Volumes	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 6-1

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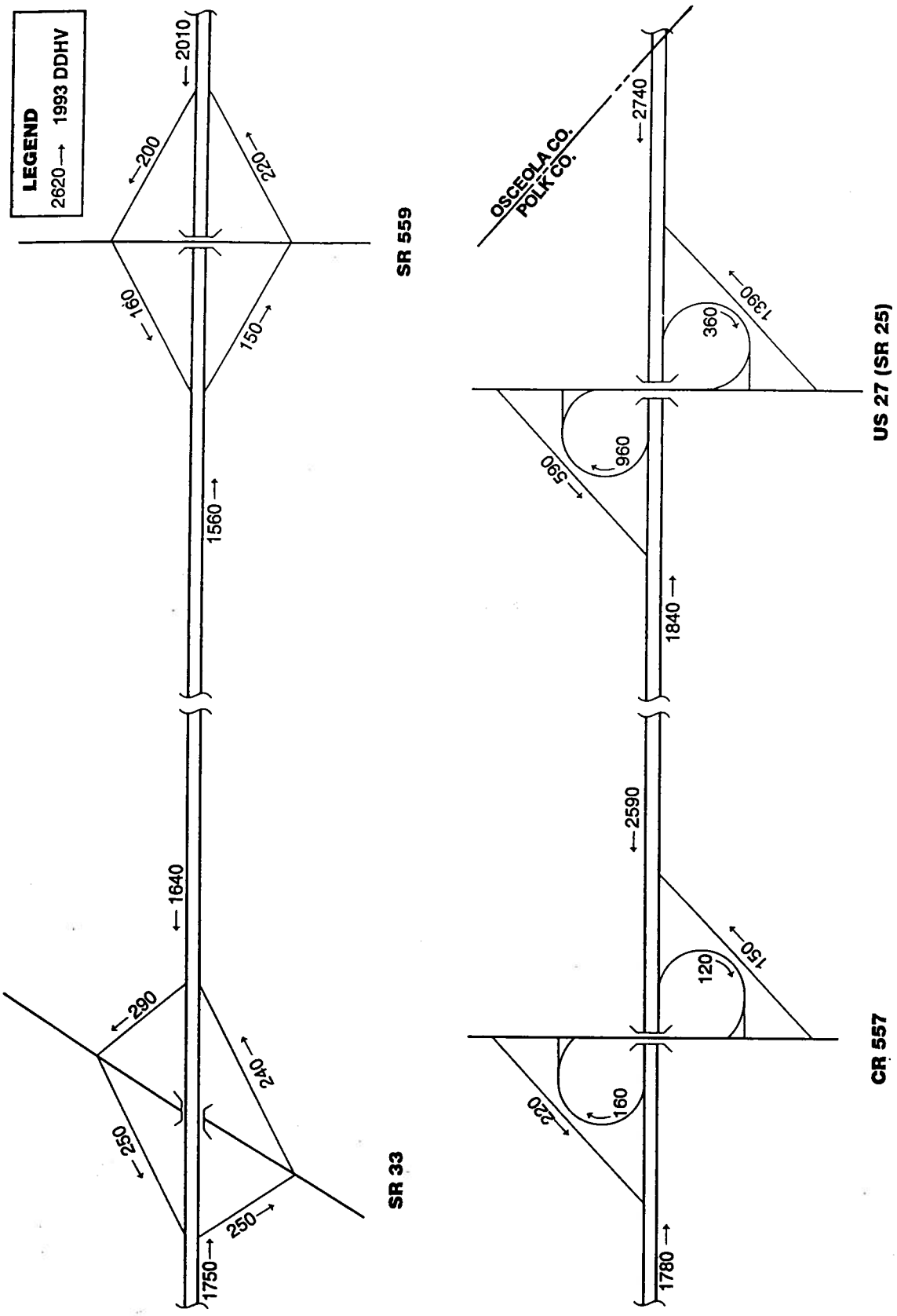

Sheet 2 of 2

Year 1993 I-4 Mainline Directional Design Hour Volumes	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 6-1

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6.2 Multimodal Transportation System Considerations

6.2.1 Bus Service

The transportation services under the direct authority of the Polk County Board of County Commissioners is the Polk County Transportation System (PCTS). The PCTS is a rural-based transit system operated by the Polk County Board of County Commissioners. The PCTS has 21 vehicles of which eight are wheelchair equipped. The PCTS acts as the Community Transportation Coordinator. In this role, PCTS provides direct service to the transportation disadvantaged and coordinates, arranges and dispatches paratransit trips under a transportation brokerage system. Under this brokerage system, PCTS will either provide or arrange service through another transportation provider.

The PCTS was created in 1975 to provide transportation to Polk County General Hospital in Bartow for County residents unable to obtain their own transportation. Since that time, PCTS has expanded its service, and now provides transportation to various hospitals, dialysis centers, and County multi-purpose Senior Centers, among other destinations. It provides transportation for sponsored clients from a number of social service agencies. Service is provided on a demand-responsive (door-to-door) and semi-fixed route basis.

The TPO has the major role in planning for the transportation disadvantaged. The TPO has specific responsibilities under this mandate. Social service agencies within the County are represented on the Transportation Disadvantaged Advisory Board on efforts to coordinate transportation for the disadvantaged.

The Lakeland Area Mass Transit District (LAMTD) operates public bus services in the Lakeland Urbanized Area, locally referred to as the Citrus Connection. Route 50 Kathleen crosses the I-4 corridor at Kathleen Road and US 98 (Segments 2 and 8). Route 51 Mall crosses the I-4 corridor at US 98 (Segment 8). Route 52 North Florida Avenue crosses the I-4 corridor at Socrum Loop Road (CR 582) and Old Combee Road (Segment 3). None of the Citrus Connection routes use I-4.

The LAMTD provides demand-responsive paratransit services for the transportation disadvantaged via the Handy Bus Service (usually including elderly and handicapped, some of which are also of limited income). This service is provided within the Lakeland Urbanized Area.

Neither the PCTS or the LAMTD has plans to expand bus transit outside of the current service areas (Polk County and the Lakeland Urbanized Area, respectively). Transit agencies in the Orlando and Tampa Bay areas have no plans to include commuter service into Polk County.

6.2.2 Railroad Crossings

The Tampa-Orlando route of the CSX railroad parallels I-4 about 0.8 km to 1.1 km (0.5 mi to 0.7 mi) to the south of I-4, west of Memorial Boulevard. CSX offers AMTRAK passenger and freight services. One existing and one abandoned north-south rail crossings of I-4 occur within the project area:

1) About 0.4 km (0.25 mi) west of Kathleen Road at about I-4 Station 726+00 (Segment 2) - This a grade separation crossing (railroad over roadway) with one track and thirteen train movements per day at a maximum speed of 127 km/h (79 mph).

2) Immediately west of and adjacent to CR 655 at about I-4 Station 1362+75 (Segment 4) - This is a grade separation crossing (roadway over railroad). Rail service at this location has been discontinued, the tracks have been removed and the right-of-way sold to the Tampa Electric Company. CSX has retained ownership of an easement within the former railroad right-of-way for a fiber optic cable operated by MCI. CSX has no plans to ever reopen this corridor to rail traffic.

The Central Florida I-4 Study has considered the market for commuter travel between Polk County and Central Florida (Orlando). Similarly, the Tampa Bay area has examined the demand for commuter rail service into Polk County and has concluded that it does not appear economically justified within the planning horizon. The forecasting models for Polk County do not indicate a large market for intra-county trips on transit in the I-4 corridor.

6.2.3 Airports

The Lakeland-Linder Regional Airport currently functions as a full-service general aviation facility and is designated as a reliever airport for Tampa International Airport. It is situated about 12.9 km (8 mi) south of this project and is used primarily by private ownership aircraft. Bartow Airport, a general aviation facility used primarily by private ownership aircraft, is located about 22.5 km (14 mi) south of the project. Neither of these airports are accessed directly from I-4. The potential for traffic generation on I-4 from these airports is not considered significant.

A privately owned grassed airstrip is located adjacent to the north right-of-way of I-4 about 1.4 km (0.9 mi) west of the SR 559 interchange on the shores of Lake Agnes and Little Lake Agnes. This airstrip is part of a privately owned aircraft and museum tourist attraction (Fantasy of Flight). Lake Agnes is located about 1.6 km (1 mi) west and north of the SR 559 interchange with I-4. This facility is not expected to generate a significant amount of traffic on I-4.

6.2.4 Park and Ride Facilities

There is one existing park and ride facility located within the study area in the northeast quadrant of the SR 33 interchange. The entrance to the park and ride facility is on the east side of SR 33 approximately 137.0 m (450 ft) north of the end of the I-4 westbound exit ramp. It is appropriately signed for in both the I-4 east and west directions.

6.3 Traffic Analysis Parameters

Several existing cross roads were upgraded to their anticipated year 2020 laneage. Memorial Boulevard, US 98 and US 27 were upgraded from four to six lanes. Kathleen Road and Griffin Road were upgraded from two to four lanes. Socrum Loop Road was upgraded from two to six lanes.

The analysis factors used to project traffic volumes and LOS for the design year 2020 are shown in Table No. 6-3.

Table No. 6-3
TRAFFIC ANALYSIS FACTORS
I-4 Project Development and Environment Study

Factor	General Purpose Lanes	Special Use Lanes (SR 33 to US 27)	All Other Special Use Lanes
K - Proportion of AADT occurring during the peak hour	0.09*	0.11	0.10
D - Directionality factor during the peak hour	0.55	0.55	0.55
PHF - Peak Hour Factor	0.95	0.95	0.95
TRUCKS:			
Total Vehicle Population			
$T_{(24)}$ - Daily Truck Factor:		0.15	
$T_{(PH)}$ - Peak Hour Truck Factor:		0.12	
Interregional Vehicle Population			
$T_{(24)}$ - Daily Truck Factor:		0.175	
$T_{(PH)}$ - Peak Hour Truck Factor:		0.14	

* A K factor of 0.10 was used for interim year analyses of general purpose lanes.

6.4 Traffic Volumes and Level of Service Projections

The Year 2020 I-4 mainline traffic characteristics, including roadway link, lane type, 2020 AADT, 2020 DDHV, 2020 DDHV Trucks, 2020 Adjusted DDHV, 2020 DDHV (pcph), Adjusted K Factor, Lane Group Capacity, Volume to Capacity Ratio and 2020 DDHV LOS, have been tabulated and are shown in Table No. 6-4.

The 2020 I-4 DDHVs are shown graphically in Figure 6-2.

The AADT projections for Years 1993, 1995, 2000, 2005, 2010, 2015 and 2020 are shown in Figure 6-3.

The 2020 LOS at the various interchange ramps is shown in Table No. 6-5.

Table No. 6-4
YEAR 2020 I-4 MAINLINE TRAFFIC CHARACTERISTICS
I-4 Project Development and Environment Study

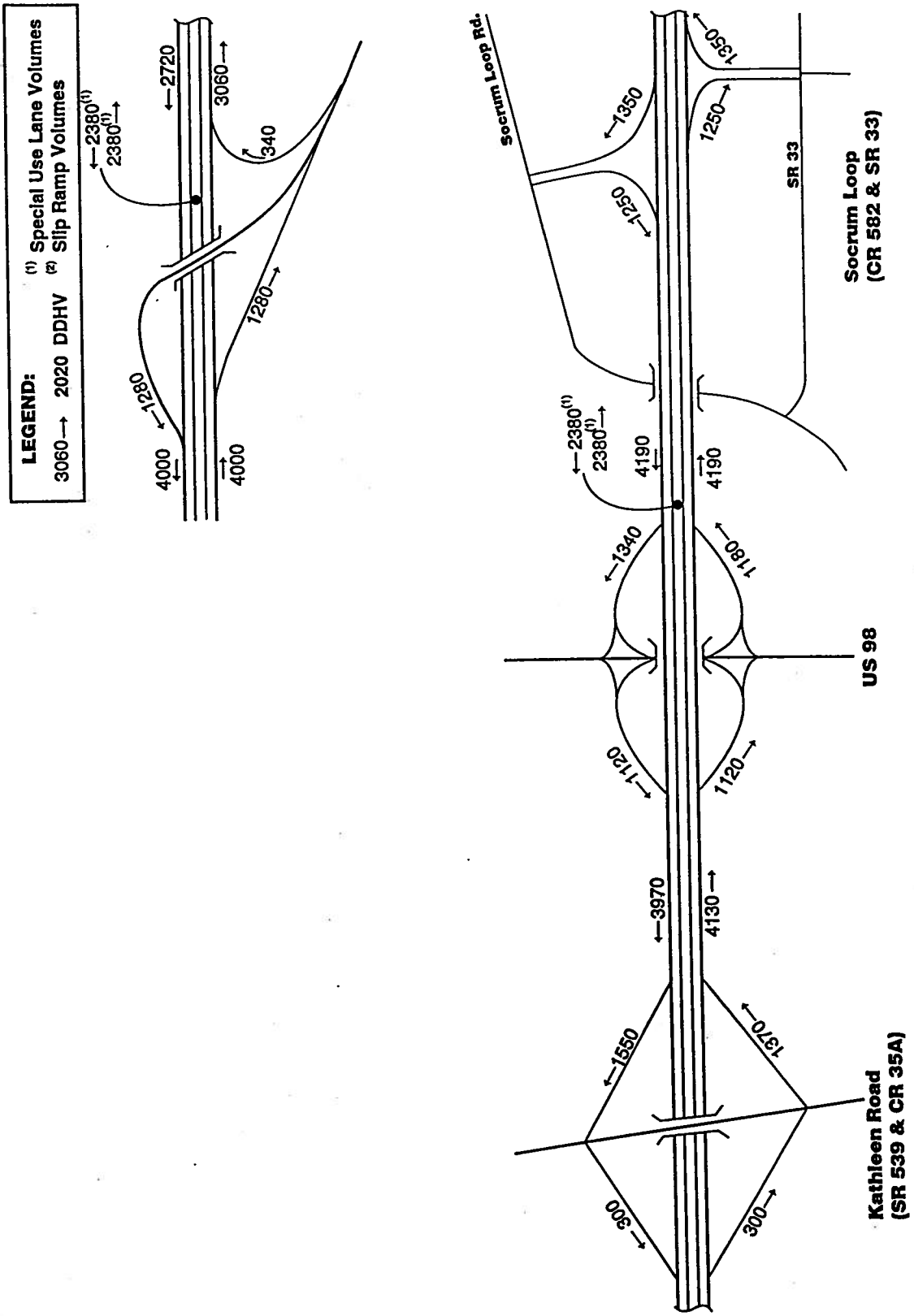
Roadway Link	Lane Type	2020 AADT	2020 DDHV	2020 DDHV Trucks	2020 Adj. DDHV	2020 DDHV (pcph)	Adj. K Factor	Lane Group Cap.	V/C Ratio	2020 DDHV LOS
West of Memorial	GPL	69,817	3,638	798	4,140	4,776	0.0915	6,000	0.80	D
to Memorial Blvd.	SUL	51,973	3,009	0	2,507	2,507	0.10	4,000	0.63	C
Memorial Blvd.*	GPL	45,362	2,722	688	3,224	3,706	0.09	6,000	0.62	C
to Kathleen Road	SUL	51,973	3,009	0	2,507	2,507	0.10	4,000	0.63	C
Kathleen Road*	GPL	72,180	3,845	822	4,347	4,923	0.09	6,000	0.82	D
to US 98	SUL	51,973	3,009	0	2,507	2,507	0.10	4,000	0.63	C
US 98	GPL	75,011	3,908	830	4,410	4,989	0.09	6,000	0.83	D
to CR 582	SUL	51,973	3,009	0	2,507	2,507	0.10	4,000	0.63	C
CR 582 to	GPL	76,926	4,008	842	4,510	5,102	0.09	6,000	0.85	D
West of SR 33	SUL	51,973	3,009	0	2,507	2,507	0.10	4,000	0.63	C
West of SR 33	GPL	67,824	3,534	870	4,036	4,398	0.0852	6,000	0.73	C
to SR 33	SUL	61,074	3,713	0	3,211	3,211	0.105	4,000	0.80	D
SR 33 to	GPL	58,874	3,068	814	3,570	4,142	0.09	6,000	0.69	C
West of Polk Co. Pkwy E.	SUL	61,074	3,713	0	3,211	3,211	0.105	4,000	0.80	D
West of Polk Co.	GPL	66,328	3,456	825	3,958	4,440	0.0881	6,000	0.74	C
Pkwy E. to	SUL	53,620	3,415	0	2,913	2,913	0.11	4,000	0.73	C
Polk Co. Pkwy E.										
Polk Co. Pkwy E.	GPL	73,419	3,826	869	4,328	4,935	0.09	6,000	0.82	D
to SR 559	SUL	53,620	3,415	0	2,913	2,913	0.11	4,000	0.73	C
SR 559 to	GPL	69,724	3,633	846	4,135	4,726	0.09	6,000	0.79	D
West of CR 557	SUL	53,620	3,415	0	2,913	2,913	0.11	4,000	0.73	C
West of CR 557	GPL	64,407	3,356	853	3,858	4,388	0.0886	6,000	0.73	C
to CR 557	SUL	58,936	3,753	0	3,251	3,251	0.11	4,000	0.81	D
CR 557	GPL	67,165	3,500	870	4,002	4,611	0.09	6,000	0.77	C
to US 27	SUL	58,936	3,753	0	3,251	3,251	0.11	4,000	0.81	D
US 27 to	GPL	55,664	4,302	967	4,804	5,478	0.09	6,000	0.91	D
Polk/Osceola Line	SUL	58,936	3,753	0	3,251	3,251	0.11	4,000	0.81	D

* These two segments have been analyzed with the refined volumes determined from the ramp analysis. The DDHV is developed from the peak directional daily volume.

GPL = General Purpose Lane, SUL = Special Use Lane

Adjustment factors:

Peak Hour Factor	=	0.95
Peak Season Factor	=	1.17
Directional Factor	=	0.55
Basic Capacity	=	2,000 pcphpl
Passenger Car Equivalent Et	=	1.7 (Table 3-3, 1985 HCM)



Sheet 1 of 2

Year 2020 I-4 Directional Design Hour Volumes	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 6-2

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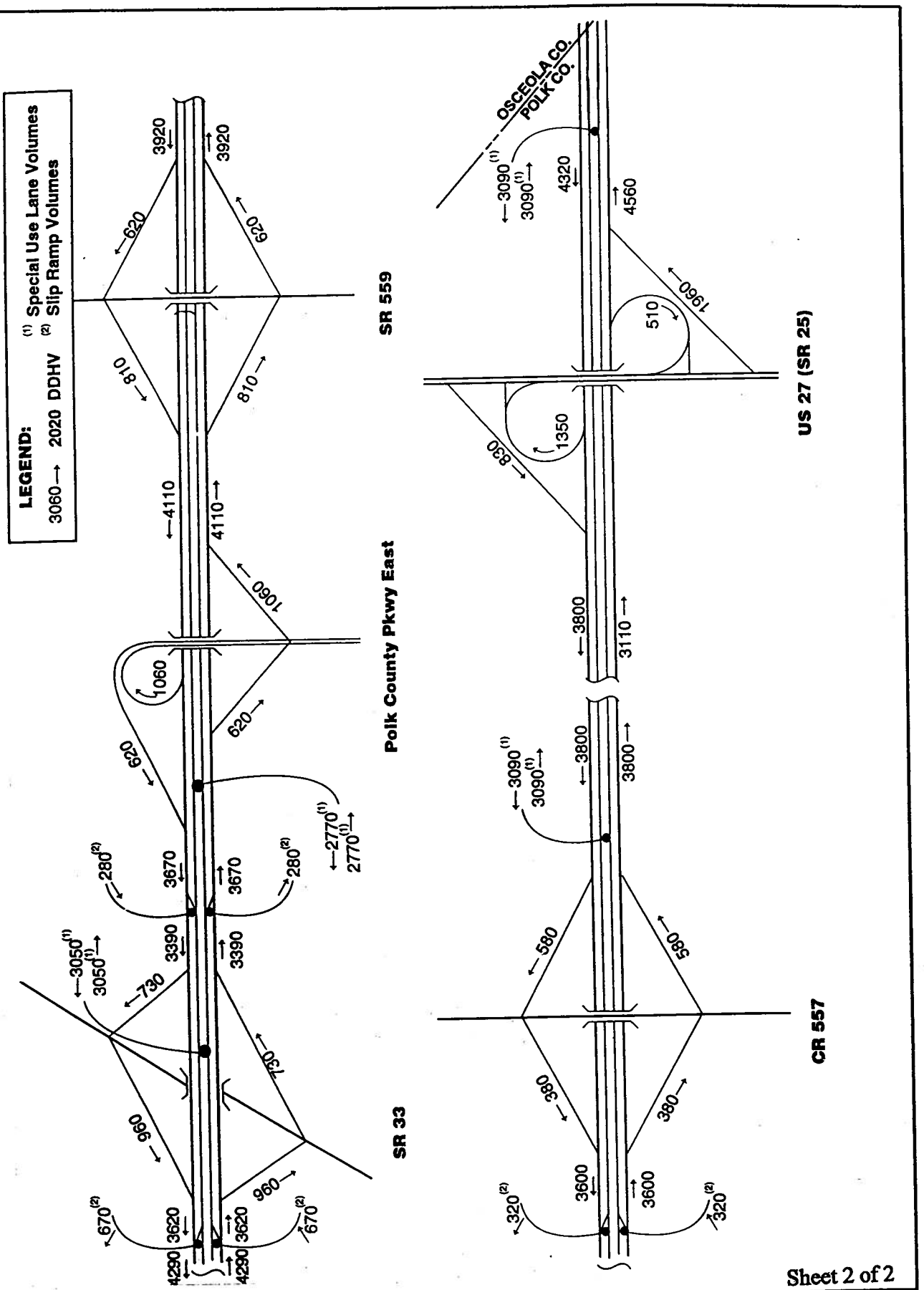

Sheet 2 of 2

Year 2020 I-4 Directional Design Hour Volumes	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 6-2

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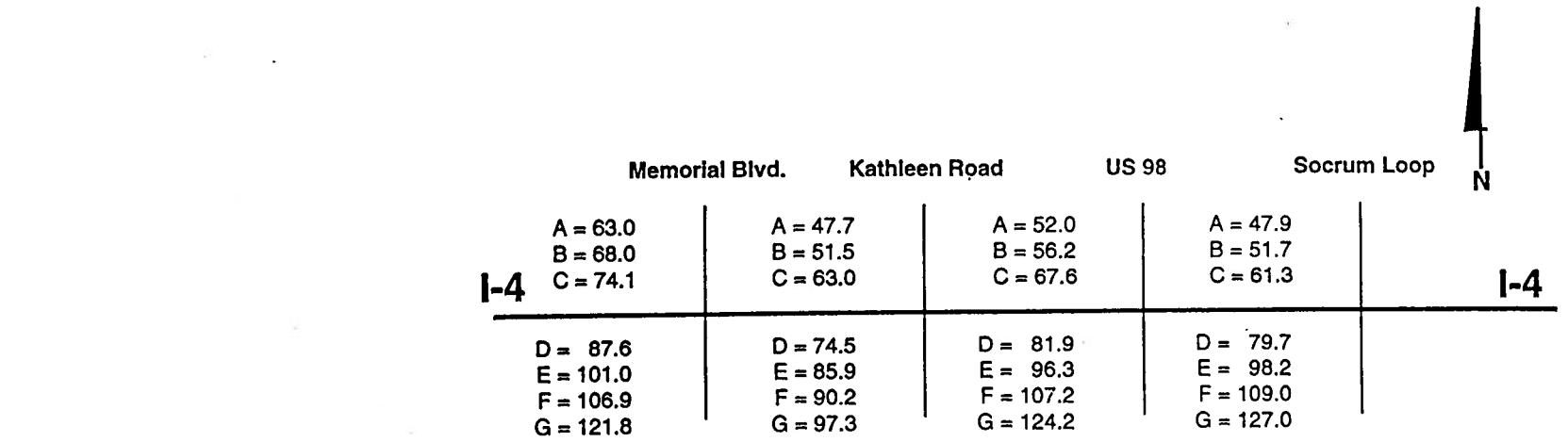
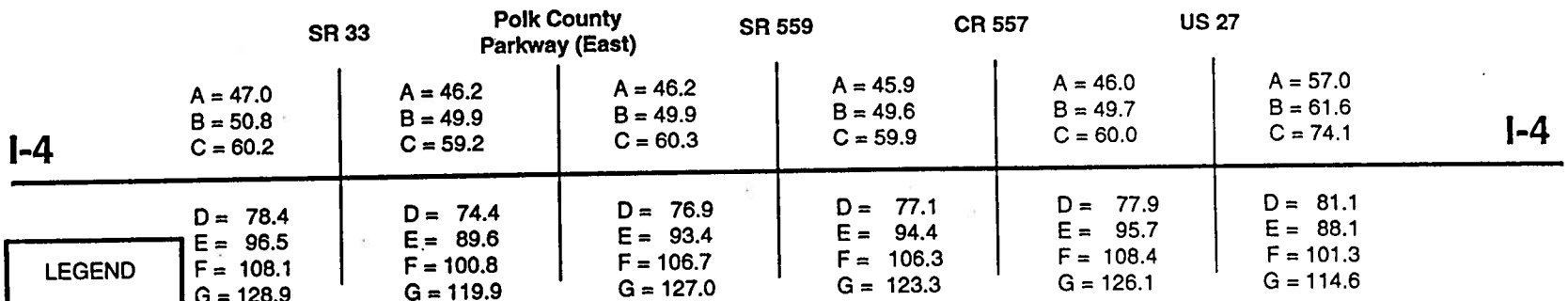
I-4 Annual Average Daily Traffic Projections





LEGEND

A = 1993
B = 1995
C = 2000
D = 2005
E = 2010
F = 2015
G = 2020

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County 4

FIGURE 6-3

Table No. 6-5
YEAR 2020 RAMP LOS SUMMARY
I-4 Project Development and Environment Study

Interchange / Location	Lanes / Movement	LOS
Memorial Boulevard		
Eastbound Off-ramp	Two-lane/diverge	B/C/D[1]
Eastbound On-ramp	One-lane/merge	C
Westbound On-ramp	Two-lane/merge	D/E/D[2]
N/A		
Kathleen Road		
Eastbound Off-ramp	One-lane/diverge	C
Eastbound On-ramp	One-lane/merge Add one lane at on-ramp	F D
Westbound Off-ramp	One-lane/diverge Drop one lane to the off- at off-ramp	F D
Westbound On-ramp	One-lane/merge	B
US 98		
Eastbound Off-ramp	One-lane/diverge Drop one lane to the off- at off-ramp	D C
Eastbound On-ramp	One-lane/merge	D
Westbound Off-ramp	One-lane/diverge Two-lane/diverge	F C/C/D[1]
Westbound On-ramp	One-lane/merge Add one lane at on-ramp	D C
Socrum Loop Road		
Eastbound Off-ramp	One-lane/diverge Two-lane/diverge	F B/C/D[1]
Eastbound On-ramp	One-lane/merge Two-lane/merge	E E/F/D[2]
Westbound Off-ramp	One-lane/diverge Two-lane/diverge	F C/C/D[1]
Westbound On-ramp	One-lane/merge Two-lane/merge	E D/E/D[2]
Slip Ramps W. of SR 33		
EB Off-ramp from GPL	One-lane, left hand ramp/diverge	D
EB On-ramp to SUL	One-lane/merge	D
WB Off-ramp from SUL	One-lane/diverge	D
WB On-ramp to GPL	One-lane, left hand ramp/merge	D
SR 33		
Eastbound Off-ramp	One-lane/diverge	D
Eastbound On-ramp	One-lane/merge	C
Westbound Off-ramp	One-lane/diverge	D
Westbound On-ramp	One-lane/merge	D

Interchange / Location	Lanes / Movement	LOS
Slip Ramps West of Polk Co. Pkwy E.		
EB Off-ramp from SUL	One-lane/diverge	C
EB On-ramp to GPL	One-lane, left hand ramp/merge	C
WB Off-ramp from GPL	One-lane, left hand ramp/diverge	C
WB On-ramp to SUL	One-lane/merge	C
Polk Co. Pkwy East		
Eastbound Off-ramp	One-lane/diverge	D
Eastbound On-ramp	One-lane/merge Two-lane merge	F C/D/D[2]
Westbound Off-ramp	One-lane/diverge Two-lane/diverge	E C/B/D[1]
Westbound On-ramp	One-lane/merge	D
SR 559		
Eastbound Off-ramp	One-lane/diverge Two-lane/diverge	E B/A/D[1]
Eastbound On-ramp	One-lane/merge	C
Westbound Off-ramp	One-lane/diverge	D
Westbound On-ramp	One-lane/merge	C
Slip Ramps W. of CR 557		
EB Off-ramp from GPL	One lane, left hand ramp/diverge	C
EB On-ramp to SUL	One-lane/merge	C
WB Off-ramp from SUL	One-lane/diverge	C
WB On-ramp to GPL	One lane, left hand ramp/merge	C
CR 557		
Eastbound Off-ramp	One-lane/diverge	C
Eastbound On-ramp	One-lane/merge	D
Westbound Off-ramp	One-lane/diverge	D
Westbound On-ramp	One-lane/merge	C
US 27		
Eastbound Off-ramp	One-lane/diverge	C
Eastbound On-ramp	Two-lane merge	F/F/D[2]
Westbound Off-ramp	One-lane/diverge Two-lane diverge	F C/C/D[1]
Westbound On-ramp	One-lane/merge	C

GPL = General Purpose Lane, SUL = Special Use Lane, EB = Eastbound, WB = Westbound
1 = LOS Diverge Area One/Diverge Area Two/Before Diverge 2 = LOS Merge Area One/Merge Area Two/After Merge

6.5 Recommended Improvements

The ultimate geometry and required laneage for the recommended improvements to I-4 through the Design Year 2020 are shown graphically in Figure 6-4.

Based on the analyses of the 1993 traffic volumes shown in Table No. 6-1, the existing four-lane freeway operates at an acceptable LOS (D or better) through Polk County with no capacity improvements. Analysis of predicted future traffic demand indicates that not all of the proposed I-4 improvements would be required initially. The following represents a generalized time line for the required improvements to maintain at least an acceptable LOS of D.

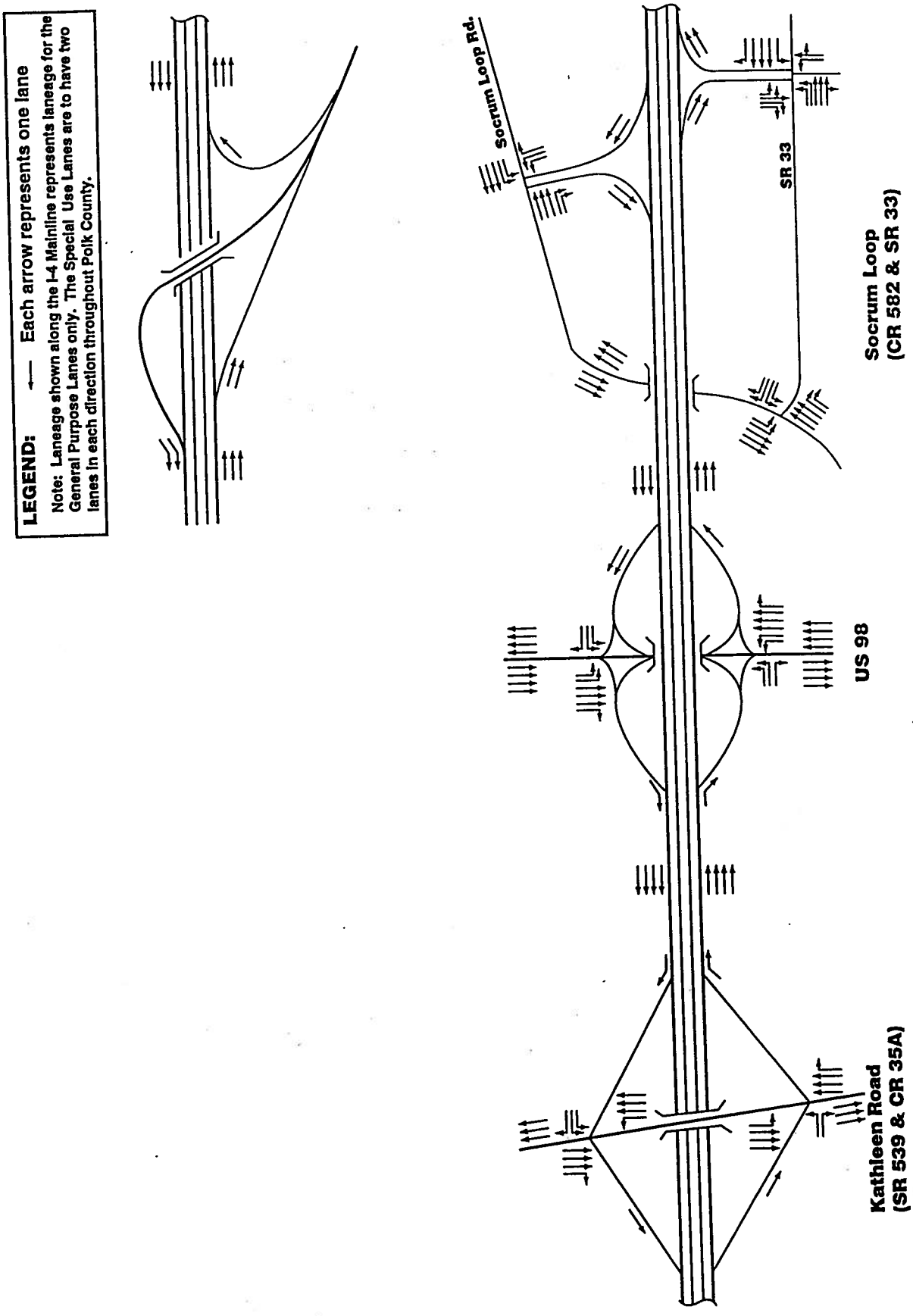
Year 1995 - The I-4 mainline roadway links west of the Memorial Boulevard interchange and east of the US 27 interchange will require improvement to six lanes in order to maintain an acceptable level of service. Overpass structures at Memorial Boulevard and Loughman Road (CR 54) would have to be replaced to conform to the ultimate I-4 typical section.

Year 2000 - Six general purpose lanes will be required on the I-4 mainline for the length of the project. All remaining overpass structures would be replaced to conform to the ultimate I-4 typical section. (The replacement structures in Segment 2 would be required to accommodate the addition of auxiliary lanes in the year 2020.) Because the cross roads interchange with the new general purpose lanes, all of the interchanges would have to be reconstructed to accommodate the improved six-lane freeway and conform to the ultimate interchange geometry.

Year 2010 - The addition of four special use lanes will be required for the length of the project. The slip ramp connections between the special use and general purpose lanes would be constructed.

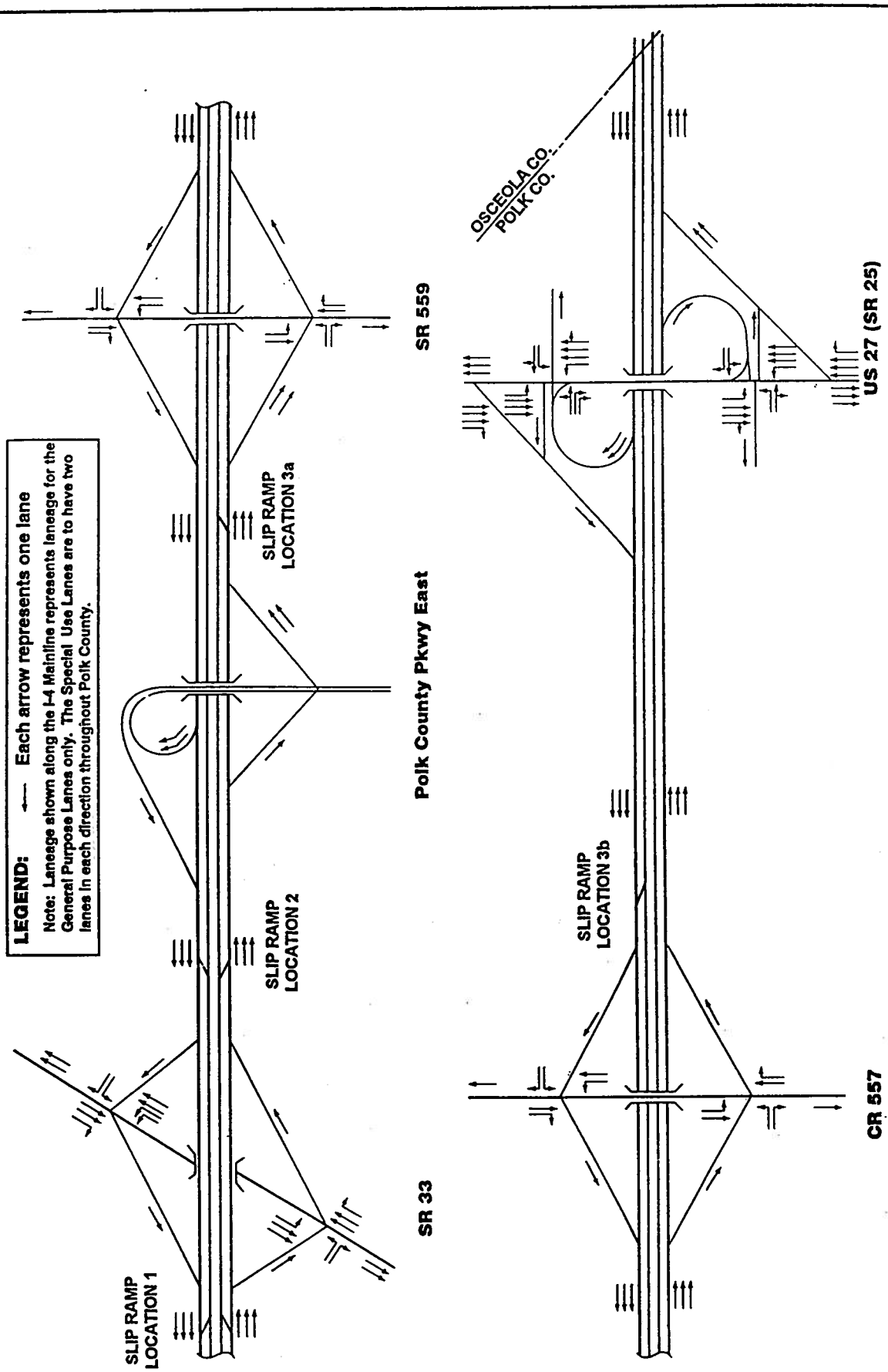
Year 2020 - Complete reconstruction of the interchanges to conform to the recommended configurations and laneages shown in Figure 6-4. Several interchange ramps would be improved to two lanes: westbound off-ramp at US 98, all ramps at Socrum Loop Road/SR 33, eastbound on-ramp and westbound off-ramp at Polk County Parkway East, eastbound off-ramp at SR 559, and the westbound off-ramp at US 27. Eastbound and westbound auxiliary lanes would be added between the Kathleen Road and US 98 interchanges.

The ultimate proposed improvements to I-4 are shown on the Concept Plans.



Sheet 1 of 2

Recommended Geometry and Laneage	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 6-4



Sheet 2 of 2

Recommended Geometry and Laneage	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 6-4

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7.0 CORRIDOR ANALYSIS

7.1 Evaluation of Alternate Corridors

The corridor analysis for the I-4 project has been limited to the existing corridor. It has been determined by the FDOT that relocation of I-4 to an alternate corridor is not a viable option for this project. Improvements to I-4 in its existing location is an integral part of the overall long-range transportation plan for Polk County and the City of Lakeland. Planned improvements to connecting roadways as well as planned and existing development of the existing corridor are also tied to the improvements to I-4 in its existing location. Factors such as interchange spacing, gross relocations (business and residential), community disruption, right-of-way costs and environmental impacts were considered by the FDOT in making the determination that alternate corridors were not viable options to the existing corridor.

7.2 Evaluation of Existing Corridor

The existing I-4 corridor was evaluated to develop a strategy to minimize or avoid impacts to the human and natural environment by considering widening to the left (north), right (south) or centered on the existing alignment. This avoidance strategy was used in selecting the preferred alignment for the proposed improvements to I-4. The alignment strategy, coupled with cost and environmental analysis forms the basis for selecting the alternatives which have been evaluated in this study.

An I-4 Corridor Analysis Report, February 1995, Revised September 1995 was prepared for this project (see Section 1 of the Appendix). In addition, Alignment Justification Reports were prepared by the preliminary engineering consultants for Segments 2, 3, 4, 5, 6 and 7. The analysis contained in those reports has been evaluated and incorporated, as appropriate, into the I-4 Corridor Analysis Report. The corridor analysis discusses the character of the various segments along I-4 and the potential impacts associated with the proposed I-4 improvements in those segments. The preferred typical sections and alignments utilized the avoidance strategy recommended in the corridor analysis.

The proposed alignment recommendations are based on a preliminary corridor reconnaissance and data collected during the master plan phase of the I-4 project. Subsequent detailed analyses of the environmental concerns expressed in the I-4 Corridor Analysis Report were used to refine the final preferred alignment. The alignment recommendations in the following sections of this report were developed as a strategy to avoid and minimize impacts to the human and natural environment of the I-4 corridor.

Generally, a centered alignment for the proposed improvements would make maintenance of traffic (MOT) during construction simpler and less costly. Except in the bifurcated median areas, the existing I-4 lanes could be kept open while the six new general purpose lanes are constructed. This would significantly minimize or completely avoid additional impacts during the construction phase (such as temporary pavement detours outside the proposed right-of-way - construction easements). With certain exceptions dictated by environmental or physical constraints, the simplified MOT and minimized environmental impacts leads this report to recommend a generally centered alignment for the proposed improvements to I-4. The exceptions to a centered alignment are noted in Sections 7.2.1 through 7.2.8.

The alignment strategy developed through the corridor analysis is intended to minimize impacts to wetlands, hazardous materials and petroleum sites, threatened or endangered species, flood plains, noise sensitive sites, historic and archaeologic sites, business and residential relocations, major utilities, cultural resources and community services. The project segments are addressed in geographical order from west to east in the I-4 Corridor Analysis Report (rather than in numerical order). Alignment recommendations from the I-4 Corridor Analysis Report for each of the project segments are summarized in the following sections. These alignment recommendations are described facing eastward (left is generally north or northwest and right is generally south or southeast).

Refinements to the Corridor Analysis Report recommendations were made as more detailed information was developed through the PD&E process. Refer to Sections 8.4.2 and 9.4 for detailed descriptions of the final alignment recommendations for the I-4 corridor.

7.2.1 Segment 2 - West of Memorial Boulevard to West of US 98

The proposed improvements to I-4 west of this project are shifted to the right to avoid or minimize the business relocations on the left side of I-4 and avoid impacts to the New Home Baptist Church Cemetery on the left side at the Memorial Boulevard interchange. As such, this project would begin shifted to the right. The corridor analysis recommended that the proposed improvements for this project transition from the right to a centered alignment as quickly as engineering constraints allow and remain centered to west of the Kathleen Road interchange. Auxiliary lanes are required between Kathleen Road and US 98. The alignment should shift to the left between Kathleen Road and US 98 (holding the south right-of-way line) to accommodate the auxiliary lanes and avoid impacts to the well heads of the Lakeland Northwest Well Field situated along the south right-of-way. This shift will impact the Florida Gas Transmission (FGT) pipeline easement along the north right-of-way and require additional right-of-way from the Victory Assembly of God Church parking area. The alignment should transition back to the center west of the US 98 interchange. The alignment recommendations in Segment 2 would reduce impacts to adjacent commercial and residential properties. The use of an urban typical section should be considered to minimize right-of-way acquisition. The combination of a centered alignment and an urban typical section would serve to minimize impacts to adjoining wetlands and relocations. The alignment of I-4 in the area from Kathleen Road to the eastern end of Segment 2 is particularly sensitive because of the well field zone of protection and the four well heads adjacent to the south right-of-way of I-4 and the FGT pipeline and Victory Assembly of God Church adjacent to the north right-of-way.

7.2.2 Segment 8 - US 98 Interchange

Because of the recommended centered alignment at the eastern end of Segment 2, the proposed improvements to US 98, the potential business and residential relocations, the well heads and FGT pipeline, the corridor analysis recommended that the proposed improvements to I-4 in Segment 8 be centered on the existing alignment. The proposed improvements to US 98 north of the I-4 interchange have been designed to accommodate a centered I-4 alignment through the interchange. The recommended improvements to US 98 south of I-4 are proposed to accommodate a centered I-4 alignment. As with Segment 2, an urban typical section constructed within the existing right-of-way should be considered for Segment 8 to minimize right-of-way acquisition.

7.2.3 Segment 3 - East of US 98 to East of SR 33

I-4 would be centered at the western end of Segment 3. Because of the additional right-of-way required through the improved Socrum Loop Road interchange to accommodate the dual lane ramps, the alignment should transition to the right west of the CR 582 interchange and remain to the right through the interchange to minimize impacts to the Lake Gibson Church of Christ, Holiday Inn and the Paddock Club Apartments properties and the FGT pipeline adjacent to the north right-of-way. I-4 should transition to a centered alignment east of CR 582 and remain centered for the remainder of Segment 3 through the SR 33 interchange. An urban typical section generally constructed within the existing right-of-way should be considered for use in Segment 3 to minimize right-of-way acquisition. A centered alignment would minimize impacts to relocated Crevasse Street and Walt Williams Road, which front on the I-4 right-of-way. Centering within the existing right-of-way would avoid impacts to the Wendell Watson Elementary School property, a Section 4(f) resource. The FGT and Orlando Utilities Commission (OUC) easements which border the I-4 right-of-way to the north and south, respectively, would not be impacted with a centered alignment and an urban typical section.

7.2.4 Segment 4 - East of SR 33 to East of SR 559

The recommendation at the western end of this segment is for a centered alignment. The Polk County Parkway Interchange has been designed to accommodate a centered I-4 alignment. The OUC power line easement is adjacent to the right I-4 right-of-way from the western end of Segment 4 to the Polk County Parkway interchange. A centered alignment (considering a rural typical section) would help to minimize wetland impacts and may not require the relocation of the OUC power poles (the proposed I-4 right-of-way would encroach on the OUC easement, but not the poles). The corridor analysis recommends that the proposed improvements to I-4 be centered on the existing right-of-way from east of SR 33 to east of CR 655. The alignment should shift to the right east of CR 655 to avoid encroaching into Lake Agnes and Little Lake Agnes. A right alignment would continue through the SR 559 interchange and transition back to a centered alignment immediately east of SR 559.

7.2.5 Segment 5 - East of SR 559 to East of CR 557

At the western end of Segment 5, I-4 would be centered on the existing alignment east of the SR 559 interchange. A rural typical section maximizing the use of the existing right-of-way should be considered in Segment 5. The new rest areas have been designed to accommodate a centered I-4 alignment east of CR 557A. The corridor analysis recommended that I-4 be centered on the existing alignment and a rural typical section be considered for use in Segment 5.

7.2.6 Segment 6 - East of CR 557 to West of US 27

The alignment recommendations at the western and eastern ends of Segment 6 are for a centered alignment. The bifurcated median areas in this segment provide sufficient existing right-of-way for the proposed improvements using a rural typical section up to a maximum width of 128.8 m (422.6 ft). Centering the proposed improvements on the existing alignment would take full advantage of the existing right-of-way and would reduce impacts to wetlands and wildlife habitat in the area of the Green Swamp. The corridor analysis recommended a rural typical section for Segment 6.

7.2.7 Segment 9 - US 27 Interchange

Right-of-way costs (particularly business damages) and construction costs would likely be the determining factors regarding the alignment of I-4 through the US 27 interchange area. No significant impacts to the natural environment are anticipated in Segment 9. Several interchange concepts have been considered at US 27, including a 2-level expanded partial cloverleaf, a 3-level diamond and a 4-level directional configuration. Business damages and relocation costs would be significant with any I-4 mainline alignment shift in Segment 9. The corridor analysis did not make specific alignment or typical section recommendations for Segment 9.

7.2.8 Segment 7 - East of US 27 to the Polk/Osceola County Line

It is recommended that the alignment be centered on the existing right-of-way at the western end of Segment 7. The alignment should stay within the existing right-of-way in the bifurcated median area to take advantage of the expanded existing right-of-way. This would reduce the wetland impacts by reducing the area of impact on any one side thus making the impacts more of a linear nature. It is anticipated that the proposed I-4 alignment should be a centered alignment west of CR 54 (Loughman Road) overpass and remain centered for the remainder of the project. The Florida scrub jay clan territories adjacent to I-4 at Loughman Road would be impacted to some degree with any widening of I-4. The corridor analysis recommended a rural typical section through Segment 7.

7.3 Corridor Right-of-Way Requirements

The existing I-4 mainline right-of-way is typically 91.4 m (300 ft) wide. The I-4 Master Plan Ultimate Section would typically require 128.8 m (422.6 ft) of right-of-way or an additional 37.4 m (122.6 ft). I-4 is classified as an Urban Interstate Highway from west of Memorial Boulevard to SR 33 (Segments 2, 3 and 8) and a Rural Interstate Highway from SR 33 to the Polk/Osceola County line (Segments 4, 5, 6, 7 and 9). The proposed ten-lane with rail provision improvements could be constructed within the existing right-of-way of 91.4 m (300 ft). Retaining walls (at some locations) and storm sewer systems would have to be utilized in order to accomplish this, but an urban typical section would effectively avoid or minimize the potential impacts caused by the taking of additional right-of-way. The preliminary corridor analysis recommended that an urban type interstate typical section (constructed within the existing right-of-way as much as possible) be evaluated for use from west of Memorial Boulevard to SR 33. The corridor analysis also recommended that a rural interstate typical section be evaluated for use from east of SR 33 to the Polk/Osceola County line. The 128.8 m (422.6 ft) typical section includes the 25 m (82 ft) border required for highways with flush shoulders in the July 1, 1995 revision of the FDOT Plans Preparation Manual.

The right-of-way requirements are tabulated by area and cost for each project segment in the alternatives evaluation matrices in Section 8.5 of this report. The existing and recommended rights-of-way are depicted on the Concept Plans.

8.0 ALTERNATIVES ANALYSIS

The analysis described in this section follows the project development process by examining the various alternatives considered (No-Project, Multimodal, Transportation System Management and Construction) for this project. The need for the improvements to I-4 is documented in Section 3.0 of this report. This section describes the reasoning behind the analysis for each of the alternatives and why they were rejected or accepted for further evaluation.

8.1 No-Project Alternative

The No-Project Alternative examines the possibility of leaving I-4 in its current condition while allowing for routine maintenance. There are distinct advantages and disadvantages associated with the No-Project Alternative. Based on the considerations listed, the proposed action has been developed as a design alternative. The No-Project Alternative will remain a viable alternate throughout the study process until after the public hearings, when the final recommendations will be made.

8.1.1 Advantages

1. No inconvenience to traffic flow or development due to construction operations.

2. No disruption to commerce, no residential relocation and no right-of-way acquisition would be necessary.

3. No expenditure of funds for right-of-way acquisition, engineering design or construction.

4. No direct impacts to the adjacent natural and human environment.

8.1.2 Disadvantages

1. Increase in traffic congestion and road user cost, unacceptable LOS and an increase in accident potential as traffic volumes increase on an already congested major thoroughfare.

2. Continued rise in maintenance cost due to a potential deterioration of the roadway.

3. The roadway will not be compatible with the future transportation network as defined in the Polk County 2020 Transportation Plan and therefore would require additional improvements to other facilities.

4. Increase in carbon monoxide and other air pollutants due to increased traffic congestion.

5. Increase in traffic demand which would exceed roadway capacity.

6. No improvement in emergency service response time or in the highway's use as a critical weather emergency evacuation route through Polk County.

8.2 Multimodal Alternatives

Multimodal alternatives were analyzed in the Master Plan phase of this project. The Multimodal Alternative utilizes public transportation or alternate transportation modes to substitute for the public use of personal motor vehicles. As discussed below, no further study of multimodal transportation systems will be analyzed in this study because these systems do not address the facility's capacity overload problems as well as serve the public's local or regional transportation needs.

8.2.1 Rail Service

Of the multimodal public transportation systems, a rail system is not a viable substitute for the I-4 roadway improvements based on cost and demographics. Data from the FDOT 1993 Florida High Speed and Intercity Rail Market and Ridership Study was used to forecast high speed intercity rail trips. It is estimated in the 1994 I-4 Master Plan that the forecasted rail trips in the I-4 corridor would divert an average of 375 daily vehicle trips (ADT) from Lakeland/Polk County to the Tampa Bay area, 750 daily vehicle trips from Lakeland/Polk County to the Orlando area, and 3,742 daily vehicle trips from the Tampa Bay area through Polk County to the Orlando area (and vice versa). This estimated reduction in ADT is not sufficient to affect the projected LOS on I-4. Provision for rail service in the median of the proposed I-4 typical section is a matter of FDOT policy, however, (based on current available technology) ridership estimates through the design year 2020 do not justify the costs associated with a rail system as a multimodal public transportation alternative to the proposed I-4 roadway improvements.

Therefore, rail service was rejected as a multimodal transportation alternative to the proposed improvements to I-4.

Note: The FDOT is currently reviewing proposals for high speed intercity rail systems. One of the proposed routes is along (or within) the I-4 corridor between Orlando and Tampa. To date, a final decision has not been made regarding the high speed rail proposals. It is anticipated that the high speed intercity rail (if approved) would not substitute for the daily use of I-4 by the driving public.

8.2.2 Bus Service

Local Bus Service - Local public transportation becomes efficient when there are large numbers of people with definite embarkation and destination locations. With the exception of Lakeland Square Mall, this project corridor is not a typical end destination region (such as a downtown business center) and therefore, does not lend itself well to local public bus transit as a means of relieving traffic congestion. A bus system uses the same public highway facilities as other vehicles and is subject to the same traffic congestion difficulties. Although bus systems can serve the public on a door-to-door basis, the widely dispersed population prefers using their private vehicles. Private vehicles will continue to be predominantly used into the foreseeable future. Citrus Connection (the Lakeland local bus transit system) does not use I-4 for any of its routes and has no plans to expand bus service in the I-4 corridor through the design year 2020.

Regional Bus Service - The Central Florida I-4 Study considered the market for commuter travel between Polk County and Central Florida (Orlando area). The local transit agencies in that area have no plans to include commuter service into Polk County. The transit agencies in the Tampa Bay area

have also examined the demand for commuter service in Polk County and made the determination that further expansion of bus systems into Polk County is not economically justified within the design year 2020. The forecasting models for Polk County do not indicate a large market for intra county trips in the I-4 corridor.

Therefore, bus service was rejected as a multimodal transportation alternative to the proposed improvements to I-4.

8.2.3 Pedestrian and Bicycle Service

Florida statute prohibits pedestrian and non-motorized bicycle traffic on limited access interstate facilities such as I-4.

8.3 Transportation System Management Alternative

Transportation System Management (TSM) activities such as interchange ramp improvements, separate turn lanes, ramp terminal traffic signal timing optimization, improvements to signing, marking and roadway lighting could improve traffic safety and operations at interchanges. However, projected traffic volumes demand the additional I-4 through lanes (six general purpose and four special use) to provide for the required capacity through the design year 2020. The construction of one additional I-4 travel lane in each direction would provide an acceptable mainline LOS through the year 2008. However, this alternative could only be temporary in nature because any improvements not conforming to the ultimate typical section (e.g., widening to the median or adding lanes to the outside of the existing lanes) would have to be totally replaced. The cost of this type of temporary improvement for just a few years of service is not economically justified.

Therefore, the TSM alternative was rejected as a transportation alternative to the proposed improvements to I-4.

8.4 Construction Alternatives

The study alternatives considered for the I-4 project are construction alternatives because the No-Project, Multimodal and TSM alternatives do not meet the future transportation needs of the region. Without improvements to this section of I-4, transportation congestion will increase as the LOS falls below E and the emergency and social services that depend on an unencumbered transportation corridor will eventually deteriorate to an unacceptable level. The right-of-way alternatives considered for this project were based on the avoidance and minimization strategy (left, right and center analysis) described in the Corridor Analysis Report. The corridor analysis avoidance and minimization strategy and right-of-way impacts are summarized in Sections 7.0 and 9.4.

The construction alternatives evaluated include various alignment configurations and typical sections within the existing corridor rather than alternate locations or corridors. The proposed improvements are required to upgrade I-4 to conform to the local and regional transportation planning and provide the required projected traffic capacity.

8.4.1 Typical Sections

Four typical section alternatives were initially evaluated for this project. All of the typical section alternatives have six 3.6 m (12 ft) general purpose lanes (three each way), four 3.6 m (12 ft) special use lanes (two each way) and provision for future rail service in the 20.0 m (66 ft minimum) median. The special use lanes would be separated from the general purpose lanes by two 3.6 m (12 ft) shoulders and a barrier wall. The shorthand notation for the typical section alternatives with six general purpose lanes and four special use lanes is 6+4. The difference in the typical sections is in the right-of-way requirements for the border (outside edge of pavement to proposed right-of-way).

The I-4 Multimodal Interstate Master Plan was prepared using the "soft" conversion from metric units to English units. The conversions from metric units reflect former equivalent English standards (where former standards exist). For example, the metric unit standard lane width is 3.6 m and the English unit standard lane width is 12 ft. (Actually, 3.6 m equals 11.81 ft and 12 ft equals 3.66 m.) This Preliminary Engineering Report and accompanying documents are also prepared using "soft" conversion. The preliminary engineering consultants prepared their engineering concepts in metric units. Conversions back and forth between metric and English standards can cause confusion, particularly when adding a series of typical section components to arrive at a total right-of-way width. For purposes of this report, overall right-of-way width is considered the most critical dimension to determine the potential environmental impacts associated with each typical section and is shown as a "hard" conversion from the total metric unit width.

A preliminary screening during the master plan phase of the project indicated the potential for increased environmental impacts (and related costs) using the full 129.0 m (424 ft) section. Wetland impacts, flood plain encroachments, business and residential relocations, Section 4(f) lands involvement, utility relocations and the increase in costs associated with those impacts indicated that a reduced typical section be evaluated for this project. In order to maintain the core of the approved Master Plan Ultimate Typical Section (6+4), reducing the right-of-way from the outside was evaluated. The 129.0 m (424 ft) typical contains a 28.7 m (94.2 ft) border from the outside edge of the general purpose lanes to proposed the right-of-way. This border dimension could be substantially reduced without encroaching onto the required 11.0 m (36 ft) clear zone. By reducing the border, the typical sections requiring 104.9 m (344 ft) and 121.9 m (400 ft) were developed.

Because of the significant additional costs for right-of-way and the extensive environmental consequences (documented in the 1994 I-4 Master Plan) of this typical section as compared to the 91.4 m (300 ft) urban interstate typical and the 104.9 m (344 ft) and 121.9 m (400 ft) rural interstate typical sections, the 129.0 m (424 ft) Master Plan Ultimate Typical Section was initially rejected for further analyses. The FDOT Plans Preparation Manual Revision of July 1, 1995 requires a border for freeways with flush shoulders (including interchange ramps) as 25 m from the outside point of the shoulder to the right-of-way line. However, the July 1, 1995 border requirement made this typical section the minimum right-of-way width that could be evaluated for rural interstate facilities. All other reduced rural typical sections were eliminated from further study. The Master Plan Ultimate Typical Section (6+4) is shown in Figure 2-3 in Section 1.6.1.

The I-4 Master Plan was based on a typical section total width described as 129 m (423.2 ft). This typical included a border width of 28.7 m (94.2 ft) from the outside edge of the travel lane to the right-

of-way. The refinement to the border definition changed the overall dimension of the I-4 Master Plan Ultimate Typical section to 128.8 m (422.6 ft). This border requirement also eliminated reduced variations of the ultimate rural interstate typical section from further consideration.

The 91.4 m (300 ft) urban interstate typical section was evaluated for use in Segments 2, 8 and 3. The 128.8 m (422.6 ft) rural interstate typical section was evaluated for Segments 4, 5, 6, 7 and 9. The results of the evaluation of the typical sections are shown in the alternatives evaluation matrices in Section 8.5. The typical sections recommended for use in this project are described in Sections 1.6.1 and 9.2.

91.4 m (300 ft) Urban Interstate Typical Section (6+4) - I-4 in Polk County is classified as an urban interstate facility from the Polk/Hillsborough County line to SR 33. An urban freeway typical section was developed containing all of the required lane, shoulder and median widths (including provisions for future rail service). This typical section (including outside retaining or barrier walls) is 80 m (262.5 ft) wide and could be constructed within the existing 91.4 m (300 ft) right-of-way. Constructing an urban freeway typical section within the existing right-of-way avoids additional impacts to the human and natural environment and eliminates additional right-of-way and construction costs. For this reason, only the 91.4 m (300 ft) urban typical section was evaluated for use in Segments 2, 8 and 3.

To accomplish the construction of the urban interstate typical section within the existing I-4 typical right-of-way of 91.4 m (300 ft), storm sewer systems and retaining walls, as appropriate, would be incorporated into the design of the interstate facility. Because of the reduced right-of-way cost and reduced impacts to the human and natural environment of the I-4 corridor and the urban interstate classification, this typical section was selected to be analyzed further for use in Segments 2, 8 and 3. The 91.4 m (300 ft) Urban Interstate Typical Section (6+4) is shown in Figure 1-2 in Section 1.6.1.

128.8 m (422.6 ft) Rural Interstate Typical Section (6+4) - I-4 is classified as a rural interstate facility from SR 33 to the Polk Osceola County line. Initially three rural typical sections were evaluated for this rural classification: 1) 104.9 m (344 ft) rural typical section for Segments 4, 5, 6, 7 ans 9; 2) 121.9 m (400 ft) rural typical section for Segment 6; and 3) the 128.8 m (422.6 ft) rural typical section for Segments 4, 5, 6, 7 and 9. The 25 m (82 ft) border requirement for freeways with flush shoulders eliminated all but the Master Plan Ultimate Typical Section for consideration. A left-center-right corridor analysis was performed to assess the environmental impacts and costs associated with the 128.8m (422.6 ft) rural interstate typical section in Segments 4, 5, 6, 7 and 9.

Typically, an additional 37.4 m (122.6 ft) of right-of-way is required for this typical section. The border from the outside edge of the shoulder to right-of-way line for this typical section is 25 m (82 ft). The FDOT District 1 established the 6+4 Master Plan Ultimate Typical Section (approved by the FHWA) as the maximum interstate typical section. This typical section was used as the basis for the alternatives evaluation in the 1994 I-4 Master Plan.

8.4.2 Alignments

The alignment configurations considered for this project were based on the avoidance and minimization strategy developed in the corridor analysis described in Section 7.2 of this report and in the Corridor Analysis Report. Alignments within the existing right-of-way were evaluated for Segments 2, 8 and 3.

Alignments left, right and center were evaluated for Segments 4, 5, 6, 7 and 9. The results of the alignment evaluation are shown in the alternatives evaluation matrices in Section 8.5. Generally, the preferred alignment is centered for the length of the project. However, in certain areas (Segments 2, 3, 4 and 7) the preferred alignment is a combination of left (north), center and right (south) alignments to minimize or avoid impacts and reduce costs. Information for specific alignment shifts within project segments is provided.

Segment 2 - The alignment in Segment 2 begins shifted to the right because of the alignment shift in Segment 1 (west of the limits of this project). The shift to the right is due to the potentially significant business damages and relocation costs that would be associated with a centered or left alignment in Segment 1 and the avoidance of the New Home Baptist Church Cemetery adjacent to the left right-of-way at Memorial Boulevard. The recommended typical section for Segment 2 is the 91.4 m (300 ft) urban interstate section (6+4). However, between Kathleen Road and US 98, 3.6 m (12 ft) auxiliary lanes are required in both directions. Even though the additional auxiliary lanes would fit within the existing right-of-way, the geometry of the eastbound I-4 on-ramp from Kathleen Road requires that the I-4 mainline alignment be shifted to the left about 6.7 m (22 ft). This would require relocating the FGT gas pipeline adjacent to the right-of-way (estimated relocation cost of about $990,000) and impact the City of Lakeland 230 kV electric transmission line (estimated relocation of about $1,000,000) but would avoid the four Lakeland Northwest Well Field well heads adjacent to the right right-of-way (estimated relocation cost of about $4,000,000). This alignment shift would also require right-of-way from the Victory Assembly of God Church property (avoiding the parking area). However, weighing the social and economic impacts of relocating the gas pipeline and affecting the church property against the potential significant adverse effects caused by impacting the well heads and well field zone of protection justifies the shift to the left between Kathleen Road and US 98.

Segment 3 - The Corridor Analysis Report recommends that the I-4 mainline be shifted to the right through the CR 582 (Socrum Loop Road) interchange (Segment 3) to avoid impacts to the Lake Gibson Church of Christ, the Holiday Inn, the Paddock Club Apartments and the FGT pipeline. The I-4 westbound on-ramp and off-ramp at CR 582 would require two lanes and therefore require that the I-4 mainline be shifted to the right to accommodate the additional ramp laneage and minimize impacts.

Segment 4 - The alignment in Segment 4 shifts to the right just east of the CR 655 overpass and remains shifted to the right through the SR 559 interchange. This shift was made to avoid open water/wetland impacts to Lake Agnes and Little Lake Agnes. The preferred typical section in Segment 4 is the 128.8 m (422.6 ft) rural interstate typical section requiring an additional 37.4 m (122.6 ft) of right-of-way. Centering on the existing alignment or widening to the left would require construction within the open water of both Lake Agnes and Little Lake Agnes. Any widening to the left would likely necessitate the construction of one or two bridges or would require the filling of a significant portion of the southern ends of these lakes (as much as 2.3 ha (5.6 ac) of open water surface area). Widening to the right in this area would impact two wetland systems associated with the contributing drainage basins for Lake Agnes and Little Lake Agnes. The wetland associated with Lake Agnes is large and forested and would require mitigation. The non-forested wetland associated with Little Lake Agnes would have less costly mitigation requirements than the forested wetland. The wetland impacts for an alignment shift to the right are considered preferable to the potential impacts to the lakes and the costly construction and mitigation for a centered or left widening.

Segment 7 - Of the 3.9 km (2.4 mi) of Segment 7, approximately 2.6 km (1.6 mi) is bifurcated median with right-of-way expanding to a maximum of 117.7 m (386 ft). The recommended typical section in Segment 7 is the 128.8 m (422.6 ft) rural typical. By shifting the proposed construction to the left and holding the existing south right-of-way, maintenance of traffic can utilize the existing westbound and eastbound lanes while the new westbound lanes are constructed. Eastbound traffic can then use the existing westbound lanes while the new eastbound lanes are being constructed. Once the new westbound and eastbound lanes are constructed, the existing roadways can be removed. This alignment shift would eliminate the necessity of constructing over 2.6 km (1.6 mi) of two-lane temporary roadway for maintenance of traffic (at an additional cost estimated to be about $1.3 million).

8.4.3 Interchange Configurations

In Polk County, the I-4 PD&E study contains eight interchanges. All of the existing interchanges require modifications to conform to the recommended typical sections, provide for an acceptable LOS and meet current design and safety standards. The existing and proposed interchange configurations carry the I-4 mainline under the cross roads except at the US 98, Socrum Loop Road (CR 582) and SR 33 interchanges.

The proposed interchange concepts were evaluated, selected and approved by the FDOT and the FHWA during the master plan phase of this project for the following five locations: Memorial Boulevard, Kathleen Road (SR 539), SR 33, SR 559 and CR 557. No alternative interchange layout concepts are proposed in this PD&E study for these five locations.

Note: The Memorial Boulevard interchange concept in the 1994 I-4 Master Plan shows the Memorial Boulevard overpass on-ramp bridge being relocated to the inside of the existing structure. A more detailed analysis of the geometry required to tie into the existing I-4 design to the west of this project requires that the proposed overpass structure be relocated to the outside of the existing bridge. This change conforms to the intent of the 1994 I-4 Master Plan concept.

Alternate configurations were presented in the 1994 I-4 Master Plan for the Socrum Loop Road (CR 582) and US 27 (SR 25) interchanges. The selection of the preferred interchange configuration was deferred to the PD&E phase of this project after detailed evaluations of the environment and costs were conducted and public input was received.

Schematics of the interchange concepts are shown in Figures 8-1 through 8-18 at the end of Section 8.4.3.

Memorial Boulevard - The existing interchange provides an eastbound I-4 exit ramp and a westbound I-4 entrance ramp. An eastbound I-4 entrance ramp would be added in the conceptual interchange configuration. The proposed westbound ramp connection to I-4 would be relocated to the east of the existing ramp. The addition of an eastbound I-4 entrance ramp would require that additional limited access right-of-way be acquired in the southeast quadrant. The I-4 ramp termini would not be signalized. The proposed ramps would provide access to the proposed general purpose lanes of I-4.

The relocated Galloway Road overpass west of Memorial Boulevard would provide connections to the frontage roads west of this project. The frontage roads in Segment 1 terminate at North Galloway Road. The westbound auxiliary lane in Segment 1 begins at the Memorial Boulevard interchange.

This modified directional interchange concept will not include a ramp for the return move from westbound I-4 to eastbound Memorial Boulevard due to the marginal warrants as stated in the 1989 I-4 Master Plan. The projected 2010 design year traffic for this movement has a DHV of 90 with a LOS A, thereby making this option for the Memorial Boulevard interchange uneconomical. This fact was confirmed during the 1994 I-4 Master Plan 2020 traffic modeling when the addition of this ramp caused a reassignment of only a small number of vehicles. A schematic of the interchange configuration proposed for Memorial Boulevard is shown in Figure 8-1.

Kathleen Road (SR 539) - The existing diamond would be modified to a tight diamond urban type interchange. The limited access right-of-way would be extended north and south along Kathleen Road. The I-4 ramp intersections with Kathleen Road would be signalized. The proposed improved ramps would provide access to the proposed general purpose lanes of I-4. The extension of the limited access right-of-way south along Kathleen Road will require the closing of the West Margaret Street and West Elliott Street intersections. Access to the residences on these two streets would be provided by opening access connections from Bella Vista Street. The proposed access roads are shown on the Concept Plans. A schematic of the interchange configuration proposed for Kathleen Road is shown in Figure 8-2.

US 98 (SR 35 & 700) - The 1994 I-4 Master Plan recommended (and the FHWA approved) an urban compressed diamond type interchange be used at US 98 (similar to the existing interchange except that the ramp terminals would be pulled in tighter to the I-4 mainline). The preliminary engineering consultant for Segment 8 has recommended a single-point urban diamond type interchange at this location because the distance between ramp terminals did not provide sufficient storage lengths for the left turning movements and degraded the LOS to an unacceptable level. The single-point urban diamond conforms to the intent of the master plan recommendation for an urban type interchange and does not require significant additional right-of-way or environmental impacts as compared to the compressed diamond type interchange configuration. The compressed diamond type interchange alternative at US 98 is shown in Figure 8-3. A schematic of the recommended single-point diamond urban interchange configuration proposed for US 98 is shown in Figure 8-4.

US 98 north of I-4 has been designed to expand the existing four-lane roadway to six lanes with auxiliary lanes. US 98 south of I-4 is proposed to be expanded from four to six lanes. The proposed single-point diamond interchange is consistent with the proposed improvements to US 98. The I-4 ramp intersections with US 98 would be signalized. The proposed improved ramps would provide access to the proposed general purpose lanes of I-4.

The 1994 I-4 Master Plan showed limited access right-of-way extended along US 98 north to Crevasse Street and south to Pyramid Parkway with Robson Street realigned. This limited access extension was a result of the exclusive northbound and southbound right turn lanes proposed for US 98 at the I-4 interchange. A LOS analysis was performed for US 98 through the interchange without the right turn lanes. The analysis showed that the LOS would not be degraded if the right turn lanes were eliminated. This then allowed the limited access limits to be set at the intersections of the proposed US 98 rights-of-way with the I-4 right-of-way lines. The limited access right-of-way would not be extended along US

98 northward and southward beyond the intersections of the proposed US 98 and I-4 mainline rights-of-way thus maintaining access from US 98 to the adjacent businesses and eliminating the need for back access roads and the purchase of limited access rights.

Socrum Loop Road (CR 582) - Two interchange configurations were evaluated during the master plan phase of this project (OCR-1 and SLR-3). Five additional interchange configurations were evaluated during the PD&E phase. The existing interchange is a modified diamond that connects I-4 to two different side roads (SR 33 and CR 582). The existing interchange geometry could not accommodate the modification of the existing ramps using current standards because the proposed ultimate typical section situates the general purpose lanes closer to the existing right-of-way. All of the CR 582 interchange alternatives include replacing the I-4 bridges over CR 582 to accommodate the ultimate ten-lane typical section on I-4 and the ultimate six-lane typical section on CR 582 and SR 33. The proposed ramps in all the alternative configurations would provide access to the proposed general purpose lanes of I-4.

Two of the interchange concepts would move the interchange from the area of the CR 582 underpass to the Old Combee Road overpass. These concepts have been designated as OCR-1 and OCR-2 (shorthand for Old Combee Road 1 and 2).

Alternate 1 (OCR-1) is an urban diamond type interchange requiring additional limited access right-of-way in all four quadrants to accommodate the ramps. This alternative is shown in the 1994 I-4 Master Plan as "Socrum Loop Road - Alternative 2". This configuration would impact the Paddock Club Apartment complex and FGT gas pipeline in the northwest quadrant and the Lakeland RV Resort and mobile home park in the southeast quadrant. This concept would require that both CR 582 and SR 33 be improved to six lanes from the CR 582/SR 33 intersection to Old Combee Road and that Old Combee Road be improved to at least four lanes from SR 33 to CR 582. A schematic of interchange alternative OCR-1 is shown in Figure 8-5.

Alternate 2 (OCR-2) is a full service partial cloverleaf with ramp loops in the northeast and southwest quadrants. Most of the right-of-way acquisition for this interchange concept would be currently vacant land. This concept would require that both CR 582 and SR 33 be improved to six lanes from the CR 582/SR 33 intersection to Old Combee Road and that Old Combee Road be improved to at least four lanes from SR 33 to CR 582. A schematic of interchange alternative OCR-2 is shown in Figure 8-6.

Three of the interchange alternatives would propose to reconfigure the interchange in its approximate existing location. These concepts have been designated as SLR-3, SLR-4 and SLR-5 (shorthand for Socrum Loop Road 3, 4 and 5).

Alternate 3 (SLR-3) is shown in the 1994 I-4 Master Plan as "Socrum Loop (CR 582) - Alternate 1". SLR-3 is a full service split diamond interchange with loop ramps connecting I-4 with CR 582 to the north and SR 33 to the south. This configuration would move the south ramps connecting to SR 33 further east utilizing the existing eastbound rest area right-of-way and aligning the ramp termini with the entrance drive to the housing development south of SR 33. The loop ramps connecting to CR 582 would utilize the vacant land between the Holiday Inn and the Paddock Club Apartments, but would significantly impact both of those properties. An additional westbound I-4 on-ramp would be provided

in the northwest quadrant of the CR 582 underpass, encroaching on the Cracker Barrel restaurant property. A schematic of interchange alternative SLR-3 is shown in Figure 8-7.

Alternate 4 (SLR-4) is very similar to SLR-3 except that the north loop ramps connecting I-4 to CR 582 would require the use of virtually all of the Holiday Inn property and isolate the Lake Gibson Church of Christ within the "infield area" of the interchange. The westbound I-4 off-ramp would be aligned with the existing intersection of CR 582 and Ferney Drive. A schematic of interchange alternative SLR-4 is shown in Figure 8-8.

Alternate 5 (SLR-5) would have the same I-4 eastbound on- and off-ramp configuration as SLR-3 and SLR-4. The I-4 westbound on- and off-ramps would be moved to the northwest quadrant of the CR 582 underpass. This configuration would impact the Cracker Barrel development and require improvement of Arteva Drive to connect the I-4 ramps to CR 582. A schematic of interchange alternative SLR-5 is shown in Figure 8-9.

The five interchange configurations at CR 582 and Old Combee Road described above were presented to representatives of the City of Lakeland, and the TPO in January 1994 to solicit local government input.

Two of the interchange alternatives (OCR-1 and OCR-2) would move the interchange from the intersection of CR 582 and SR 33 to Old Combee Road, about 1.1 km (0.7 mi) east of the existing interchange. Because of sight distances, touchdown lengths and increased traffic loading, both of these alternatives would require that Old Combee Road be improved from two lanes to at least a four-lane divided highway from SR 33 to CR 582, a distance of about 1.0 km (0.6 mi), SR 33 be improved to a six-lane roadway from CR 582 to Old Combee Road, a distance of about 1.8 km (1.1 mi) and CR 582 be improved to a six-lane roadway from SR 33 to Old Combee Road, a distance of about 1.6 km (1.0 mi). The City and the TPO expressed concerns regarding several issues related to moving the interchange to the Old Combee Road location: 1) incompatibility with future land use in the area of the interchange, 2) incompatibility with the Bridgewater Development of Regional Impact (now approved), 3) incompatibility with the local road network, and 4) proximity to existing and planned development in the area of the existing interchange.

The City of Lakeland also expressed concerns regarding the proposed interchange configurations at the existing location (SLR-3, SLR-4 and SLR-5). The City preferred that encroachment into the Cracker Barrel Restaurant, Holiday Inn and Paddock Club Apartment properties be minimized or avoided and that access to the Lake Gibson Church of Christ, the Chevron Gas Station and the private properties along the north side of Socrum Loop Road between Arteva Drive and Ferney Drive be maintained or provided. All of the interchange concepts at the Socrum Loop location (SLR-3, SLR-4, SLR-5, NCR-6 and SLR-7) would require that CR 582 and SR 33 be improved to six lanes from the intersection of CR 582/SR 33 to about 0.4 km (0.25 mi) east of the I-4 ramp terminals.

Alternate 6 - A sixth interchange configuration NCR-6 (shorthand for New Connector Road 6) was developed as a result of the input received from the City of Lakeland and the TPO. NCR-6 is a tight urban diamond type interchange with a new connector road from CR 582 and SR 33 located just east of the existing ramps, between the Holiday Inn and Paddock Club Apartment properties. This configuration would avoid impacts to the Cracker Barrel development, minimize impacts to the Holiday Inn property

and maintain access to the church, gas station and residences. NCR-6 would take advantage of the existing eastbound rest area right-of-way and would not require the rebuilding of Old Combee Road. NCR-6 would require the taking of two of the Paddock Club apartment buildings and the relocation of the GTE facility south of I-4. NCR-6 would also require that the I-4 mainline alignment shift to the right (south). A traffic operations analysis of Alternate NCR-6, showed that an unacceptable LOS would result because of the short distances between the intersection of the I-4 eastbound off- and on-ramps with the New Connector Road and SR 33. A schematic of interchange alternative NCR-6 is shown in Figure 8-10.

Alternate 7 (SLR-7) was developed and selected as the alternative which best complies with the desires of local government, minimizes impacts and provides acceptable traffic operations. Alternate SLR-7 would be compatible with future land use (including the Bridgewater DRI) and the local road network and is proximate to the existing development in the area of the interchange. This alternate minimizes impacts to the Holiday Inn and Paddock Club Apartment properties and avoids the taking of the FGT pipeline and the GTE facility. In order to provide an acceptable LOS at the intersection of CR 582 and SR 33, both of these roadways would be improved to six lanes through the area of the interchange. Access to the development in the northwest quadrant of the interchange (Cracker Barrel) will be improved by the addition of a City of Lakeland street located between Arteva Drive and Ferney Drive. (This street is shown dashed on the Concept Plans and labeled "By Others".) It is anticipated that a traffic signal may be required at the intersection of this new street and CR 582 at some point in the future. Signal warrants will be determined at such time as the traffic operation degrades to an unacceptable LOS. Access from Arteva Drive to CR 582 would be closed due to the short distance between the Arteva Drive and SR 33 intersections. The I-4 ramp intersections with CR 582 and SR 33 would be signalized. The intersection of SR 33 and CR 582 would also be signalized. Under this concept the proposed signal at SR 33 and North Florida Avenue would be removed. A schematic of interchange alternative SLR-7 is shown in Figure 8-11.

Major utility relocations were evaluated in this comparison. A FGT pipeline runs along the north I-4 right-of-way from east of Old Combee Road to west of the Paddock Club Apartments where it turns north to Socrum Loop Road (CR 582). The pipeline follows Socrum Loop Road southwest to the I-4 right-of-way where it turns west and runs along the north right-of-way of I-4 to US 98. The estimated relocation cost for the FGT pipeline is about $562,500 per km ($900,000 per mile). A GTE switching facility is located south of I-4 and west of the existing I-4 eastbound off-ramp. The estimated cost to relocate the GTE facility is about $1,290,000. American Telecasting maintains a microwave tower adjacent to the north I-4 right-of-way between the Holiday Inn and the Paddock Club Apartments. The cost to relocate the tower is about $121,500.

Alternate 7 (SLR-7) was selected as the preferred alternative configuration for the CR 582 Socrum Loop Road interchange.

The total estimated costs and impacts for Segment 3 (which includes the CR 582 interchange) are shown in Figure 8-21 in Section 8.5.

<u>SR 33</u> - The existing diamond would be modified to a tight diamond urban type interchange. The limited access right-of-way would be extended north and south along SR 33. The I-4 ramp intersections with SR 33 would be signalized. The proposed improved ramps would provide access to the proposed

general purpose lanes of I-4. A schematic of the interchange configuration proposed for SR 33 is shown in Figure 8-12.

SR 559 - The existing diamond interchange would be modified to a tight diamond urban type interchange. The existing frontage road intersection in the southeast quadrant would be relocated to the south and the limited access right-of-way would be extended south to the relocated frontage road. The I-4 ramp intersections with SR 559 would be signalized. The proposed improved ramps would provide access to the proposed general purpose lanes of I-4. A schematic of the interchange configuration proposed for SR 559 is shown in Figure 8-13.

CR 557 - The existing interchange is a full service partial cloverleaf with ramp loops in the northwest and southeast quadrants. The proposed conceptual layout for this interchange is a full service rural diamond type interchange eliminating the existing ramp loops. The improved ramps would provide access to the proposed general purpose lanes of I-4. Additional limited access right-of-way would be extended north and south along CR 557 to accommodate the proposed ramps. The I-4 ramp intersections with CR 557 would be signalized. A schematic of the interchange configuration proposed for CR 557 is shown in Figure 8-14.

US 27 - The existing interchange is a full service partial cloverleaf with ramp loops in the northwest and southeast quadrants. Existing frontage roads are located in the northwest and southwest quadrants. Two alternative interchange concepts were presented in the 1994 I-4 Master Plan.

Alternate 1 (US27-1) is a full service three-level modified diamond interchange. Level 1 would be I-4 at grade. Level 2 would be the US 27 southbound overpass and Level 3 would be the US 27 northbound overpass. The I-4 exit and entrance ramps would split to intersect both the US 27 northbound and southbound levels. The proposed ramps would provide access to the proposed general purpose lanes of I-4. The existing frontage roads would be relocated to the north and south, respectively. This configuration would not require ramps or loops in the northeast or southwest quadrants, but would require the limited access right-of-way be extended north and south along US 27 in those quadrants. A schematic of interchange concept US27-1 is shown in Figure 8-15.

Alternate 2 (US27-2) is a full service four-level directional interchange. Level 1 would be the I-4 mainline at approximately the same grade as the existing I-4. Level 2 is the US 27 overpass which is proposed to remain at the approximate level of existing ground. Level 3 would carry US 27 southbound to I-4 east and westbound and US 27 northbound to I-4 east and westbound. Level 4 would consist of directional elevated ramps connecting I-4 eastbound to US 27 north and southbound and I-4 westbound to US 27 north and southbound. These ramps would continue to provide access to the proposed general purpose lanes of I-4. The alignment and terminus of the frontage road in the northwest quadrant would be relocated to the north and the alignment of the frontage road in the southwest quadrant would be shifted to the south. This concept would require additional right-of-way in the northeast and southwest quadrants. Since the northbound and southbound exit ramps touchdown between the US 27 travel lanes, the limited access right-of-way would not have to be extended along the existing US 27 right-of-way. A schematic of interchange alternate US27-2 is shown in Figure 8-16.

Alternate 3 (US27-3) was developed during the PD&E phase to see if the multi-level concepts could be reduced to a two-level design. US27-3 is a full service two-level partial cloverleaf concept (semi-directional with loops). Level 1 would be I-4 at approximately existing grade. Level 2 would be the US 27 overpass and the I-4 flyover entrance ramps. The US27-3 alternate would provide loop ramps in the northwest and southeast quadrants for the I-4 westbound and eastbound exit ramps, respectively. These loops would be similar to the existing loop ramps, but redesigned to current standards and moved outward to accommodate the I-4 and US 27 improvements. Flyover ramps for the I-4 westbound and eastbound entrance ramps would be provided east and west, respectively, of the existing US 27 overpass. This concept would require additional right-of-way in all four quadrants but would not require the extension of the limited access right-of-way along US 27 in the northeast and southwest quadrants. A schematic of interchange alternate US27-3 is shown in Figure 8-17.

An evaluation of the three interchange alternatives described above for US 27 was documented in Technical Memorandum, INTERCHANGE ALTERNATIVES ANALYSIS, Interstate 4 at US 27, August 1995 (US 27 Tech Memo), prepared as a separate document. This analysis showed that the total estimated cost for each alternative (including comparative construction, right-of-way and other costs) was essentially the same. Construction and other costs are higher for Alternate 2 (primarily due to the higher and longer structures), but right-of-way costs are higher for Alternates 1 and 3 (primarily due to the extension of limited access). The estimated construction costs range from about $50,500,000 for Alternates 1 and 3 to about $63,160,000 for Alternate 2. The total estimated cost differential between the alternatives with the lowest and highest cost is less than one percent. Therefore, the selection of interchange configuration was based on the potential effects on the surrounding community and a comparison of traffic flow characteristics of the three alternates.

Alternate 2 would impact seventeen (17) parcels of land and require two (2) business relocations for an estimated right-of-way cost of about $7,780,000 (including relocations and business damages). Alternates 1 and 3 would impact fifty-nine (59) parcels and require twelve (12) business relocations due to either the acquisition of land or the extension of limited access rights for an estimated right-of-way cost of about $22,120,000 (including relocations and business damages).

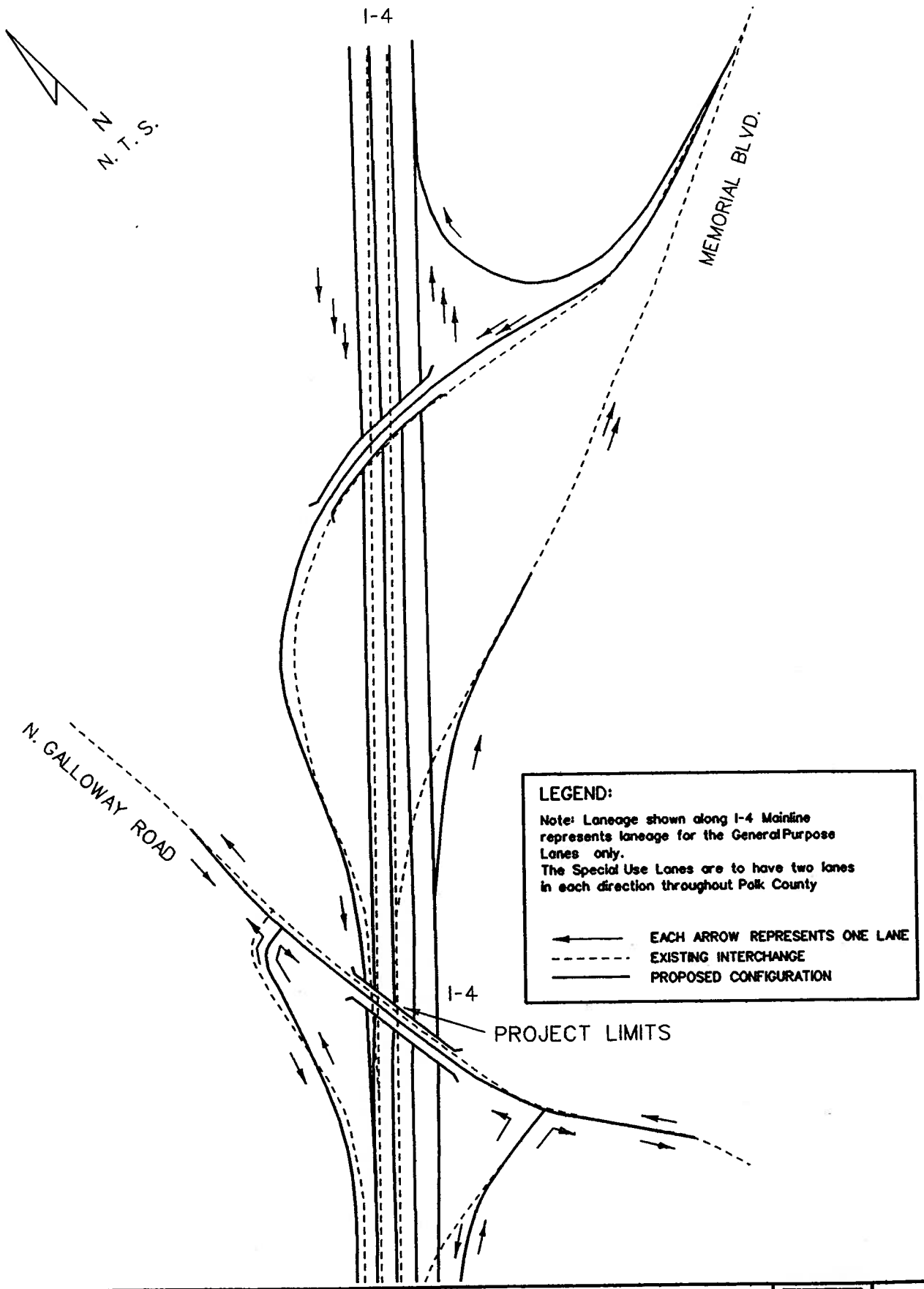
The traffic flow comparison showed that Alternate 2 would provide a higher quality of traffic flow for through trips than either Alternates 1 or 3 and would serve equally well as Alternate 1 and better than Alternate 3 for stopping trips. From an overall standpoint, Alternate 2 would operate more efficiently than Alternates 1 or 3. The results of the traffic flow characteristics analysis of the US 27 interchange configuration alternatives 1, 2 and 3 are tabulated in the August 1995 US 27 Tech Memo. As a result of the comparative analysis of US 27 interchange alternatives US27-1, US27-2 and US27-3, alternate configuration US27-2, the four-level directional interchange was recommended in the August 1995 US 27 Tech Memo.

Alternate 4 (US27-4) was subsequently developed because of the significant community impacts resulting from the extension of the limited access right-of-way associated with alternatives US27-1, US27-2 and US27-3 and the structure construction costs associated with the multi-level concepts. US27-4 is an expansion of the existing partial cloverleaf interchange configuration. The ramps in the northwest and southeast quadrants would be expanded outward requiring the acquisition of about 39.7 ha (98.1 ac) of additional right-of-way in the northwest and southeast quadrants for a total cost of about $22,340,000. This right-of-way acquisition would result in the relocation of four fast food restaurants

(Hardee's Restaurant in the southeast quadrant and McDonald's, Wendy's and New York Pizza World Restaurants in the northwest quadrant). No other restriction to business access is anticipated. The ramp terminals would be moved north and south, respectively, of their existing locations. The south ramp terminal would be aligned with the relocated frontage road intersection with US 27. The limited access right-of-way would be extended in the southeast quadrant to Home Run Boulevard and in the northwest quadrant to a point north of the taper for the US 27 southbound to I-4 westbound entrance ramp. The limited access right-of-way in the northeast and southwest quadrants would not be extended along US 27 northward and southward, respectively, beyond the intersections of the US 27 and I-4 mainline rights-of-way thus maintaining access from US 27 to the adjacent businesses and eliminating the need for back access roads and the purchase of limited access rights. A schematic of US27-4 is shown in Figure 8-18.

Alternate 4 (US27-4) was selected as the preferred alternative configuration for the US 27 interchange because of the lower overall cost (by about $8.56m), simpler maintenance of traffic, less disruption of access to the commercial corridor and fewer business relocations.

The impacts and comparative costs for the interchange configuration alternatives evaluated for the US 27 interchange are shown in the alternatives evaluation matrix in Figure 8-27 in Section 8.5 of this report. The actual estimated total costs and impacts for Segment 9 (including the recommended US 27 interchange configuration) are shown in Figure 8-25 in Section 8.5.

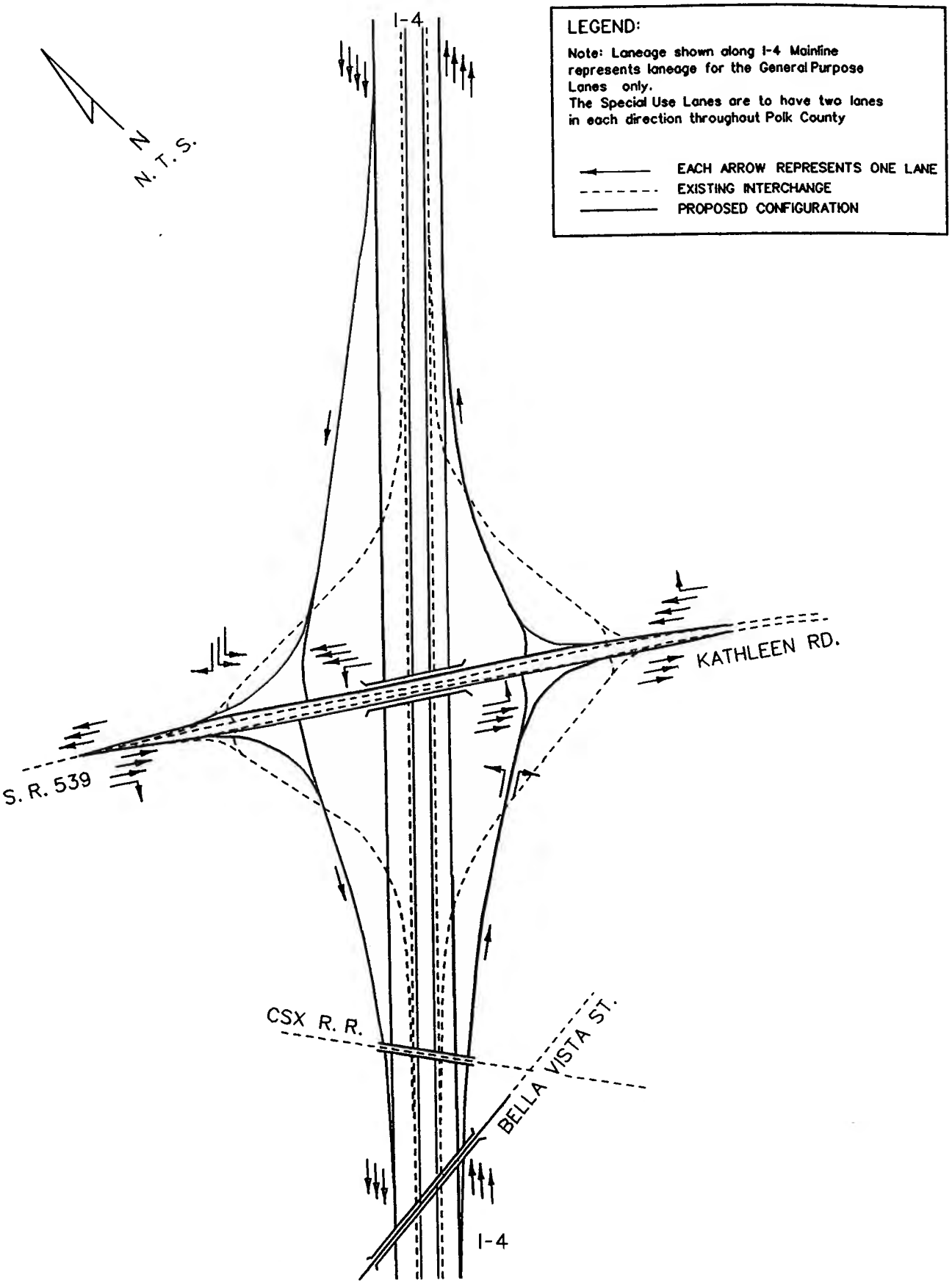


Schematic Diagram of Memorial Boulevard Interchange Concept

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

FIGURE 8-1

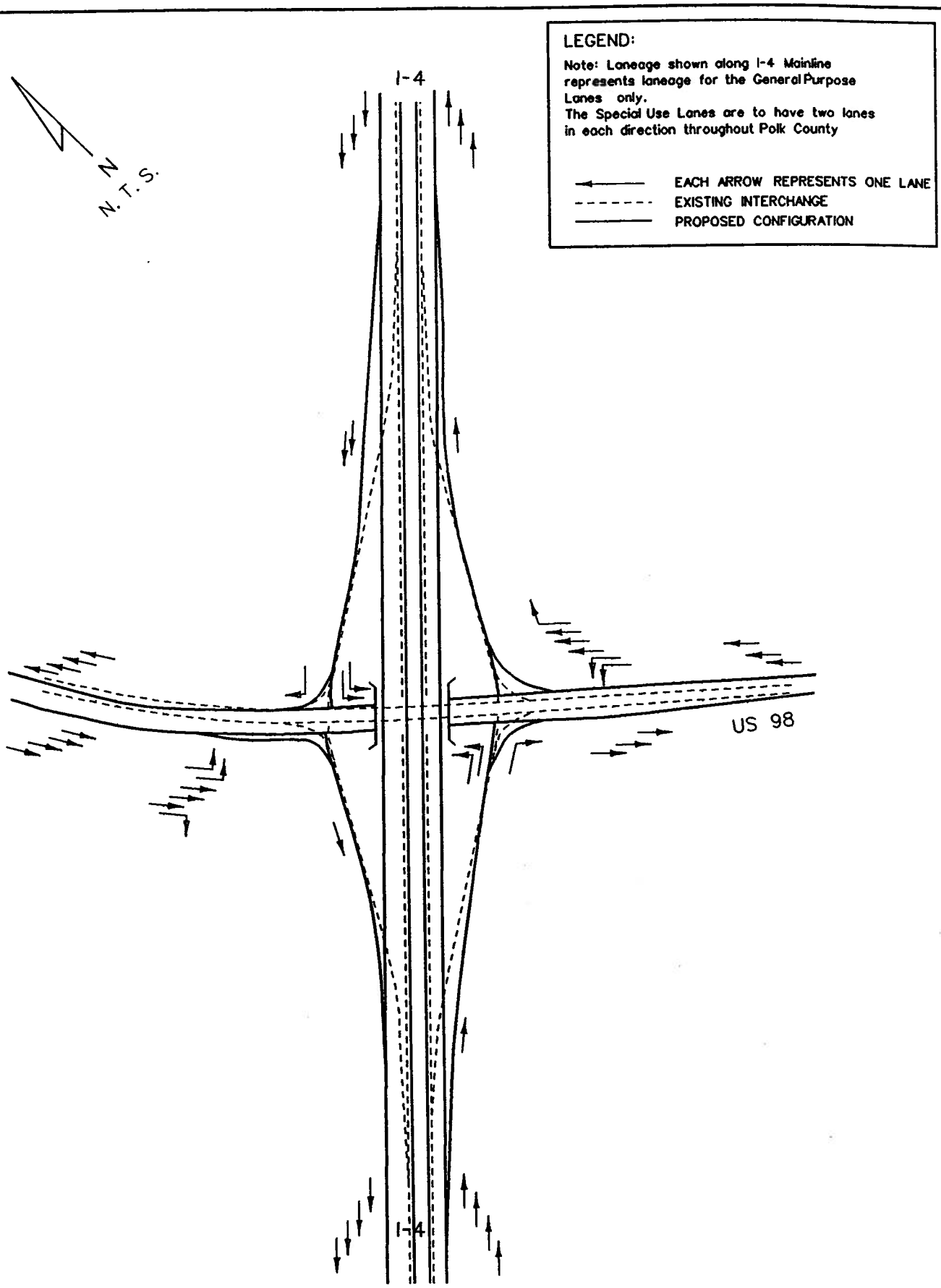


Schematic Diagram of Kathleen Road Interchange Concept

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

FIGURE 8-2



Schematic Diagram of US 98 Interchange Concept (US98-1)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

FIGURE 8-3

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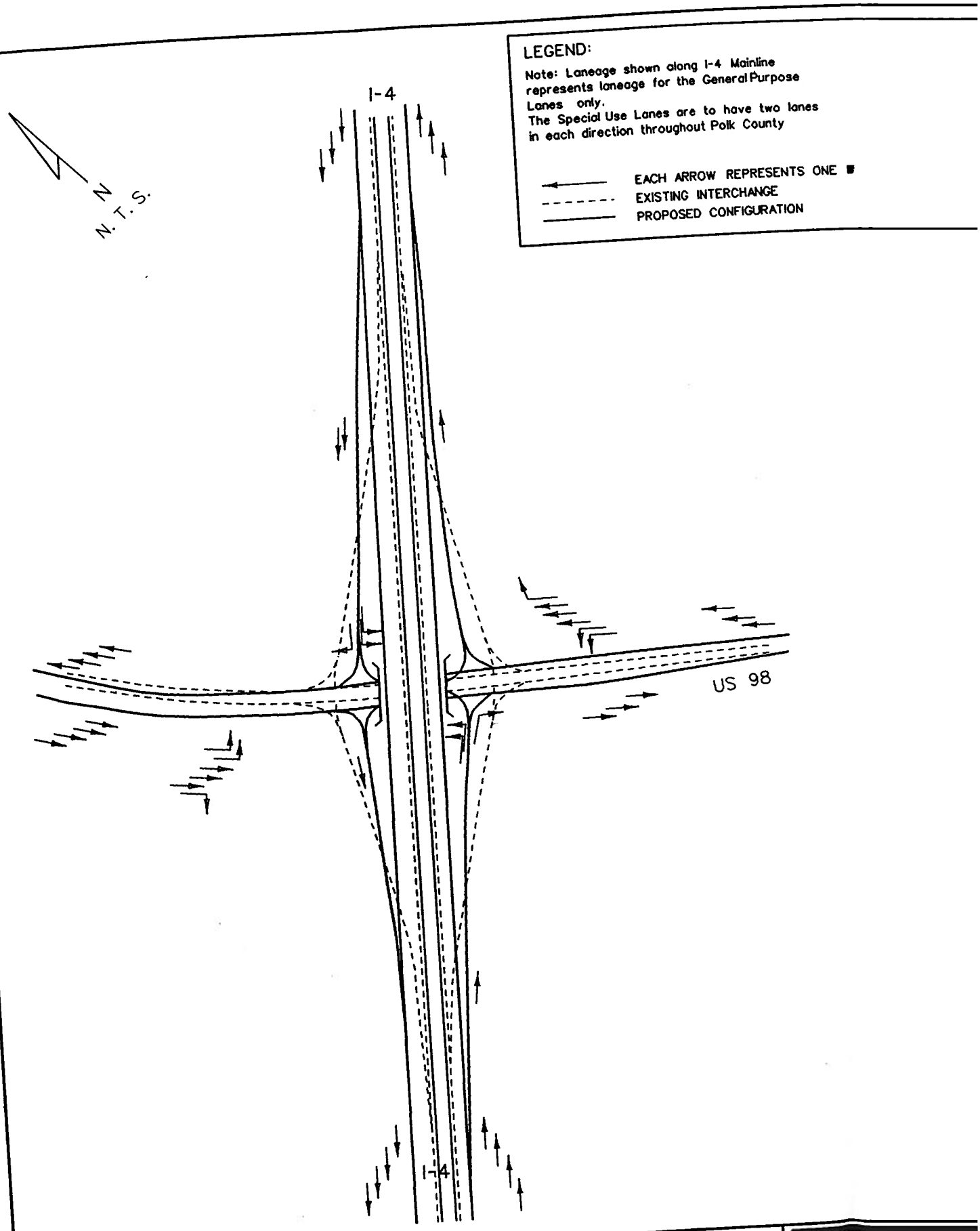

Schematic Diagram of US 98 Interchange Concept (US98-2)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

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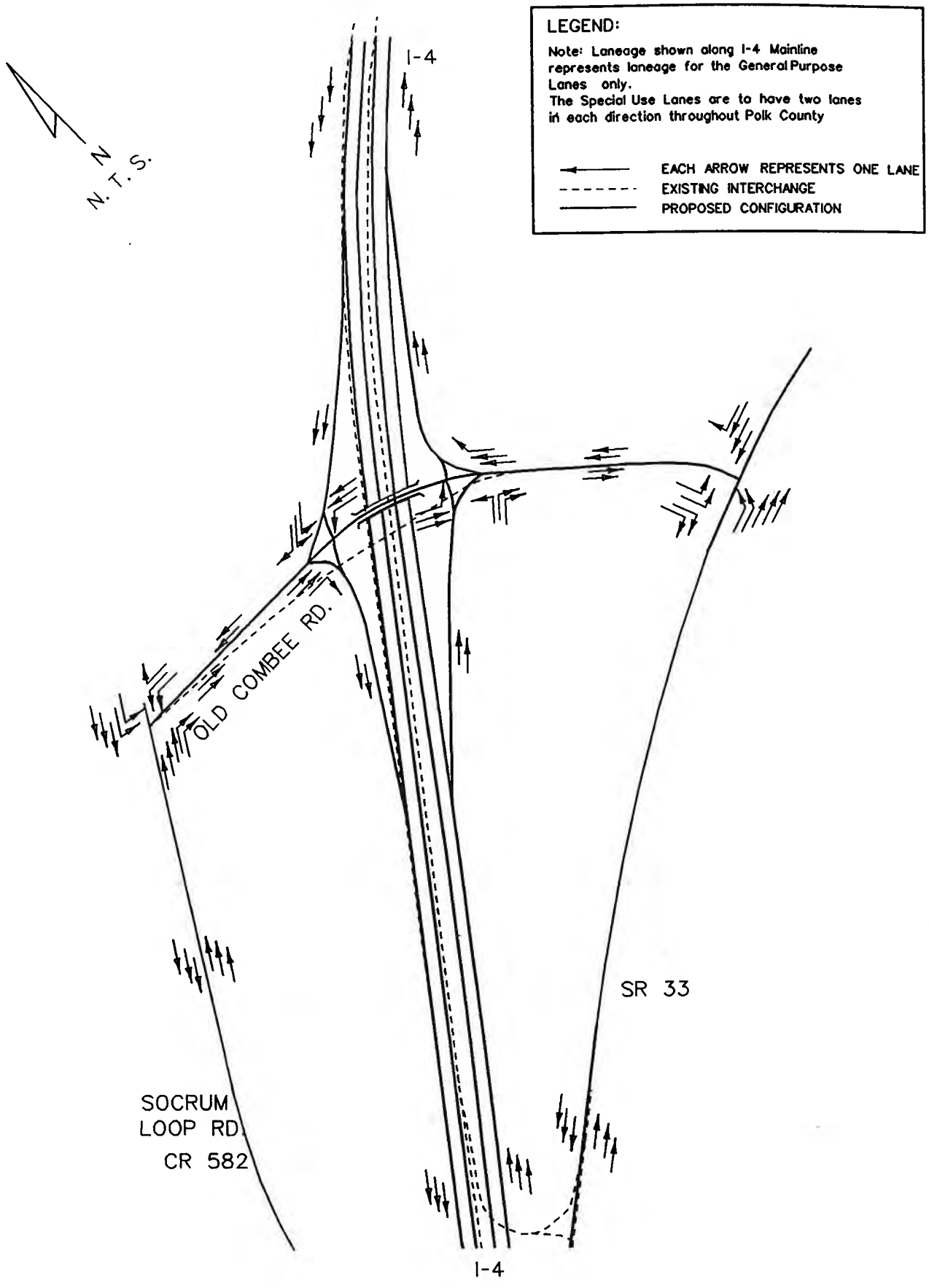

Schematic Diagram of CR 582 Interchange Concept (OCR-1)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

FIGURE 8-5

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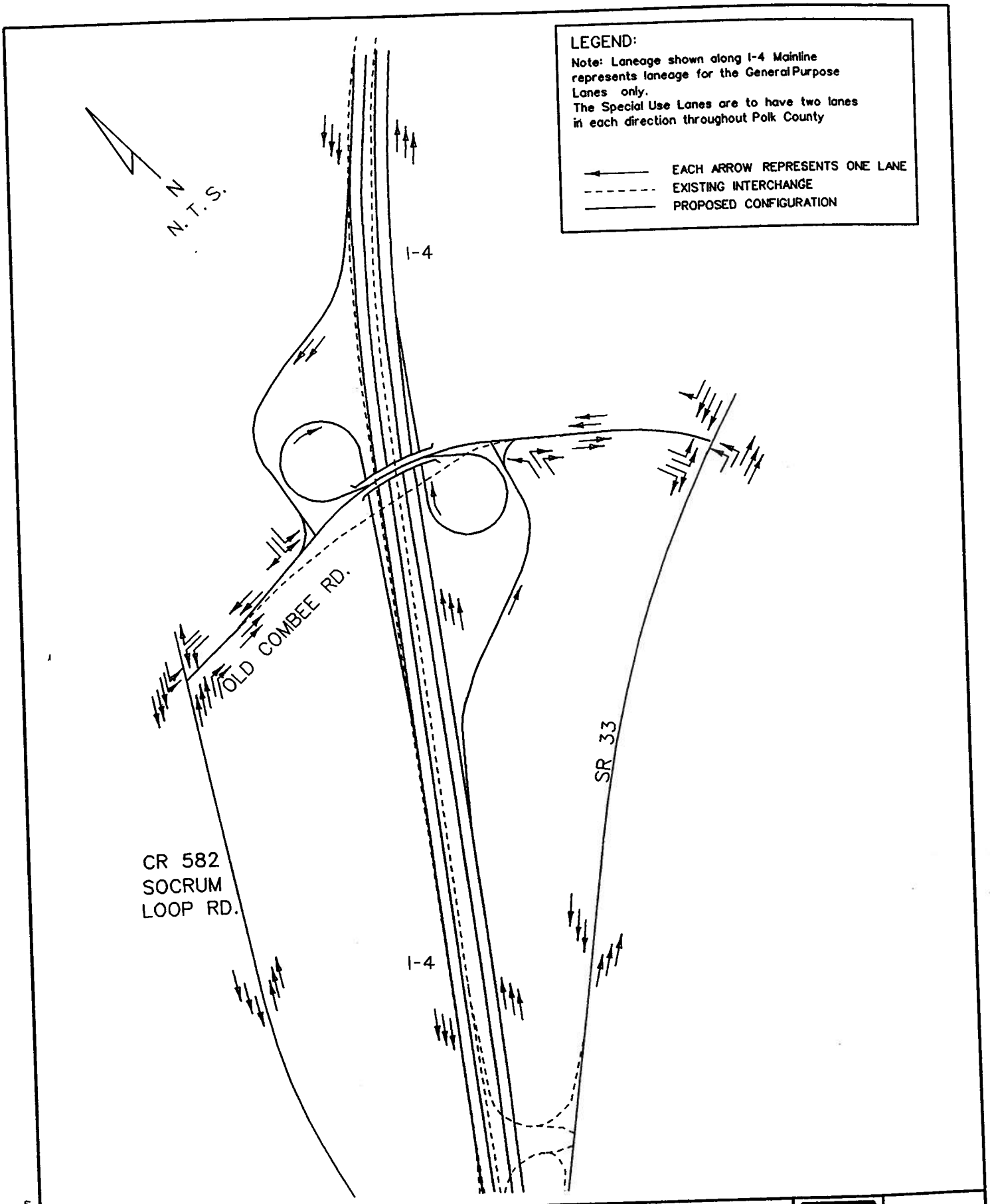

Schematic Diagram of CR 582 Interchange Concept (OCR-2)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

FIGURE 8-6

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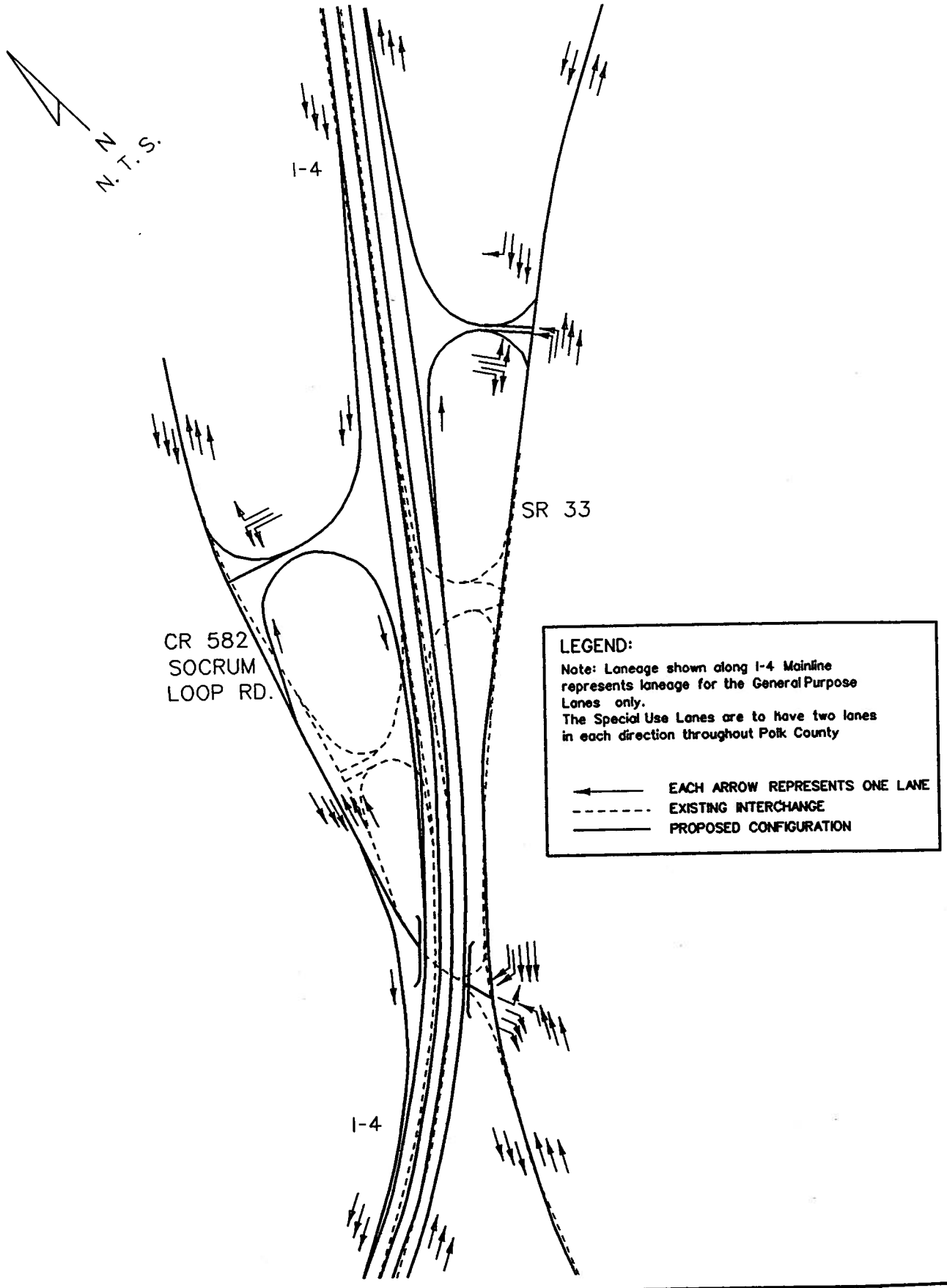

Schematic Diagram of CR 582 Interchange Concept (SLR-3)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

FIGURE 8-7

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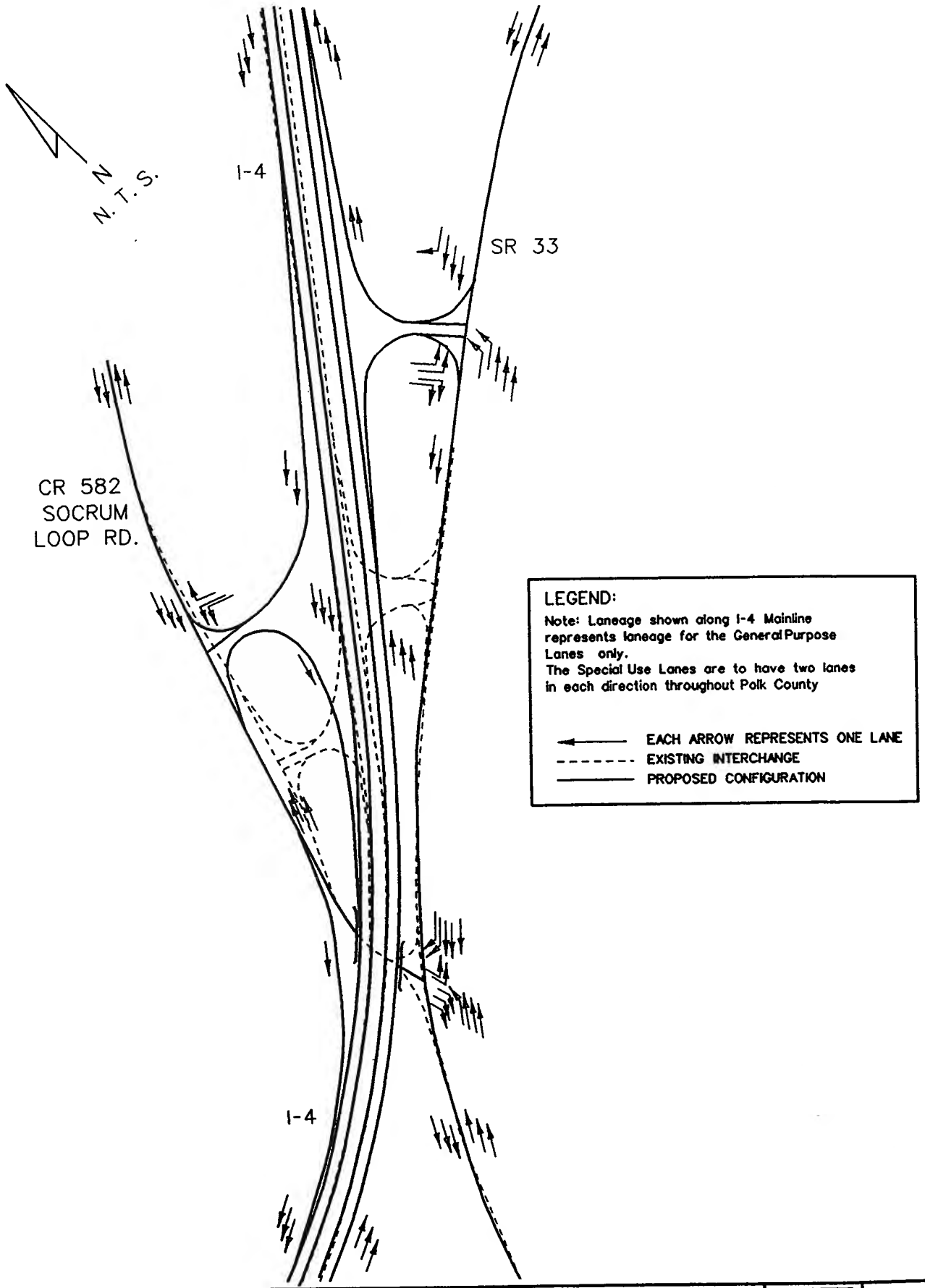

Schematic Diagram of CR 582 Interchange Concept (SLR-4)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 8-8

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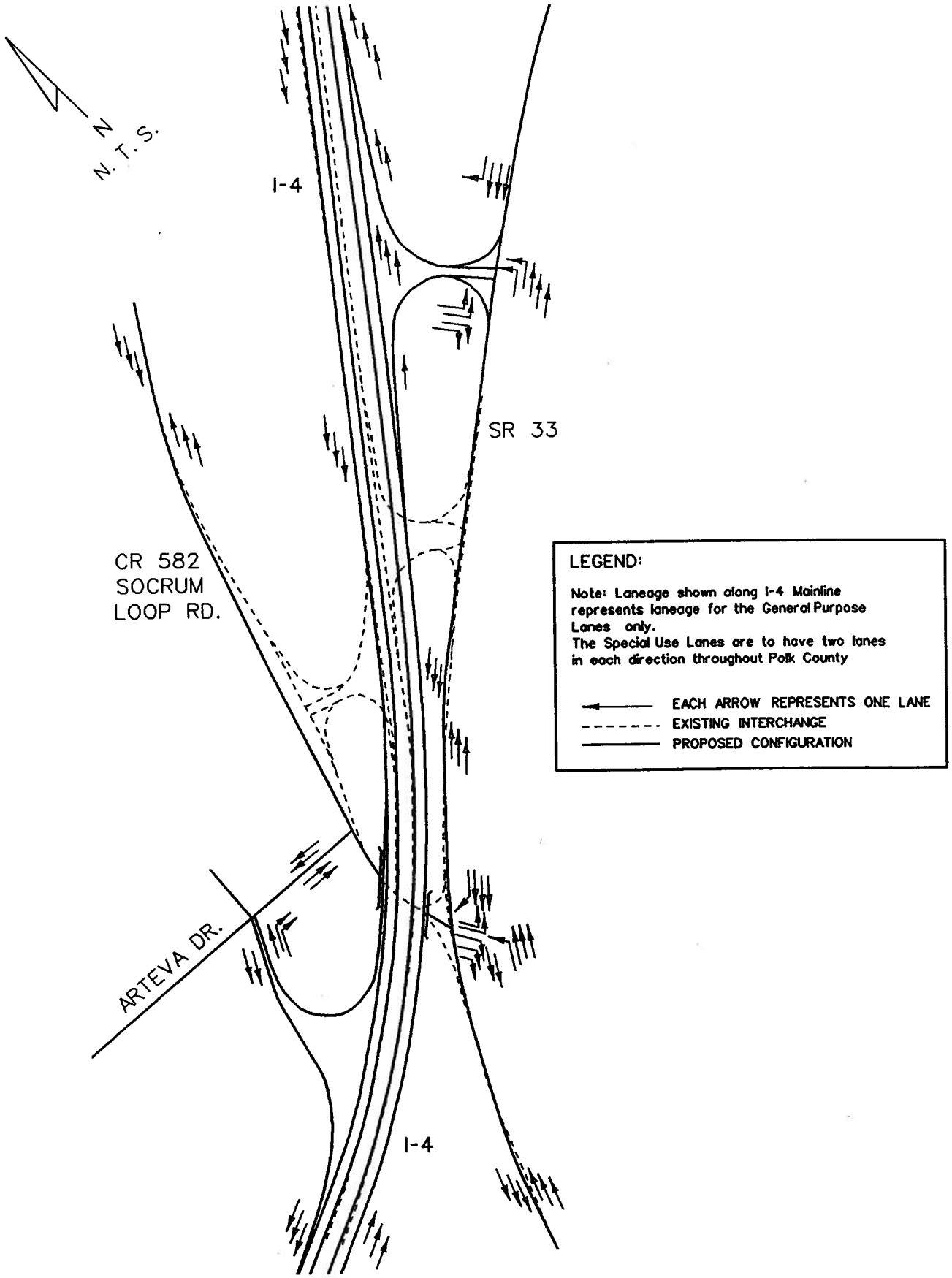

Schematic Diagram of CR 582 Interchange Concept (SLR-5)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 8-9

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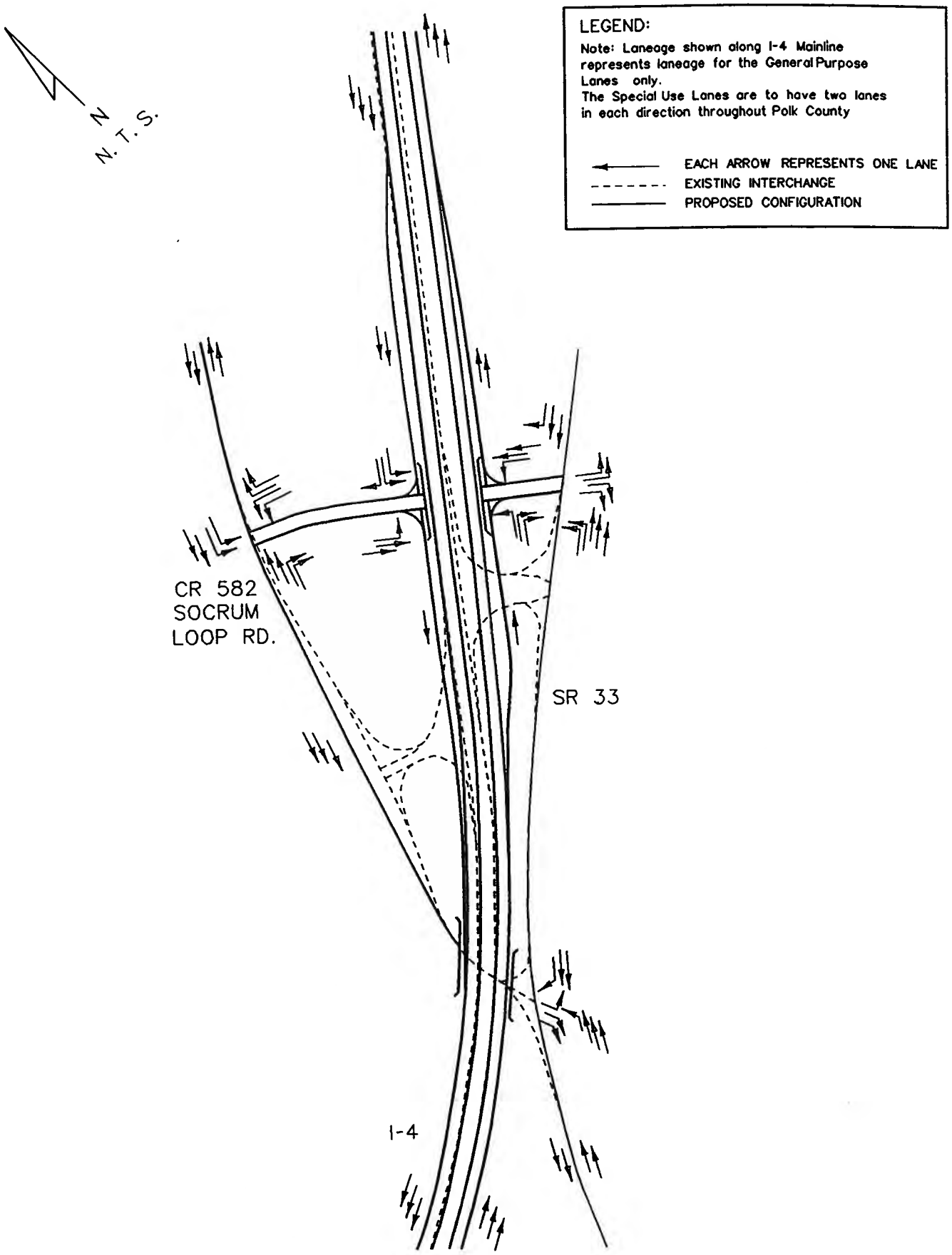

Schematic Diagram of CR 582 Interchange Concept (NCR-6)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 8-10

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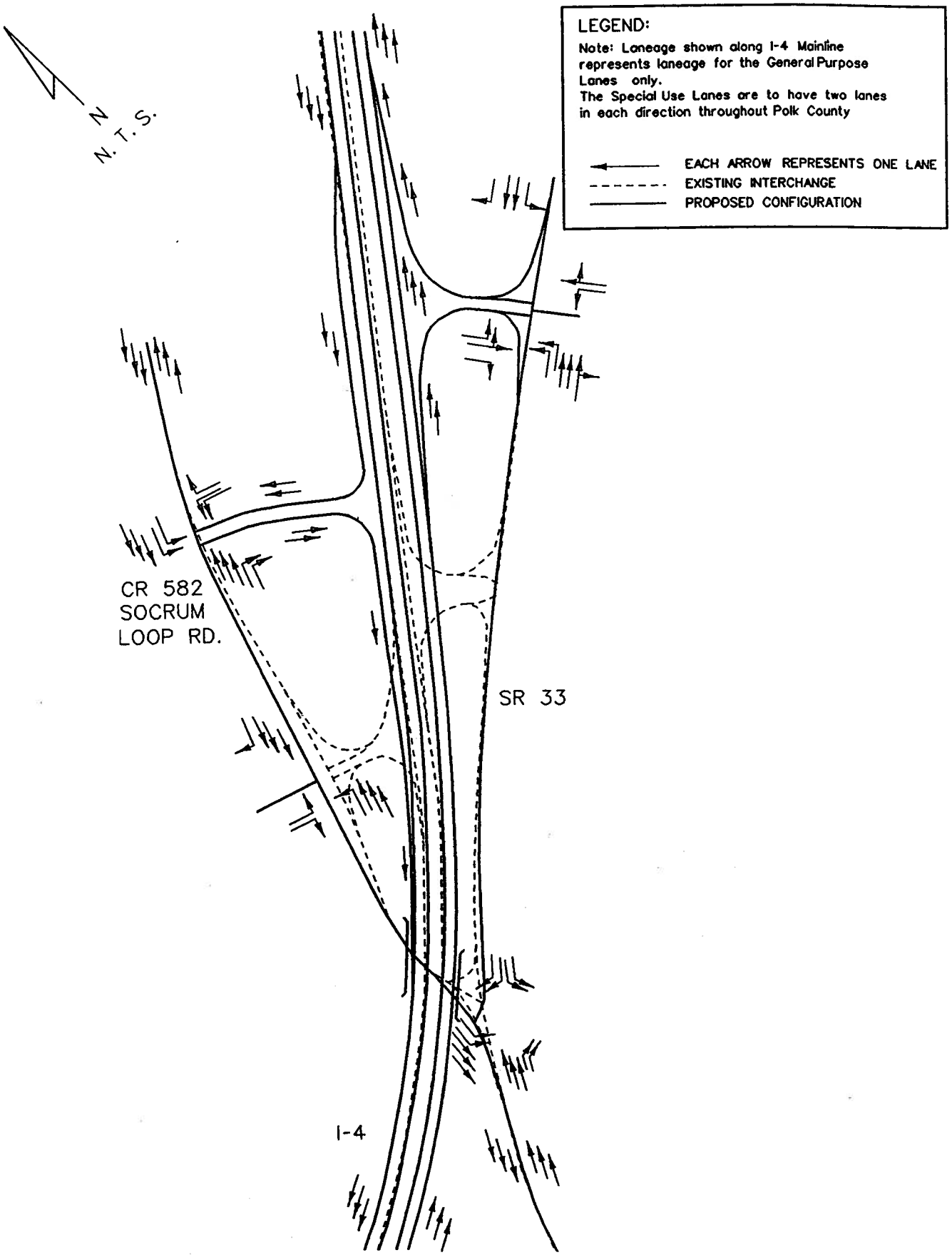

Schematic Diagram of CR 582 Interchange Concept (SLR-7)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 8-11

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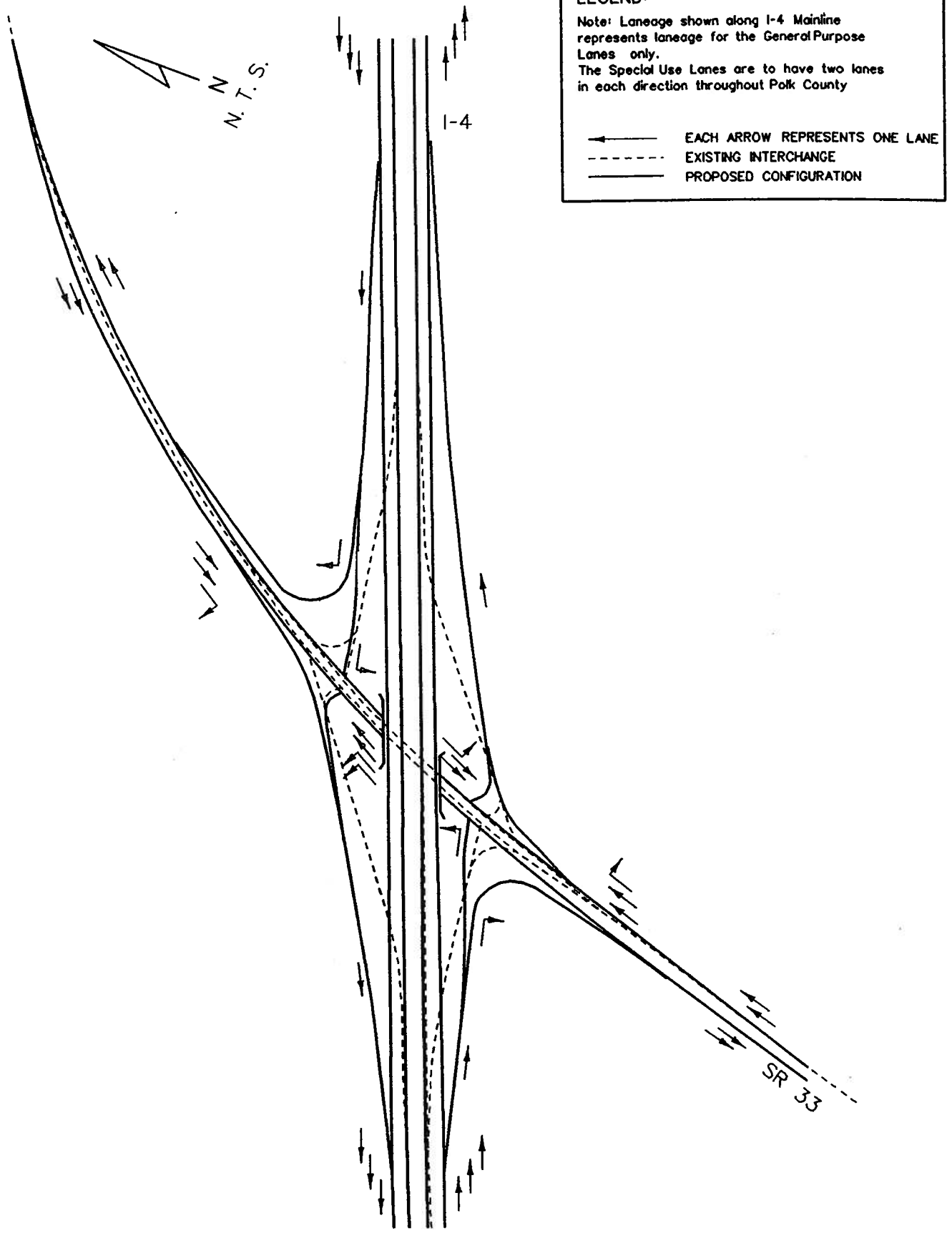
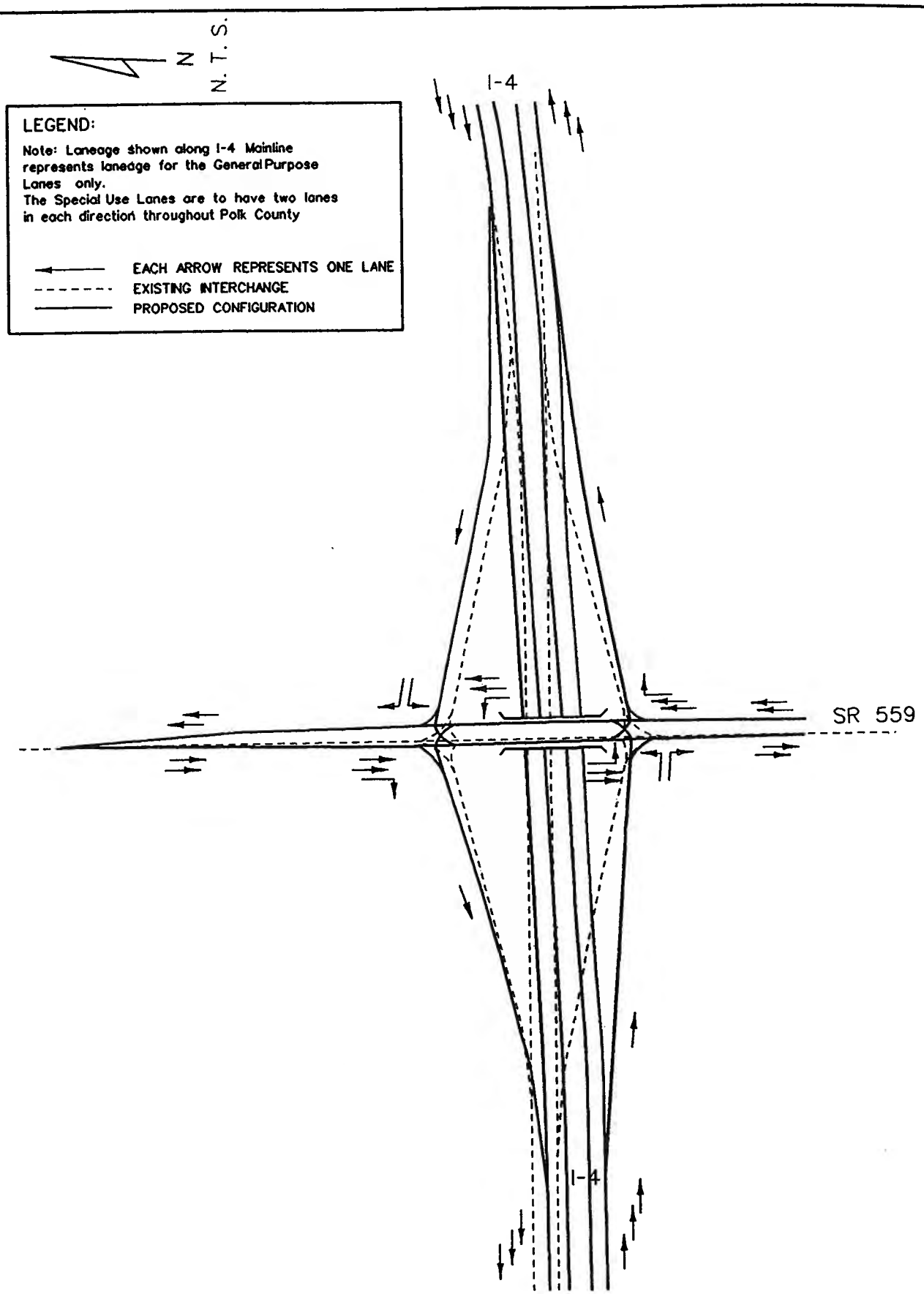


Schematic Diagram of SR 33 Interchange Concept	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 8-12

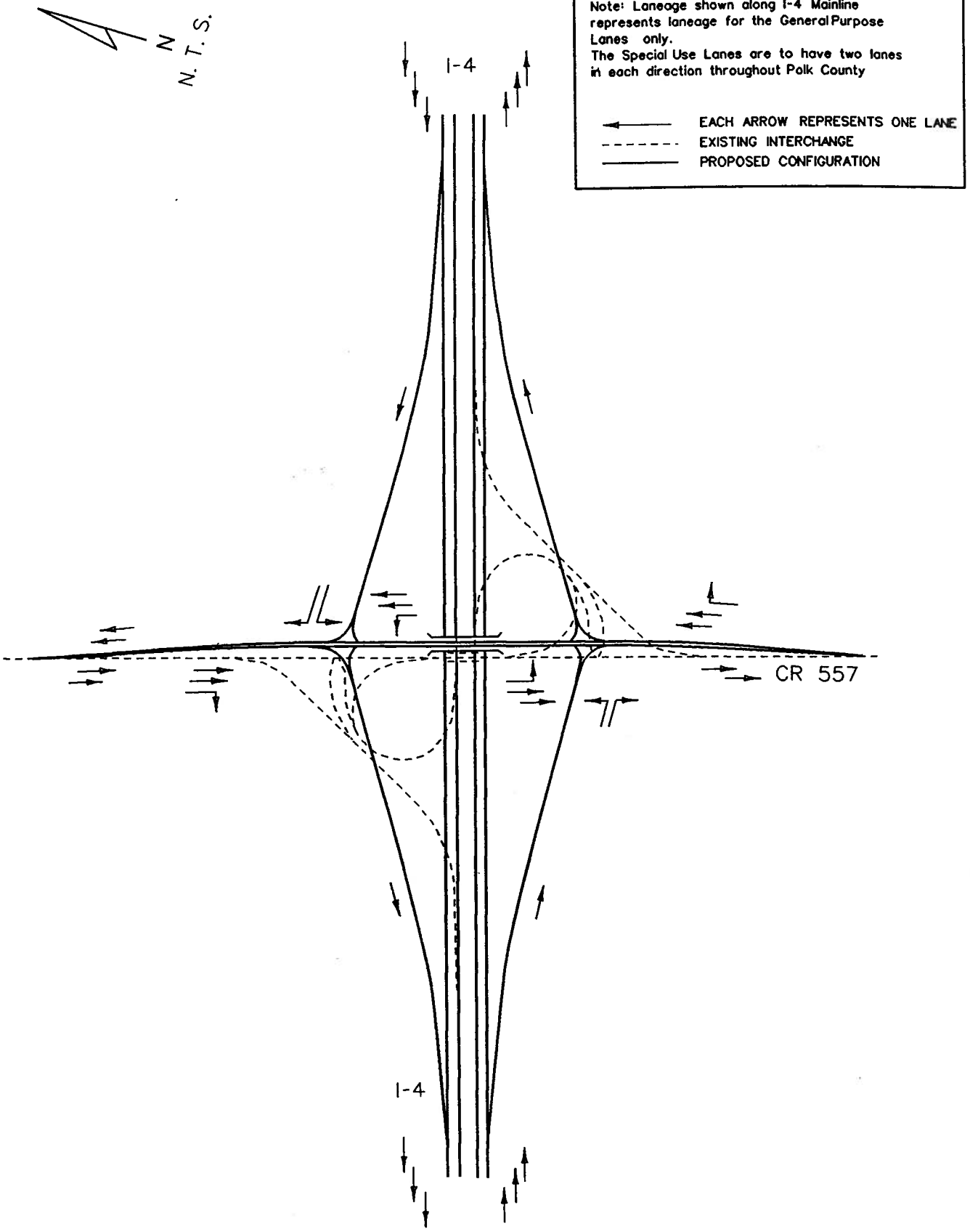


Schematic Diagram of SR 559 Interchange Concept

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

FIGURE 8-13



Schematic Diagram of CR 557 Interchange Concept	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 8-14

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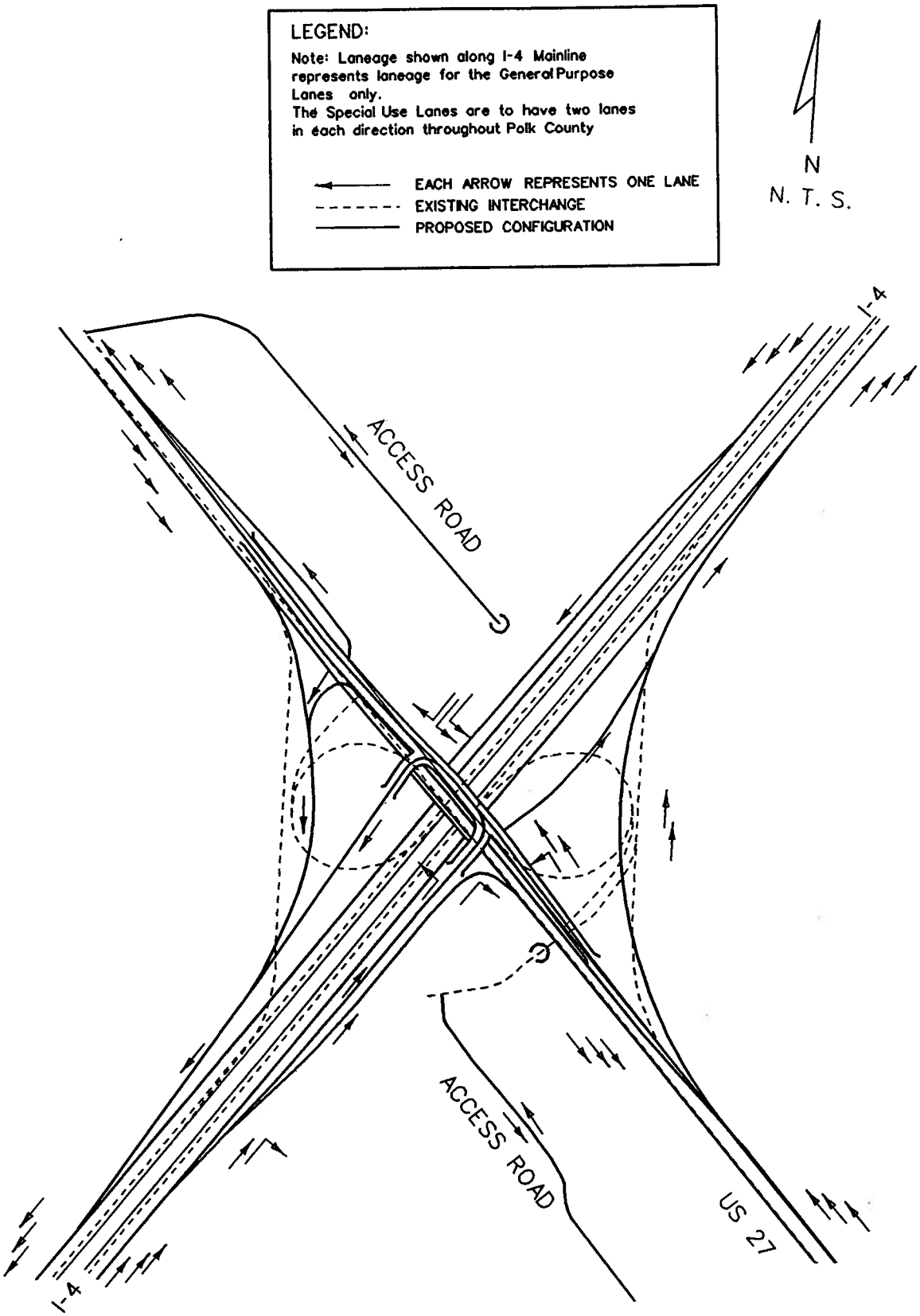

Schematic Diagram of US 27 Interchange Concept (US27-1)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

FIGURE 8-15

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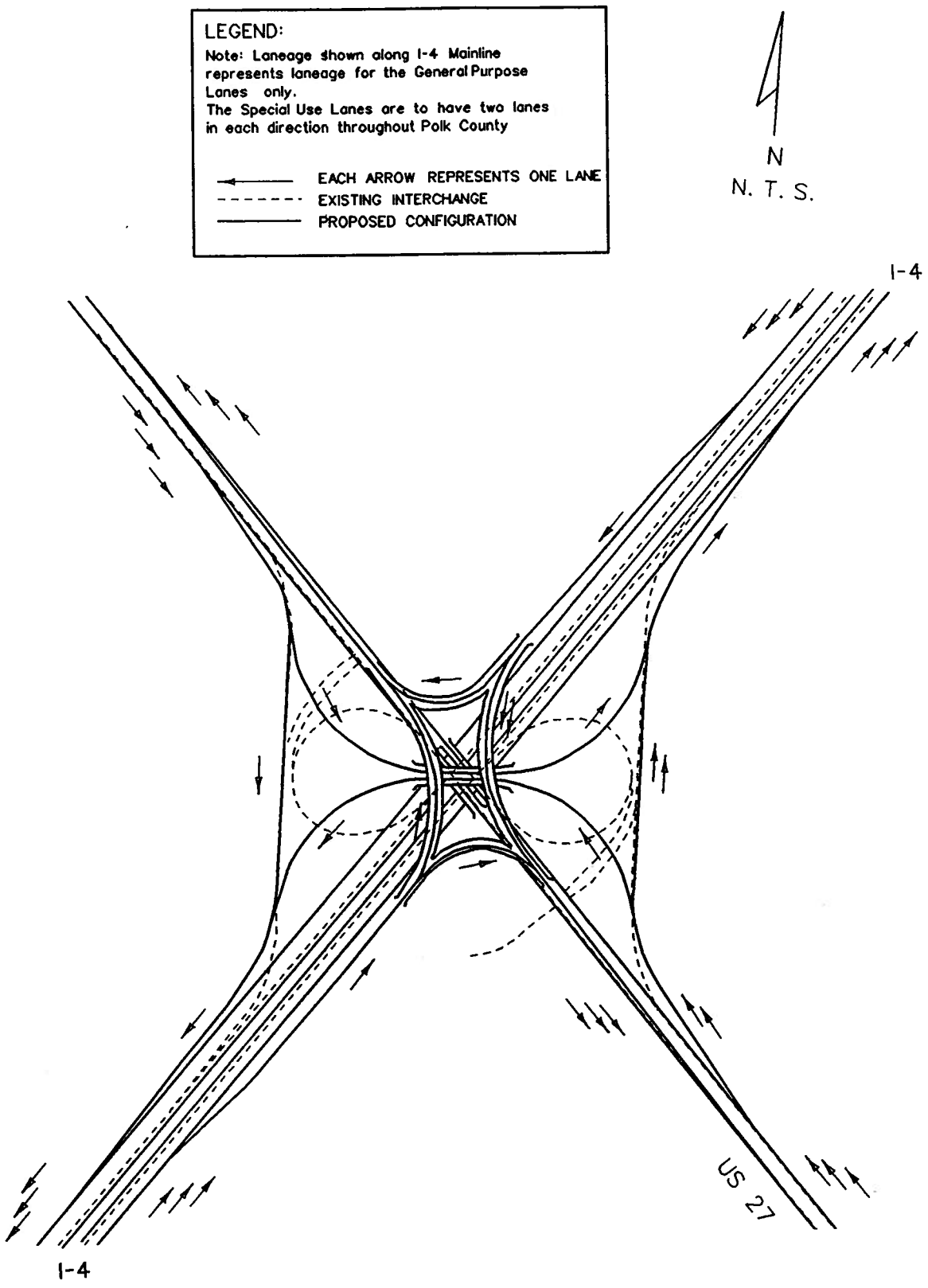

Schematic Diagram of US 27 Interchange Concept (US27-2)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 8-16

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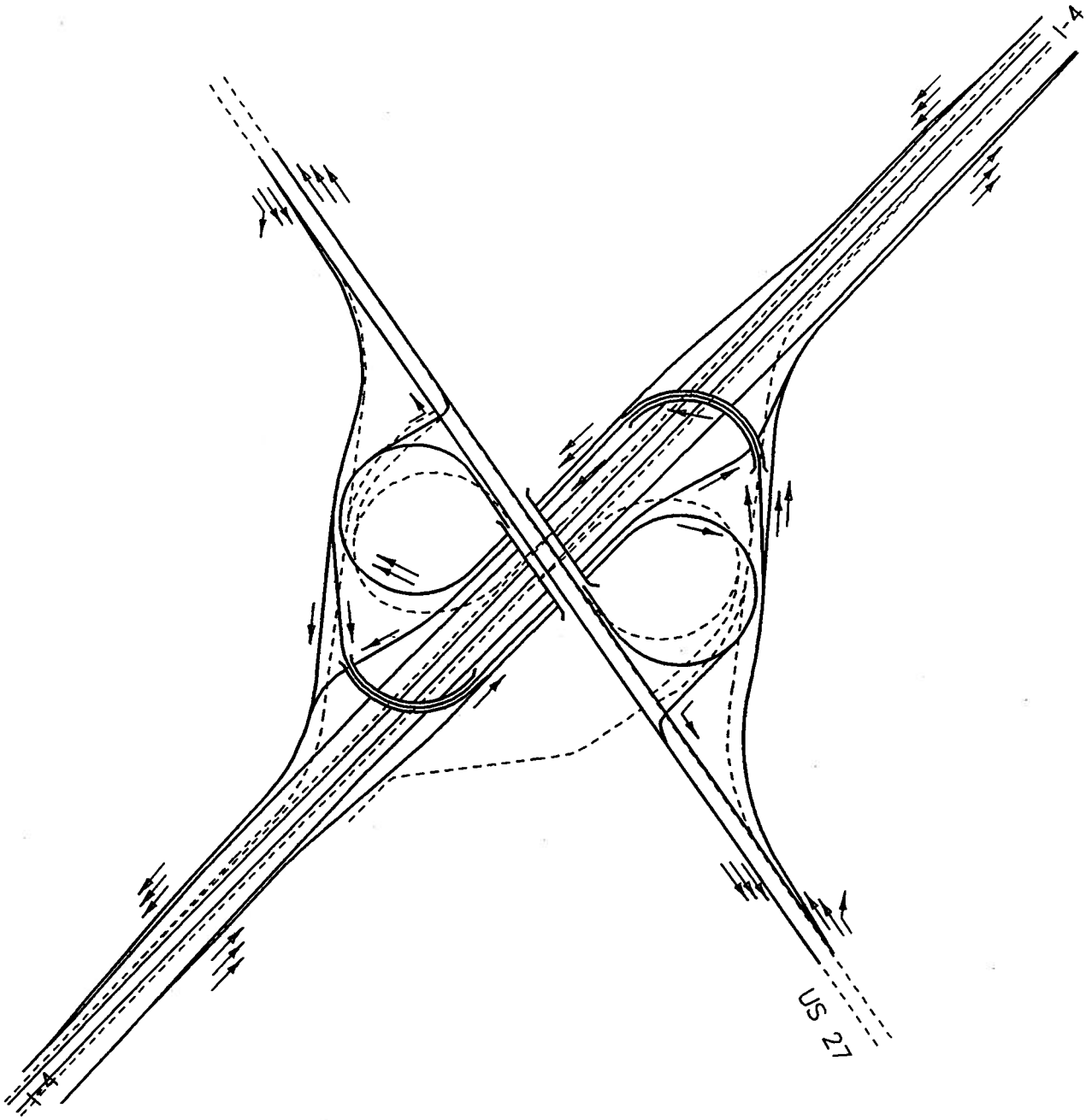
LEGEND:

Note: Laneage shown along I-4 Mainline represents laneage for the General Purpose Lanes only.
The Special Use Lanes are to have two lanes in each direction throughout Polk County

EACH ARROW REPRESENTS ONE LANE
EXISTING INTERCHANGE
PROPOSED CONFIGURATION

N

N. T. S.



Schematic Diagram of US 27 Interchange Concept (US27-3)

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 8-17

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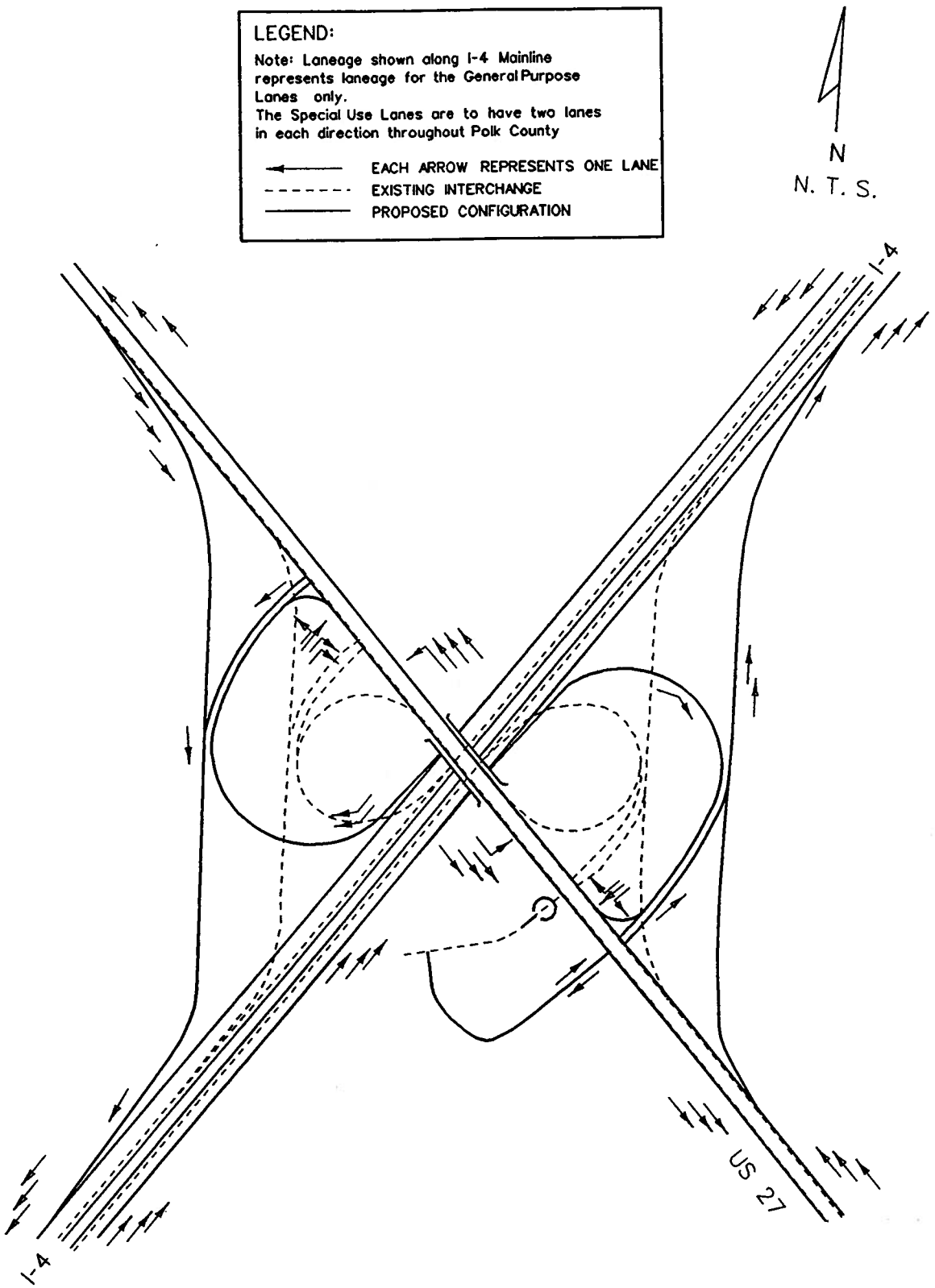

Schematic Diagram of US 27 Interchange Concept (US 27-4)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 8-18

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8.5 Alternatives Evaluation Matrices

Once the typical sections to be analyzed were selected and the avoidance and minimization strategy was developed, evaluation matrices were prepared for each segment of this project. The matrices quantify impacts to the human and natural environment and provide a comparison of impacts and costs for the widening of I-4. The matrices for Segments 2, 8 and 3 show the costs and impacts associated with widening I-4 within the existing right-of-way. The matrices for Segments 3, 4, 5, 6, 7 and 9 compare the costs and impacts for widening to the left, center or right using the 128.8 m (422.6 ft) rural typical section. Costs and impacts were tabulated by sheet to enable the mixing and matching of left-center-right where appropriate to select the preferred alternative alignment which often is a combination of various left-center-right options. The total segment left-center-right costs and impacts are shown on the matrices. The matrices include costs for design, right-of-way for roadway, right-of-way for storm water management facilities, relocations and business damages, construction, additional maintenance of traffic, major utility relocations, environmental mitigation and contamination. The preferred alternative alignments shown in the matrices support and are consistent with the alignment strategy presented in the Corridor Analysis Report.

The information tabulated in the evaluation matrices quantifies the potential impacts identified in the alignment strategy and attaches costs to those impacts (based on specific typical sections) for comparative purposes. Only those typical sections deemed appropriate in each project segment were included in the matrices. The matrices allow a decision to be made for the general alignment of the entire segment (left-center-right) and for a typical section type (urban-rural). Specific alignment shifts within a segment require additional detailed analysis. For example, the matrix for Segment 2 identified the costs for the major utility relocations associated with left or right alignment shifts between Kathleen Road and US 98. In Segment 3, the matrix quantified the significant potential impacts to the Holiday Inn and Paddock Club Apartments properties. The additional construction and wetland mitigation costs associated with an encroachment into Lake Agnes and Little Lake Agnes were identified in Segment 4. In Segment 7, the additional cost for maintenance of traffic associated with a centered alignment was identified. These areas were further analyzed in greater detail to avoid or minimize the potential for significant impacts. See Section 8.4.2 for a description of the alignment shifts in Segments 2, 3, 4 and 7.

An evaluation matrix was prepared for the four alternative interchange concepts at US 27. The matrix aided in the selection of the US27-4 alternative by identifying the significant right-of-way and structure costs differences associated with each concept.

The alignment and typical section alternatives evaluation matrices by project segment are shown in Figures 8-19 through 8-26. The US 27 interchange alternatives comparison matrix is shown in Figure 8-27. The CR 582 Socrum Loop Road interchange alternatives comparison matrix is shown in Figure 8-28.

I-4 Project Development and Environment Study

ALTERNATIVES EVALUATION MATRIX

Segment 2

West of Memorial Boulevard to West of US 98

5.8 km (3.6 mi)

Evaluation Factor	Measure	91.4 m (300 ft) Urban Typical Section		
		Left	Center	Right
Design Cost (15% of (Construction + MOT))	$ x Million		$11.03	
Right-of-Way Cost (Roadway)	$ x Million		$4.12	
Right-of-Way Cost (Storm Water Management)	$ x Million		$0.78	
Business Damages and Relocation Cost	$ x Million		$0.09	
LRE Construction Cost (includes 10% MOT)	$ x Million		$73.52	
Additional Maintenance of Traffic Cost	$ x Million		$0.00	
Major Utility Relocation Cost	$ x Million		$1.99	
Mitigation Cost	$ x Million		$0.16	
Contamination Cleanup Cost	$ x Million		$0.00	
Total Segment Cost	$ x Million		**$91.69**	
Relocations - Business	No.		0	
Relocations - Residential	No.		6	
Potential Contamination Sites	No.		0	
Parcels within Right-of-Way	No.		51	
Right-of-Way (Roadway)	Ha (ac)		3.4 (8.5)	
Right-of-Way (Storm Water Management)	Ha (ac)		7.3 (18.0)	
Wetlands	Ha (ac)		0.8 (2.1)	
Threatened & Endangered Species	H - M - L		Low	
Sensitive Cultural Features	No.		1	
Preferred Alternative			X	

The preferred alignment is a combination of left, center and right alignments typically within the existing right-of-way based on a sheet by sheet evaluation of impacts and costs.

Costs in this matrix have been rounded to the nearest $ 0.01 m.

Figure No. 8-19

I-4 Project Development and Environment Study

ALTERNATIVES EVALUATION MATRIX

Segment 3

East of US 98 to East of SR 33

9.5 km (5.9 mi)

Evaluation Factor	Measure	91.4 m (300 ft) Urban Typical Section		
		Left	Center	Right
Design Cost (15% of (Construction + MOT))	$ x Million		$14.03	
Right-of-Way Cost (Roadway)	$ x Million		$5.37	
Right-of-Way Cost (Storm Water Management)	$ x Million		$1.29	
Business Damages and Relocation Cost	$ x Million		$0.00	
LRE Construction Cost (includes 10% MOT)	$ x Million		$93.53	
Additional Maintenance of Traffic Cost	$ x Million		$0.00	
Major Utility Relocation Cost	$ x Million		$1.86	
Mitigation Cost	$ x Million		$2.06	
Contamination Cleanup Cost	$ x Million		$0.00	
Total Segment Cost	$ x Million		**$118.14**	
Relocations - Business	No.		0	
Relocations - Residential	No.		0	
Potential Contamination Sites	No.		0	
Parcels within Right-of-Way	No.		32	
Right-of-Way (Roadway)	Ha (ac)		15.6 (38.5)	
Right-of-Way (Storm Water Management)	Ha (ac)		11.9 (29.5)	
Wetlands	Ha (ac)		11.1 (27.4)	
Threatened & Endangered Species	H - M - L		Low	
Sensitive Cultural Features	No.		0	
Preferred Alternative			X	

* The preferred alignment is a combination of left, center and right alignments typically within the existing right-of-way based on a sheet by sheet evaluation of impacts and costs.
Costs in this matrix have been rounded to the nearest $ 0.01 m.

Figure No. 8-20

I-4 Project Development and Environment Study

ALTERNATIVES EVALUATION MATRIX

Segment 4

East of SR 33 to East of SR 559

9.8 km (6.1 mi)

Evaluation Factor	Measure	128.8 m (422.6 ft) Rural Typical Section		
		Left	Center	Right
Design Cost (15% of (Construction + MOT))	$ x Million	$11.15	$9.04	$11.15
Right-of-Way Cost (Roadway)	$ x Million	$7.80	$8.38	$8.18
Right-of-Way Cost (Storm Water Management)	$ x Million	$1.86	$1.86	$1.86
Business Damages and Relocation Cost	$ x Million	$0.06	$0.06	$0.00
LRE Construction Cost (includes 10% MOT)	$ x Million	$60.26	$60.26	$60.26
Additional Maintenance of Traffic Cost @ 8%	$ x Million	$4.82	$0.00	$4.82
Major Utility Relocation Cost	$ x Million	$0.34	$1.77	$1.83
Mitigation Cost	$ x Million	$1.04	$1.04	$0.67
Contamination Cleanup Cost	$ x Million	$0.00	$0.00	$0.00
Total Segment Cost	$ x Million	**$87.33**	**$82.41**	**$88.77**
Relocations - Business	No.	0	0	0
Relocations - Residential	No.	4	4	0
Potential Contamination Sites	No.	2	2	2
Parcels within Right-of-Way	No.	27	45	26
Right-of-Way (Roadway)	Ha (ac)	29.8 (73.5)	32.3 (79.7)	31.5 (75.6)
Right-of-Way (Storm Water Management)	Ha (ac)	17.3 (42.7)	17.3 (42.7)	17.3 (42.7)
Wetlands	Ha (ac)	5.6 (13.9)	5.6 (13.9)	3.6 (8.9)
Threatened & Endangered Species	H - M - L	Low	Low	Low
Sensitive Cultural Features	No.	0	0	0
Preferred Alternative			X	

Costs in this matrix have been rounded to the nearest $ 0.01 m.

Figure No. 8-21

I-4 Project Development and Environment Study

ALTERNATIVES EVALUATION MATRIX

Segment 5

East of SR 559 to East of CR 557

6.4 km (4.0 mi)

Evaluation Factor	Measure	128.8 m (422.6 ft) Rural Typical Section		
		Left	Center	Right
Design Cost (15% of (Construction + MOT))	$ x Million	$6.58	$6.10	$6.58
Right-of-Way Cost (Roadway)	$ x Million	$2.70	$2.49	$2.47
Right-of-Way Cost (Storm Water Management)	$ x Million	$0.87	$0.87	$0.87
Business Damages and Relocation Cost	$ x Million	$0.11	$0.11	$0.11
LRE Construction Cost (includes 10% MOT)	$ x Million	$40.64	$40.64	$40.64
Additional Maintenance of Traffic Cost @ 8%	$ x Million	$3.25	$0.00	$3.25
Major Utility Relocation Cost	$ x Million	$0.00	$0.11	$0.11
Mitigation Cost	$ x Million	$3.60	$3.60	$3.36
Contamination Cleanup Cost	$ x Million	$0.00	$0.00	$0.00
Total Segment Cost	$ x Million	**$57.75**	**$53.92**	**$57.39**
Relocations - Business	No.	1	1	1
Relocations - Residential	No.	0	0	0
Potential Contamination Sites	No.	0	0	0
Parcels within Right-of-Way	No.	14	19	10
Right-of-Way (Roadway)	Ha (ac)	35.0 (86.3)	33.3 (82.2)	33.0 (81.4)
Right-of-Way (Storm Water Management)	Ha (ac)	8.1 (20.0)	8.1 (20.0)	8.1 (20.0)
Wetlands	Ha (ac)	19.4 (48.0)	19.4 (48.0)	18.1 (44.8)
Threatened & Endangered Species	H - M - L	Low	Low	Low
Sensitive Cultural Features	No.	0	0	0
Preferred Alternative			**X**	

Costs in this matrix have been rounded to the nearest $ 0.01 m.

Figure No. 8-22

I-4 Project Development and Environment Study

ALTERNATIVES EVALUATION MATRIX

Segment 6

East of CR 557 to West of US 27

10.0 km (6.2 mi)

Evaluation Factor	Measure	128.8 m (422.6 ft) Rural Typical Section		
		Left	Center	Right
Design Cost (15% of (Construction + MOT))	$ x Million	$7.29	$7.36	$7.29
Right-of-Way Cost (Roadway)	$ x Million	$3.58	$3.55	$3.62
Right-of-Way Cost (Storm Water Management)	$ x Million	$1.35	$1.35	$1.35
Business Damages and Relocation Cost	$ x Million	$0.00	$0.00	$0.00
LRE Construction Cost (includes 10% MOT)	$ x Million	$46.74	$46.74	$46.74
Additional Maintenance of Traffic Cost	$ x Million	$1.87	$2.34	$1.87
Major Utility Relocation Cost	$ x Million	$0.00	$0.00	$0.00
Mitigation Cost	$ x Million	$7.65	$7.35	$7.56
Contamination Cleanup Cost	$ x Million	$0.00	$0.00	$0.00
Total Segment Cost	$ x Million	**$68.48**	**$68.69**	**$68.43**
Relocations - Business	No.	0	0	0
Relocations - Residential	No.	0	0	0
Potential Contamination Sites	No.	0	0	0
Parcels within Right-of-Way	No.	7	5	4
Right-of-Way (Roadway)	Ha (ac)	15.3 (37.9)	15.2 (37.5)	15.4 (38.1)
Right-of-Way (Storm Water Management)	Ha (ac)	12.5 (30.9)	12.5 (30.9)	12.5 (30.9)
Wetlands	Ha (ac)	41.3 (102.0)	39.7 (98.0)	40.8 (100.8)
Threatened & Endangered Species	H - M - L	Low	Low	Low
Sensitive Cultural Features	No.	0	0	0
Preferred Alternative			**X**	

Costs in this matrix have been rounded to the nearest $ 0.01 m.

Figure No. 8-23

I-4 Project Development and Environment Study

ALTERNATIVES EVALUATION MATRIX

Segment 7

East of US 27 to the Polk/Osceola County Line

3.9 km (2.4 mi)

Evaluation Factor	Measure	128.8 m (422.6 ft) Rural Typical Section		
		Left	Center	Right
Design Cost (15% of (Construction + MOT))	$ x Million	$2.42	$2.61	$2.42
Right-of-Way Cost (Roadway)	$ x Million	$1.19	$1.03	$1.20
Right-of-Way Cost (Storm Water Management)	$ x Million	$0.52	$0.52	$0.52
Business Damages and Relocation Cost	$ x Million	$0.00	$0.00	$0.00
LRE Construction Cost (includes 10% MOT)	$ x Million	$16.13	$16.13	$16.13
Additional Maintenance of Traffic Cost @ 8%	$ x Million	$0.00	$1.29	$0.00
Major Utility Relocation Cost	$ x Million	$0.00	$0.00	$0.00
Mitigation Cost	$ x Million	$1.17	$1.16	$1.16
Contamination Cleanup Cost	$ x Million	$0.00	$0.00	$0.00
Total Segment Cost	$ x Million	**$21.43**	**$22.74**	**$21.43**
Relocations - Business	No.	0	0	0
Relocations - Residential	No.	0	0	0
Potential Contamination Sites	No.	0	0	0
Parcels within Right-of-Way	No.	4	5	4
Right-of-Way (Roadway)	Ha (ac)	7.1 (17.6)	6.2 (15.3)	7.2 (17.8)
Right-of-Way (Storm Water Management)	Ha (ac)	4.9 (12.1)	4.9 (12.1)	4.9 (12.1)
Wetlands	Ha (ac)	6.3 (15.6)	6.2 (15.4)	6.2 (15.4)
Threatened & Endangered Species	H - M - L	Medium	Medium	Medium
Sensitive Cultural Features	No.	0	0	0
Preferred Alternative			X	

Costs in this matrix have been rounded to the nearest $ 0.01 m.

Figure No. 8-24

I-4 Project Development and Environment Study

ALTERNATIVES EVALUATION MATRIX

Segment 8

US 98 Interchange

0.8 km (0.5 mi)

Evaluation Factor	Measure	91.4 m (300 ft) Urban Typical Section		
		Left	Center	Right
Design Cost (15% of (Construction + MOT))	$ x Million		$4.38	
Right-of-Way Cost (Roadway)	$ x Million		$1.66	
Right-of-Way Cost (Storm Water Management)	$ x Million		$0.15	
Business Damages and Relocation Cost	$ x Million		$0.26	
LRE Construction Cost (includes 10% MOT)	$ x Million		$29.19	
Additional Maintenance of Traffic Cost	$ x Million		$0.00	
Major Utility Relocation Cost	$ x Million		$0.00	
Mitigation Cost	$ x Million		$0.47	
Contamination Cleanup Cost	$ x Million		$0.00	
Total Segment Cost	$ x Million		**$36.11**	
Relocations - Business	No.		1	
Relocations - Residential	No.		10	
Potential Contamination Sites	No.		0	
Parcels within Right-of-Way	No.		41	
Right-of-Way (Roadway)	Ha (ac)		2.1 (5.2)	
Right-of-Way (Storm Water Management)	Ha (ac)		1.4 (3.5)	
Wetlands	Ha (ac)		2.5 (6.2)	
Threatened & Endangered Species	H - M - L		Low	
Sensitive Cultural Features	No.		0	
Preferred Alternative			X	

Costs in this matrix have been rounded to the nearest $ 0.01 m.

Figure No. 8-25

I-4 Project Development and Environment Study

ALTERNATIVES EVALUATION MATRIX

Segment 9

US 27 Interchange

1.1 km (0.7 mi)

Evaluation Factor	Measure	128.8 m (422.6 ft) Rural Typical Section		
		Left	Center	Right
Design Cost (15% of (Construction + MOT))	$ x Million	$4.07	$3.77	$4.07
Right-of-Way Cost (Roadway)	$ x Million	$22.50	$22.34	$21.70
Right-of-Way Cost (Storm Water Management)	$ x Million	$0.21	$0.21	$0.21
Business Damages and Relocation Cost	$ x Million	$0.29	$0.50	$0.44
LRE Construction Cost (includes 10% MOT)	$ x Million	$25.15	$25.15	$25.15
Additional Maintenance of Traffic Cost @ 8%	$ x Million	$2.01	$0.00	$2.01
Major Utility Relocation Cost	$ x Million	$0.00	$0.00	$0.00
Mitigation Cost	$ x Million	$0.00	$0.00	$0.00
Contamination Cleanup Cost	$ x Million	$0.00	$0.00	$0.00
Total Segment Cost	$ x Million	**$54.24**	**$51.97**	**$53.59**
Relocations - Business	No.	4	4	4
Relocations - Residential	No.	0	0	0
Potential Contamination Sites	No.	4	4	4
Parcels within Right-of-Way	No.	23	23	23
Right-of-Way (Roadway)	Ha (ac)	40.3 (99.6)	39.7 (98.1)	37.2 (92.0)
Right-of-Way (Storm Water Management)	Ha (ac)	2.0 (4.9)	2.0 (4.9)	2.0 (4.9)
Wetlands	Ha (ac)	0 (0)	0 (0)	0 (0)
Threatened & Endangered Species	H - M - L	Low	Low	Low
Sensitive Cultural Features	No.	0	0	0
Preferred Alternative			**X**	

Costs in this matrix have been rounded to the nearest $ 0.01 m.

In response to comments received from the public at the Public Hearings held on October 12, and 13, 1998, the PD&E concept for the US 27 interchange has been subsequently refined to avoid the taking of 3 businesses - McDonalds, Wendys and New York Pizza World restaurants. The concept plan shown at the Public Hearing indicated that relocating the frontage road would impact the above 3 restaurants. This concept change results in avoiding the taking of McDonalds and New York Pizza World, and minimizing the right-of-way taking from Wendys.

I-4 Project Development and Environment Study

COMPARATIVE COST EVALUATION MATRIX

US 27 Interchange Concepts

Evaluation Factor	Measure	Interchange Configuration Alternative			
		1	2	3	4
		US27-1	US27-2	US27-3	US27-4
Design Cost (15% of Construction)	$ x Million	$5.80	$7.26	$5.34	$3.77
Right-of-Way Cost (Roadway)	$ x Million	$20.60	$8.54	$20.60	$22.34
Right-of-Way Cost (Storm Water Management)	$ x Million	$0.21	$0.21	$0.21	$0.21
Business Damages and Relocation Cost	$ x Million	$1.52	$1.05	$1.52	$3.24
LRE Construction Cost (includes 10% MOT)	$ x Million	$35.80	$48.40	$35.60	$25.15
Additional Maintenance of Traffic Cost @ 8%	$ x Million	$2.86	$0.00	$0.00	$0.00
Major Utility Relocation Cost	$ x Million	$0.00	$0.00	$0.00	$0.00
Mitigation Cost	$ x Million	$0.00	$0.00	$0.00	$0.00
Contamination Cleanup Cost	$ x Million	$0.00	$0.00	$0.00	$0.00
Comparative Cost *	$ x Million	**$66.79**	**$65.46**	**$63.27**	**$54.71**
Relocations - Business	No.	12	2	12	2
Relocations - Residential	No.	0	0	0	0
Potential Contamination Sites	No.	4	4	4	4
Parcels within Right-of-Way	No.	59	23	59	23
Right-of-Way (Roadway)	Ha (ac)	7.9 (19.4)	6.3 (15.6)	7.9 (19.4)	39.7 (98.1)
Right-of-Way (Storm Water Management)	Ha (ac)	2.0 (4.9)	2.0 (4.9)	2.0 (4.9)	2.0 (4.9)
Preferred Alternative					X

* These costs **do not** represent the total costs for the interchange. They represent only the **major** cost items which differ for each alternative. The total project costs for Segment 9 are shown in Figure No. 8-25.

Figure 8-27

I-4 Project Development and Environment Study

COMPARATIVE COST EVALUATION MATRIX

CR 582 Socrum Loop Road

Interchange Concepts

Evaluation Factor	Measure	Interchange Configuration Alternative						
		1	2	3	4	5	6	7
		OCR-1	OCR-2	SLR-3	SLR-4	SLR-5	NCR-6	SLR-7
Design Cost (15% of Construction)	$ x Million	$1.38	$1.71	$1.75	$1.74	$1.37	$1.77	$1.10
Right-of-Way Cost (Roadway)	$ x Million	$6.53	$5.83	$4.58	$6.01	$4.93	$1.97	$1.20
Right-of-Way Cost (Storm Water Management)	$ x Million	$0.30	$0.25	$0.30	$0.30	$0.37	$0.30	$0.30
Business Damage and Relocation Cost	$ x Million	$0.56	$0.15	$0.41	$0.30	$0.03	$0.28	$0.00
Comparative Construction Cost [1]	$ x Million	$9.19	$11.41	$11.66	$11.57	$9.13	$11.83	$7.31
Major Utility Relocation Cost [2]	$ x Million	$0.53	$0.53	$1.93	$1.66	$1.64	$1.58	$1.41
Comparative Cost *	$ x Million	**$18.49**	**$19.88**	**$20.63**	**$21.58**	**$17.47**	**$17.73**	**$11.32**
Relocations - Business	No.	0	0	0	1	0	1	0
Relocations - Residential	No.	42	5	16	0	1	32	0
Parcels within Right-of-Way	No.	12	9	8	10	10	6	3
Right-of-Way (Roadway)	Ha (ac)	10.4 (25.6)	11.6 (28.6)	4.7 (11.7)	5.1 (12.5)	5.1 (12.5)	2.1 (5.2)	2.0 (5.0)
Right-of-Way (Storm Water Management)	Ha (ac)	2.8 (6.8)	2.3 (5.8)	2.8 (6.8)	3.5 (8.6)	3.5 (8.6)	2.8 (6.9)	2.8 (6.9)
Preferred Alternative								**X**

[1] These construction cost estimates do not include the I-4 mainline improvements. They would remain essentially the same for all interchange alternatives.

[2] Major utilities in the area of the Socrum Loop Road interchange include the FGT pipeline (@ $900,000 per mile) along the north side of I-4 and the American Telecasting cable television microwave receiving tower (@ $121,500) located between the Holiday Inn and the Paddock Club Apartments. Impacts to the GTE facility (@$1.29 million) in the southwest quadrant of the existing interchange is considered a utility impact cost.

* These costs **do not** represent the total costs for the interchange. They represent only the **major** cost items which differ for each alternative. The total project costs for Segment 3 are shown in Figure No. 8-20.

Figure No. 8-28

8.6 Title VI, Title VIII and Executive Order 12898 (Environmental Justice)

Title VI of the 1964 Civil Rights Act (Title VI), and related statutes, provides that no person shall, on the grounds of race, color, age, religion, sex, national origin, or handicap/disability, be excluded from participation in, or be denied the benefits of, or be otherwise subject to discrimination under any program of the Federal, State or local government. Title VIII of the 1968 Civil Rights Act (Title VIII) guarantees each person equal opportunity in housing.

In February 1994, the President of the United States issued Executive Order 12898 (Environmental Justice) requiring Federal agencies to analyze and address, as appropriate, disproportionately high adverse human health and environmental effects of Federal actions on minority and low-income populations, when such analysis is required by the National Environmental Policy Act of 1969 (NEPA).

An adverse effect on minority or low-income populations occurs when: 1) the adverse effect is predominately borne by the minority and/or low-income population; or 2) the adverse effect suffered by the minority and/or low-income population is more severe or greater than the adverse effect suffered by the non-minority and/or non-low-income population. If a disproportionately high and adverse effect on minority and/or low-income populations is determined though the NEPA process, then the Federal action may not be carried out unless mitigation measures or "environmental enhancements" are included.

The Executive Order 12898 was issued to underscore and complement certain provisions of existing law, including Title VI and Title VIII and related statutes. This project has been developed in accordance with Title VI, Title VIII and Executive Order 12898.

The existing I-4 through Polk County was constructed in the late 1950s and early 1960s. At that time, much of the county was very rural, however, the route selected for the highway traversed some neighborhoods in the Lakeland area. When initially constructed, I-4 became a physical barrier placed within these neighborhoods, severing some community ties. However, over the past forty years, these areas have reestablished as cohesive neighborhoods.

The proposed improvements to I-4 in Polk County involve widening the existing facility on the same alignment to accommodate additional general purpose and special use lanes, improve the traffic operations at interchanges and incorporate the latest design and safety standards. As such, the additional right-of-way is anticipated to impact 20 residences and 6 businesses along the existing corridor. A small number of these may be minority, ethnic, elderly or low-income persons. However, no discriminatory criteria were used during the development and selection of alternatives. The proposed improvements have not been planned to impact any specific groups or individuals, but rather to improve upon the existing facility.

9.0 PRELIMINARY DESIGN ANALYSIS

9.1 Design Traffic Volumes

The existing (Year 1993) and proposed (Year 2020) design traffic volumes (AADT and DDHV) for this project are shown in Table Nos. 6-1 and 6-4 in Sections 6.1.2 and 6.4, respectively.

9.2 Typical Sections

9.2.1 I-4 Mainline

The following typical sections were selected for the I-4 mainline improvements:

91.4 m (300 ft) Urban Interstate Typical Section (6+4) - This urban interstate typical could be constructed within the existing I-4 typical right-of-way of 91.4 m (300 ft). Storm sewer systems and retaining walls, as appropriate, would be incorporated into the design of the interstate facility. Because of the reduced right-of-way cost and reduced impacts to the human and natural environment of the corridor when compared to a rural section and the urban interstate classification, this typical section was selected for use in Segments 2, 3 and 8.

128.8 m (422.6 ft) Rural Interstate Typical Section (6+4) -This is a rural interstate typical section requiring 128.8 m (422.6 ft) of right-of-way. Typically, an additional 37.4 m (122.6 ft) of right-of-way would be required for this typical section. The border from the outside edge of the shoulder to right-of-way line for this typical section is 25 m (82 ft). The FDOT District 1 established the 6+4 Master Plan Ultimate Typical Section (approved by the FHWA) as the maximum interstate typical section. This typical section was used as the basis for the alternatives evaluation in the 1994 I-4 Master Plan. Because of the significant additional costs for right-of-way and the extensive environmental consequences (documented in the 1994 I-4 Master Plan) of this typical section as compared to the 91.4 m (300 ft) urban interstate typical and the 104.9 m (344 ft) and 121.9 m (400 ft) rural interstate typical sections, the 129.0 m (424 ft) Master Plan Ultimate Typical Section was initially rejected for further analyses. However, the July 1, 1995 border requirement made this typical section the minimum right-of-way width that could be evaluated for rural interstate facilities. All other reduced rural typical sections were eliminated from further study.

Both of the above proposed I-4 typical sections contain six 3.6 m (12 ft) general purpose lanes and four 3.6 m (12 ft) special use lanes physically separated from the general purpose lanes by two 3.6 m (12 ft) shoulders and a barrier wall. These typical sections include a 20.0 m (66 ft) median reserved for future rail service and allow for the minimum required 11.0 m (36 ft) clear zone outside the travel lanes.

The recommended I-4 mainline typical sections are shown in Figures 1-2 and 1-3 in Section 1.6.1.

9.2.2 Cross Roads

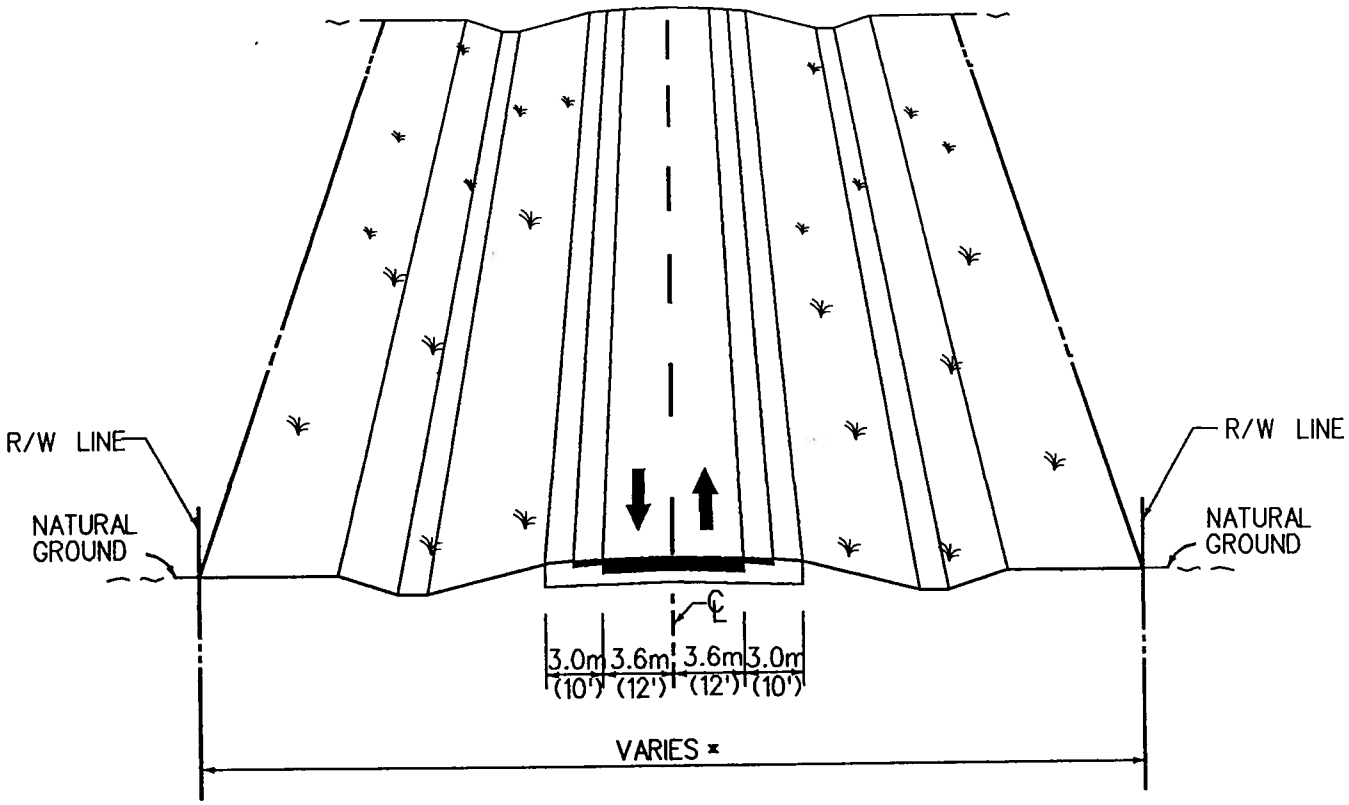
The US 98, CR 582, SR 33 and US 27 cross roads at interchanges will be designed to ultimately accommodate six lanes and provide a minimum 9.0 m (30 ft) median. The Kathleen Road (SR 539) overpass will be designed for four lanes but will ultimately accommodate six lanes and a 6.7 m (22 ft) median because of the narrow right-of-way south of I-4. The 1995 PD&E study for US 98 recommended

that US 98 be improved to six lanes south of I-4 and eight lanes north of I-4. CR 557 would be designed to ultimately accommodate four lanes with a 9.0 m (30 ft) median. US 27 will be designed for six lanes. The cross road typical section recommendations in this study are based on the improvements necessary to satisfy the traffic demand through the 2020 Design Year and to be consistent with the adopted long range transportation planning of Polk County and the City of Lakeland. Sufficient right-of-way for the ultimate six-lane or four-lane configuration should be purchased initially. Table No. 9-1 lists the existing, proposed and ultimate laneage, proposed ultimate median width and type of typical section.

Table No. 9-1
PROPOSED CROSS ROAD TYPICAL SECTIONS
I-4 Project Development and Environment Study

Cross Road Name	Existing Lanes	Proposed Lanes	Median Width	Ultimate Lanes	Roadway Type
Swindell Road	2	2	N/A	2	Rural
10th Street	2	2	N/A	2	Rural
Bella Vista Street	2	2	N/A	2	Rural
SR 539 (Kathleen Road)	2	4	14.0 m (46 ft)	6	Urban
CR 582 (Griffin Road)	2	4	9.0 m (30 ft)	4	Urban
US 98	4	6S & 8N	9.0 m (30 ft)	6S & 8N	Urban
Carpenter's Way Road	2	2	N/A	2	Rural
CR 582 (Socrum Loop Road)	4	6	16.5 m (54 ft)	6	Urban
Old Combee Road	2	2	N/A	2	Urban
SR 33	2	4	9.0 m (30 ft)	6	Rural
Mt. Olive Church Road	2	2	N/A	2	Rural
CR 655	2	2	N/A	2	Rural
SR 559	2	4	9.0 m (30 ft)	4	Urban
CR 557A	2	2	N/A	2	Rural
CR 557	2	2	N/A	4	Rural
US 27	4	6	9.0 m (30 ft)	6	Urban
CR 54 (Loughman Road)	2	2	N/A	2	Rural

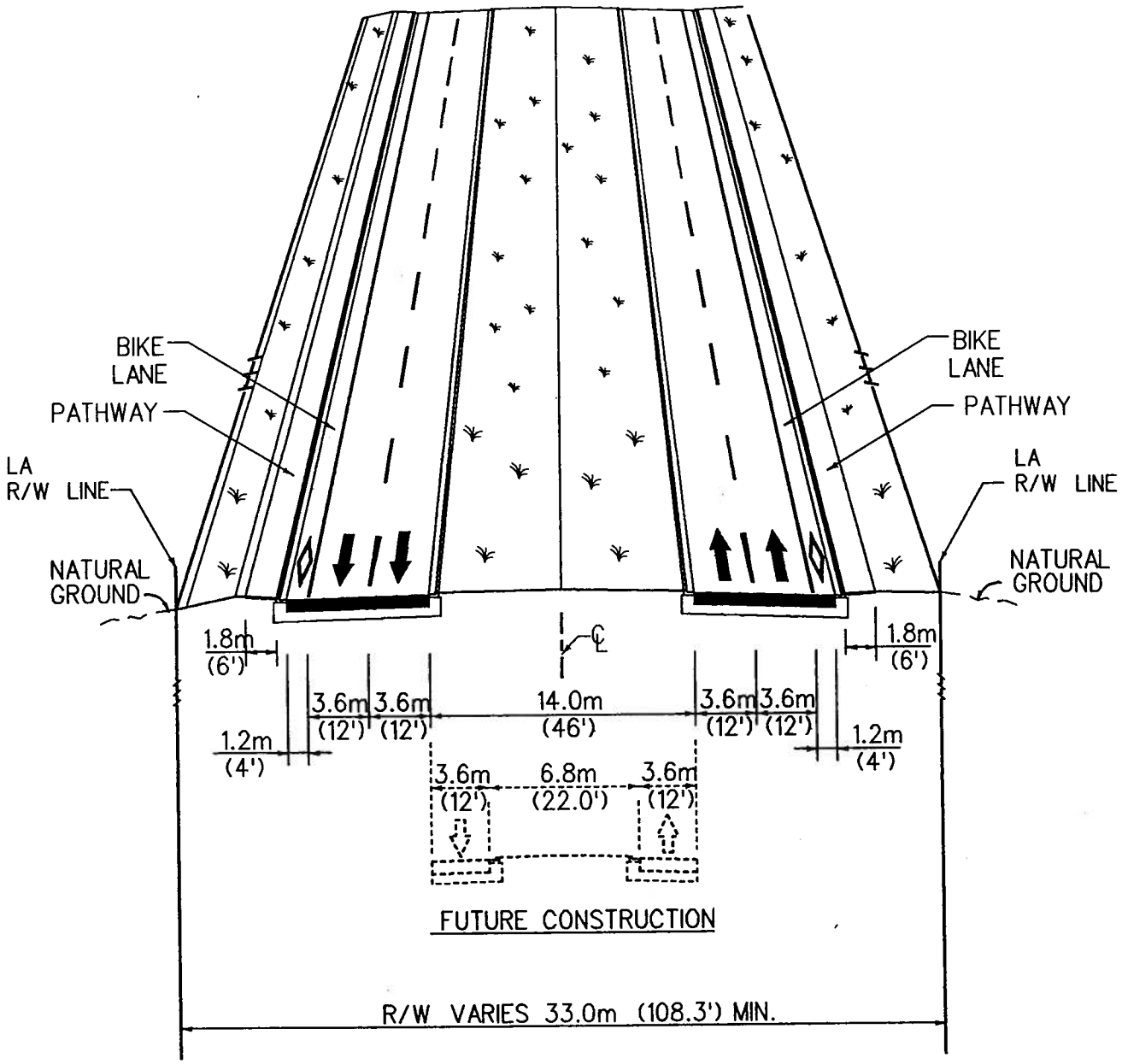
The design accommodations for the future widening to four or six lanes are shown dashed and labeled "Future Construction" on the recommended typical sections, as appropriate. The recommended typical sections for the cross roads are shown in Figures 9-1 to 9-11.



RECOMMENDED TYPICAL SECTION

	MINIMUM R/W *
SWINDELL ROAD	30.48m (100')
10th STREET	30.48m (100')
BELLA VISTA STREET	27.0m (88.58')
CARPENTER'S WAY ROAD	27.0m (88.58')
Mt. OLIVE ROAD	30.0m (98.43')
CR 557A	48.76m (160')
CR 54 (LOUGHMAN ROAD)	30.48m (100')

Cross Road Recommended Typical Section (Swindell Rd., 10th St., Bella Vista St., Carpenter's Way Rd., Mt. Olive Rd., CR 557A, CR 54)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-1



RECOMMENDED TYPICAL SECTION

SR 539 (KATHLEEN ROAD)

Cross Road Recommended Typical Section (Kathleen Road)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-2

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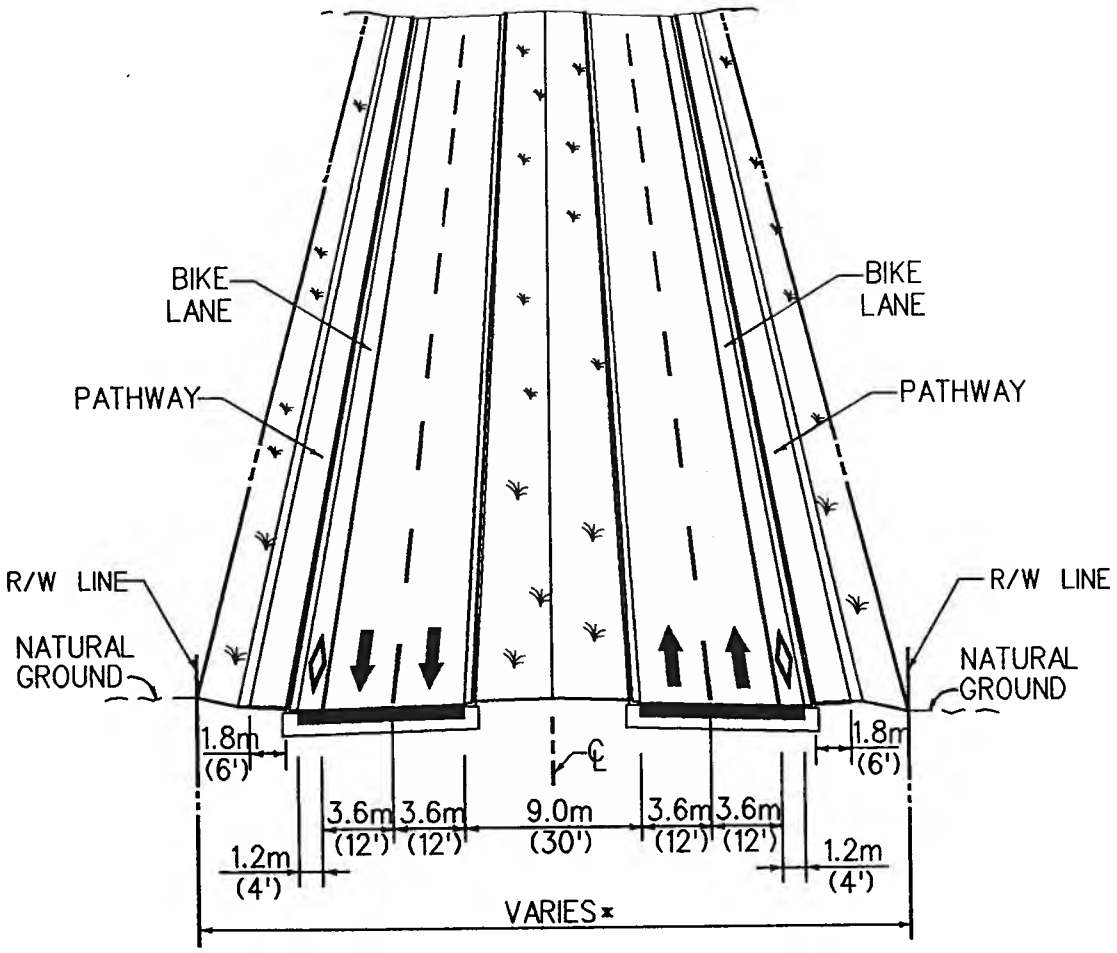
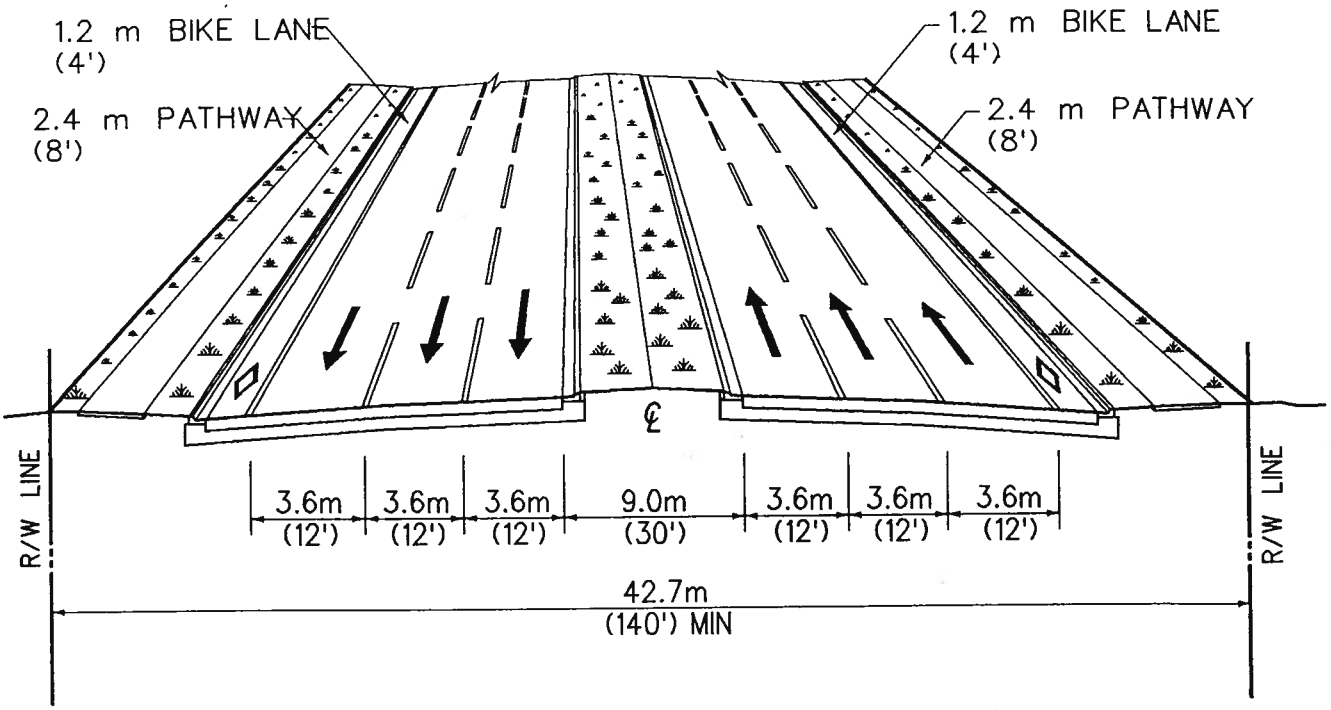


RECOMMENDED TYPICAL SECTION

* MINIMUM R/W

GRIFFIN ROAD	33.0m (108.3')
SR 559	34.0m (112')

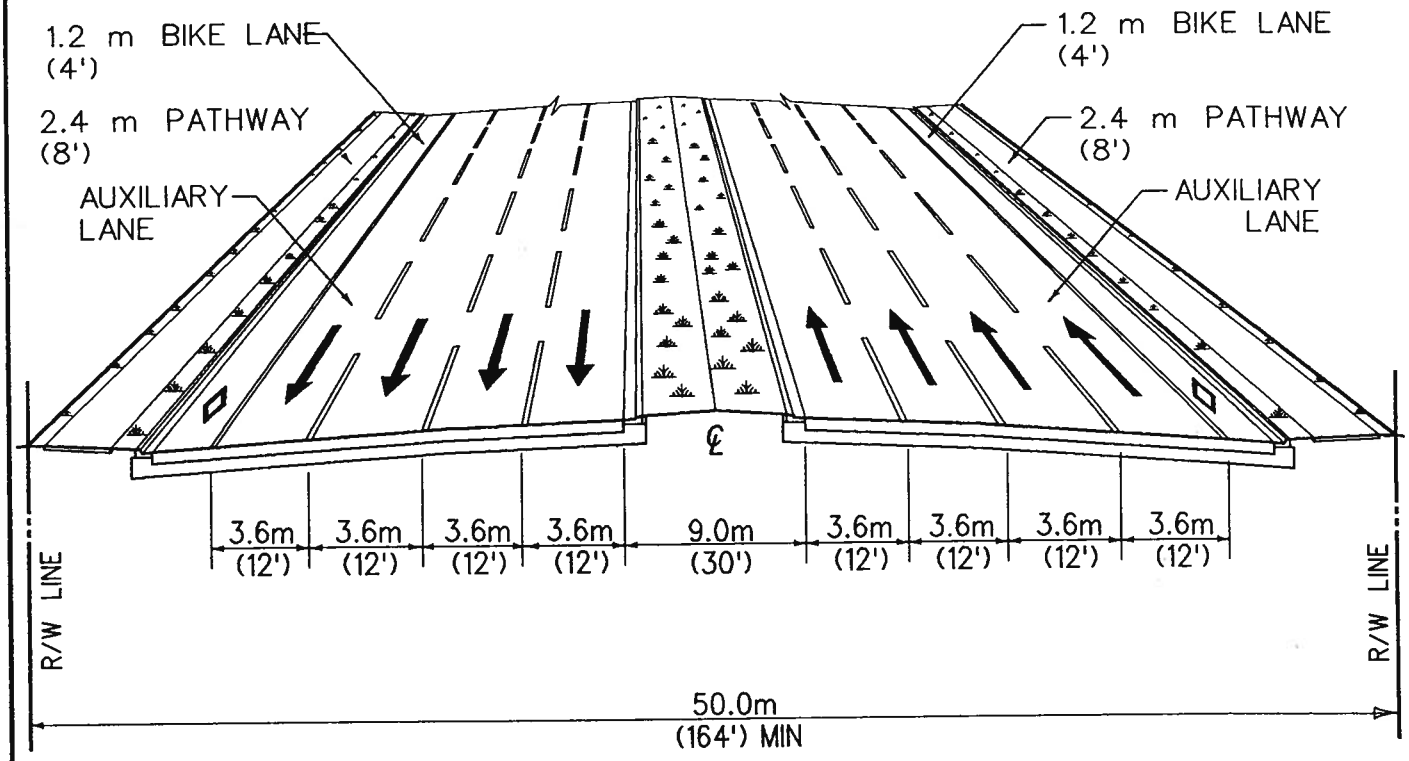
Cross Road Recommended Typical Section (Griffin Road, SR 559)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-3



RECOMMENDED TYPICAL SECTION

US 98
(SOUTH OF I-4 INTERCHANGE)

Cross Road Recommended Typical Section (US 98 South of I-4)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-4



RECOMMENDED TYPICAL SECTION

US 98
(NORTH OF I-4 INTERCHANGE)

Cross Road Recommended Typical Section (US 98 North of I-4)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-5

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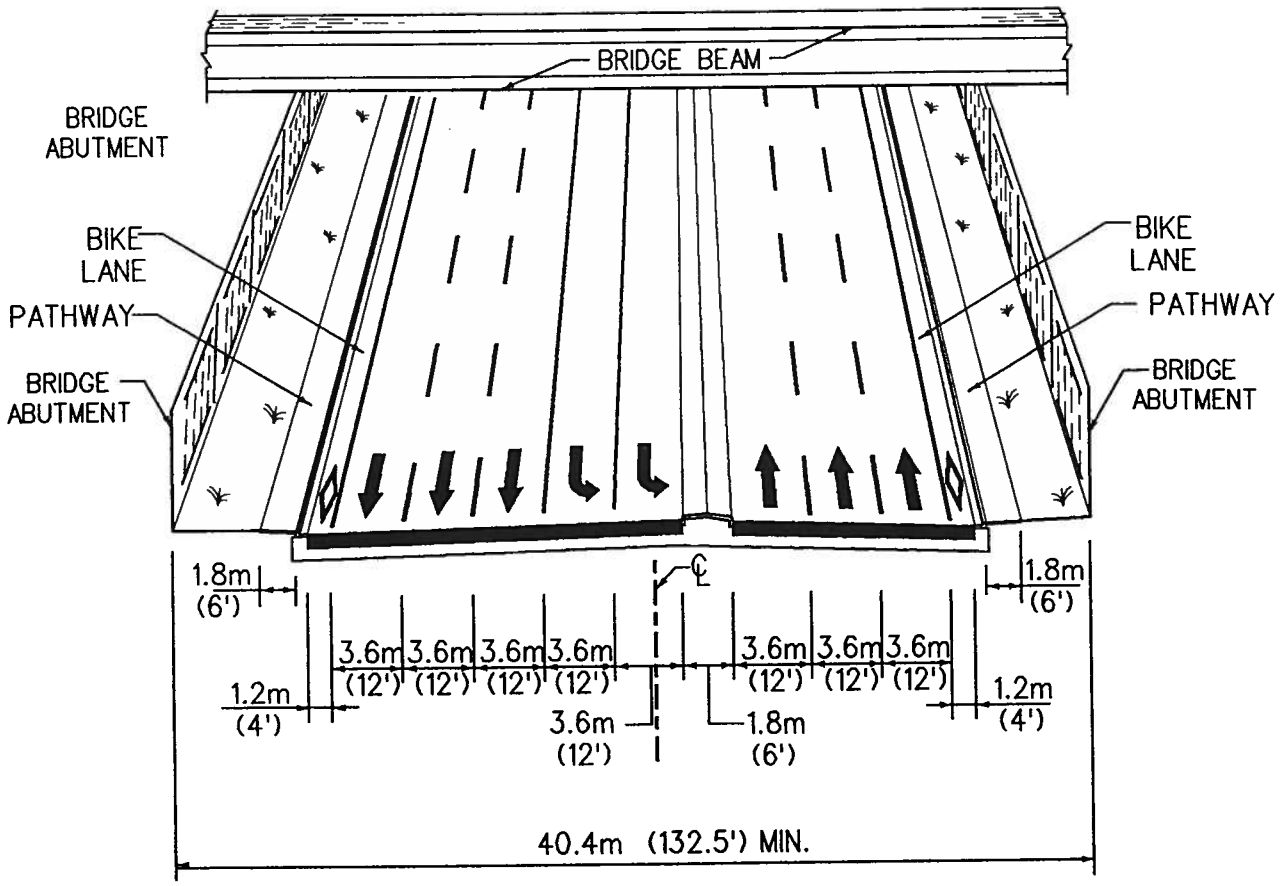
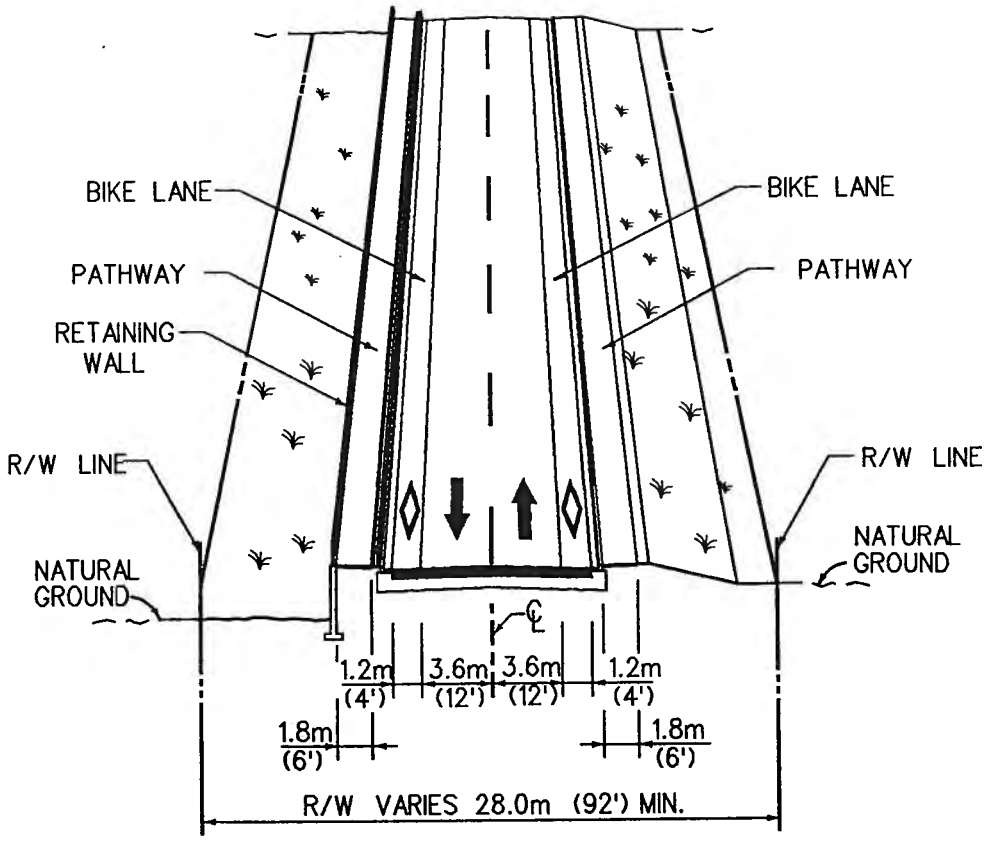


RECOMMENDED TYPICAL SECTION

CR 582
(SOCRUM LOOP ROAD)

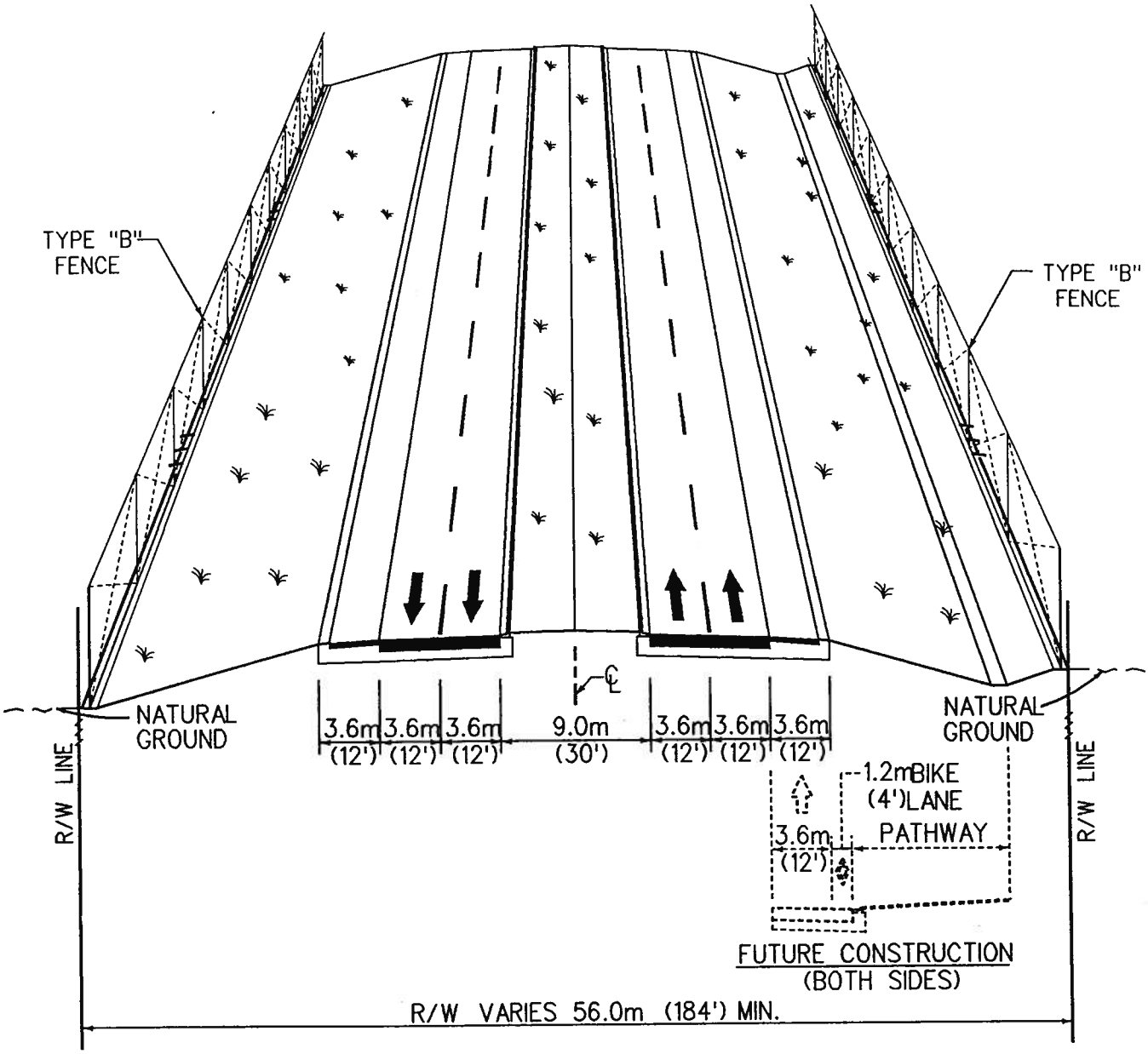
Cross Road Recommended Typical Section (SR-582 Socrum Loop Road)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-6



RECOMMENDED TYPICAL SECTION

OLD COMBEE ROAD

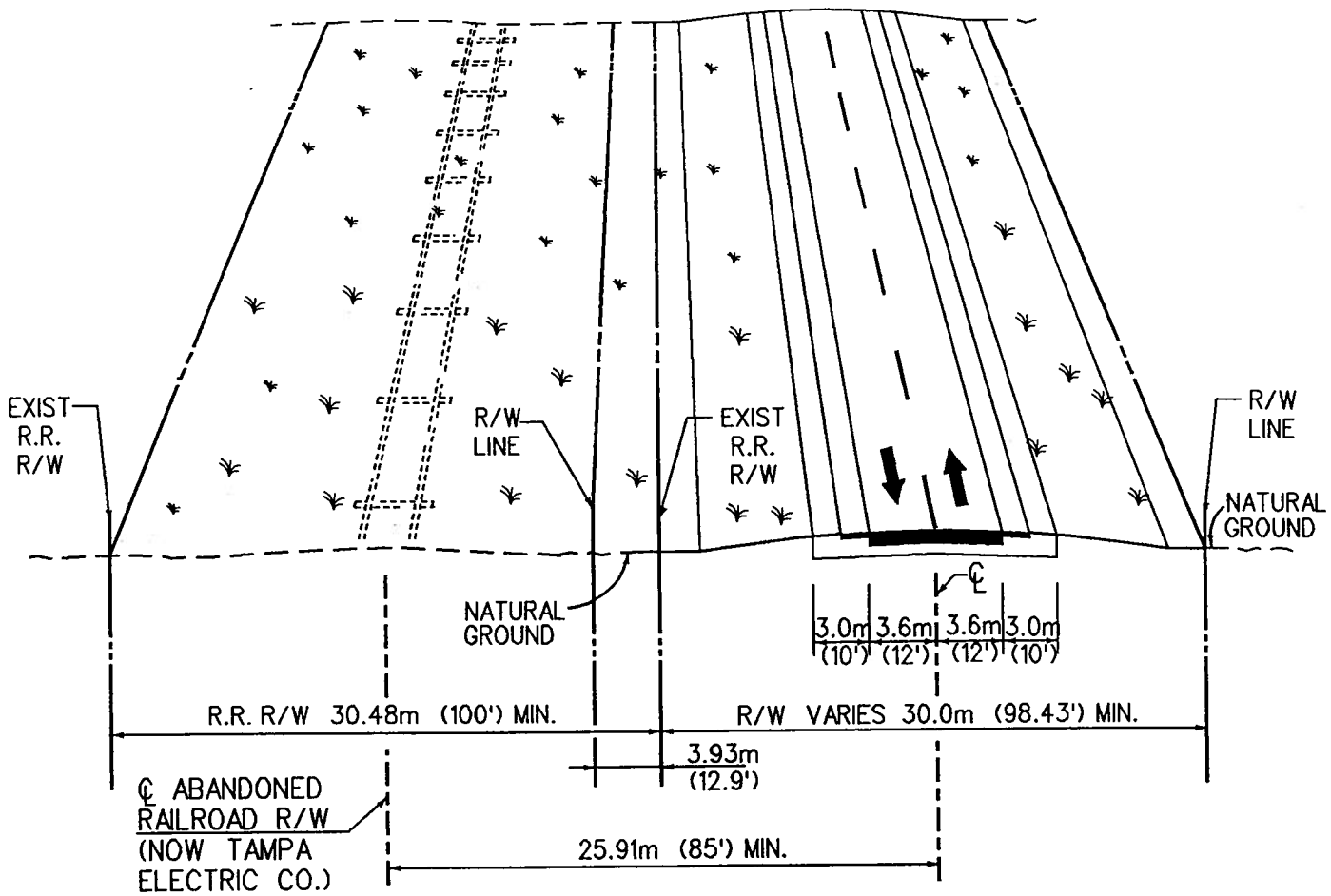
Cross Road Recommended Typical Section (Old Combee Road)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-7



RECOMMENDED TYPICAL SECTION

SR 33

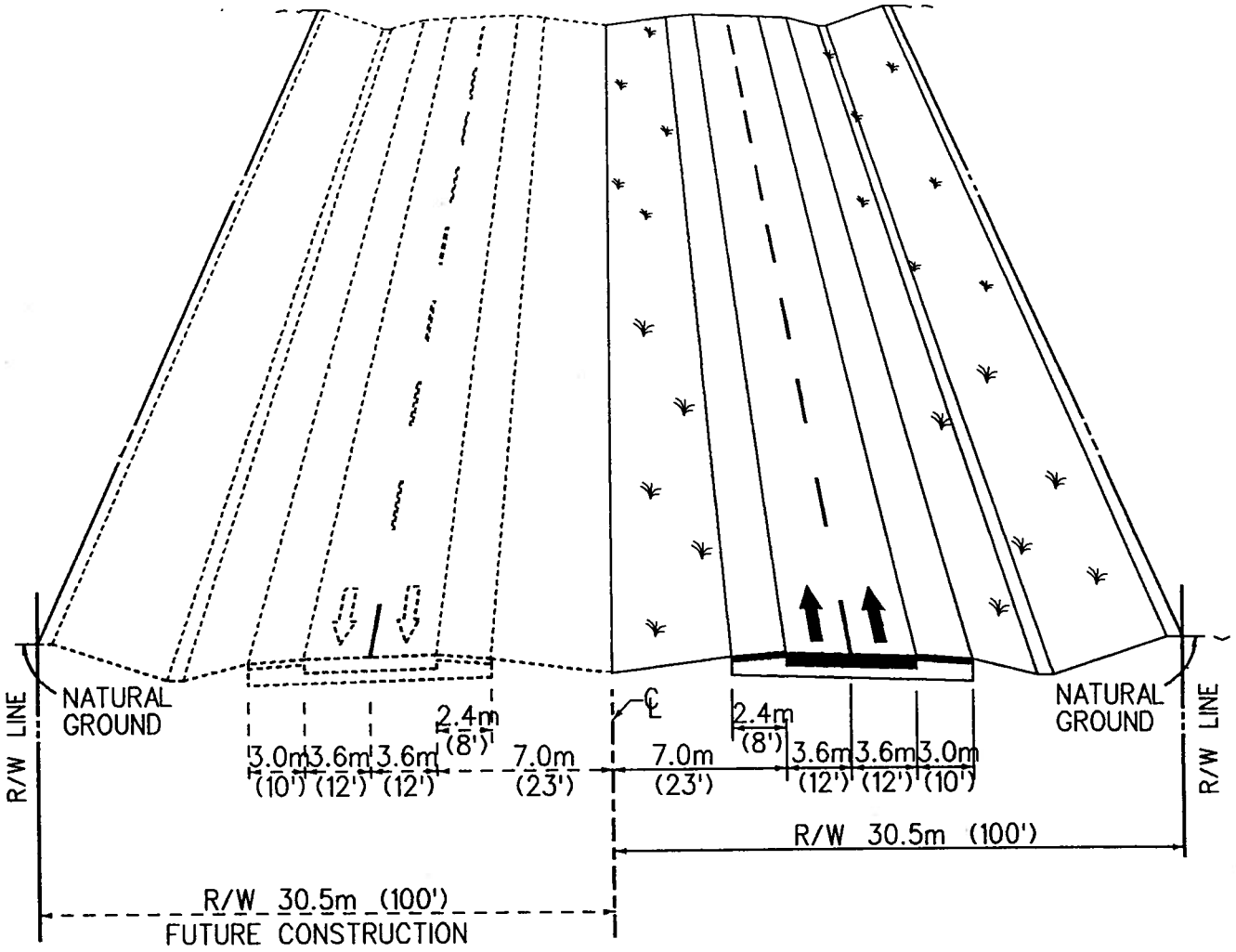
Cross Road Recommended Typical Section (SR 33)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-8



RECOMMENDED TYPICAL SECTION

CR 655

Cross Road Recommended Typical Section (CR 655)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-9



RECOMMENDED TYPICAL SECTION

CR 557

Cross Road Recommended Typical Section (CR 557)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-10

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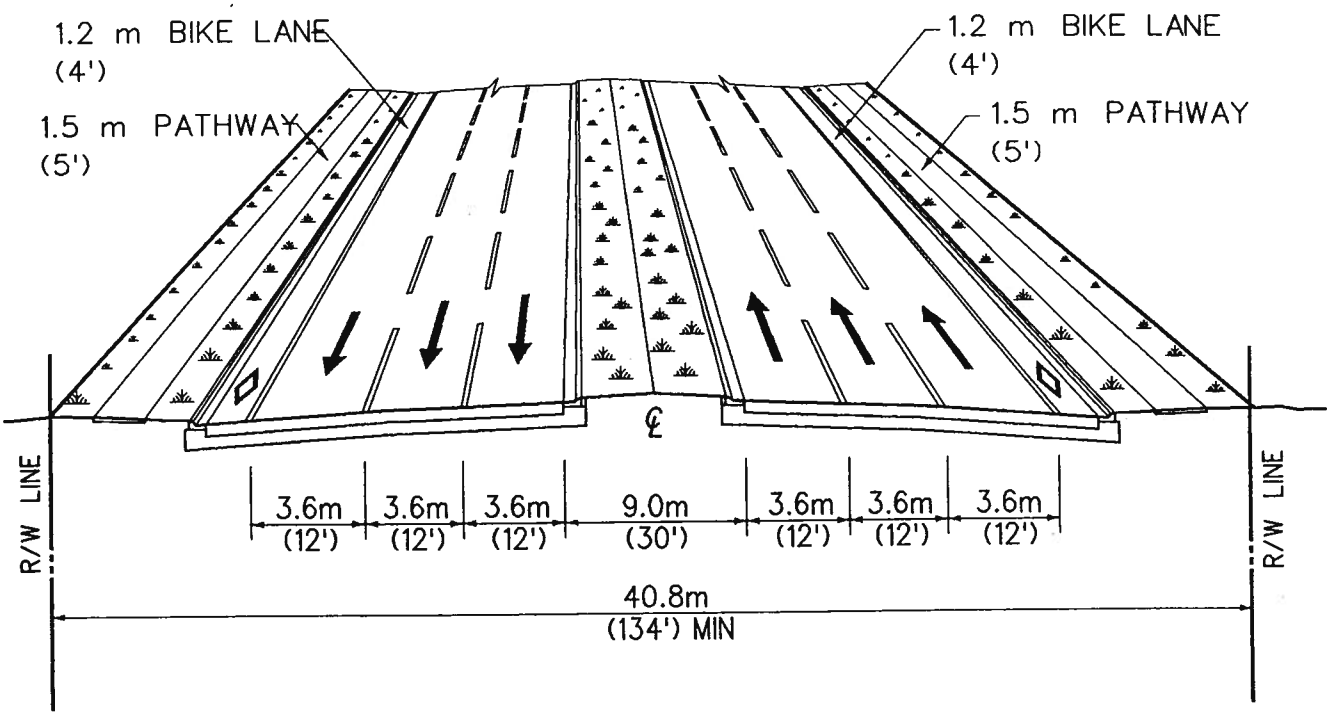

RECOMMENDED TYPICAL SECTION

US 27

Cross Road Recommended Typical Section (US 27)	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-11

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9.3 Interchange Concepts

In Polk County, the I-4 PD&E study contains eight interchanges. All of the existing interchanges require modifications to conform to the recommended improvements to I-4 and the cross roads, provide for an acceptable LOS and meet current design and safety standards. As such, all of the interchanges will have to be completely reconstructed. The following interchange configurations have been selected for use in this study.

Memorial Boulevard (SR 546) - The existing interchange would be reconstructed to provide an eastbound I-4 exit ramp, a westbound I-4 entrance ramp and an eastbound I-4 entrance ramp. The I-4 ramp termini would not be signalized. See Figure 8-1 in Section 8.4.3.

Kathleen Road (SR 539) - The existing diamond would be modified to a tight diamond urban type interchange. The limited access right-of-way would be extended north and south along Kathleen Road requiring the closure of two intersections and the addition of access roads in the southwest quadrant. The I-4 ramp intersections with Kathleen Road would be signalized. See Figure 8-2 in Section 8.4.3.

US 98 - The existing diamond interchange would be modified to a single point diamond urban type interchange (Alternate US98-2). The I-4 ramp intersections with US 98 would be signalized. See Figure 8-4 in Section 8.4.3.

Socrum Loop Road (CR 582) - The existing modified diamond would be reconstructed into a modified diamond type interchange with ramps connecting I-4 with CR 582 to the north and loop ramps connecting to SR 33 further east. The I-4 ramp termini would be signalized. See Figure 8-10 in Section 8.4.3.

SR 33 - The existing diamond would be modified to a tight diamond urban type interchange. The limited access right-of-way would be extended north and south along SR 33 requiring the realignment of the Tomkow Road intersection. The I-4 ramp intersections with SR 33 would be signalized. See Figure 8-12 in Section 8.4.3.

SR 559 - The existing diamond interchange would be modified to a tight diamond urban type interchange. The limited access right-of-way would be extended north and south along SR 559. The I-4 ramp intersections with SR 559 would be signalized. See Figure 8-13 in Section 8.4.3.

CR 557 - The existing full service partial cloverleaf would be modified to a rural diamond type interchange eliminating the existing ramp loops. Additional limited access right-of-way would be required in the northeast and southwest quadrants to accommodate the proposed ramps. The I-4 ramp intersections with CR 557 would be signalized. See Figure 8-14 in Section 8.4.3.

US 27 - The existing interchange is a full service partial cloverleaf with ramp loops in the northwest and southeast quadrants. The proposed configuration is a full service expanded loop partial cloverleaf interchange (Alternate US27-4). Additional limited access right-of-way would be required in the northwest and southeast quadrants to accommodate the expanded loop ramps. See Figure 8-18 in Section 8.4.3.

The recommended interchange concepts are shown on the Concept Plans.

9.4 Alignment

A Corridor Analysis Report was prepared for this project (see Sections 7.2 and 8.4.2). The report discusses the character of various segments along the I-4 mainline from west of Memorial Boulevard to the Polk/Osceola County line (Segments 2 through 9) and the potential impacts associated with these segments. The corridor analysis develops an alignment strategy to avoid or minimize potential impacts by shifting the alignment of the proposed improvements left (north), right (south) or center. Typical section and preferred alternative development utilized the alignment strategy recommended in this analysis. Generally, the preferred alignment recommended for the improvements to I-4 are described as follows:

Segment 2 - Begin widening to the right to match the design of I-4 west of Memorial Boulevard. Transition from right to a centered alignment immediately east of the Memorial Boulevard interchange and remain centered to west of the Kathleen Road interchange. The alignment should shift to the left between Kathleen Road and US 98 to avoid impacts to the well heads along the right right-of-way. The alignment should transition back to the center west of the US 98 interchange.

Segment 8 - Segment 8 should be a centered alignment through the US 98 interchange.

Segment 3 - The improvements to I-4 should be centered on the existing alignment for the length of this segment (except through the area of the CR 582 Socrum Loop Road interchange).

Segment 4 - Segment 4 should be centered on the existing alignment from east of SR 33 to east of CR 655. The alignment should transition to the right after the CR 655 overpass and remain to the right through the SR 559 interchange. Segment 4 should transition back to a centered alignment east of SR 559.

Segment 5 - The improvements to I-4 should be centered on the existing alignment for the length of this segment.

Segment 6 - The improvements to I-4 should be centered on the existing alignment for the length of this segment.

Segment 9 - The improvements to I-4 in Segment 9 should be centered on the existing alignment through the US 27 interchange.

Segment 7 - The improvements to I-4 should be centered on the existing right-of-way at the western end of Segment 7. The alignment should shift to the left within the existing right-of-way in the bifurcated median area. The improvements should transition to a centered alignment west of the CR 54 (Loughman Road) overpass and remain centered for the remainder of the project.

The recommended preferred alignment was developed as a result of the avoidance and minimization strategy described above, the alternatives analysis documented in Section 8.0, the environmental impacts evaluation and the cost analysis documented in Section 8.5. The recommended preferred alignment is shown on the Concept Plans.

9.5 Relocations and Business Damages

A Conceptual Stage Relocation Plan was developed by the FDOT for this project in accordance with Florida Statutes, Chapter 339.09, the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (Public Law 91-646 as amended by Public Law 100-17). The residential and business relocations and costs (in 1995 dollars) associated with the alignment alternatives are shown in the Alternatives Evaluation Matrices in Section 8.5 and listed in Table No. 9-2 for the preferred alternative.

Table No. 9-2
PREFERRED ALTERNATIVE
RELOCATIONS AND BUSINESS DAMAGES
I-4 Project Development and Environment Study

Project Segment	Residential Relocations	Business Relocations	Business Damages	Relocation Cost [1]	Total Cost
2	6	0	$0	$88,000	$88,000
3	0	0	$0	$0	$0
4	4	0	$0	$59,000	$59,000
5	0	1	$50,000	$59,000	$109,000
6	0	0	$0	$0	$0
7	0	0	$0	$0	$0
8	10	1	$50,000	$206,000	$256,000
9	0	4	$260,000	$236,000	$496,000
Totals	**20**	**6**	**$360,000**	**$648,000**	**$1,018,000**

[1] Relocation cost includes signage, personal property and other miscellaneous relocation costs. Relocation costs in the Alternatives Evaluation Matrices in Section 8.5 (Figure Nos. 8-19 through 8-28) have been rounded to the nearest $ 0.01 m.

In response to comments received from the public at the Public Hearings held for this project on October 12 and 13, 1998, the PD&E concept for the US 27 interchange has been subsequently refined to avoid the taking of 3 businesses - McDonalds, Wendys and New York Pizza World restaurants. The concept plans shown at the public hearing indicated that relocating the frontage road would impact the above 3 restaurants. This concept change results in avoiding the taking of McDonalds and New York Pizza World, and minimizing the right-of-way taking from Wendys.

9.6 Right-of-Way

Estimated required right-of-way and costs (in 1995 dollars) for roadway improvements and storm water management facilities are shown by project segment in the Alternatives Evaluation Matrices in Section 8.5 and listed in Table No. 9-3 for the preferred alternative.

Table No. 9-3
PREFERRED ALTERNATIVE
RIGHT-OF-WAY
I-4 Project Development and Environment Study

Project Segment	Required Area		Estimated Cost		Total Cost
	Roadway Ha (ac)	Storm Water Ha (ac)	Roadway	Storm Water	
2	6.3 (15.6)	7.3 (18.0)	$4,120,000	$780,000	$4,900,000
3	15.6 (38.5)	11.9 (29.5)	$5,370,000	$1,290,000	$6,660,000
4	32.3 (79.7)	17.3 (42.7)	$8,380,000	$1,860,000	$10,240,000
5	33.3 (82.2)	8.1 (20.0)	$2,490,000	$870,000	$3,360,000
6	15.2 (37.5)	12.5 (30.9)	$3,550,000	$1,350,000	$4,900,000
7	7.1 (17.6)	4.9 (12.1)	$1,030,000	$520,000	$1,550,000
8	0.3 (0.8)	1.4 (3.5)	$1,660,000	$150,000	$1,810,000
9	32.5 (80.3)	2.0 (4.9)	$22,340,000	$210,000	$22,550,000
Totals	**142.6 (352.2)**	**65.4 (161.6)**	**$48,940,000**	**$7,030,000**	**$55,970,000**

The right-of-way costs shown in Table No. 9-3 include support (Phase 30), operations (Phase 32) and land costs (Phase 31 except business damages). Relocation (Phase 38) and business damage costs are listed in Section 9.5.

9.7 Construction Costs

The preliminary construction cost estimates are based on the procedures found in the FDOT Long Range Estimates Manual, dated June 12, 1991. Estimated construction costs (in 1995 dollars) by project segment, including 10% for traffic control and 10% for mobilization, are shown in the Alternatives Evaluation Matrices in Section 8.5 and listed in Table No. 9-4 for the preferred alternative.

Table No. 9-4
PREFERRED ALTERNATIVE
CONSTRUCTION COSTS
I-4 Project Development and Environment Study

Project Segment	Construction Cost	Additional Maintenance of Traffic Costs [1]	Total Costs
2	$73,520,000	$0	$73,520,000
3	$93,530,000	$0	$93,530,000
4	$60,260,000	$0	$60,260,000
5	$40,640,000	$0	$40,640,000
6	$46,740,000	$2,340,000	$49,080,000
7	$16,130,000	$1,290,000	$17,420,000
8	$29,190,000	$0	$29,190,000
9	$25,150,000	$0	$25,150,000
Totals	**$385,160,000**	**$3,630,000**	**$388,790,000**

[1] Segments 6 and 7 have maintenance of traffic costs considered to be in excess of the 10% computed in the Long Range Estimate construction cost estimate. The extra costs are caused by the alignment shift for the bifurcated medians.

9.8 Preliminary Engineering Costs

Estimated preliminary engineering costs (in 1995 dollars) are based on 15 percent of the estimated total construction cost (including any additional maintenance of traffic costs, if appropriate) and are shown by project segment on the Alternatives Evaluation Matrices in Section 8.5 and listed in Table 9-5 for the preferred alternative.

Table No. 9-5
PREFERRED ALTERNATIVE
PRELIMINARY ENGINEERING (DESIGN) COSTS
I-4 Project Development and Environment Study

Project Segment	Estimated Preliminary Engineering Costs
2	$11,030,000
3	$14,030,000
4	$9,040,000
5	$6,100,000
6	$7,360,000
7	$2,610,000
8	$4,380,000
9	$3,770,000
Total	**$58,320,000**

9.9 Total Estimated Project Cost

The total project cost for the preferred alternative including design, right-of-way for roadway, right-of-way for storm water management, relocation and business damages, construction (including traffic control and mobilization), additional maintenance of traffic (where appropriate), major utility relocations and environmental mitigation (no contamination cleanup costs are anticipated) is estimated to be **$525,670,000**. A tabulation of project costs by project segment is shown in Table No. 9-6.

Table No. 9-6
PREFERRED ALTERNATIVE
ESTIMATED PROJECT COSTS
I-4 Project Development and Environment Study

Cost Items	Project Segments								Total Cost
	2	3	4	5	6	7	8	9	
Design (15% of Construction + MOT)	$11.03	$14.03	$9.04	$6.10	$7.36	$2.61	$4.38	$3.77	$58.32
Right-of-Way (Roadway)	$4.12	$5.37	$8.38	$2.49	$3.55	$1.03	$1.66	$22.34	$48.94
Right-of-Way (Storm Water Management)	$0.78	$1.29	$1.86	$0.87	$1.35	$0.52	$0.15	$0.21	$7.03
Business Damages and Relocations	$0.09	$0.00	$0.06	$0.11	$0.00	$0.00	$0.26	$0.50	$1.02
Construction (LRE)	$73.52	$93.53	$60.26	$40.64	$46.74	$16.13	$29.19	$25.15	$385.16
Additional Maintenance of Traffic	$0.00	$0.00	$0.00	$0.00	$2.34	$1.29	$0.00	$0.00	$3.63
Major Utility Relocation	$1.99	$1.86	$1.77	$0.11	$0.00	$0.00	$0.00	$0.00	$5.73
Mitigation	$0.16	$2.06	$1.04	$3.60	$7.35	$1.16	$0.47	$0.00	$15.84
Contamination Cleanup	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Cost	$91.69	$118.14	$82.41	$53.92	$68.69	$22.74	$36.11	$51.97	$525.67

Costs shown are $ x million and have been rounded to the nearest $ 0.01 m.

9.10 Recycling of Salvageable Materials

Due to the age of the pavement (approximately 35 to 40 years old) and according to the FDOT 1993 All System Flexible Pavement Condition Survey, the pavement needs to be resurfaced to withstand the existing traffic until the 6 + 0 typical section is built. The construction project for the resurfacing of I-4 from the ramp termini east of SR 33 to the Polk/Osceola County line was scheduled to be initiated in August of 1995 and completed in November of 1996. Due to a lack of funding, the asphalt pavement from east of CR 582 to east of SR 33 will not be resurfaced at this time. The existing lanes will serve the traffic during the construction of the outer six lanes (Stage I) with the exception of the areas at the bifurcated medians (see Section 9.17 for a general discussion of the Traffic Control Plan). After the completion of the Stage I 6 + 0 typical section, the existing lanes would be removed and could be stockpiled for recycling use in future construction projects.

The existing I-4 pavement is concrete from west of Memorial Boulevard to east of the CR 582 (Socrum Loop Road) interchange. This pavement could be recycled into the proposed construction as:

1) base course (after crushing to specified gradation);
2) channel linings; or
3) fill material (after partial crushing).

It is anticipated that the construction of the proposed improvements would be staged by design segment. Stockpiling of the removed concrete pavement from one construction segment for use in another construction segment could be accomplished by the FDOT. Another recycling option is to allow the contractor to own and stockpile the removed concrete pavement for future use in other I-4 (or non I-4) construction projects.

Recycled I-4 concrete pavement would not be available to the first construction segment. The existing pavement could not be removed early enough in the construction phasing since the existing lanes would be used for maintenance of traffic. An important element of the recycling of concrete pavement is to establish ownership of the stockpiled material so that future competitive bidding can be maintained for subsequent I-4 construction segments.

Subsequent design phases of this project will determine the suitability of the drainage structures for reuse with the proposed improvements. All of the cross drains would have to be lengthened or replaced to accommodate the proposed I-4 typical sections.

9.11 User Benefits

Central Polk County is rapidly developing as a population support area for the major metropolitan areas of Orlando and Tampa. Improved access to and from Polk County will enhance the local community assets by providing life choice flexibility for local residents desiring to work and recreate outside the county while also providing the residents of surrounding counties the opportunity to commute to Polk County for work, shopping and recreation. The proposed addition of special use lanes would allow tourists desiring to travel to and from the major resort areas of the Orlando and the west coast beaches to pass through Polk County without hampering the traffic service of local tourists or permanent residents. I-4 serves as the major east/west weather emergency evacuation route for and through Polk County. The quality of life for residents of Polk County would be enhanced knowing that egress through and from Polk County in a weather emergency would be improved by the additional capacity of I-4 provided by the initial

widening to six general purpose lanes and the eventual addition of the four special purpose lanes. Improvements such as additional capacity, improved signing and marking, improved level of traffic service, interchange improvements, special use lanes and provisions for multimodal travel would decrease the potential for accidents. It is anticipated the current public perception of the existing facility as an unsafe highway would be significantly diminished. These improvements would provide substantial benefits to the users of the roadway and the surrounding population in general in that I-4 would become more user friendly and aesthetically pleasing.

9.12 Pedestrian, Bicycle and Handicapped Facilities

The I-4 corridor is a limited access interstate facility on which State statute prohibits non-motorized (bicycle and pedestrian) traffic on the mainline of I-4 and the entrance and exit ramps. Bicyclist and pedestrian accommodations will be provided on the non-interchange cross road grade separations and on the cross roads at interchanges. The types of proposed pedestrian and bicycle accommodations at the cross roads are shown in Table No. 9-7.

Table No. 9-7
PEDESTRIAN AND BICYCLE ACCOMMODATIONS
I-4 Project Development and Environment Study

Location	Type of Accommodations	
	Pedestrian	Bicycle
Swindell Road Bridge	2.4 m (8 ft) Sidewalks	3.0 m (10 ft) Paved Shoulders
10th Street Bridge	2.4 m (8 ft) Sidewalks	3.0 m (10 ft) Paved Shoulders
Bella Vista Street Bridge	1.5 m (5 ft) Sidewalks	3.0 m (10 ft) Paved Shoulders
Kathleen Road Bridge	1.5 m (5 ft) Sidewalks	1.2 m (4 ft) Bike Lanes
Griffin Road Bridge	1.5 m (5 ft) Sidewalks	1.2 m (4 ft) Bike Lanes
US 98 Underpass	2.4 m (8 ft) Sidewalks	1.2 m (4 ft) Bike Lanes
Carpenter's Way Road Bridge	None	3.0 m (10 ft) Paved Shoulders
Socrum Loop Road Underpass	1.8 m (6 ft) Sidewalks	1.2 m (4 ft) Bike Lanes
Old Combee Road Bridge	1.8 m (6 ft) Sidewalks	1.2 m (4 ft) Bike Lanes
SR 33 Underpass	None	3.0 m (10 ft) Paved Shoulders
Mt. Olive Road Bridge	None	3.0 m (10 ft) Paved Shoulders
CR 655 Bridge	None	3.0 m (10 ft) Paved Shoulders
SR 559 Underpass	1.8 m (6 ft) Sidewalks	1.2 m (4 ft) Bike Lanes
CR 557A Bridge	None	3.0 m (10 ft) Paved Shoulders
CR 557 Bridge	None	3.0 m (10 ft) Paved Shoulders
US 27 Bridges	1.5 (5 ft) Sidewalks	1.2 m (4 ft) Bike Lanes
CR 54 Bridge	None	3.0 m (10 ft) Paved Shoulders

Cross walks with curb cut ramps for handicapped access will be provided at the signalized intersections of the I-4 entrance and exit ramp termini at Kathleen Road, US 98, CR 582 and SR 559 within the interchange areas.

The School Board of Polk County provided data concerning the use of the Swindell Road, 10th Street and Bella Vista Street overpasses by school children to the FDOT in support of wide sidewalks to make the crossings safer for students and other pedestrians. See Section 5 of the Appendix for the letter addressed to C.O. Morgan dated August 10, 1995.

9.13 Safety

During the five year period from 1988 to 1992, 637 accidents occurred along the mainline I-4 project corridor caused 651 injuries and 28 deaths. Fifty seven percent of the accidents on the I-4 mainline occurred during the daylight hours. Thirty-nine percent of the total number of accidents were either rear end, side swipe, angle or head on collisions of which rear end collisions were the most prevalent accident type (60 percent). The improvement of sight distances by flattening the vertical curves at interchanges and the improvement of acceleration and deceleration lane lengths will reduce the potential for rear end, side swipe and angle accidents on the I-4 mainline. The potential for head-on collisions would be significantly reduced during Stage I because the median would be increased from 19.5 m (64 ft) to 50.0 m (164.0 ft). After Stage II construction, the barrier wall between the general purpose and special use lanes will reduce the potential for side-swipe and angle collisions by separating six lanes of traffic from the four special use lanes. The Stage II typical section has a 20 m (66 ft) median containing two-3.6 m (12 ft) shoulders and a 16.4 m (42 ft) depressed grassed median. Minimized potential remains for head-on collisions from vehicles in the special use lanes crossing the Stage II median to the opposing special use lanes.

Angle, left turn and right turn accidents are associated with turning movements. The addition of exclusive left and right turn lanes, improved signing, marking and lighting on the exit ramps at the interchanges would reduce the potential for turning accidents. Rear end collisions are usually associated with reduced LOS during peak traffic periods. The addition of exclusive left and right turn lanes and improved LOS within the interchanges will reduce the potential for rear end collisions in the interchanges.

The majority of the accidents at the cross roads which interchange with I-4 were angle, left turn and right turn accidents. These are the types of accidents associated with turning movements. The addition of exclusive left and right turn lanes with adequate storage lengths on the cross roads will reduce the potential for angle and left or right turn accidents. Another significant portion of accidents on the cross roads were rear end collisions. This type of accident is generally associated with reduced LOS during peak periods. The proposed improvements are projected to increase the LOS within the interchanges thereby reducing the potential for rear end accidents.

Refer to Section 4.1.9 for additional information on accident data.

Another important safety improvement is the addition of 3.6 m (12 ft) shoulders inside and outside with a minimum 3.0 m (10 ft) of the shoulder paved. The existing facility has substandard shoulders (3.0 m (10 ft) outside with 2.4 m (8 ft) paved and 2.4 m (8 ft) inside with 1.2 m (4 ft) paved). The shoulder improvements will allow for safer recovery areas and refuges for disabled vehicles on both sides of the roadway.

Substandard vertical clearances will be improved to, at least, the minimum current standard of 5.0 m (16.5 ft), with the replacement of all of the bridge structures now spanning I-4.

The addition of special use lanes, slip ramps and interchange improvements will require that special attention be paid to the signing and marking of the new roadway. A signing and marking plan to be developed by the FDOT during the design phase of the project specifically for this project, will increase the safety potential of I-4. See Section 9.22.1 for a discussion of the proposed signing concept for the special use lane slip ramps.

9.14 Economic and Community Development

The commercial/light industrial areas of western Polk County are rapidly developing as a regional distribution center. The commercial/business park areas immediately adjacent to I-4 from west of Kathleen Road to east of US 98 are also developing. Residential development is also expected to continue as the normal transition of land uses (from rural to suburban and suburban to urban) occurs over time. The proposed improvements (through an increase in traffic capacity) will maintain an acceptable LOS of C or D on the I-4 mainline (general purpose and special use lanes) through the design year 2020 even though the traffic volumes are predicted to more than double. An acceptable LOS at the interchange ramps will also be maintained through the design year. The maintenance of an acceptable LOS will allow the projected future development of Polk County and the City of Lakeland to progress normally without the additional pressures and constraints associated with a congested travel corridor.

The proposed improvements to the I-4 project corridor are consistent with the recommended Stage One Adopted Polk County Long Range Transportation Plan by Year 2000 and the Polk County 2010 Transportation Plan Update, May 1989.

The Growth Management Plan incorporated into the Lakeland Comprehensive Plan, Year 1990-2000, requires that public facilities and services necessary to support proposed development occur concurrent with the impacts of such development. The proposed upgrade of I-4 will benefit the anticipated social and economic demands within this corridor by enhancing travel mobility, limiting traffic diversion (congestion) on alternate routes, continuing accessibility to the area and providing for the continuous movement of people and goods with increased safety and efficiency.

9.15 Environmental Impacts

The environmental impacts associated with the preferred alternative for the proposed improvements to I-4 are described in the following sections.

9.15.1 Wetlands

In compliance with Presidential Executive Order 11990, and using assessment methodology, evaluation procedures and document preparation guidance found in the Federal Highway Administration's (FHWA) Technical Advisory T6640.8A, Title 23, Code of Federal Regulations, Part 777; and Part Two, Chapter 18 of the FDOT's PD&E Manual, Revised 10/01/91, project consideration was given to protect wetland resources. Extensive assessments of wetland and environmental resources within the project corridor have been conducted. The primary goal of these tasks was to identify significant natural resources which occur within the proposed right-of-way. This information has aided project engineers in designating a proposed alignment alternative that will minimize environmental impacts within each project segment.

Wetlands associated with the I-4 corridor are generally in poor condition and have been previously disturbed in most instances. The disturbance levels range from light to heavy and can consist of the diversion of water from wetlands (ditching), livestock grazing pressures to timber and mining operations. All of the forested wetlands in the corridor have been clear cut in the recent past and some logging operations are currently underway. Phosphate mining in the region has affected vast areas of land adjacent to the project and changed the surficial and groundwater hydrology in the region. Large phosphate areas have been reclaimed and now resemble wet prairie and lake habitats.

Over one hundred wetland sites were identified, classified, and characterized within the I-4 study corridor. The width of the study area was defined as 76.2 m (250 ft) beyond the existing right-of-way on each side in order to plan for an ultimate design typical section that could be shifted left, right or centered. At the locations of proposed improvements to interchanges, the PD&E study area borders were also expanded accordingly. The total area that has been studied is approximately 1,158 ha (2,861 ac).

Wetland Evaluation Technique, Version 2.1 (WET 2.1), was utilized to assess the functional values of those wetlands proposed for impact by the project. Potential wetland impact areas were determined using preliminary roadway typical sections and plans, 1993 blueline aerials and field review. Areas were calculated by planimetering the approximate wetland boundaries from the 1:2000 (1"=200') aerials.

Three (3) general types of palustrine wetlands dominate the project corridor: forested systems, scrub/shrub communities and emergent marshes. Other wetland types include lakes, manmade open water features and drainage ditches. The regulatory status of drainage ditches within the project differs between regulatory agencies. Some agencies consider ditches wetlands and others do not. Regardless of their jurisdictional determination, wet ditches are a prevalent feature of the I-4 corridor and are therefore included in this discussion.

Project wetlands occur within five (5) regional drainage basins. Listed from west to east the basins are: 1) Alafia River Basin, 2) Hillsborough/Withlacoochee River Basin, 3) Peace River Drainage, 4) Green Swamp, and 5) Kissimmee River Basin. The Hillsborough, Withlacoochee, Peace and Kissimmee Rivers comprise the watershed for this project. During subsequent design phases of this project, basin boundaries will become an important aspect of surface water permitting because current policy dictates that wetland impacts be compensated for within the same drainage basin.

The interstate bisects a lobe of a large regional recharge area known as the Green Swamp. The existing roadway has created a constriction in the surface hydrology of the area because of the configuration of the raised roadway fill and relatively few north-south hydrologic connections. The Green Swamp abuts the I-4 right-of-way on the north and south sides between CR 557 and US 27. I-4 cuts through the southern tip of the 2201 km^2 (850 mi^2) Green Swamp in the northeastern quadrant of Polk County.

The entire Green Swamp was legislatively designated a State Area of Conservation Interest, and in 1974, an Area of Critical State Concern. The Green Swamp falls under the jurisdiction of several agencies which include the Florida Division of Forestry, SWFWMD, SJRWMD, and the FGFWFC (Green Swamp Wildlife Management Area only). The Area of Critical State Concern pertains to land in Hillsborough, Pasco, Hernando, Sumter, Lake and Polk Counties. The Green Swamp along this section of the I-4 corridor provides no designated recreational or public facilities. Vehicular and pedestrian access is restricted by the limited access fencing and private property owners along the interstate right-of-way. This area remains in a relatively natural state and functions as an aquifer recharge area, wildlife preserve and passive recreational area.

Wetland types within the corridor consist of forested hardwood and coniferous basin swamps. Cypress domes are a dominant feature along the corridor. Red maple and bayhead swamps also occur as successional stages in previously logged areas. An occasional area of wet pine flatwoods exists along the corridor. Emergent herbaceous systems are also found throughout the corridor. Most of these types of systems have been heavily grazed by cattle, drained by ditching or dredged to create deepwater habitat. Vegetative components of these heavily disturbed areas consist of elderberry, cattails, willow and primrose willow. Emergent areas that have been less disturbed support pickerel weed, duck potato, St. John's wort, soft rush, and muhly grass. The disturbed edge of many of these wetlands, both forested and emergent, supports scrubby shrub species such as wax myrtle, dahoon holly, palmetto, elderberry and primrose willow.

The total wetland impacts for the recommended improvements is estimated to be 85.32 ha (210.88 ac). The proposed improvements are generally concentrated on a centered alignment. This alignment will cause additional impacts to already disturbed systems but minimizes new impacts.

Impacts associated with the proposed improvements involve impacts to all classifications of wetlands, including the mixed jurisdictional roadside ditches. To avoid and minimize wetland impacts, individual wetlands were ranked according to their design constraints by project biologists. Project engineers subsequently used the wetland ranking to determine if alignment adjustments were appropriate to minimize impacts. An example of an alignment shift that was made as the result of wetland impact avoidance/minimization measures is the case of Lake Agnes and Little Lake Agnes in Segment 4, where a right alignment avoids open water impacts.

Five (5) habitat types, as defined by the USFWS Classification System of Wetlands and Deepwater Habitats, will be affected by the expansion of the I-4 corridor in Polk County. The area of impact to the five (5) wetland habitats were calculated based on preliminary alignment, recommended typical section, and potential stormwater management impact. Table No. 9-8 presents a summary of potential wetland area impacts from the proposed alignment alternative within each project segment. Wetlands are listed with their corresponding USFWS classification for each project segment. Approximately 62% (52.54 ha (129.82 ac)) of the total estimated impacts will occur to palustrine forested (PFO) areas, the majority of which are located within the eastern portion of the project corridor (Segments 5, 6 and 7), in the Green Swamp drainage basin. Approximately 46% (39.68 ha (98.04 ac)) of the total wetland impact occurs within Segment 6.

Palustrine scrub/shrub environs account for approximately 29% (20.90 ha (51.64 ac)) of all wetland impacts. Lesser impacts occur to palustrine emergent (PEM) wetlands with only 8% (6.12 ha (15.14 ac)) of the total wetland impacts. The remaining wetland classifications, palustrine open water (POWHx) and lacustrine, limnetic, unconsolidated bottom, excavated (L1UBHx) account for less than 1% (0.23 ha (0.58 ac)) of all wetland impacts.

Based on the above considerations, it has been determined that there is no practicable alternative to the proposed construction in wetlands, and that the proposed action includes all practicable measures to minimize harm to wetlands.

Final determination of jurisdictional areas, proposed wetland impacts and mitigation requirements will occur through coordination between FDOT and natural resource regulatory agencies during the final design and permitting phase of the project.

Table No. 9-8
AREAS OF WETLAND IMPACTS BY WETLAND HABITAT CLASSIFICATION
I-4 Project Development and Environment Study

Wetland Habitat Classification[1]	Project Segments ha (ac)[2]								
	2	3	4	5	6	7	8	9	Total
PFO	0.44 (1.08)	7.76 (19.19)	0.65 (1.60)	15.06 (38.70)	24.49 (60.51)	3.54 (8.74)	---	---	52.54 (129.82)
PEM	---	0.27 (0.68)	0.42 (1.03)	1.91 (4.71)	0.14 (0.35)	2.25 (5.57)	2.49 (6.16)	---	7.88 (19.50)
PSS	---	3.03 (7.50)	4.48 (11.01)	1.61 (3.99)	15.05 (37.18)	0.44 (1.09)	---	---	24.61 (60.84)
POWHx	---	---	0.04 (0.09)	0.23 (0.58)	---	---	---	---	0.27 (0.67)
L1UBHx	---	---	0.02 (0.05)	---	---	---	---	---	0.02 (0.05)
Total Impact Area	0.84 (2.08)	11.06 (27.37)	5.61 (13.85)	19.41 (47.98)	39.68 (98.04)	6.23 (15.40)	2.49 (6.16)	0 (0)	85.32 (210.88)

[1] Classification Description
PFO - Palustrine Forested, PEM - Palustrine Emergent, PSS - Palustrine Scrub/Shrub, POWHx - Palustrine, Open Water, Permanently Flooded, Excavated, L1UBHx - Lacustrine, Limnetic, Unconsolidated Bottom, Excavated

[2] Area of Impact Based on Proposed Alignment, Recommended Typical Section and Potential Stormwater Management Impact

Conceptual Mitigation Alternatives

A number of the criteria used to evaluate mitigation options and ratios were effectuated by the Memorandum of Agreement (February 1990) and the State of Florida's mitigation regulations (FAC 17-312). The Wetland Evaluation Report investigated the specific impacts to be anticipated by the proposed improvements to I-4. Project segment engineers are currently researching reasonable sites and options that will provide realistic mitigation for project impacts.

Mitigation types, timing of mitigation, location of mitigation, community types, and recommended acreage based upon the results of the WET 2.1 analyses, and agency input from the Federal, State, and county levels were assessed and incorporated. These are: restoration - 1.5:1 for concurrent mitigation, or 1:1 for up-front; and, enhancement - 3:1 for concurrent mitigation, or 2:1 for up-front mitigation, based on recent EPA recommendations (Kruczynski, 1990).

Many of the wetland impacts will be to areas of man-made wetlands, in particular, borrow pits created during construction of the existing roadways, created lakes and conveyance canals and ditches. The total acreage of man-made wetlands to be potentially impacted by the preferred alternative is about 12.8 ha (31.6 ac) or 6% of the total wetlands impacted. The extent of habitat and wetland plant communities affected by the entire project is minimal and in-kind replacement can be accomplished through the creation of additional borrow areas and roadside conveyance ditches or the addition of littoral shelves to existing wetland areas.

About 50.9 ha (125.8 ac) or 60% of the total estimated area of potential wetland impact is located within the existing right-of-way. The majority of the remainder of the potentially impacted wetlands are immediately adjacent to the existing right-of-way. Extensive field reviews of the project corridor indicate that no "critical habitat" (i.e., wading bird nesting colonies) occurs within the potentially impacted wetland areas. No listed species occur within the potentially impacted wetlands of the study area except for transient foraging wading birds. The wetland areas to be disturbed by the proposed improvements to I-4 will be compensated for by mitigation coordinated through the appropriate resource agencies.

Land use adjacent to the roadway within the Green Swamp region ranges from surface mining to relatively intact forested wetlands. Most of the historic forested areas have been logged, resulting in even aged tree stands (particularly cypress), loss of pinelands for pasture and residential development, and increased hardwood prevalent in historic cypress/hydric pine habitat.

The existing roadway bisects large and small wetlands, isolated, and contiguous wetlands ranging in disturbance levels from low to high. A large portion of wetland involvement concerns roadway associated wetlands such as roadside ditches, borrow pits, excavated lakes, and the disturbed fringes and secondary growth of adjacent forested wetlands affected by the initial construction of I-4. Most existing wetland functions will not be affected due to the large size of the wetlands and the existing impacted condition (i.e., bisected, existing linear impacts). Loss of storage is the most apparent effect in regard to wetland fill. Effects to wetland functions will be greatest to small, non-contiguous wetlands as the impact ratio increases relative to the remaining wetland. This is typically not the case in the Green Swamp region, but does occur to a small extent. The small scale and immediate locality effects are minimal due to the spacial heterogeneity of the wetlands in the region and the generally low functional value individual wetlands have in relationship to the Green Swamp *in toto.*

Secondary and cumulative impacts at both the regional and local scale are minimal due to the existing condition. The bisection created by the initial construction of I-4 produced the habitat separation and barrier effects to flood flow and wildlife movement often attributed to this section of I-4. Increased road width will compound some cumulative problems associated with storm water runoff, wildlife movement, and lost wetland storage volumes resulting from fill requirements, but the proposed project will contain large wildlife undercrossings where virtually none exist and storage volumes and treatment of storm water will be addressed according to current regulatory guidelines.

All wetland impacts will be mitigated for through the use of one or more of several compensation options including monetary contribution to regulatory agencies, in-kind replacement, wetland enhancement, or mitigation banking in coordination with appropriate regulatory agencies.

Of the wetland areas north and south of I-4 that the FGFWFC rated as very high in terms of a Biodiversity Hot Spot, contain considerable habitat designated as a strategic Habitat Conservation Area, and/or has a very high Species Richness Index, only very minimal impacts to these wetland functions are anticipated as a result of the proposed improvement to I-4. For additional information regarding wildlife and habitat in the I-4 corridor, please refer to the Endangered Species Biological Assessment, April 1998, prepared as a separate document.

The FDOT is currently working with the water management districts and other agencies to develop corridor, regional and district-wide Ecosystem Management Plans (EMP). Wetland mitigation banking is one of the EMP elements being considered.

In accordance with FHWA policy as contained in 23 CFR 777.11, the full range of mitigation options were considered in developing the project, including avoidance, minimization, restoration, enhancement and creation. Mitigation options include restoration, enhancement, creation and the use of S. 373.4137 F.S. (The Bronson Bill), which allows payment of $75,000 per acre to the Water Management Districts for their use in mitigating the impacts.

Table No. 9-9 summarizes the total area of potential forested and non-forested wetland impacts by project segment.

Table No. 9-9
FORESTED AND NON-FORESTED WETLAND IMPACTS
I-4 Project Development and Environment Study

Project Segment	Forested ha (ac)	Non-Forested ha (ac)	Total ha (ac)
2	0.44 (1.08)	0.40 (1.0)	0.84 (2.08)
3	7.76 (19.19)	3.3 (8.18)	11.06 (27.37)
4	0.65 (1.60)	4.96 (12.25)	5.61 (13.85)
5	15.66 (38.70)	3.75 (9.28)	19.41 (47.98)
6	24.49 (60.51)	15.19 (37.53)	39.68 (98.04)
7	3.54 (8.74)	2.69 (6.66)	6.23 (15.40)
8	0.0 (0.0)	2.49 (6.16)	2.49 (6.16)
9	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Total	52.54 (129.82)	9.76 (24.21)	85.32 (210.88)

9.15.2 Water Quality

The topography of this section of Polk County consists of low, rolling hills. The region is interspersed with many lakes and low, wet areas. The Central Highlands Ridge extends north-northwest to south-southeast through most of Polk County. Land surface elevations range from 15.2 m to 93.0 m (50 ft to 305 ft), NGVD 1929. Due to this topographic high, surface flow travels in all directions from the county. The eastern 35 percent of the county drains southeastward into the Kissimmee River basin. The south central 35 percent of the county drains into the Peace River. Along the western boundary, 8 percent of the county is in the Alafia River basin and 4 percent drains to the west in the Hillsborough River. On the north, 15 percent drains northwest to the Withlacoochee River and the remaining 3 percent of the county is drained into the Saint Johns River basin which carries water northward into the headwaters of the Oklawaha River and the Withlacoochee River basin. The Hillsborough, Peace and Withlacoochee Rivers' headwaters are formed by the Green Swamp in the central portion of Polk County.

The proposed drainage systems will be designed to convey storm water runoff away from the roadway in the existing natural basin flow directions. Subsequent design phases of this project will assess the

availability and suitability of storm water management pond locations. The preferred alternative from west of Memorial Boulevard to SR 33 (Segments 2, 3 and 8) will be an urban interstate ten-lane typical section constructed within the existing 91.4 m (300 ft) right-of-way. Storm water runoff would be collected in median and shoulder inlets, conveyed through a storm sewer system to storm water management ponds generally situated outside the existing right-of-way in close proximity to the outfall locations. Retaining walls of various heights would have to be constructed at some locations in order to avoid the proposed typical section toe of slope from falling outside the existing right-of-way. It may be feasible in some areas to construct flow channels between the retaining walls and the right-of-way, possibly reducing the closed storm sewer system requirements.

The preferred alternative from SR 33 to the Polk/Osceola County line will be a rural interstate ten-lane typical section constructed within a minimum 128.8 m (422.6 ft) right-of-way. Roadway storm water runoff to the outside would be collected in roadside ditches. Roadway storm water runoff to the inside would be collected in median inlets and conveyed to the outside roadside ditches. Storm water would be conveyed by the roadside ditches to storm water management ponds generally situated outside the proposed right-of-way in close proximity to outfall locations.

The proposed improvements will increase the amount of impervious surface and consequently increase storm water runoff. A Water Quality Impact Evaluation (WQIE) checklist was conducted in accordance with Chapter 20 of the PD&E Manual. The appropriate Best Management Practices will be used during the construction phase for erosion control and water quality considerations.

The FDOT coordinated with the FDEP, SWFWMD and SJRWMD storm water personnel to provide them with descriptions of the conceptual design of the storm water management system for this project. The proposed storm water facility designs will include, at a minimum, the water quantity requirements for water quality impacts as required by SWFWMD in Rules Chapters 40D-4 and 40D-40 and SJRWMD in Chapters 40C-4, 40C-40 and 40C-42. Therefore, no further mitigation for water quality impacts will be needed. There would be no discharge of storm water to non-contiguous receivers.

The SWFWMD and SJRWMD regulates isolated wetlands and wetlands connected to "Waters of the State" under the Environmental Resource Permitting (ERP) program. The specifics of permitting and various exemptions and thresholds are discussed in the SWFWMD ERP Permit Information Manual, and the SJRWMD ERP Applicant's Handbook. This project will comply with the specific storm water management requirements.

As referenced in the Soil Survey of Polk County, Florida, October 1990, the water in Polk County comes mainly from the Floridan Aquifer which is an artesian aquifer throughout much of the county. The surficial aquifer and intermediate aquifer system are also in the County. The surficial aquifer consists primarily of quartz sand and includes surficial sand and clay. The top of the surficial aquifer is ground water that is virtually unconfined. The intermediate aquifer system is in the western part of the county south of Polk City. It is a confined aquifer made up of limestone and clayey sediments. The base of the intermediate aquifer system is in direct contact with the Floridan Aquifer.

The corridor is not located within a sole source aquifer area. However, the contractor will be required to prevent any contamination to the Floridan Aquifer. All oils, chemicals, fuels, etc., must be disposed of in an acceptable manner and be consistent with local, state, or federal regulations and must not be dumped on the ground or in sink holes, canals, borrow lakes, etc.

As referenced in the Lakeland Comprehensive Plan, Year 1990-2000, both the shallow groundwater aquifer and the deeper Floridan Aquifer are used extensively for potable water supplies. Outside the Lakeland water service area the groundwater aquifer is the source of potable water for almost all individual wells. There are instances where groundwater has been contaminated by hazardous wastes or landfill leachate. The groundwater aquifer recharges the intermediate aquifer and the Floridan Aquifer, so there is concern that contaminated groundwater could ultimately affect the Floridan Aquifer which is the source of public water supplies. The Floridan Aquifer is also threatened by certain practices such as the phosphate mining procedure of recharging the aquifer with groundwater, or injection of sewage effluent and industrial wastes into zones below the drinking water aquifers.

The proposed improvements to I-4 between Kathleen Road and US 98 (Segment 2) recommend a combination of reduced right-of-way, left alignment, an urban typical section with closed storm sewer systems and storm water management facilities to provide water quality treatment to minimize potential impacts within the City of Lakeland Northwest Wellfield zone of protection.

During project construction, potential short-term increases in water turbidity which could affect wetlands and water quality would be controlled by strict adherence to the procedures and techniques set forth in the FDOT Standard Specifications for Road and Bridge Construction, "Prevention, Control, and Abatement of Erosion and Water Pollution."

9.15.3 Farmlands

In compliance with the Farmland Protection Policy Act (FPPA) of 1984, farmlands along the proposed I-4 alignment were evaluated for potential impacts.

The State Soil Scientist has reviewed the project corridor and determined that under the NRCS's definition, no prime and unique farmlands will be converted by the project to transportation use.

9.15.4 Flood Plains

FDOT drainage maps, USGS Quadrangle maps, SWFWMD topographic maps and FEMA FIRMs were used to identify flood-prone areas within the I-4 corridor. A field inspection was conducted to identify obvious drainage problems. Additionally, people knowledgeable about local drainage conditions (residents, FDOT maintenance personnel, Lakeland and Polk County operations personnel) were interviewed.

FEMA has prepared a Flood Insurance Study (FIS) for Polk County, September 1980, revised October 18, 1988. With the exception of Community-Panel Number 120261-0190 D, revised October 18, 1988; the FIRMs for Polk County showing the I-4 study area are dated January 19, 1983. These include Community-Panel Numbers 120261-0100 B, 120261-0125 B, 120261-0175 B, 120261-0200 B, 120261-0225 B, 120261-0250 B, 120261-0285 B, 120261-0295 B, 120261-0305 B and 120261-0310 B. A review of these FIRMs indicate that the proposed I-4 alignment encroaches or borders on the base flood plain at 38 locations. The flood plain encroachment locations are shown in Figure 9-12.

FEMA is currently in the process of revising the Polk County FIS. Discreet advanced data has been provided to Polk County for review and comment/approval. Communication with the FEMA (included in Section 5 of the Appendix) indicates that this advanced data should not be used for flood plain evaluation until approved by Polk County.

Phone contact with the Polk County FEMA coordinator in August 1998 indicates that the schedule for the completion of the review of the advanced data has not been determined. Because of the timing of the I-4 PD&E study, the flood plain evaluation in this report is based on the current existing published FIS. It is recommended that the flood plain impacts be reevaluated in subsequent phases of this project using the revised data, if approved.

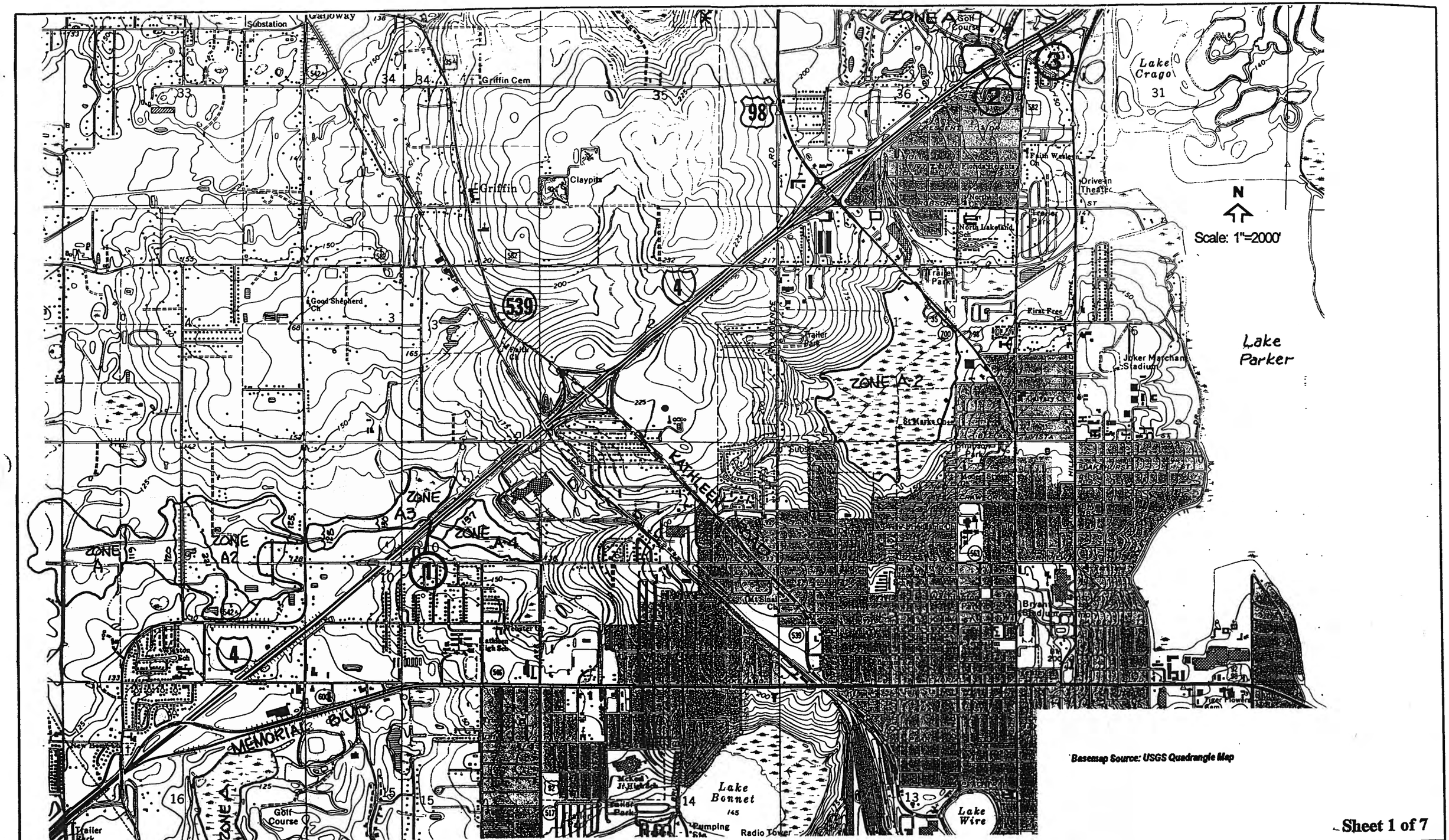
Preliminary FIRM Map Panel 12105C0284, dated September 30, 1996, (not yet approved) includes a Floodway at the I-4 crossing of Itchepackesassa Creek Tributary 1, located about 1.5 km (0.85 mi) west of Kathleen Road in Segment 2. The delineated Floodway is shown as contained within the existing channel (culvert) at the I-4 crossing. The existing cross drain is a 1.8 m x 1.8 m (6 ft x 6 ft) concrete box culvert. The proposed I-4 improvements will replace or modify the existing culvert with one of equal or greater hydraulic capacity and, as such, will not increase the water surface elevations.

Lake Deeson, located south of I-4 and east of Old Combee Road, is a closed drainage basin lake which has experienced flooding in recent years. The FEMA 100-year flood plain limits, (El. 133 ft NGVD) of Lake Deeson as delineated on Community-Panel 120261 0305 B of the 1983 Polk County FIRMs, locates the flood boundary about 91 m (300 ft) east of the I-4 right-of-way. The September 30, 1996 Preliminary Polk County FIRMs (Map Number 12105C0302 F) show the base flood elevation (BFE) has been revised to El. 138.6 ft NGVD and the flood boundary delineation has been expanded to the I-4 right-of-way. Additionally, the Polk County Surface Water Management Section has recommended that an additional 1 foot be added to the Lake Deeson BFE for the issuance of building permits, thus raising the elevation to 139.6 ft NGVD. Raising the BFE to 139.6 ft would cause the flood boundary to be delineated into the I-4 right-of-way resulting in an encroachment into 100-year base flood plain by any expansion of I-4 to the south. Polk County recommends that a flood study of the Lake Deeson drainage basin be made to determine what modifications could be implemented to alter the flooding potential of the lake. The recent flooding problems at Lake Deeson are not attributable to any FDOT drainage structures. The potential encroachment into the Lake Deeson flood plain is identified as Flood Plain Encroachment No. 38.

Eight of the 38 potential flood plain encroachments are in Evaluation Category 1, fifteen are in Evaluation Category 2 and fifteen are in Evaluation Category 4. The Category 1 encroachments would not involve any work below the 100-year flood elevation. The Category 2 encroachments do not involve the replacement or modification of any drainage structures. The Category 4 encroachments involve the replacement of drainage structures with hydraulically equivalent structures. In all cases the project would result in no significant adverse impacts on natural and beneficial flood plain values and no significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that these encroachments are not significant.

The proposed improvements to I-4 are consistent with the existing watershed and flood plain management programs for the Lakeland Planning Area and Polk County as defined by the Lakeland Comprehensive Plan: Year 1990-2000 and the Polk County Comprehensive Plan January 31, 1994, respectively.

No other flooding problems have been identified for the length of this project. For further information regarding flood plains, refer to the Location Hydraulics Report, July 1995, Revised August 1998, prepared as a separate document.

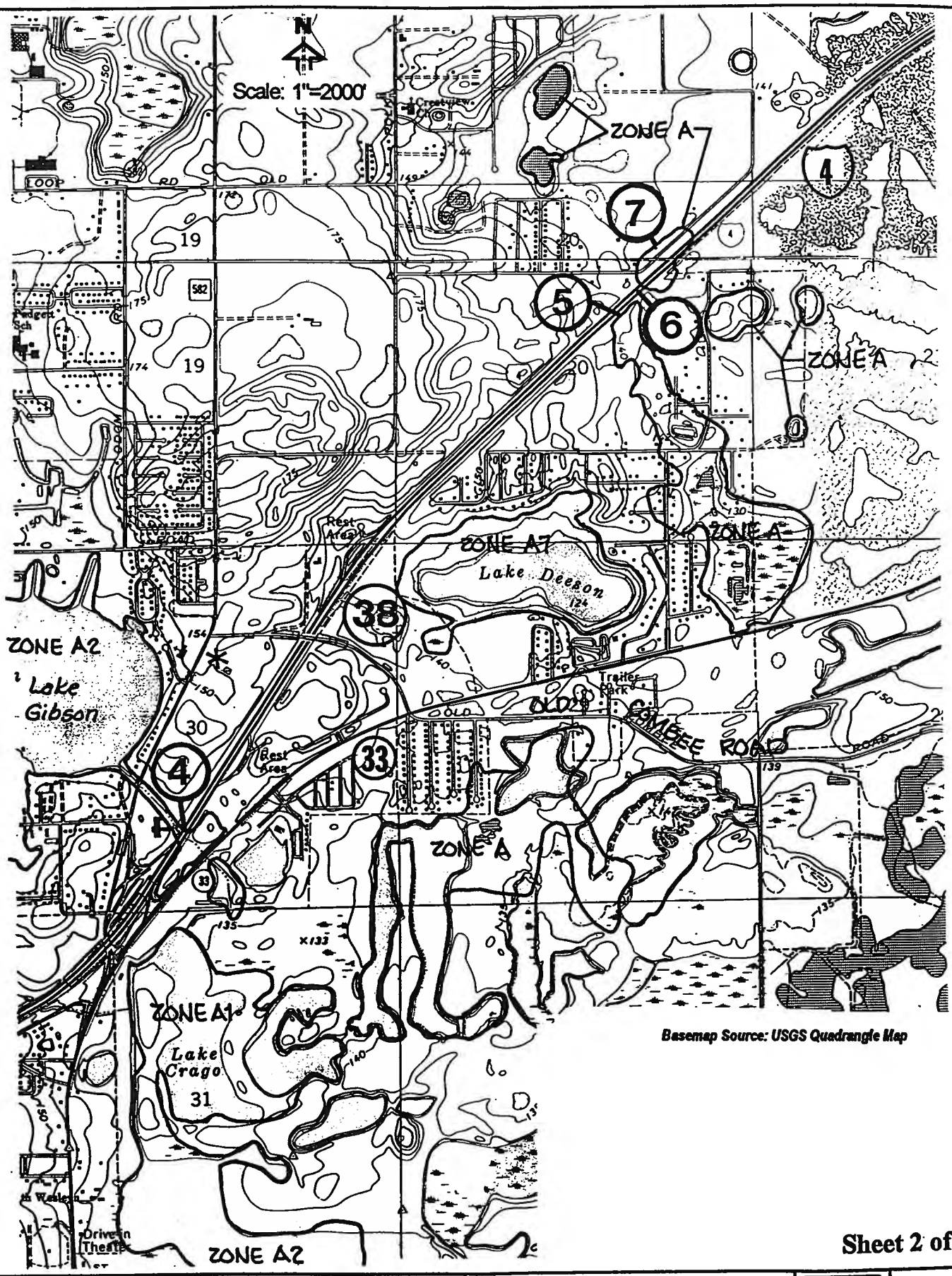


Basemap Source: USGS Quadrangle Map

Sheet 1 of 7

Areas of Potential Base Flood Plain Encroachment

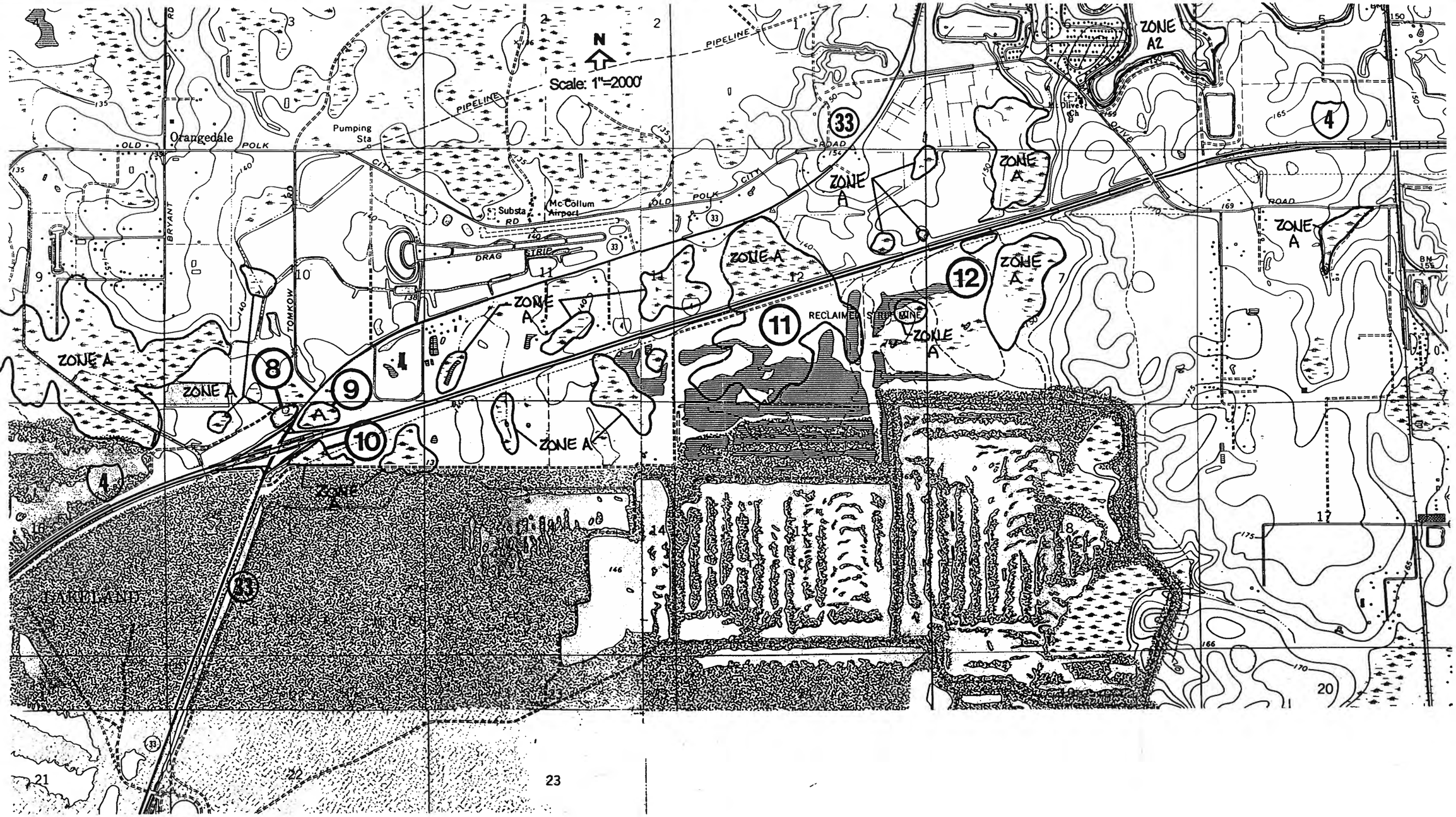
I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-12



Basemap Source: USGS Quadrangle Map

Sheet 2 of 7

Areas of Potential **Base Flood Plain Encroachment**	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-12



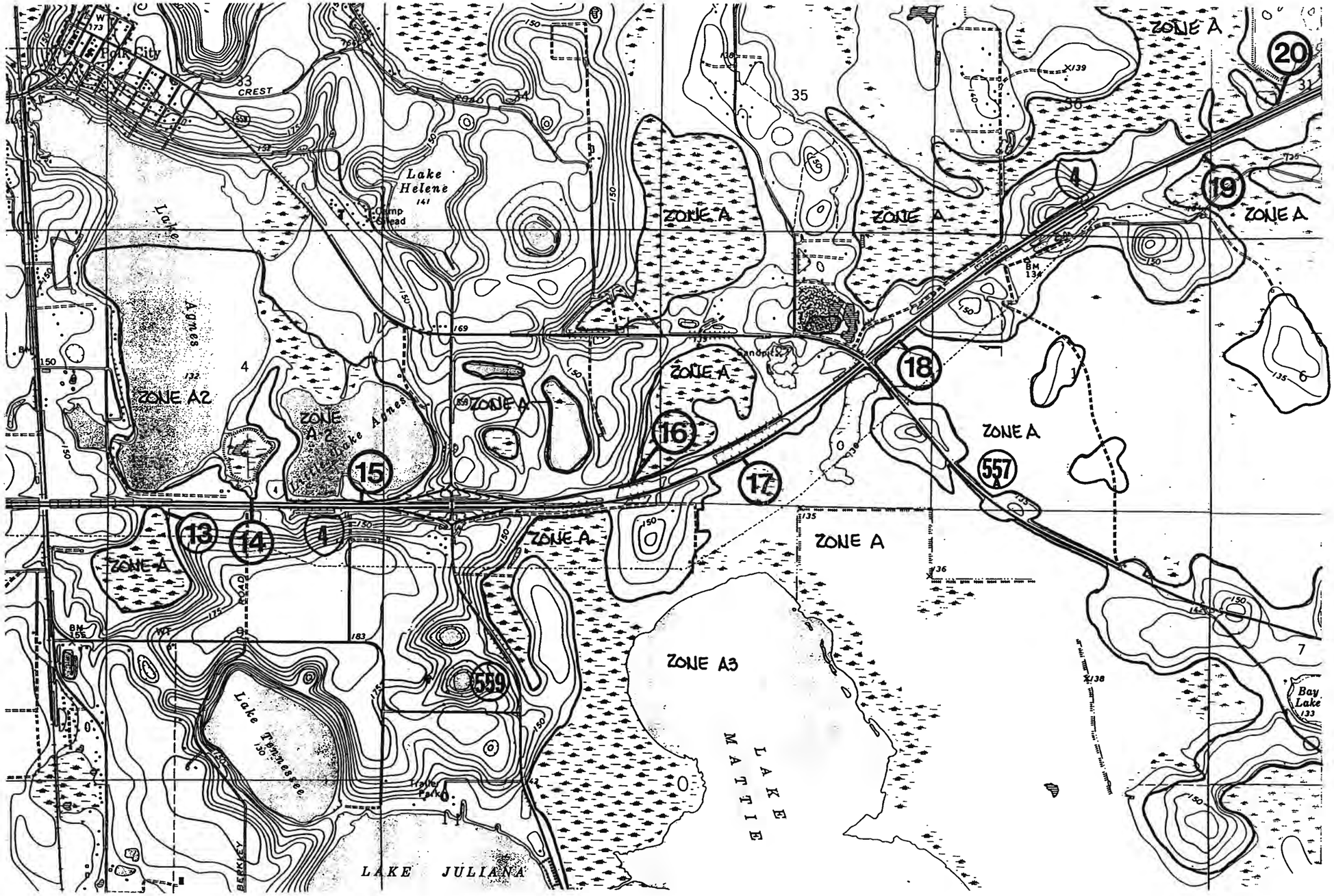
Basemap Source: USGS Quadrangle Map

Areas of Potential Base Flood Plain Encroachment

I-4 Preliminary Engineering Report
State Project No. 16320-1402

Polk County

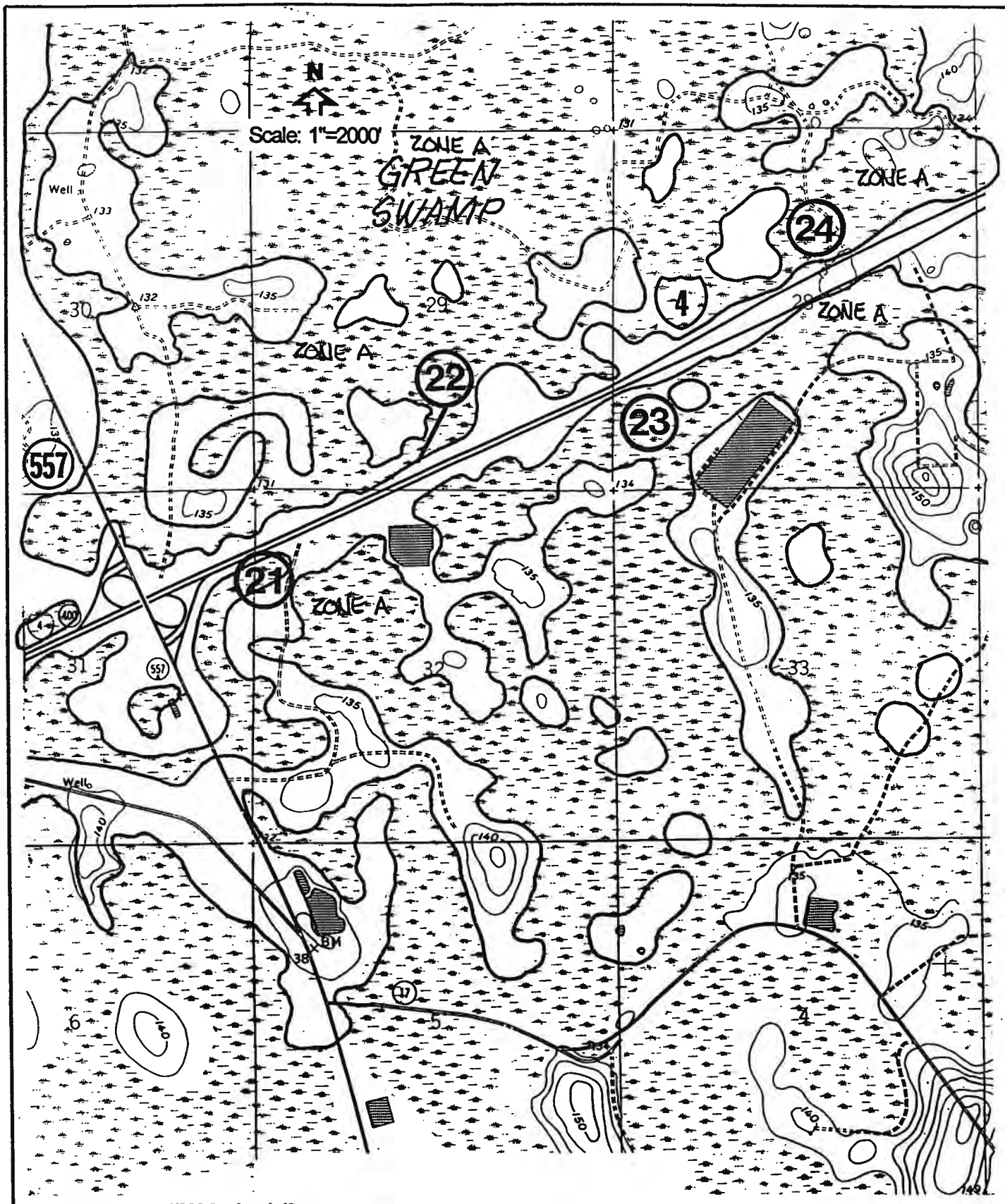
FIGURE 9-12



Basemap Source: USGS Quadrangle Map

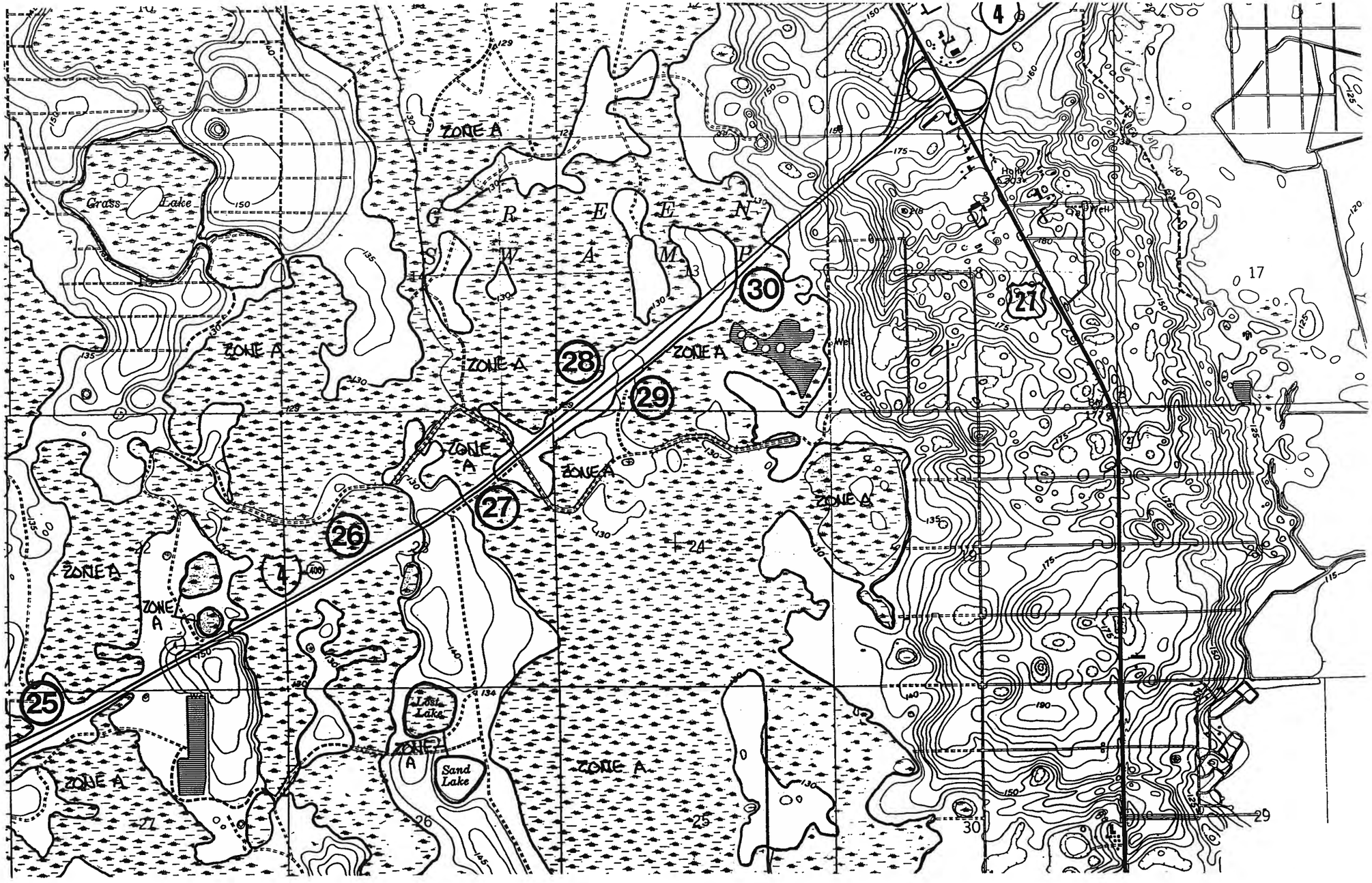
Sheet 4 of 7

Areas of Potential Base Flood Plain Encroachment	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-12



Sheet 5 of 7

Areas of Potential Base Flood Plain Encroachment	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-12



Basemap Source: USGS Quadrangle Map

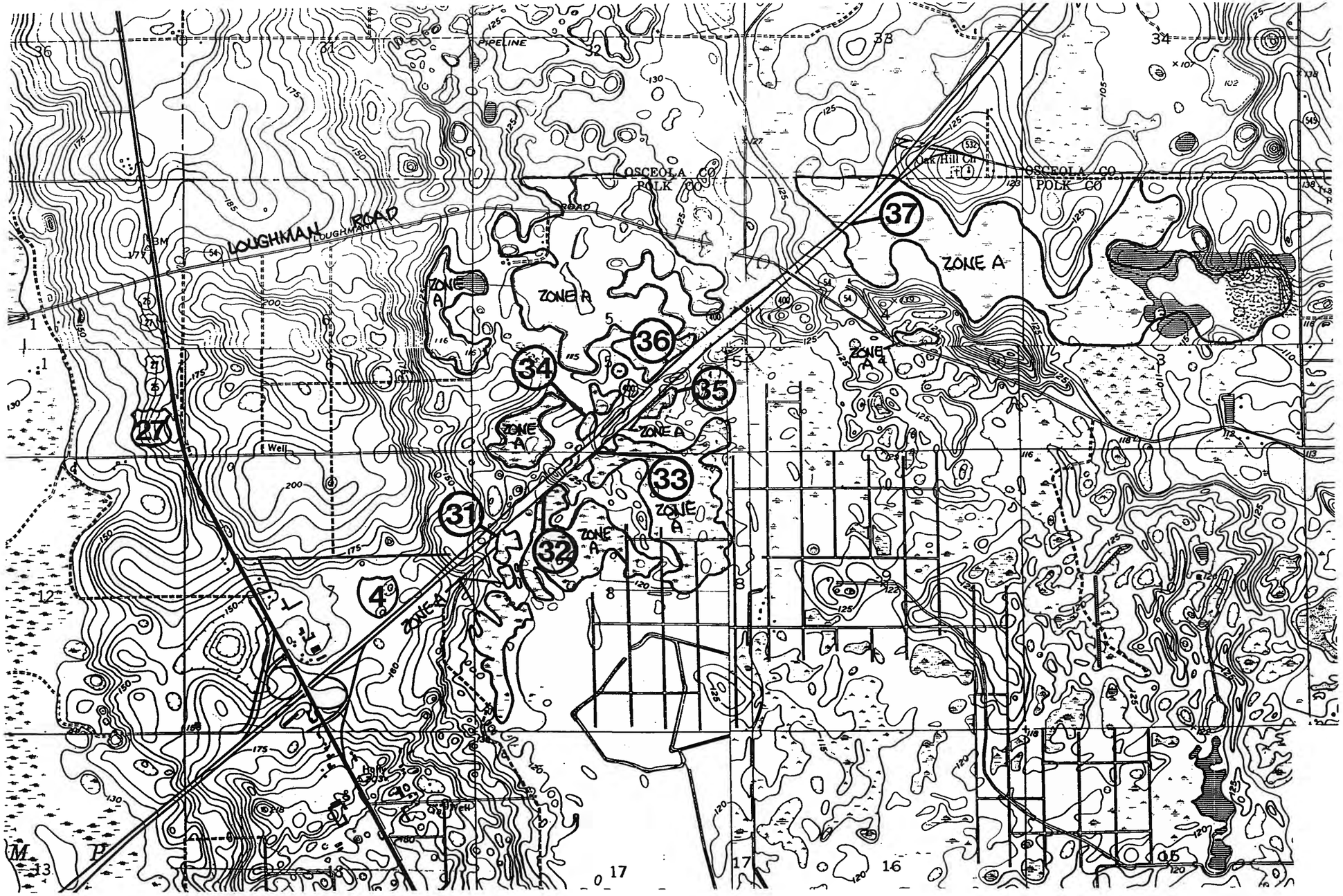
Sheet 6 of 7

Areas of Potential Base Flood Plain Encroachment

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 9-12



Basemap Source: USGS Quadrangle Map

Sheet 7 of 7

Areas of Potential Base Flood Plain Encroachment

I-4 Preliminary Engineering Report State Project No. 16320-1402	FIGURE 9-12

9.15.5 Wildlife and Habitat

This project has been evaluated for impacts to wildlife and habitat resources, including protected species, in accordance with the Endangered Species Act of 1973 as amended by Rules 39-25.002, 39-27.002, and 39-27.011 of the Wildlife Code of the State of Florida (Chapter 39, F.A.C.). A literature review, field surveys, and coordination with the USFWS and the FGFWFC were conducted to determine if any protected species occur within the project area. The project team coordinated with the USFWS and the FGFWFC directly and through an environmental advisory group established to evaluate the potential for the inclusion of wildlife undercrossings into the proposed improvements to I-4. A review of the road alignment for the potential occurrence of Federal and State listed plant and animal species was conducted during the initial study phase and subsequent site reviews. No critical habitat, with the exception of known nest locations, for any protected species was identified within the project corridor. This project is proposed with minimized typical sections (in Segments 2, 3 and 8), generally centered on the existing alignment and utilizes the existing right-of-way to the greatest extent possible. The alignment of the preferred alternative considered all practicable measures to minimize harm to wildlife and habitat.

The information is this section is a summary of the findings described in the Endangered Species Biological Assessment, Interstate 4, April 1998 (ESBA), prepared as a separate document.

Flora

So much of the I-4 corridor has been developed that very little of the native flora remains intact. Wetland areas have been less impacted than upland areas. The relatively intact upland areas existing within the project corridor are on the whole not unique or of outstanding quality. The majority of the areas are xeric turkey oak and live oak communities. These areas have been shown to support listed species although the habitat type is marginal and highly fragmented. Most of the federally listed species occur on the white sand Pleistocene ridges of central Florida, all of which have been converted to citrus groves and pasture within the project corridor. The typical pine flatwoods found throughout most of Florida have been converted to pasture or mined for phosphate throughout the length of the project leaving little possibility of intact floral communities. The most intact habitat throughout the corridor that may support protected species are the wetland areas. Although none of the wetland areas are relatively unique, the size and complex interrelationship among these areas may provide unique environmental conditions supportive of individual populations. The confirmed sightings or occurrences of protected plant species within the project corridor include:

Beargrass (Nolina brittoniana), Endangered - Florida Department of Agriculture (FDA) & USFWS
Garberia (Garberia heterophylla), Threatened - FDA
Leafless Beak Orchid (Stenorrhynchos lanceolatus), Threatened - FDA

Fauna

Pedestrian and windshield surveys were conducted for the I-4 corridor and established guidelines were used where the potential for protected species existed. No critical habitat for any protected species has been identified within the project limits.

Many species of wading birds have been observed foraging in the wetland areas of the I-4 corridor. Impact to valuable habitats that are critical to any one species are limited due to the linear nature of the project. Areas of concern within the I-4 corridor include upland areas conducive to habitation by the Florida scrub jay, and corridor areas adjacent to known and potential nesting sites of the Florida sandhill crane, the Southeastern American kestrel, and the bald eagle. The wood stork and other wading birds are also species of concern since they have been observed feeding in the I-4 corridor.

Impacts to Florida scrub jay territories west of CR 54 Loughman Road will result with the proposed project. The road widening would directly affect 1.28 ha (3.17 ac) of Type III habitat within the territory of a clan but would probably not affect access to the remaining territories or the survival of the existing clans due to the negative roadway elevation relative to the surrounding grade and the apparent habituation to traffic these clans exhibit. Mitigation for impacts to Florida scrub jay territories will be accomplished at a ratio of 2:1 through utilization of the FDOT Highlands County mitigation bank. Consultation with the USFWS has been initiated in accordance with Section 7 of the Endangered Species Act. Copies of the USFWS and FGFWFC correspondence are included in Section 5 of the Appendix.

Potential habitat for nesting cranes does occur along the I-4 corridor, however, no nests were found within or adjacent to the I-4 right-of-way. A multi-species rookery (identified as POLK001040 by the FGFWFC) is located 2.01 km (1.25 mi) south of I-4 and about 2.41 km (1.5 mi) east of the SR 33 interchange. The rookery is not within 457 m (1500 ft) of the roadway, therefore, it is anticipated that scheduling of construction activities will not be affected.

The USFWS has designated primary zones to extend 750 feet in all directions from bald eagle nests PO49, PO49A, PO50A and PO64A and a secondary zone to extend an additional 750 feet from the boundary of the primary zone, for a total distance of 1,500 feet from each nest. The proposed project is located outside of the protection zones for these bald eagle nests. The USFWS concluded in a letter dated 8-27-97 (see Appendix, Section 5 - USFWS letter dated 8-27-97), "That the proposed project is located outside of the protection zones for bald eagle nests PO49, PO49A, PO50A and PO64A. Therefore, we conclude that the proposed project is not likely to adversely affect the aforementioned bald eagle nests."

All gopher tortoise appropriate habitat within the I-4 corridor was surveyed according to FGFWFC methodology guidelines. Gopher tortoise habitat exists in several areas along the I-4 corridor, although no active burrows were identified within the project limits. Tortoise burrows have been seen in abandoned citrus groves and improved pasture areas along the I-4 corridor. Incidental take permits will be required for additional impacts potentially occurring to individuals found along the linear impact zone of construction. A resurvey of the project corridor (or appropriate habitat) may be required prior to construction. Mitigation, if required, will be accomplished through the use of the FDOT Highlands County mitigation bank.

The construction phase of this project is currently not included in the FDOT 5-year work program. Because of anticipated delay in construction, a resurvey of the project corridor may be required. Potential impacts to protected plant and animal species found within the proposed right-of-way will require consultation and coordination with both state and federal regulatory agencies pursuant to federal and state regulations.

9.15.6 Noise

A total of 933 existing and planned sensitive sites were identified adjacent to the I-4 corridor as having the potential to be impacted by motor vehicle-related noise with the proposed improvements. These sites include single and multi-family residences, two elementary schools and four churches. Of the 933 sites, 380 are predicted to experience existing and future (year 2021) no-build noise levels that may approach or exceed the FHWA's Noise Abatement Criteria (NAC). With the I-4 improvements, noise levels that may approach or exceed (65 to 79 dBA) the NAC are predicted at 626 sites during the design year. As required by the 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 the construction of 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, due to the nature of the facility and the capacity constraints caused by such measures, traffic management is not considered a feasible or reasonable mitigation measure for the project.

Roadway Alignment Alternatives - The preferred construction alternative generally utilizes the existing right-of-way for I-4. Further shifts in the roadway would increase impacts unrelated to noise to the businesses and residences currently located adjacent to the roadway. While considered to be feasible, this measure is considered to be unreasonable to mitigate predicted noise impacts.

Noise Barriers - Noise barriers were evaluated at 27 locations adjacent to the improved I-4 roadway. The results of the evaluation indicate that the desired reduction in noise (5 dBA) can not be achieved at 3 of the locations, the cost effective guideline is significantly exceeded at 21 locations. As such, noise barriers are not considered a reasonable noise abatement measure at 24 of the locations evaluated. At the remaining locations (location nos. 6, 7 and 15), the analysis indicates that noise barriers would provide a reasonable reduction in noise levels at a cost below the cost effective guideline. The FDOT is committed to provide these barriers contingent on the following:

- The barrier is subjected to a detailed noise analysis during the design phase of this project and the analysis supports the need for the abatement.

- The affected property owners are surveyed and a positive desire for the barriers (including type, height, location and access requirements) is obtained.

- All safety and engineering aspects of the barrier are reviewed and approved as they relate to the roadway user and the adjacent property owners.

An additional objective of the noise study is the prediction of noise impact "zones" adjacent to the improved I-4 corridor. This information is provided to assist local officials in planning development so that future noise sensitive sites within the "zones" are minimized. These "zones" delineate the distance from the centerline of the improved roadway's near travel lane where the FHWA NAC level for category "B" land uses (67 dBA) is estimated to occur with the proposed project. Generally, the results of this analysis indicate that local planning officials should strive to maintain a 198.1 to 213.3 m (650 to 700 ft) buffer zone adjacent to the improved I-4 corridor. Land uses within this zone should be compatible with highway noise (commercial, industrial, etc.).

Construction of the proposed project will have a temporary impact on the noise sensitive sites adjacent to the project corridor. The contractor will adhere to the 1991 FDOT Standard Specifications for Road and Bridge Construction and any special provisions in the construction contract which relate to the control of noise.

Noise Study Addendum - In response to comments received from the public at the Public Hearings held for this project on October 12 and 13, 1998, the noise walls identified as Barriers 2, 11, 16 and 17 in the Noise Study Report for I-4 were reevaluated using more refined data than was available during the previous analysis. The noise walls were also shortened in these areas in an attempt to achieve the minimum desired insertion loss of 5 dBA for the more densely situated noise sensitive sites in each area. Based on the results of a noise barrier reevaluation performed in response to public comment, Barriers 2, 11, 16 and 17 are considered to be a reasonable noise abatement measure at the locations analyzed and will be carried forward to final design for consideration. The Addendum - Section 8 of the Noise Study Report, March 1998, Revised August 1998 presents the results of the noise study reevaluation. Also refer to Section 9.18.3 of this Preliminary Engineering Report for a summary of the public hearings.

For further information regarding noise impact potential, refer to the Noise Study Report, March 1998, Revised August 1998, prepared as a separate document.

9.15.7 Air Quality

An Air Quality Study was conducted for the I-4 PD&E study in order to determine whether project related motor vehicle emissions will cause or contribute to an exceedance of the National Ambient Air Quality Standard (NAAQS) for carbon monoxide. Results of the air quality analysis indicate that the project will not cause or contribute to the NAAQS for carbon monoxide with or without the proposed I-4 improvements.

The project is located in an area which has been designated attainment for the ozone standards under the criteria provided in the Clean Air Act Amendments of 1990. This project is in conformance with the State Implementation Plan because it will not cause violations of the NAAQS.

Construction of the proposed project will have a temporary impact on air quality conditions in the vicinity of the roadway during site preparation, with particulate matter (dust) having the greatest impact. Where excess particulate matter is likely to become a problem, the contractor will adhere to the 1991 FDOT Standard Specifications for Road and Bridge Construction and any special provisions in the construction contract which relate to the control of air pollution.

Over the short term, construction of the proposed project would impact local air quality conditions in the form of particulate matter (dust) caused by construction activities. Over the long term, motor vehicles will be the primary source of air pollutant emissions associated with the proposed I-4 improvements. The purpose of the air quality analysis is to determine whether these project motor vehicle emissions will cause or contribute to an exceedance of the NAAQS for carbon monoxide. The NAAQS for this pollutant are 35 parts-per-million (ppm).

For further information regarding air quality, refer to the Air Quality Report, January 1998, Revised August 1998, prepared as a separate document.

9.15.8 Construction

The improvements to I-4 would typically be constructed in two stages. Stage I would consist of the construction of the six general purpose lanes and drainage structures (including storm water management ponds), removal of the existing lanes, replacement of the cross road and interchange structures and completion of the interchange ramps. Stage II would consist of the addition of the four special use lanes and slip ramps. Stage I would be designed and constructed to accommodate the addition of Stage II at a later date. Each stage would be complete unto itself, containing signing, marking, lighting and aesthetics.

Typically, the new general purpose lane construction (Stage I) would take place outside of the existing lanes allowing the existing lanes to be used for maintenance of traffic. In areas with bifurcated medians or alignment shifts, special attention will have to be given to a detailed traffic control plan. (See Section 9.17.)

I-4 construction activities would have minimal, temporary, yet unavoidable, noise, air quality, water quality, wetlands, traffic flow, and visual impacts on the residences, businesses, recreational areas, and travelers within the immediate vicinity of the project.

Noise and vibration impacts generated by heavy equipment movement and construction activities such as pile driving and vibratory compaction of embankments. Noise control measures would include those contained in FDOT's Standard Specifications for Road and Bridge Construction and through the use of Best Management Practices.

Construction activities would also cause minor short-term air quality impacts in the form of emissions from diesel-powered construction equipment and dust from earthwork and unpaved roads. Air pollution associated with the creation of airborne particles would be effectively controlled through the use of watering or the application of calcium chloride in accordance with the FDOT's Standard Specifications for Road and Bridge Construction.

During project construction, potential short-term increases in water turbidity could affect wetlands and water quality. Water quality impacts would be controlled in accordance with FDOT's Standard Specifications for Road and Bridge Construction and through the use of Best Management Practices.

Maintenance of traffic and sequence of construction will be planned and scheduled so as to minimize traffic delays throughout the project. Signs would be used as appropriate to provide notice of road closures and other pertinent information to the traveling public. The local news media would be notified in advance of road closings and other construction-related activities.

A sign providing the name, address and telephone number of a FDOT contact person would be displayed on-site to assist the public in obtaining immediate answers to questions or logging complaints about project activity.

Access to all businesses and residences would be maintained to the extent practical through controlled construction scheduling. During final design, a Traffic Control Plan (for maintenance of traffic and access) will be developed and approved for use, in accordance with the latest edition of the FDOT Roadway and Traffic Design Standards. Visual impacts associated with the storage of construction materials and establishment of temporary construction facilities would occur, but are not considered significant.

Construction of the roadway and bridges requires excavation of unsuitable material (muck), placement of embankments, and use of such materials, such as limerock, asphaltic concrete, and Portland concrete.

Demucking is anticipated at most of the wetland sites and would be controlled by Section 120 of the FDOT's Standard Specifications. Disposal would be on-site in detention areas or off-site. The removal of structures and debris would be in accordance with local State regulation agencies permitting the construction. The contractor is responsible for controlling pollution on haul roads, in borrow pits, other material pits, and areas used for disposal of waste materials from the project. Temporary erosion control features as specified in the FDOT's Standard Specifications, Section 104, would consist of temporary grassing, sodding, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings and berms.

These impacts would be minimized on this project by the contractor's adherence to measures discussed in the latest edition of the FDOT Standard Specifications for Road and Bridge Construction, "Prevention, Control, and Abatement of Erosion and Water Pollution" and the project construction contract's Special Provisions.

9.15.9 Contamination

A total of 54 sites (47 initially identified, plus seven sites listed in Segment 8 for the US 98 CSER) were initially identified for this project by windshield survey, examination of historic aerial photography, a review of the original I-4 construction drawings, the 1989 I-4 Master Plan and the US 98 CSER, November 1993. Site inspections, and an initial review of local FDEP files, Sanborn Insurance Maps and Lakeland City Directories eliminated three (3) of these sites from further study. Of the remaining forty-four (44) sites, eighteen (18) were suspected hazardous materials sites and twenty-six (26) were suspected petroleum sites. After the historic document and file research, field inspections and interviews with owners, four (4) of the hazardous materials sites and sixteen (16) petroleum sites were initially considered to have a MEDIUM or HIGH potential for contamination. Soil boring and organic vapor analyzer (OVA) screenings were completed on June 30, July 3 and July 5, 1995. The OVA screenings did not encounter significant hydrocarbon vapors at any of the sites tested.

Two areas within the I-4 project corridor were documented by the FDEP as having known groundwater contamination stemming from the past use of the pesticide ethylene dibromide (EDB) including the area around the SR 559 interchange in Segment 4 and the area around the US 27 interchange in Segment 9 (including the eastern end of Segment 6).

On September 12, 1995, six soil samples were obtained from existing or former citrus grove areas where there is concern for possible EDB or other pesticide/herbicide contamination. Each soil sample was analyzed for Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs) (EPA Method 608), Organophosphorus Pesticides (EPA Method 814), Chlorinated Herbicides (EPA Method 615) and EDB (EPA Method 810). Soil samples were obtained at each of the predetermined locations at a depth of less than one foot after the removal of surface vegetation and roots. The results of the laboratory analysis of soil samples indicate that none of the constituents for which analysis was performed were found above the laboratory detection limit for that constituent.

Of the original 54 sites identified for this study, three (3) were eliminated from further study. After the OVA screenings and soil sample analysis the forty-four (44) sites were assigned final ratings. Five (5) sites were rated as NO INDICATION and thirty-five (35) sites were rated as having a LOW potential for contamination. Although the OVA screening did not reveal the presence of contamination, based on the historic nature of the businesses conducted (e.g. gasoline service stations), the additional right-of-way required from the site, known past incidents of contamination, and/or the close proximity of the underground storage tanks to the proposed right-of-way, four (4) sites were rated as having a MEDIUM potential for the presence of contamination. See Table No. 9-10 for the four (4) sites with a MEDIUM rating.

Table No. 9-10
I-4 POTENTIAL CONTAMINATION SITES
I-4 Project Development and Environment Study

Site No.	Name	Final Rating
61S	Amoco/Lung Ho Ventures, Inc. (Segment 4)	Medium
68N	Speedway Station #8179 (Segment 9)	Medium
72S	Exxon #45536 (Segment 9)	Medium
75S	Amoco #17 (Segment 9)	Medium

Because of the negative results of the OVA screenings, EDB soil sample analysis and of the lack of known contamination, no contamination cleanup costs have been developed for the sites identified for this project.

Seven (7) petroleum sites were evaluated in Segment 8 for the US 98 PD&E project (SPNs 16210-1514A & 16210-1514B), November 1993, and the CSER for US 98 Pond Sites, July 1995 (SPN 16210-1514). These sites are listed in this report because they have the potential to be impacted by the proposed improvements to the I-4/US 98 interchange. Soil borings and OVA screenings were conducted for the US 98 project in 1993. The US 98 sites and their contamination potential ratings (assigned for the US 98 CSER) are shown in Table No. 9-11.

The estimated contamination cleanup costs shown in Table No. 9-11 have not been included in the total costs for the I-4 PD&E project. (They are included in the project costs for the US 98 PD&E project -SPN 16210-1514 A&B.) The US 98 project north of I-4 is currently in the construction phase and is expected to be completed in Fiscal Year 1998/99. Construction of the proposed improvements to US 98 south of I-4 are not included in the FDOT five-year work program, however, at this time it is estimated that the US 98 improvements would precede the proposed I-4 improvements.

Table No. 9-11
US 98 POTENTIAL CONTAMINATION SITES
I-4 Project Development and Environment Study

US 98 Site No.	Name	Rating	Estimated Cleanup Cost
24W	Former Miami Subs (Segment 8)	High	$120,450
26W	Former Mobil Station #02-CXW (Segment 8)	High	$66,000
25E	Chevron Station #47445 (Segment 8)	High	$96,000
23W	Shorty's Amoco #202 (Segment 8)	High	$111,000
21W	Coastal Mart #666 (Segment 8)	High	$49,500
20W	Racetrac Petroleum, Inc. #234 (Segment 8)	High	$333,000
22E	Citgo (Former Union 76) (Segment 8)	High	$476,250

For additional information regarding the potential for contamination in the I-4 corridor, refer to Section 4.3.4 and the Contamination Screening Evaluation Report, January 1998, prepared as a separate document.

9.16 Utility Impacts

The existing utilities within the I-4 study area which have the potential to be affected by the various alignment alternatives for the proposed improvements have been summarized in Section 4.1.12. The exact locations of all these systems will be determined during the subsequent design phases of this project and conflicts with these systems will be identified. Utility impacts and the associated relocation costs resulting from the preferred alternative are discussed below.

Segment 2

City of Lakeland - Electric - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12, except the 427 m (1,400 ft) of 7.2 kV to ground, located north of I-4 at Memorial Boulevard and the 1097 m (3,600 ft) of 3 phase underground lines located south of I-4 at Kathleen Road. In addition, it is anticipated that as many as 10 poles of 3 phase 230 kV transmission lines could be impacted in this segment. The FDOT would bear the cost of the 230 kV transmission line relocation.

City of Lakeland - Public Works - It is anticipated that impacts will be associated with the 12" force main attached to Griffin Road bridge.

City of Lakeland - Water - It is anticipated that impacts will be associated with the six locations identified in Table No. 4-10 in Section 4.1.12.

Florida Gas Transmission Company - It is anticipated that impacts will be associated with the relocation of the 22" high pressure natural gas transmission pipeline, located on private easements that parallel I-4 to the north for about 1.6 km (1 mi) from the Kathleen Road interchange to the eastern end of Segment 2. The FDOT would bear the cost of this relocation.

GTE - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12.

LDDS Communications - It is anticipated that impacts will be associated with the fiber optic cable where Griffin Road (CR 582) crosses I-4.

Peoples Gas Company - It is anticipated that impacts will be associated with the 91 m (300 ft) of carrier pipe which crosses under I-4 at the Owens Illinois plant and with the 91 m (300 ft) of carrier pipe which crosses under I-4 at the Pepperidge Farm plant.

Based on the responses from the Utility Request Packages, the cost estimates (in 1995 dollars) for Segment 2 for utility relocations associated with the preferred alternative are as follows:

City of Lakeland -Electric	$1,000,000[1]
	$176,000
City of Lakeland -Public Works	$22,000
City of Lakeland -Water	$1,677,000

Florida Gas Transmission Company	$990,000[1]
GTE	$893,000
LDDS	$250,000
Peoples Gas Company	$60,000
Total	$5,068,000

[1]Cost borne by the FDOT = $1,990,000

Segment 8

City of Lakeland - Electric - It is anticipated that impacts will be associated with the 61 m (200 ft) of 3 phase underground electric lines, located south of I-4 at US 98. In addition, it is anticipated that as many as three poles of 3 phase overhead transmission lines could be impacted through the US 98 interchange, north of I-4.

City of Lakeland - Public Works - It is anticipated that impacts will be associated with the 12" force main crossing I-4 near Providence Road and the 8" gravity line located within the US 98 right-of-way, paralleling either side of I-4.

Florida Gas Transmission - It is anticipated that no impacts will be associated with the 22" high pressure natural gas transmission pipeline, located on private easements that parallel I-4 to the north for the length of Segment 8.

GTE - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12.

Peoples Gas Company - It is anticipated that impacts will be associated with the 91 m (300 ft) of carrier pipe crossing under I-4 on the east side of US 98 north.

Based on the responses from the Utility Request Packages, the cost estimates (in 1995 dollars) for Segment 8 for utility relocations associated with the preferred alternative are as follows:

City of Lakeland - Electric	$308,000
City of Lakeland - Public Works	$76,000
Florida Gas Transmission Company	$0
GTE	$446,000
People's Gas Company	$30,000
Total	$860,000

Segment 3

American Telecasting - It is anticipated that impacts will be associated with the microwave tower and receiver and the 152 m (500 ft) underground tv cable located near the proposed Connector Road at the CR 582 (Socrum Loop Road) interchange.

City of Lakeland -Electric - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12, except the 183 m (600 ft) of overhead electric distribution located south of I-4 at CR 582, the 213 m (700 ft) of overhead electric distribution south of I-4 and west of

Wendell Watson Elementary School and the 427 m (1,400 ft) of overhead electric distribution lines, located north of I-4 and east of Wendell Watson Elementary School. In addition, it is anticipated that as many as three poles of the 230 kV transmission lines could be impacted in this segment. The FDOT would bear the cost of the 230 kV transmission line relocation.

City of Lakeland -Public Works - It is anticipated that impacts will be associated with all of the locations identified in Table No. 4-10 in Section 4.1.12.

City of Lakeland -Water - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12, except the 84 m (276 ft) of 10" PVC which parallels the north side of I-4 east of Carpenter's Way Road and the 229 m (750 ft) of 8" PVC which parallels the north side of I-4 east of the westbound rest area.

Florida Gas Transmission Company - It is anticipated that no impacts will be associated with the 22" high pressure natural gas transmission pipeline, located on private easements that parallel I-4 to the north for the length of Segment 3. However, it is anticipated that impacts will be associated with the 6" high pressure natural gas transmission pipeline which parallels I-4 to the south, west of the intersection of I-4 and SR 33 and crosses I-4.

GTE - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12. Note: The cost for the relocation of the GTE switching station at the CR 582 Socrum Loop Road Interchange is included in this cost estimate.

LDDS Communications - It is anticipated that impacts will be associated with the fiber optic cable, located east of the centerline of SR 33.

Orlando Utilities Commission - has identified about 60 transmission line structures south of I-4 in Segment 3 (west of SR 33) and continuing into Segments 4, 5 and 6. The structures are within a utility easement. It is anticipated that impacts may be associated with one of the OUC structures in Segment 3.

People's Gas Company -It is anticipated that impacts will be associated with the 91 m (300 ft) of carrier pipe, crossing under I-4 at CR 582.

Based on the responses from the Utility Request Packages, the cost estimates (in 1995 dollars) for Segment 3 for utility relocations associated with the preferred alternative are as follows:

American Telecasting	$122,000[1]
City of Lakeland -Electric	$300,000[1]
	$176,000
City of Lakeland -Public Works	$410,000
City of Lakeland -Water	$125,000
Florida Gas Transmission Company	$350,000
GTE	$1,340,000[1]
LDDS	$150,000
Orlando Utilities Commission	$95,000[1]
Peoples Gas Company	$30,000
Total	$3,098,000

[1]Cost borne by the FDOT = $1,857,000.

Segment 4

City of Lakeland -Electric - It is anticipated that impacts will be associated with the 610 m (2,000 ft) of overhead distribution north of I-4, east of Mt. Olive Church Road.

Florida Gas Transmission - It is anticipated that impacts will be associated with the 12" high pressure natural gas transmission pipeline that parallels SR 559 to the east and crosses I-4.

GTE - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12.

MCI - has identified a fiber optic route within the abandoned former CSX railroad right-of-way (now Tampa Electric Company) at CR 655 which crosses under I-4 in Segment 4. However, it is anticipated that the proposed improvements will not affect the fiber optic route, therefore there are no costs associated with MCI.

Orlando Utilities Commission - has identified about 60 transmission line structures beginning south of I-4 in Segment 3 (west of SR 33) and continuing into Segments 4, 5 and 6. The structures are within a utility easement. Since the proposed improvements encroach into the OUC easement in segment 4, there could be impacts associated with seventeen OUC structures.

Polk County Utilities - It is anticipated that impacts will be associated with the sewage force main that runs under the road bed at a right angle to the I-4 centerline, near Mt. Olive Church Road.

Tampa Electric Company - It is anticipated that impacts will be associated with the five locations identified in Table No. 4-10 in Section 4.1.12.

Time Warner Cable - It is anticipated that impacts will be associated with the 914 m (3,000 ft) of underground cable crossing I-4 at CR 655.

Based on the responses from the Utility Request Packages, the cost estimates (in 1995 dollars) for Segment 4 for utility relocations associated with the preferred alternative are as follows:

City of Lakeland - Electric	$57,000[1]
Florida Gas Transmission Company	$500,000
GTE	$677,000
MCI	$0
Orlando Utilities Commission	$1,615,000[1]
Polk County Utilities	$44,000
Tampa Electric Company	$98,000[1]
	$25,000
Time Warner Cable	$10,000
Total	$3,026,000

[1]Cost borne by the FDOT = $1,770,000

Segment 5

AT&T - It is anticipated that impacts will be associated with the fiber optic cable crossing I-4 and paralleling CR 557 on the east side.

GTE - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12.

Orlando Utilities Commission - has identified about 60 transmission line structures beginning south of I-4 in Segment 3 (west of SR 33) and continuing into Segments 4, 5 and 6. The structures are within a utility easement. It is anticipated that the proposed improvements could impact one OUC structure.

Tampa Electric Company - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12, excluding the 7.6 kV pole/underground line located south of I-4 and west of CR 557.

Based on the responses from the Utility Request Packages, the cost estimates (in 1995 dollars) for Segment 5 for utility relocations associated with the preferred alternative are as follows:

AT&T Communications	$80,000
GTE	$133,000
Orlando Utilities Commission	$95,000[1]
Tampa Electric Company	$13,000[1]
	$23,000
Total	$344,000

[1]Cost borne by the FDOT = $108,000.

Segment 6

Orlando Utilities Commission - has identified about 60 transmission line structures beginning south of I-4 in Segment 3 (west of SR 33) and continuing into Segments 4, 5 and 6. The structures are within a utility easement. It is anticipated that impacts will not be associated with any of the OUC structures.

Based on the responses from the Utility Request Packages, the cost estimates (in 1995 dollars) for Segment 6 for utility relocations associated with the preferred alternative are as follows:

Orlando Utilities Commission	$0
Total	$0

Segment 9

Chesapeake Utilities - It is anticipated that impacts will be associated with the 4" gas main with 6" gas main crossing I-4 on the west side of US 27.

Florida Power Corporation - It is anticipated that impacts will be associated with the overhead distribution lines, north and south of I-4 with crossing on the west side of US 27.

GTE - It is anticipated that impacts will be associated with the locations identified in Table No. 4-10 in Section 4.1.12.

Polk County Utilities - It is anticipated that impacts will be associated with the 16" water main, the 14" sewage force main and the 12" reuse water main which crosses under the road bed at a right angle to the centerline of I-4 near the US 27 interchange and with the 8" water main hung on the east side of the US 27 bridge.

Time Warner Cable - It is anticipated that impacts will be associated with the 305 m (1,000 ft) of overhead fiber optic cable crossing I-4 at US 27.

Based on the responses from the Utility Request Packages, the cost estimates (in 1995 dollars) for Segment 9 for utility relocations associated with the preferred alternative are as follows:

Chesapeake Utilities Corporation	$75,000
Florida Power Corporation	$150,000
GTE	$1,786,000
Polk County Utilities	$2,491,000
Time Warner Cable	$5,000
Total	$4,507,000

Segment 7

Chesapeake Utilities Corporation - It is anticipated that impacts will be associated with the 91 m (300 ft) of CTD STL crossing I-4 at CR 54 (Loughman Road).

Based on the responses from the Utility Request Packages, the cost estimates (in 1995 dollars) for Segment 7 for utility relocations associated with the preferred alternative are as follows:

Chesapeake Utilities Corporation	$62,000
Total	$62,000

Total Estimated Utility Relocation Cost $16,965,000

Of the total utility relocation cost of $16,965,000, it is anticipated that the FDOT would bear about $5,725,000 of the costs. The remaining $11,240,000 utility relocation cost would be borne by the utility company or municipality.

9.17 Traffic Control Plan

Generally, MOT for this project is simplified wherever the proposed improvements are centered on the existing roadway. The existing I-4 travel lanes are situated at approximately the same location as the proposed special use lanes. The proposed general purpose lanes would be constructed to the outside of the existing lanes, allowing traffic to be maintained on the existing lanes. Once the general purpose lanes are completed, traffic would be switched to the new lanes and the existing I-4 pavement could be removed without disrupting traffic on the new lanes. The exceptions are in areas where the recommended alignment shifts to the right (south) or left (north) (Segments 2, 3 and 4) or in areas where the eastbound and westbound existing roadways are separated by a bifurcated median (Segments 5, 6 and 7).

In typical areas where the recommended alignment shifts left or right, one set of general purpose lanes would have to be constructed using the existing lanes for traffic. Traffic would shift to the first set of new general purpose lanes and one set of the existing lanes while one set of existing lanes is removed and the second set of general purpose lanes is constructed. Traffic would then be shifted to use both sets of new general purpose lanes while the second set of existing lanes is removed. The figure shown for this type of traffic control plan shows an alignment shift to the left. For a shift to the right, the figure would be reversed.

In the atypical (bifurcated) areas, temporary pavement would have to be constructed to maintain traffic (either eastbound or westbound) while the first set of general purpose lanes is constructed. Traffic would then be routed to the new general purpose lanes and traffic reversed on the temporary pavement while the second set of general purpose lanes is constructed. In Segment 7, the majority of the roadway between US 27 and CR 54 is bifurcated. Shifting the roadway to the left allows for one set of general purpose lanes to be constructed while using the existing lanes for maintenance of traffic. Traffic would then be shifted to the new general purpose lanes and one set of the existing lanes while the second set of general purpose lanes is constructed. See Figures 9-13, 9-14, 9-15 and 9-16 for examples of traffic control plans for the centered I-4 typical section, alignment shifts, bifurcated medians and Segment 7, respectively.

A detailed traffic control plan will be developed during the design phases of this project.

9.18 Results of Public Involvement Program

A public involvement plan was developed for the 1994 I-4 Master Plan and PD&E study in accordance with the FDOT PD&E Manual, Part 1, Chapter 8, November 1, 1994, to fully inform and involve all interested public officials, citizens and special interest groups in the development of this project. The project team coordinated with state and local agencies and various land developers along the project corridor through meetings, teleconferences and various forms of correspondence throughout the development of the I-4 Master Plan and subsequent PD&E study. Presentations were also made to the Polk County Transportation Planning Organization (TPO) Citizens and Technical Advisory Committees to discuss the status of the I-4 Master Plan. The project team was also involved in quarterly I-4 corridor meetings with representatives of FDOT Central Office, Districts 1, 5 and 7 and their respective study consultants.

The FDOT's Interstate Policy limits the expansion of the interstate typical section to ten lanes, consisting of six general use lanes physically separated from four special use lanes and a transit envelope to facilitate the development of mass transit modes of transportation. Two design evaluation workshops (charettes) were held to define viable alternatives for the first stage of development toward the ultimate interstate section and to evaluate the alternatives utilizing screening criteria. The Tier I Evaluation Workshop (charette) was held on October 28, 1993 with representatives from the FDOT Districts 1, 5, 7, Central and the Turnpike; the Federal Highway Administration; the Florida Highway Patrol and the consultant project team. The Tier II Evaluation Workshop (charette) was held on February 16 & 17, 1994.

Threatened and endangered species agency coordination meetings were held with the FDOT, project consultants and various regulatory agencies on September 23, 1994, January 20, 1995, January 24, 1995 and February 3, 1995 to identify potential threatened and endangered species within the project corridor, discuss potential wildlife crossings and to solicit comments and input from the environmental agencies.

A series of informative newsletters were prepared and provided to the public through direct mailings. The newsletters presented a summary of previous activities and notification of upcoming events related to this project.

PHASE 1

PHASE 2

PHASE 3

PHASE 4

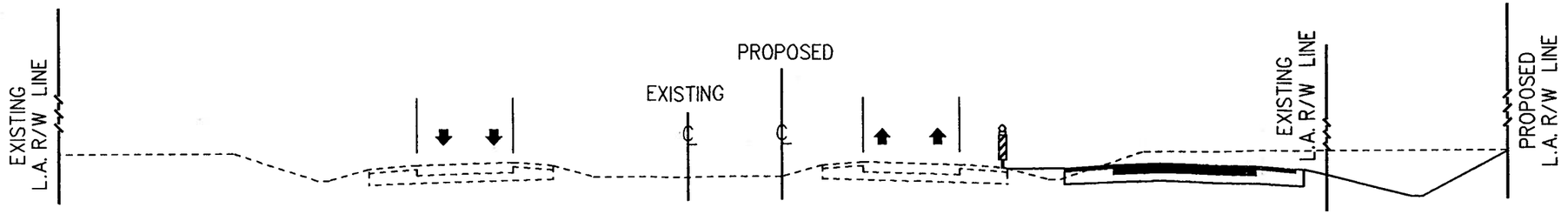
TYPICAL TRAFFIC CONTROL PLAN

I-4 Preliminary
Engineering Report
State Project No. 16320-1402

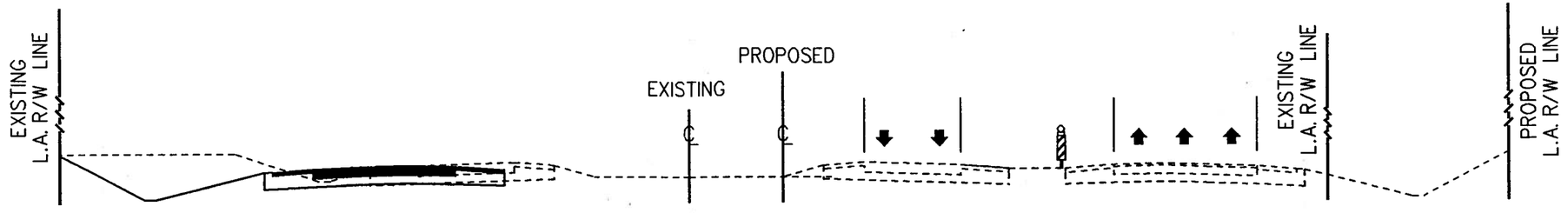
4 Polk County

FIGURE
9-13

PHASE 1



PHASE 2



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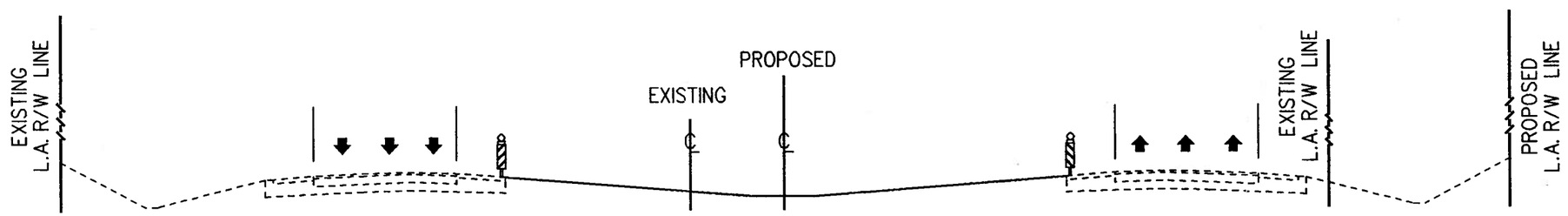
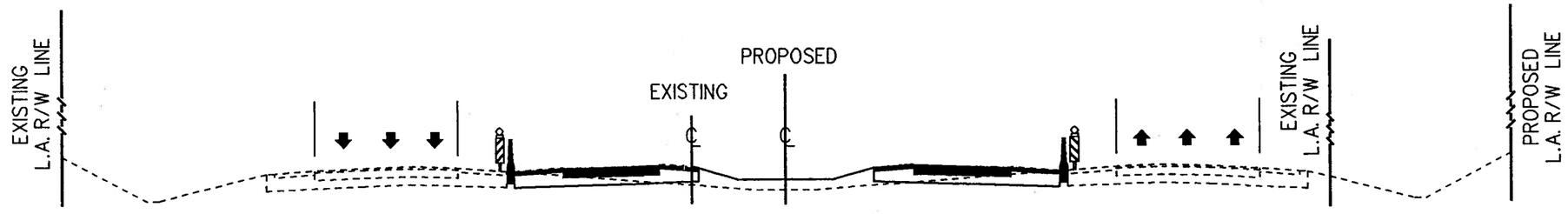
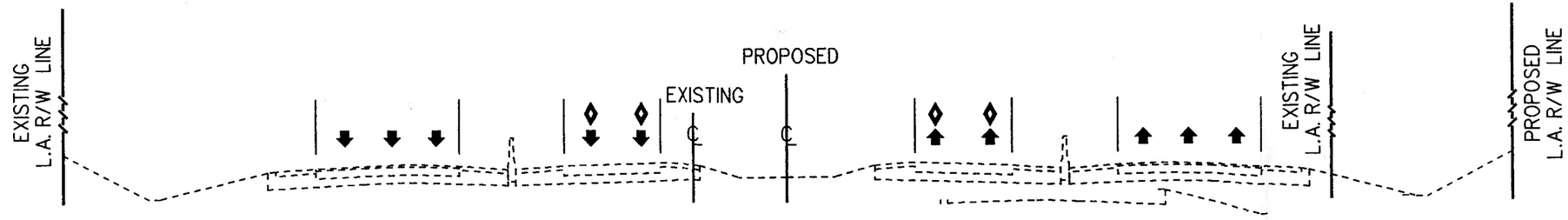


PHASE 4



PHASE 5



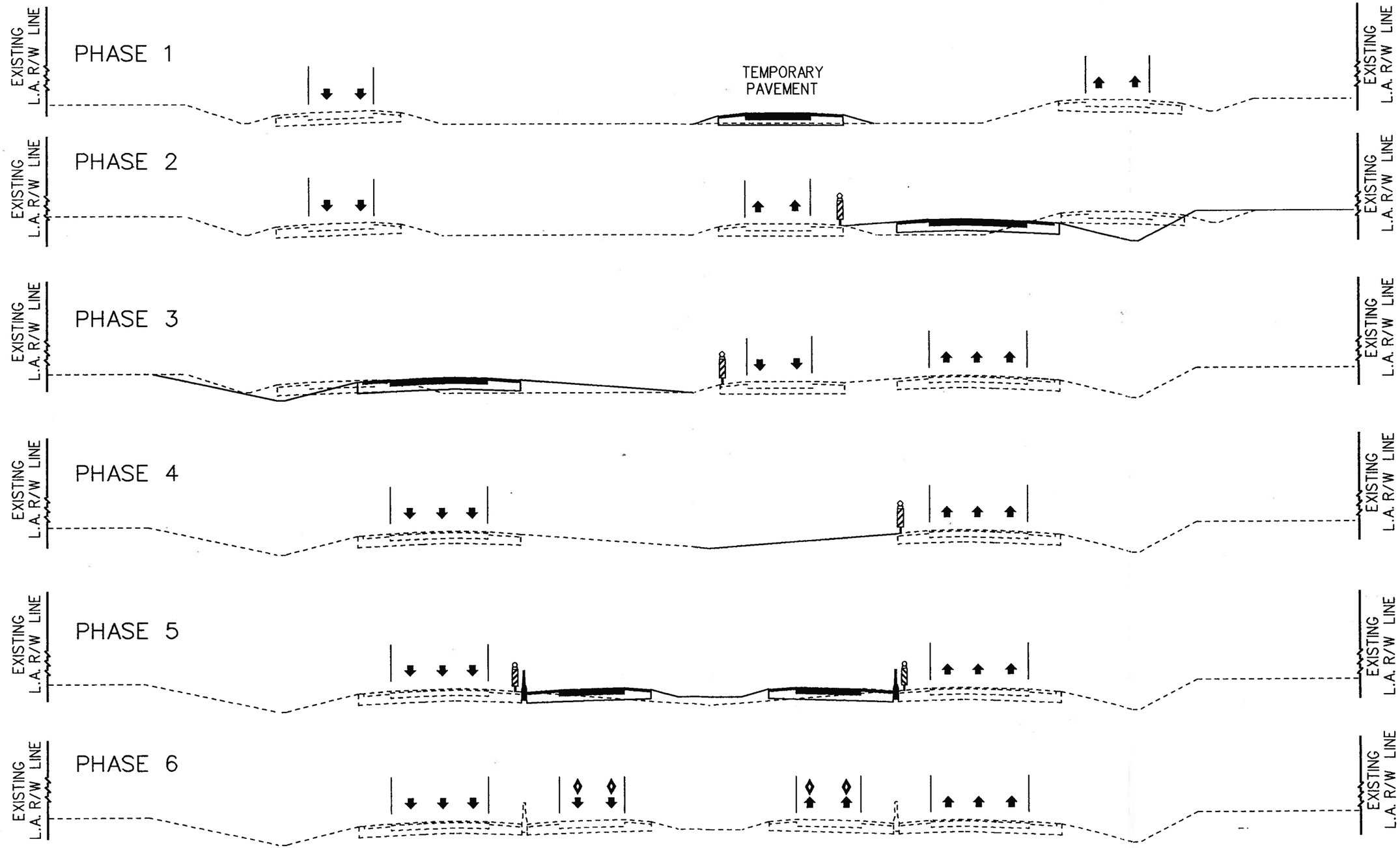
ALIGNMENT SHIFT TRAFFIC CONTROL PLAN

I-4 Preliminary
Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE
9-14

IPARM-
22-JAN-1998
dn3214_16v8



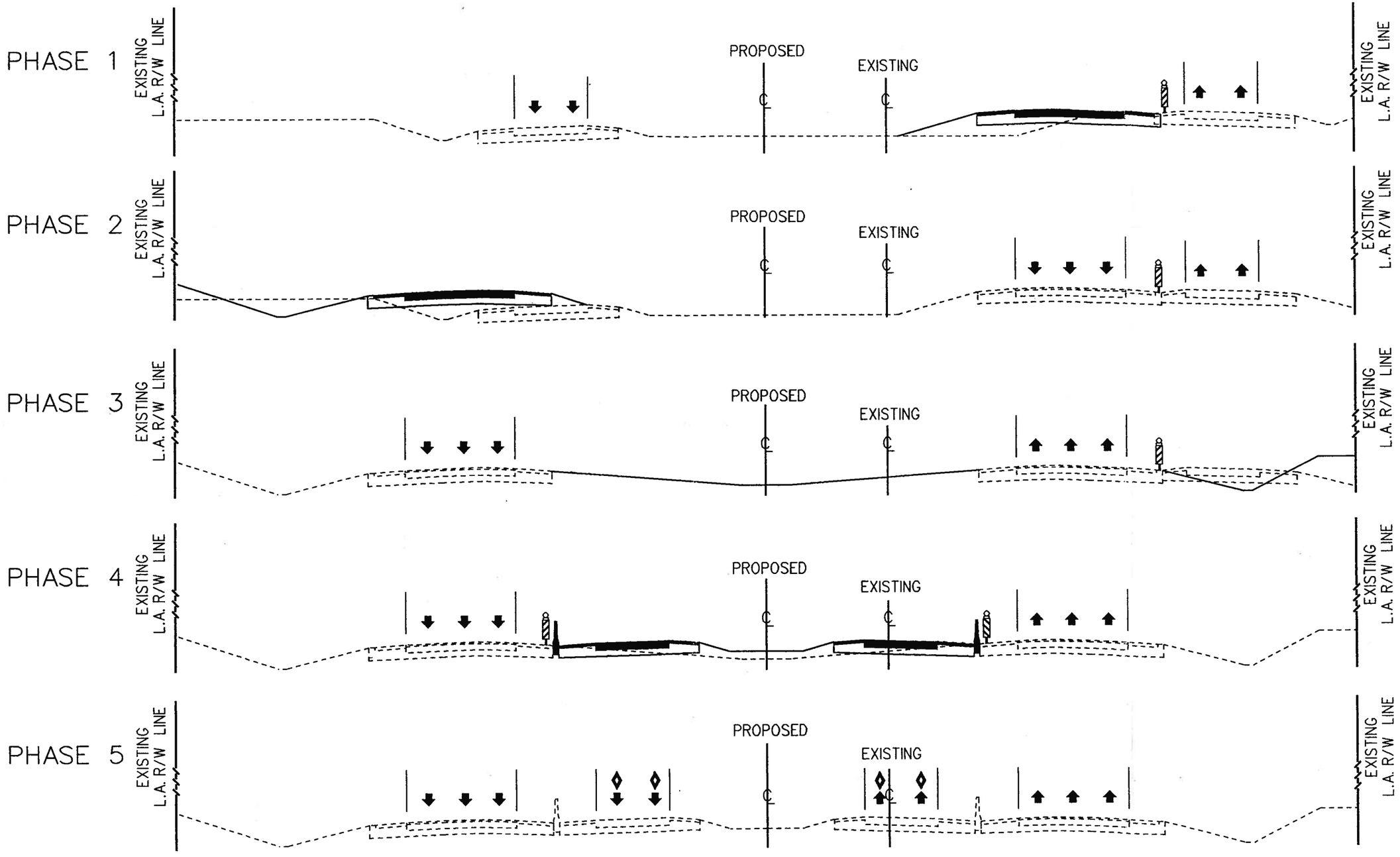
BIFURCATED MEDIAN TRAFFIC CONTROL PLAN

I-4 Preliminary
Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 9-15

IP-AM-1998 3
24-MAY-1998 3
d:\i4274\JR\bypass.sgn



SEGMENT 7 TRAFFIC CONTROL PLAN

I-4 Preliminary Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE 9-16

I-4 Environmental Advisory Group (EAG)

A kick-off meeting was held on May 11, 1994 with the I-4 Environmental Advisory Group (EAG) to discuss the purpose and schedule of events. The purpose of the I-4 EAG was to involve the local environmental community in the decision making process for two sensitive issues along the I-4 corridor, wetland and wildlife mitigation banking and wildlife corridor connections (undercrossings). The makeup of the group included representatives of thirty-four (34) organizations including regulatory and advisory agencies, state, local and regional government, environmental interest groups, and private consultants. The I-4 EAG was headed by the League of Environmental Organizations and the Central Florida Regional Planning Council.

The I-4 EAG was charged with the task of identifying potential wildlife undercrossing locations and potential wetland and wildlife mitigation options along the I-4 corridor and making a unified recommendation to the FDOT. The I-4 EAG's focus concentrated on wildlife undercrossings in two areas, the Green Swamp and the upper Peace River basin. The Group's recommended locations were further coordinated with the USFWS and the FGFWFC where undercrossing design criteria were established. The result was that low-level bridges spanning two areas of deep muck deposits in the Green Swamp and an area of wetland connection in the upper Peace River basin were incorporated into the design plans for I-4. See Section 9.22.2 for details of the wildlife undercrossings.

The creation of the I-4 EAG served a three-fold purpose: 1) Public Involvement - it involved the local environmental community int he planning stages of a major project with the potential for significant environmental impacts; 2) Technical Expertise - the I-4 EAG gave the project team access to specialized experts in the environmental disciplines which otherwise may not have been so readily available and; 3) Agency Coordination - the involvement of the regulatory and advisory agencies early in the project planning should be very beneficial when the time comes for agency reviews and permit applications during the subsequent design phases of this project.

9.18.1 Advance Notification

The FDOT initiated early project coordination on February 1, 1995, by distribution of an Advance Notification package (AN) to the Florida State Clearinghouse, Office of the Governor, Tallahassee, Florida in accordance with Executive Order 83-150. The AN defined the project and described anticipated issues and impacts. A 45-day comment period (up to 60 days if requested in writing of the FDOT by the State Clearinghouse) was afforded to allow for distribution and receipt of agency responses. No controversial comments were received as a result of the AN process.

Federal Emergency Management Agency - Region IV advises that the Flood Insurance Study (FIS) for Polk County is currently being revised. This data has been released in advance format to Polk County Surfacewater Management Division for independent review, comment, and possible use. The preliminary revised Flood Insurance Rate Maps and FIS text are under review and a release date has not yet been scheduled. In addition, it has been recommended that the lowest horizontal members of all bridges be at least 0.3 m (1 ft) above the 100-year base flood elevation (BFE), and that the top surface of the entire roadway also be elevated above the BFE.

Federal Aviation Administration - Airports District Office - Interposes no objections from an aeronautical standpoint."

Florida Department of Environmental Protection - Central District - The submerged Lands and Environmental Resources Program requires consent in the form of an easement for public right-of-ways

on sovereignty submerged lands pursuant to Chapter 18-21, Florida Administrative Code. Upon receipt of the Join FDEP/ACOE application for this project, the Title and Lands Record Section will identify any activity occurring on state-owned lands.

Florida Department of Environmental Protection - Office of Intergovernmental Programs - The FDEP indicates that the project will impact several important ecosystems including Saddle Creek, a tributary to the Peace River and a portion of the Green Swamp. Review of the Florida Natural Areas Inventory indicates there are several species listed as threatened, endangered, or species of special concern occurring within a half-mile corridor adjacent to the proposed roadway. The development of riparian/wildlife crossings at specific locations adjacent to both wetland and upland areas is recommended in order to avoid creating an impassible barrier for wildlife.

Florida Game and Fresh Water Fish Commission - Office of Environmental Services - The FGFWFC indicates that the project may impact environmentally sensitive areas, including areas rated very high as a biodiversity hot spot; considerable area within a designed Strategic Habitat Conservation Area, and areas with a high Species Richness Index (40-50 species). The FDOT is advised to consider a project design which would improve surface and groundwater hydrology and create wildlife underpasses. The FGFWFC also recommends coordination of project planning with the affected state, regional and local agencies.

Florida Department of State - Division of Historical Resources - Conditioned upon the FDOT undertaking a cultural resource survey, and appropriately avoiding, minimizing, or mitigating project impacts to any identified significant archaeological or historic sites, the proposed project will have no effect on historic properties listed, or eligible for listing, in the National Register, or otherwise of historical or architectural value. If these conditions are met the project will also be consistent with the historic preservation aspects of Florida's Coastal Management Program.

State of Florida - Department of Community Affairs - Several of the reviewing agencies have recommended intergovernmental coordination to develop an ecosystem management policy, wetland mitigation and wildlife protection measures which should be included in future environmental documents prepared for this project. The Department of Community Affairs stated that the state has determined that the proposed action is consistent with the Florida Coastal Management Program at this advanced notification stage.

Southwest Florida Water Management District - The District is concerned over the project's potential impacts to the Green Swamp, to wetland systems, to water flow and water quality, and potential encroachments of the 100-year floodplain. The application does not provide enough information to determine consistency with District plans, programs and policies designed to implement its statutory mandates. As such, further environmental documentation is needed to address the concerns listed above including more detailed location maps, discussions of impact avoidance and impact minimization, and possible alternative actions.

South Florida Water Management District - Regulation Department - Staff has determined that the proposed project is located outside of the jurisdictional boundaries of the SFWMD within the St. Johns River and Southwest Florida Water Management Districts. Although this particular segment of Interstate 4 (I-4) is not located within SFWMD jurisdictional boundaries, it is part of a larger FDOT proposal to widen and improve the entire I-4 corridor between Tampa and Daytona Beach. This corridor crosses the boundaries of three different FDOT districts and three different water management district. Due to the fragmentation of existing wetland systems and the interruption of historic surface water flows that has occurred as a result of the original I-4 construction (e.g., the Green Swamp, Reedy Creek,

Shingle Creek) and the additional wetland impacts anticipated in connection with the improvements proposed along the entire I-4 corridor, the SFWMD recommends that the FDOT take an ecosystem approach to developing a mitigation plan for this project (coordinated with the three affected water management districts) rather than having piecemeal mitigation projects developed separately by the jurisdictional FDOT regional district."

St. Johns River Water Management District - The major issues of concern that the District has about the floodplain and wetlands consists of the following: loss of the 10-year and 100-year floodplain, loss of wetland functions, cumulative impacts to water quality and wetland functions, and secondary impacts to water quality and wetland functions. It was noted that the project appears to require a Management and Storage of Surfacewater (MSSW) Permit (Chapter 40C-4, F.A.C.). Also, a Wetland Resource Management Permit (Section 62-312, F.A.C.) may be required for the proposed road improvements.

For more information regarding the AN process, agency comments received and FDOT responses, refer to the Comments and Coordination Report, November 1998.

9.18.2 Public Workshop Summary

Public workshops were held on January 26, 1995 Calvary Baptist Church in Lakeland and on January 31, 1995 at the Comfort Inn at I-4 and US 27 to inform the community of proposed improvements to I-4. Notification was accomplished by direct mail to elected and appointed officials in Polk County, and the City of Lakeland and to property owners whose property lies in whole or in part within 91.4 m (300 ft) from the centerline of the proposed project. Legal display advertisements for the workshops were published on Sunday, January 22, 1995 in the Polk County edition of the Tampa Tribune and the Lakeland Ledger.

About 232 persons representing the citizens and the business community attended the two, four-hour public workshops. Representatives from the FDOT were present to discuss the proposed I-4 improvements and the impacts to the community and environment. This informal workshop was held to provide the general public with information about the project, the various alternatives under consideration, project scheduling, the status of the necessary studies and environmental documentation, and solicitation of comments from the general public. Eleven comments forms were received requesting to be added to the mailing list. Sixteen requests were received for additional information including aerial maps and segment information. The FDOT received five comments regarding noise, four comments regarding right-of-way cost and impact considerations and two comments supporting the project.

9.18.3 Public Hearings

Formal public hearings were conducted after FHWA approval of the Environmental Assessment. Public Hearings were held on October 12, 1998 and October 13, 1998, at the Florida Southgate Inn, I-4 @ US 27, Exit 23, 5414 US 27 North, Davenport, Florida and at the Calvary Baptist Church, 1945 North Florida Avenue, Lakeland, Florida, respectively. The hearings were held to inform the public of the preliminary results of the study and to give the public the opportunity to express their views regarding specific location, design, socio-economic effects and environmental impacts associated with the project. Mr. Bryan Williams, District Environmental Manager for the FDOT, District 1, presided at the hearings. The FDOT and its consultants were on hand in the meeting room prior to the formal proceedings to informally discuss the project with the general public. Approximately 295 persons attended the hearings.

Notification was accomplished by direct mail to elected and appointed officials in Polk County and the City of Lakeland and to property owners whose property lies in whole or in part within (300 ft) from the

centerline of the proposed project. Legal display advertisements for the hearings were published in the Tampa Tribune - Polk Edition on September 19, 1998 and October 3, 1998; and in The Ledger (a daily newspaper in Lakeland) on September 22, 1998 and October 6, 1998.

Following introductory remarks, Mr. Williams introduced an audio-visual presentation which summarized the need for the facility and the relative merits of the alternates based on their levels of traffic service and socio-economic and environmental impacts. Included within the presentation was a description of right-of-way acquisition procedures with particular reference to State and Federal relocation assistance programs. Following the presentation, the next portion of the hearing was devoted to comments and questions.

Specific questions and comments raised at the public hearing were answered at the hearing, in this report, by letter, or during informal discussions with concerned individuals. Nine persons spoke for the public record at the hearings and 34 written statements (some providing more than one comment), letters, and requests for exhibits were received within the time period allotted for comments.

Seven requests were received for copies of exhibits, maps and/or project corridor video tapes. One comment was received in support of the project. One comment was received regarding provisions for additional rest areas. Two comments were received regarding access to and from Memorial Boulevard. One comment was received regarding Socrum Loop traffic flow. One comment was received regarding the 10th Street overpass. One question was asked at the public hearing regarding drainage involving property on Elliott Street. One comment was received regarding Heller Road and the proposed closure of the full median opening on US 27 adjacent to this road. One comment was received regarding the widening project of Highway US 98 North. Three comments were received regarding property encroachment. One comment was received regarding County-owned property. One comment was received regarding property values. One comment was received regarding land depreciation and the tax structure. Twenty-three comments were received regarding the existing noise levels of the traffic on I-4. Eight comments were received regarding the SR 559 interchange.

For additional information regarding the Public Involvement Program, refer to the Comments and Coordination Report, November 1998.

In response to comments received from the public at the Public Hearings, the noise walls identified as Barriers 2, 11, 16 and 17 in the Noise Study Report for I-4 were reevaluated using more refined data than was available during the previous analysis. The noise walls were also modified in these areas in an attempt to achieve the minimum desired insertion loss for the more densely situated noise sensitive sites in each area. For more information regarding the noise study results, refer to the Noise Study Report, Section 8.0 - Addendum, March 1998, Revised August 1998.

In response to comments received from the public at the Public Hearings, the PD&E concept for the US 27 interchange has been subsequently refined to avoid the taking of 3 businesses - McDonalds, Wendys and New York Pizza World restaurants. The concept plans shown at the public hearing indicated that relocating the frontage road would impact the above 3 restaurants. This concept change results in avoiding the taking of McDonalds and New York Pizza World, and minimizing the right-of-way taking from Wendys.

In response to comments received from the public at the Public Hearings, a recommendation for low-level, directed and shielded lighting at the SR 559 interchange will be forwarded to the design phase of this project.

9.19 Value Engineering

The FDOT District One Value Engineering Office determined that, because of the length of the project, representative project segments would be evaluated for Value Engineering. Segments 2 and 3 were reviewed during the week of October 9-13, 1995 and Segment 6 was reviewed during the week of October 30-November 3, 1995 by value engineering teams assembled by Ventry Engineering (the District-Wide Value Engineering Consultant). A presentation of the recommendations of the value engineering reviews of Segments 2 and 3 was made to the FDOT and the project team on November 3, 1995. The Segment 6 presentation was made on November 28, 1995. Segment 4 was evaluated the week of May 12-15, 1997 by a review team consisting of FDOT District One personnel. The results of the Value Engineering review of Segment 4 were presented in a report signed August 4, 1997.

9.19.1 Segment 2

Eight elements of Segment 2 were evaluated by the value engineering team. These include the Swindell Road, West 10th Street, Bella Vista Street and Griffin Road bridge overpasses, the Kathleen Road interchange bridge, the Memorial Boulevard interchange Ramp "A" bridge, I-4 pavement and base and retaining walls. Several of the value engineering recommendations concerned structure design alternatives, retaining wall heights and pavement materials. These recommendations will be addressed during subsequent design phases of this project.

The value engineering review also recommended realignment of the Swindell Road and West 10th Street overpasses to a perpendicular crossing and elimination of the Bella Vista Street overpass. As a secondary recommendation, if the Bella Vista Street overpass cannot be eliminated, the overpass should be realigned to a perpendicular crossing. The realignments of these crossings would shorten the required bridge lengths at these locations and would allow for simpler, less costly structure designs.

When I-4 was designed and built in the late 1950s and early 1960s, the typical FDOT approach was to be as economical as possible while maintaining the design criteria and safety standards of the time (minimize cut and fill, minimize structure length, minimize right-of-way acquisition... minimize cost). The alignment of I-4 cut through the existing Lakeland area local road network at an approximate 45^0 diagonal between Memorial Boulevard and US 98 (Segment 2). The corridor options were to either sever the existing local road network (as was done with Providence Road), sever, realign and reroute the local roads (as in the case of North Galloway and Crutchfield Roads) or maintain the existing road network by crossing I-4 (as in the case of Swindell Road, West 10th Street, Bella Vista Street and Griffin Road). The crossings were maintained on the same alignment as the existing roads (about 45^0 skew) even though the structure cost for a perpendicular crossing would be more economical. More than likely, this was done so as not to degrade the operation of the local road network by introducing undesirable geometry and requiring lower design and posted speeds on these cross roads which might inhibit future development and degrade the traffic service. This project and the adjacent US 98 PD&E study (State Project Nos. 16210-1514A&B) have been closely coordinated with the City of Lakeland, Polk County and the TPO. One of the major concerns expressed during that coordination was the operation of the local road network in conjunction with the proposed improvements to US 98 and I-4.

The value engineering review provided sketches of possible realignments at Swindell Road, West 10th Street and Bella Vista Street. These sketches introduced one 90^0 and two 45^0 curves into the existing straight alignments. The alignments in the sketches were not drawn to roadway design criteria (e.g. minimum curve radii for specific design speeds) and therefore do not accurately estimate the right-of-way

required for the recommended realignments and the subsequent cost estimates. The following paragraphs describe costs associated with the value engineering realignment recommendations in excess of the cost estimates provided by the value engineering review.

Swindell Road

The value engineering review recommended that Swindell Road be realigned to a perpendicular crossing of I-4 east of the existing crossing thus allowing a Florida Bulb "T" type bridge to be used instead of the proposed steel box girder type bridge.

Applying the appropriate horizontal curves for a design speed of 70 km/h (45 mph) to the value engineering recommendation for realignment would require twelve (12) residential relocations, 6.1 ha (15 ac) of right-of-way and 1.1 ha (2.6 ac) of wetland impacts. Additionally, the Winston Elementary School property at the intersection of Swindell Road and Sutton Road would be significantly impacted by this realignment. The cost of the additional 12 relocations (at an estimated cost of $22,000 each) would be about $264,000. The additional land purchase (at an estimated cost of $70,000 per acre) would be about $1,050,000. The cost to mitigate for the additional wetland impacts (at an estimated cost of $75,000 per acre) would be about $195,000. The bridge cost for the value engineering alternative is estimated to be about $960,000 (about $707,000 less than the preferred alternative bridge). The estimated cost of the value engineering recommendation to realign Swindell Road would be about $2,469,400. The proposed preferred alternative Swindell Road crossing of I-4 would require no relocations, about $266,500 in right-of-way costs and no wetland impacts. The estimated bridge cost for the preferred alternative is about $1,667,000. The total cost difference between the preferred alternative ($1,933,500) and the value engineering recommendation ($2,469,400) is about $535,500 in favor of the preferred alternative.

Therefore, because of the lower total cost, no relocations, fewer environmental impacts, no impacts to the Winston Elementary School property, no additional degradation of the local road network and less potential for incompatibility with future development the preferred alternative Swindell Road crossing of I-4 (approximate 45^0 skew, centered on existing alignment) will remain the recommendation of this PD&E study.

West 10th Street

The value engineering review recommended that West 10th Street be realigned to a perpendicular crossing of I-4 east of the existing crossing thus allowing a Florida Bulb "T" type bridge to be used instead of the proposed steel box girder type bridge.

Applying the appropriate horizontal curves for a design speed of 70 km/h (45 mph) to the value engineering recommendation for realignment would require fourteen (14) residential relocations, 6.1 ha (15 ac) of right-of-way and 0.9 ha (2.2 ac) of wetland impacts. The cost of the additional 14 relocations (at an estimated cost of $22,000 each) would be about $308,000. The additional land purchase (at an estimated cost of $70,000 per acre) would be about $1,050,000. The cost to mitigate for the additional wetland impacts (at an estimated cost of $75,000 per acre) would be about $165,000. The bridge cost for the value engineering alternative is estimated to be about $960,000 (about $706,000 less than the preferred alternative bridge). The estimated cost of the value engineering recommendation to realign West 10th Street would be about $2,483,000. The proposed preferred alternative West 10th Street crossing of I-4 would require no relocations, about $502,600 in right-of-way costs and no wetland impacts. The estimated bridge cost for the preferred alternative is about $1,666,000. The total cost difference between the

preferred alternative ($2,168,600) and the value engineering recommendation ($2,483,000) is about $314,400 in favor of the preferred alternative.

Therefore, because of the lower total cost, no relocations, fewer environmental impacts, no additional degradation of the local road network and less potential for incompatibility with future development the preferred alternative West 10th Street crossing of I-4 (approximate 45^0 skew, centered on existing alignment) will remain the recommendation of this PD&E study.

Bella Vista Street

The value engineering review made two alternate recommendations for the Bella Vista Street crossing of I-4. The value engineering preferred recommendation is to eliminate the Bella Vista Street overpass with I-4. The alternate value engineering recommendation is to realign Bella Vista Street to a perpendicular crossing (similar to the Swindell Road and West 10th Street recommendations).

Alternate No. 1 recommended severing Bella Vista Street, removing the existing overpass, dead-ending Bella Vista Street without a cul-de-sac south of I-4 and dead-ending Bella Vista Street with a cul-de-sac north of I-4. This alternative eliminates the need for a replacement bridge structure (estimated cost of $1,850,000) and would require no additional right-of-way for Bella Vista Street.

The preferred alternative Bella Vista Street crossing of I-4 (approximate 45^0 skew, centered on existing alignment) does not degrade the existing local road network and is compatible with the future land use and development anticipated for the now vacant land on either side of Bella Vista Street north of I-4 (the Maddox farm property) and areas further to the north of I-4. The preferred alternative does not require the permanent detouring of local traffic onto Kathleen Road and West 10th Street and is consistent with local government desires to maintain the function of the existing road system.

Alternate No. 2 recommended that Bella Vista Street be realigned to a perpendicular crossing of I-4 east of the existing crossing thus allowing a Florida Bulb "T" type bridge to be used instead of the proposed steel box girder type bridge.

This alternate is not feasible based on the required roadway geometry to maintain the existing design speed for the Bella Vista Street crossing. By applying the proper design criteria, either the relocated CSX railroad crossing would be in a superelevated curve (not feasible), the I-4 crossing structure would be curved (not desirable), significant residential relocations east of the CSX railroad would be required and the convergence of the realigned Bella Vista Street with the existing roadway would require about 0.8 km (0.5 mi) of new roadway be constructed.

Therefore, because no relocations would be required, fewer environmental and social impacts, no additional degradation of the local road network and less potential for incompatibility with future development the preferred alternative Bella Vista Street crossing of I-4 (approximate 45^0 skew, centered on existing alignment) will remain the recommendation of this PD&E study.

For additional information, refer to the Value Engineering Summary of I-4, Segment No. 2, WPI No. 0110256, State Project No. 99990-1637, Polk County, Florida, October 9-13, 1995, "Draft Report" and subsequent response memorandum from Abe Neemeh (Parsons Brinckerhoff Quade and Douglas, Inc.) to Jack Montpetit (Sverdrup Civil, Inc.) dated October 25, 1995 (see Section 5 of the Appendix).

9.19.2 Segment 3

Three elements of Segment 3 were evaluated by the value engineering team. Two of the recommendations concerned retaining wall heights and pavement materials. These recommendations will be addressed during subsequent design phases of this project. The value engineering team reviewed the proposed I-4 typical section and recommended reducing the width of the median and outside paved shoulder widths from 3.6 m (12 ft) to 3.0 m (10 ft) in order to save an estimated $129,000 in construction costs and maintain continuity with the I-4 bridge shoulder widths which are 3.0 m (10 ft).

The FDOT Roadway Plans Preparation Manual states that for Freeways, 6 lanes, full shoulder width (without shoulder gutter) should be 3.6 m (12 ft) (see Section 2.3 Shoulders, Table 2.3.1 SHOULDER WIDTHS AND SLOPES). The same reference states that paved shoulder width should be 3.0 m (10 ft). The typical section for this segment is an urban type section with a barrier wall at the edge of the required 3.6 m (12 ft) shoulder. The pavement was extended the additional 0.6 m (2 ft) to minimize problems with maintenance and drainage. In addition, the 1994 AASHTO "Green Book", A Policy on Geometric Design of Highways and Streets, page 557, states that "The usable paved width of the right shoulder should be at least 3.0 m (10 ft) and where truck traffic exceeds 250 DDHV it should preferably be 3.6 m (12 ft)." Also stated is "On freeways of six or more lanes, the usable paved width of the median shoulder should also be 3.0 m (10 ft) and preferably 3.6 m (12 ft) where truck traffic exceeds 250 DDHV." The DDHV truck traffic on I-4 in Segment 3 for the design year 2020 is 1,392 and for the year 2000 is 721. Therefore, the recommended I-4 median and outside shoulder widths for this PD&E study will remain at 3.6 m (12 ft).

For additional information, refer to the Value Engineering Summary of I-4, Segment No. 3, WPI No. 0110256, State Project No. 99990-1637, Polk County, Florida, October 9-13, 1995, "Draft Report" and the subsequent response memorandum from Jimmie Gill (Greiner, Inc.) to Jack Montpetit (Sverdrup Civil, Inc.) dated October 26, 1995 (see Section 5 of the Appendix).

9.19.3 Segment 4

Three elements of Segment 4 were evaluated by the value engineering team: 1) the CR 655 grade separation, 2) minor adjustments to the I-4 mainline alignment in the vicinity of Lake Agnes and Little Lake Agnes, and 3) the end treatment of the frontage road in the northwest quadrant of the SR 559 interchange. Minor refinements to the I-4 mainline alignment will be addressed during the subsequent final design phase of this project. The cul-de-sac recommended at the end of the frontage road is a Polk County requirement for new dead-end roadways.

CR 655 Grade Separation

The VE review recommended that the proposed I-4 over CR 655 grade separation be reversed so that CR 655 overpasses I-4. The VE team investigated the ownership and projected use of the abandoned rail right-of-way adjacent to CR 655 and determined that:

- The rail right-of-way has been abandoned and purchased by several private property owners including The Tampa Electric Company (TECO). TECO owns the section of abandoned rail right-of-way through the I-4 grade separation with CR 655.
- The FDEP, Greenways Program does not have this corridor identified for purchase or trail development.

- The Polk County TPO has the corridor identified on their long-range plans for a bicycle path but has no immediate plans for purchase or development of the right-of-way.
- A developer has approached the Central Florida Regional Planning Council about developing the property immediately north of I-4 along CR 655 as a DRI. It is reasonable to expect that CR 655 would require multi-laning because of this development. The DRI is currently in the very early development stage.

As a result of this information, the VE team evaluated the possibility of placing I-4 at grade and elevating CR 655 on structure over I-4. The evaluation suggests an initial construction cost savings of about $7,690,000 and a life-cycle cost savings of about $4,936,200. This savings is realized because instead of ten lanes of interstate structure over CR 655 and the former rail right-of-way, a two-lane CR 655 overpass would be constructed over I-4.

No additional right-of-way would be required, traffic service would not be altered, the CR 655 overpass is expandable for future development and the initial and life-cycle cost is significantly lower. This VE recommendation was incorporated into the preferred alternative for the proposed I-4 improvements.

For additional information, refer to the Value Engineering Report, Executive Summary, I-4 from East of SR 33 to East of SR 559 (Segment 4), WPI Number 1147952, State Project Number 16320-1436, VE Study Number 96-01-05, Polk County, May 15, 1997, and the subsequent response memorandum from M. H. Dougherty, Jr., Interstate Program Manager to Mr. G. E. Carrigan, District Director of Production, dated August 11, 1997 (see Section 5 of the Appendix).

9.19.4 Segment 6

Five elements of Segment 6 were evaluated by the value engineering team. Three of the recommendations concerned the method of subsurface stabilization in muck areas, replacement of drainage structures and maintenance of traffic. These recommendations will be addressed during the subsequent design phases of this project. The value engineering team recommended that the two proposed wildlife (under)crossings be eliminated (by eliminating the low-level bridges proposed for spanning the muck areas) and that the existing cattle crossing be extended to serve as a wildlife (under)crossing (an estimated savings of $2,700,000). The value engineering team also recommended that (by eliminating the wildlife undercrossings) the special fencing would also be eliminated for an additional savings of $208,000. The value engineering team also recommended that a 104.9 m (344 ft) right-of-way be used in Segment 6 in place of the proposed 121.9 m (400 ft) right-of-way. (No cost savings were specified for this recommendation.)

The value engineering team recommended that 1.0 m (3.3 ft) of muck be removed, the remaining muck be stabilized with surcharge and geogrid material instead of bridging deep muck areas. In the attached response memorandum, an explanation is provided supporting the use of low-level bridges to span the muck areas. Given that the low-level bridges remain as the preferred alternative, then these structures can be modified to serve as wildlife undercrossings. As stated in the FGFWFC letter to Mr. John DeWinkler dated May 12, 1995, (see Section 5 of the Appendix) "This portion of I-4 lies within the Green Swamp Area of Critical Concern's core area of habitat. This area is also one of two regionally significant wildlife habitat systems that the GFC (FGFWFC) recognizes as having been functionally impaired by the habitat barrier imposed by the construction of I-4 in Polk County. Based on the following analyses, we believe that the justification exists to construct one or more wildlife-friendly underpasses within the area." As explained in this letter the analyses used to make this determination were: contiguity and extent of habitat,

relative intactness of habitat, habitat quality, and genetic exchange. Wildlife undercrossing design criteria were established through coordination with the FGFWFC, the USFWS, the FDEP and the SWFWMD and the SJRWMD. (See Section 9.22.2.) The existing cattle crossing (a concrete box culvert located in the highest upland in Segment 6) does not meet any of the agreed upon criteria and cannot be substituted for the low-level bridges as a wildlife undercrossing. At a coordination meeting with the FGFWFC on May 26, 1995, the basic design criteria to enable the area under the low-level bridges to be used as I-4 wildlife undercrossings were established including high fencing in the median to control the wildlife movement through the undercrossing (see Section 5 of the Appendix).

The matrix analysis that the value engineering team used to rank the alternatives for wildlife undercrossings did not include important rating criteria such as public involvement or agency acceptance. The evaluation matrix used to rank the alternatives for muck removal and muck bridges assigned the lowest weight to animal crossing. As one of the primary reasons for considering low-level bridges to span the muck deposits, wildlife undercrossings should have received a higher weight in the matrix. These inconsistencies in the evaluation ranking skewed the results of the analysis away from the wildlife undercrossing alternative.

Additionally, the subsurface stabilization alternative recommended by the value engineering team would require a 24-month waiting period for surcharging, additional budget for construction monitoring, more surcharge areas for rail areas and resurfacing within 5 to 10 years. These disadvantages combined with the low-level bridge advantages of long term performance of the roadway and fewer public safety concerns during construction make the value engineering alternative less desirable.

Since the low-level bridges remain as the preferred alternative, the special fencing associated with these structures to allow them to function as wildlife undercrossings will also remain in the preferred alternative.

The value engineering team recommended that the typical section for Segment 6 be reduced from a 121.9 m (400 ft) to a 104.9 m (344 ft) right-of-way in order to be consistent with the typical section in Segments 5 and 9 and to reduce right-of-way requirements. However, the July 1, 1995 border requirement eliminated this typical section from further study and the FDOT District 1 established the 6+4 Master Plan Ultimate Typical Section (approved by the FHWA) as the maximum interstate typical section for rural interstate typical sections which include Segment 6. This recommended rural interstate typical section will require 128.8 m (422.6 ft) of right-of-way. Typically, an additional 37.4 m (122.6 ft) of right-of-way would be required for this typical section. The border from the outside edge of the shoulder to right-of-way line for this typical section is 25 m (82 ft).

For additional information, refer to the Value Engineering Summary of I-4, Segment No. 6, WPI No. 0110256, State Project No. 99990-1637, Polk County, Florida, October 30-November 3, 1995, "Draft Report" and subsequent "Summary of Recommendations" response memorandum from Martin E. Marquez (David Volkert & Associates) to Jeff Toussant (Sverdrup Civil, Inc.) dated November 27, 1995 (see Section 5 of the Appendix).

9.20 Drainage

The proposed drainage systems will be designed to convey storm water runoff away from the roadway in the existing natural basin flow directions. Subsequent design phases of this project will assess the availability and suitability of storm water management pond locations.

The preferred alternative from west of Memorial Boulevard to SR 33 (Segments 2, 3 and 8) will be an urban interstate ten-lane typical section typically constructed within the existing 91.4 m (300 ft) right-of-way. To accomplish this, storm water roadway runoff would be collected in median and shoulder inlets, conveyed through a storm sewer system to storm water management ponds generally situated outside the existing right-of-way in close proximity to the outfall locations. Retaining walls of various heights would have to be constructed at some locations in order to avoid the proposed typical section toe of slope from falling outside the existing right-of-way. It may be possible in some areas to construct flow channels between the retaining walls and the right-of-way, possibly reducing the storm sewer system requirements. Typically, the space between the retaining wall and the right-of-way would be less than 5.7 m (18.7 ft). Because of this limited space between the edge of the retaining wall and the right-of-way, these flow channels may have to be lined (concrete channels) and have steep (possibly vertical) side slopes, however, maintenance would be potentially difficult and costly.

The preferred alternative from SR 33 to the Polk/Osceola County line (Segments 4, 5, 6, 9 and 7) will be a rural interstate ten-lane typical section constructed within a 128.8 m (422.6 ft) right-of-way. Roadway storm water runoff would be directed to the outside and collected in roadside ditches. Roadway storm water runoff to the inside would be collected in median inlets and conveyed to the outside roadside ditches. The distance between the outside edge of shoulder to the right-of-way in this rural typical section would be about 25.0 m (82.0 ft). This distance would allow for ditches with 1:6 front slopes, a bottom width of about 1.5 m (5 ft), a depth of 1.0 m (3.2 ft), and a back slope of 1:6. This would still allow for a maintenance strip to the outside of the roadside ditch. Storm water would be conveyed by the roadside ditches to storm water management ponds generally situated outside the proposed right-of-way in close proximity to outfall locations.

From east of CR 557 to west of US 27 (Segment 6) in the area of the Green Swamp, 25.0 m (82.0 ft) border will allow for the construction of expanded roadside ditches with earthen berms along the outside. Roadway runoff would be collected and treated in the expanded roadside ditches. Ditch blocks or other retention devices would be installed as appropriate in the expanded ditches. The berms would be constructed along the outside of the expanded ditches to prevent co-mingling of untreated I-4 storm water runoff with the surface waters of the Green Swamp. No off-site storm water management ponds would be required in Segment 6.

There would be no discharge of storm water to non-contiguous receivers.

It is anticipated that all of the existing drainage structures, including the cross drains, would be removed and/or replaced as part of the improvements to I-4. Most of the existing drainage structures were constructed in the late 1950s and early 1960s. It is expected that the construction phase of this project would not occur until after the turn of the century, making the majority of the drainage structures 40 or more years old. The proposed roadway profile grade line is not known at this time, but the vertical alignment will be critical in determining the need for modification or replacement of many of the drainage structures. According to the LOS projections for this project, construction of the outer six general purpose lanes of the proposed typical section would occur first (Stage I), followed about 8 to 10 years later by the construction of the inner four special use lanes (Stage II). This would require a staged construction of the drainage structures to conform to the ultimate typical section.

For additional drainage information see Section 4.1.7 and the Location Hydraulic Report, July 1995, Revised August 1998, prepared as a separate document.

9.21 Structures

The project includes eight grade separation interchanges, ranging from simple compressed urban and single-point diamond interchanges to expanded partial cloverleaf designs, and eleven grade separation overpasses (including the CSX railroad overpass west of Kathleen Road) which will require replacement to satisfy the horizontal and vertical clearances of the recommended typical sections. Replacement structures which pass over I-4 will have to meet the required vertical clearance of 5.0 m (16.5 ft). New bridge numbers will be assigned to the replacement structures. The bridge numbers of the existing structures are listed only for reference.

The following I-4 bridges would be replaced as part of the Stage I construction of the general purpose lanes: I-4 over US 98 (#160174 & #160175) in Segment 8, I-4 over CR 582 Socrum Loop Road (#160177 & #160178) in Segment 3, I-4 over SR 33 (#160181 & #160182) in Segment 3. The I-4 over CR 655 bridges (#160184 & #160185) in Segment 4 would be removed and an overpass bridge for CR 655 would be added.

The I-4 bridges would be constructed in stages. Stage I would be construction of the dual, parallel general purpose lane bridges and removal of the existing bridges. All of the Stage I structures would contain 3 - 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders (both sides) and a minimum of 50 m (164 ft) between the inside edge of travel lanes to allow for the Stage II construction. Stage II would be the dual, parallel special use lane bridges. All of the Stage II structures would contain 2 - 3.6 m (12 ft) lanes and 3.0 m (10 ft) shoulders (both sides). The typical section requirements for the cross road replacement bridges are listed below.

Memorial Boulevard Flyover Ramp (#160074) in Segment 2 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders (both sides)

Swindell Road (#160170) in Segment 2 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders and 2.4 m (8 ft) sidewalks (both sides)

Tenth Street (#160171) in Segment 2 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders and 2.4 m (8 ft) sidewalks (both sides)

Bella Vista Street (#160172) in Segment 2 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders and 1.5 m (5 ft) sidewalks (both sides)

SR 539 Kathleen Road (#160113) in Segment 2 - six 3.6 m (12 ft) lanes, 1.8 m (6 ft) median, 1.2 m (4 ft) bike lanes and 1.5 m (5 ft) sidewalks (both sides)

CR 582 Griffin Road (#160112) in Segment 2 - six 3.6 m (12 ft) lanes, 1.8 m (6 ft) median, 1.2 m (4 ft) bike lanes and 1.5 m (5 ft) sidewalks (both sides)

Carpenter's Way Road (#160176) in Segment 3 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders (both sides)

Old Combee Road (#160180) in Segment 3 - two 3.6 m (12 ft) lanes, 1.8 m (6 ft) sidewalks (both sides)

Mt. Olive Church Road (#160183) in Segment 4 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders (both sides)

CR 655 (Proposed) in Segment 4 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders (both sides)

SR 559 (#160115) in Segment 4 - four 3.6 m (12 ft) lanes, 9.0 m (30 ft) median, 1.2 m (4 ft) bike lanes and 1.5 m (5 ft) sidewalks (both sides)

CR 557A (#160066) in Segment 5 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders (both sides)

CR 557 (#160114) in Segment 5 - three 3.6 m (12 ft) lanes, 3.0 m (10 ft) right shoulder, 2.4 m (8 ft) left shoulder (Note: The center lane would be painted out as a median until future demand required the construction of a similar parallel 3-lane bridge for southbound traffic.)

US 27 (#160141 & #160920) in Segment 9 - three 3.6 m (12 ft) lanes, 9.0 m (30 ft) median, 1.2 m (4 ft) bike lanes and 1.5 m (5 ft) sidewalks (both sides)

CR 54 Loughman Road (#160105) in Segment 7 - two 3.6 m (12 ft) lanes, 3.0 m (10 ft) shoulders (both sides)

The design requirements for these structures will be determined in subsequent design phases of this project.

Low-level I-4 bridges spanning areas of unsuitable geological stability (deep muck deposits) are recommended in two locations in the vicinity of the Green Swamp between the CR 557 and US 27 interchanges (Segment 6). Low-level I-4 bridges are also recommended between the SR 33 interchange and proposed Polk County Parkway East interchanges in the vicinity of Saddle Creek and the Tenoroc Management Area (Segment 4). These structures will serve as wildlife undercrossings.

Design criteria to enable the area under the bridges to be used as I-4 wildlife undercrossings have been coordinated with the FGFWFC, the USFWS, the FDEP and the SWFWMD and SJRWMD. At a coordination meeting with the FGFWFC on May 26, 1995, the following criteria for wildlife undercrossings were established. It was agreed that an AASHTO girder type structure would be preferable to a flat slab type structure because: 1) the AASHTO girder type would be more economical because fewer piers would be required, 2) it should be less noisy, and 3) it provides for a more open, less restricted area for wildlife to cross underneath the structure. Span lengths of less than 12.2 m (40 ft) should not be used. This is the minimum span length that has been used for wildlife undercrossings and has been documented to function (Alligator Alley). The vertical underclearance should not be less than 2.4 m (8 ft) above seasonal high water (SHW) or existing ground (whichever is higher). High fencing will be provided in the median to control wildlife movement through the undercrossing. The type of right-of-way fencing will be determined during subsequent phases of this project.

For the structures in Segment 6, the bridge abutments will have normal slope protection to within 0.3 m (1 ft) above SHW. At that elevation a 3.0 m (10 ft) wide level (or only slightly sloped to drain) bench will be constructed. From the bench the fill will slope to the water and/or existing ground at a slope no steeper than 10 horizontal to 1 vertical.

For the structures in Segment 4, the bridge abutments will have normal slope protection to existing ground (since SHW is below ground level in this area). The distance between the bottom of the abutment slopes will not be less than 30 m (about 100 ft). A channel will be constructed under the bridges to accommodate the existing drainage. The side slopes of the channel will be as flat as hydraulically practical down to the normal water level. The existing roadway embankment between the bridges will be removed down to match the existing ground levels at the north and south right-of-way lines.

The locations of the I-4 low-level wildlife undercrossing bridges in Segments 4 and 6 are shown in the Concept Plans.

One rail crossing is located within the project limits. Bridge No. 160173, the CSX Railroad overpass west of the Kathleen Road Interchange, will require replacement to accommodate the proposed I-4 typical section. The replacement structure will be located immediately to the west of and parallel to the existing structure. The alignment and location of the proposed replacement rail overpass structure has been coordinated with the CSX Railroad through the FDOT District Railroad Coordinator.

New and replacement drainage structures will be required for the length of the project. All of the existing drainage structures would have to modified to accommodate the proposed typical sections, if they are deemed suitable. This determination will be made during the design phase of this project.

9.22 Special Features

9.22.1 Special Use Lane Access

Because of the barrier wall separating the special use lanes from the general purpose lanes, ramp connections between the proposed special use and general purpose lanes are provided in the recommended improvements. The 1994 I-4 Master Plan identified four general locations for access to and from the special use lanes within the limits of this project. The selection of general locations was based on a minimum spacing of 4.8 km (3.0 mi), demand at major destinations in the corridor, the spacing of general purpose lane interchanges, I-4 mainline geometry and the potential for environmental impacts. Three of the slip ramp locations are within these project limits. A weaving analysis was performed at each of the proposed general locations to establish minimum allowable distances from interchanges.

Location No. 1 is between the CR 582 and SR 33 interchanges (Segment 3). This location serves the special use demand generated by the Kathleen Road, US 98, CR 582 and SR 33 interchanges. The westbound special use lane exit slip ramp is about 2167 m (7,110 ft) east (gore-to-gore) of the CR 582 interchange I-4 westbound exit ramp. The eastbound special use lane entrance slip ramp is about 2716 m (8,910 ft) east (gore-to-gore) of the CR 582 interchange I-4 eastbound entrance ramp. Both distances exceed the recommended minimum weaving length of 2012 m (6,600 ft).

Location No. 2 is west of the proposed Polk County Parkway East interchange and east of the SR 33 interchange (Segment 4). This location serves the anticipated demand created by the proposed Polk County Parkway East interchange. The westbound special use lane entrance slip ramp is about 1957 m (6,420 ft) west (gore-to-gore) of the Polk County Parkway East interchange I-4 westbound entrance ramp. The eastbound special use lane exit ramp is about 1917 m (6,290 ft) west (gore-to-gore) of the Polk County Parkway East interchange I-4 eastbound exit ramp. Both distances exceed the recommended minimum weaving length of 762 m (2,500 ft).

Location No. 3 was shown in the 1994 I-4 Master Plan between the SR 559 and CR 557 interchanges in Segment 5, serving demand created by the Polk County Parkway and US 27 interchanges. Physical, geometric and environmental constraints required that Location No. 3 be separated into Location No. 3a and Location No. 3b. Location No. 3a (the eastbound special use lane entrance slip ramp) has been relocated into Segment 4 between the CR 655 overpass and the SR 559 interchange. This location is about 2414 m (7,920 ft) east (gore-to-gore) of the proposed Polk County Parkway I-4 eastbound entrance ramp (the minimum recommended weaving distance at this location). Location No. 3b (the westbound special use lane exit ramp) has been relocated into Segment 6 east of the CR 557 interchange. This location is about 1080 m (3,540 ft) east (gore-to-gore) of the CR 557 interchange westbound exit ramp. This location exceeds the minimum acceptable weaving distance of 762 m (2,500 ft).

Note: A fourth location was described in the 1994 I-4 Master Plan as being "located at the end of the project" (Segment 7). Exhibit No. 9-4 of the 1994 I-4 Master Plan (included in Section 6 of the Appendix) indicates that the fourth location is in the area of the Polk/Osceola County line and the CR 532 interchange (possibly beyond the limits of this project). An analysis of the consequences of placing a slip ramp east of the Polk/Osceola County line showed that the I-4 general purpose lane LOS east of US 27 would degrade to an unacceptable level. The location of this special use lane access will be located in Osceola County and may be influenced by the results of the master plan currently being prepared for I-4 in Osceola County.

Three types of special use lane access ramps were considered for this project - underpass, flyover and slip ramps. Preliminary estimates of construction and right-of-way costs showed that underpass and flyover ramps would cost about $4,780,000 and $4,144,000, respectively. Slip ramp construction and right-of-way cost estimates ranged from about $150,000 to about $606,000. Because of the significant estimated cost differences between slip ramps and the underpass or flyover ramps, further analysis of the operational characteristics of slip ramps was performed to determine their suitability for use in the recommended improvements for I-4.

During the development of the slip ramp criteria, concerns were expressed about the possible misuse of the opening in the barrier wall for illegal, wrong way cross-over maneuvers, left-hand entrance and exit from the general purpose lanes, merging opportunities and signage.

Barrier Wall Openings - Only a strict enforcement policy or some form of physical deterrent such as a gated closure can prevent the opening in the barrier wall from being mis-used for illegal, wrong way cross-over maneuvers. However, elsewhere in Florida (e.g. Orlando and Miami) and throughout the United States (e.g. Southern California, Washington D.C., and Houston), special use lanes are not physically separated from the general purpose lanes and no known operational problems are associated with the non-physically separated special use lanes. The use of a "Jersey" type barrier wall (which allows drivers to observe traffic on the other side of the wall), the widened median at the slip ramp location, the 329 m (1,080 ft) opening in the wall and the projected LOS (which allows a prediction of average vehicle spacing) are all features which decrease the potential for accidents in the event that the barrier wall opening is mis-used.

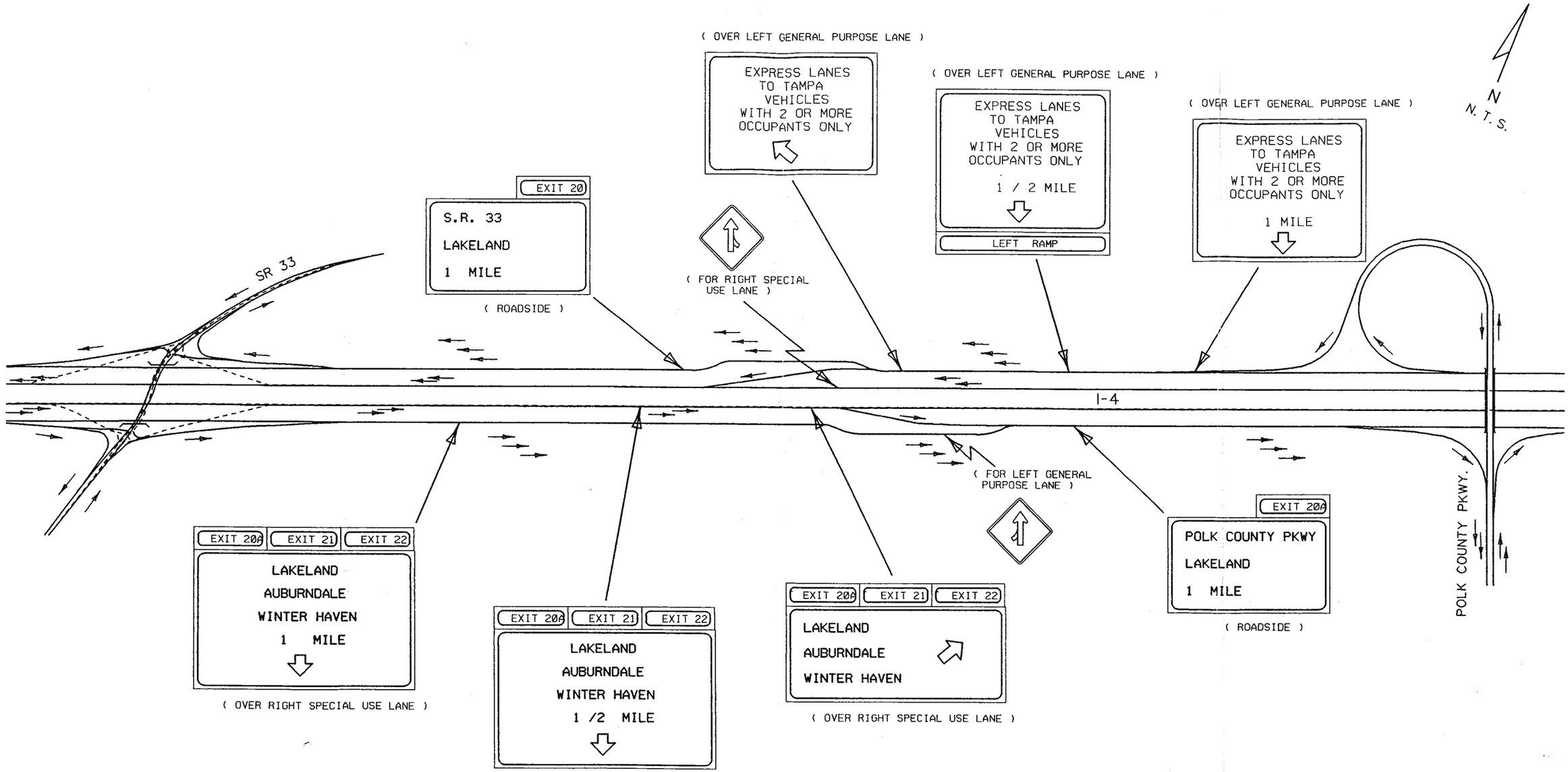
Left-Hand Entrance and Exit - The design criteria for the recommended slip ramp configuration were selected to reduce the potential for operational difficulties. Drivers intending to use the slip ramp will be advised by signage well in advance. The use of a "Jersey Type" barrier wall separating the special use lanes from the general purpose lanes allows drivers to observe the traffic on the other side of the wall prior to entering the slip ramp. The combination of the acute (2^0) divergence angle of the exit ramp, the 329

m (1,080 ft) barrier wall opening, the 152 m (498 ft) parallel merge lane and the 70:1 ratio 252 m (827 ft) entrance taper provides sufficient opportunity for the merging driver to observe the traffic, adjust speed, select an opening in traffic and successfully merge. Because of the visual opportunities provided and the parallel or nearly parallel traffic flow in the slip ramp, the operation of the slip ramp will function much like a simple lane change.

Merging Opportunity - A LOS analysis was performed at the worst case (highest traffic volume) slip ramp location to determine merging opportunities (Location No. 1 - between the CR 582 and SR 33 interchanges). The analysis considered a special use lane exit slip ramp (exiting the right special use lane and entering the left general purpose lane). At this location all freeway segments on the general purpose and special use lanes both upstream and downstream of the slip ramp are predicted to operate at a LOS D or better using the year 2020 1994 I-4 Master Plan traffic volumes. It is assumed that about 15% of the vehicles in the left general purpose lane will merge into the lane(s) to the right (in advance of the slip ramp) to make room for vehicles entering from the slip ramp. For this single lane (left general purpose), the LOS upstream will be B and the LOS downstream will be D, in both the eastbound and westbound directions. Downstream from the slip ramp merge area, the lane balance across the lanes will be reestablished (generally within ½ mile), and a LOS C will result in the eastbound direction and LOS D in the westbound direction. At the anticipated LOS and average speed, the average vehicle gap in the vicinity of the slip ramp will be a minimum of about 102 m (335 ft) at the point of merge (ref. 1994 Highway Capacity Manual). In reality, vehicles will not keep uniform spacing, but with this average vehicle spacing, merging vehicles will find ample acceptable gaps.

Signage - A signing concept for the slip ramps was developed through coordination with the FDOT Traffic Operations Department. In a coordination meeting on May 6, 1996, it was agreed that the signage concept for the slip ramps should take a general, simple approach. The ultimate proposed I-4 typical section allows drivers (and passengers) in the special use lanes to see the signage directed at the drivers in the general purpose lanes and vice versa. As such, the slip ramp signage should not overload the drivers with too much information. A lot of tourists (many foreign) use I-4 and digesting and interpreting excessive sign information could be confusing and possibly hazardous. Destination signage should be limited to ultimate destinations such as Orlando/Daytona or Orlando/Tampa. In keeping with a simple approach, the slip ramp signing concept would not sign for specific attractions, but could sign for the area of the attractions (e.g. Lakeland Area Attractions or Orlando Area Attractions). Because state highway maps, AAA maps, rent-a-car counter maps, etc. and most billboards currently provide exit numbers, the slip ramp signing concept could use exit numbers on the signage (e.g. Lakeland Area, Exits 16 through 20). A detailed signing and marking plan will be developed during subsequent design phases of this project. A graphic diagram showing a typical example of a slip ramp signing concept is shown in Figure 9-17.

Slip Ramps - Slip ramps are connections constructed at grade between the special use lanes and general purpose lanes. Several combinations of design features were evaluated for slip ramps: exit ramps with and without deceleration lanes, various lengths of merge lanes, entrance ramps with or without acceleration lanes, entrance tapers ranging from 50:1 to 70:1, median widths ranging from 7.8 m (26 ft) to 15.0 m (50 ft), barrier wall openings ranging from 131 m (430 ft) to 617 m (2,023 ft), various divergence angles ranging from 2^0 to 4^0 were considered. Safety was the primary consideration when evaluating the possible slip ramp design criteria. The slip ramp design criteria selected for recommendation consists of: no deceleration lane, 2^0 exit divergence angle, 4.5 m (15 ft) wide ramp, 152 m (498 ft) parallel merge lane,



NOTE: This example of the I-4 Special Use Lane Slip Ramp Signing Concept shows typical signage for a westbound special use lane entrance ramp and an eastbound special use lane exit ramp. This exhibit does not attempt to show all signage which may be required for the general purpose lanes.

I-4 Special Use Lane
Slip Ramp Signing Concept

I-4 Preliminary
Engineering Report
State Project No. 16320-1402

4 Polk County

FIGURE
9-17

11.4 m (38 ft) median, 329 m (1,080 ft) barrier wall opening and a 70:1 252 m (827 ft) entrance taper. The proposed design criteria and locations of the slip ramps were reviewed and accepted by the FHWA at a meeting on April 11, 1996.

The slip ramp design criteria and general configuration are shown in Figure 9-18. The locations of the slip ramps are shown on the Concept Plans.

9.22.2 Wildlife Undercrossings

On a statewide basis, wildlife corridor analyses were done by Florida Greenways and FGFWFC. The results of these analyses indicate that the Withlacoochee, Hillsborough, Peace and Kissimmee River basins are regional connections to other important areas of remaining wildlife habitat. The preservation of areas like the Green Swamp is an important step in preserving the natural ecosystems of a region. Disturbances to habitat areas in the Green Swamp have remained relatively low due to the inaccessibility of most of the area. The linking together of natural areas like the Green Swamp north and south of I-4 allows the exchange and importation of different genetic stocks to ensure that healthy populations of wildlife are maintained.

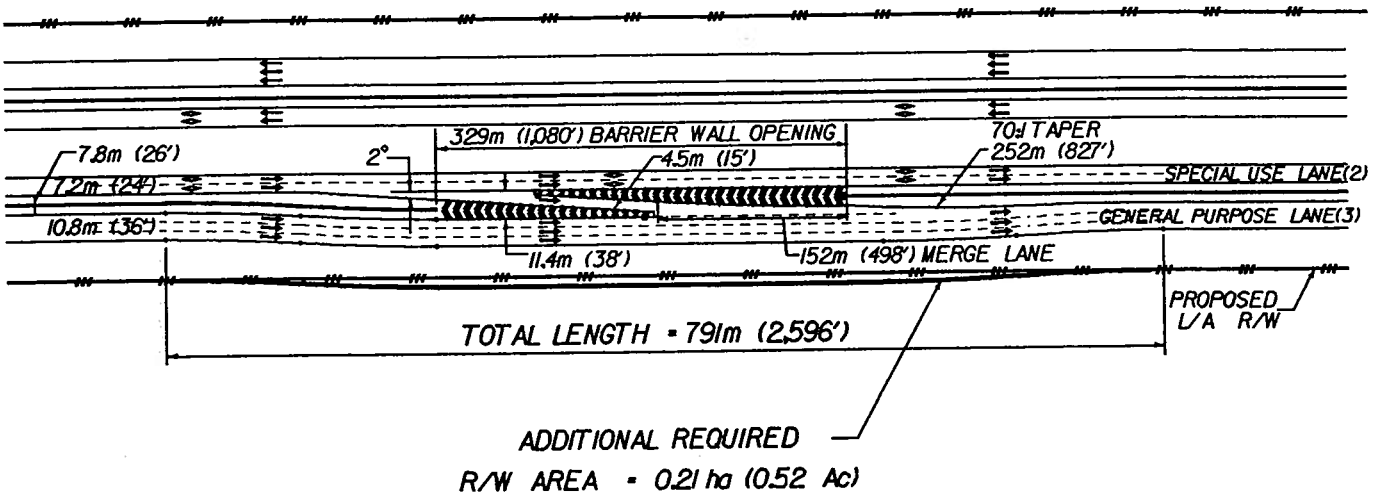
At the request of the FDOT and under the direction of the League of Environmental Organizations and the Central Florida Regional Planning Council, an I-4 Environmental Advisory Group (EAG) was formed to bring together diverse interest groups and expertise involved in the wildlife corridor issue. A recommendation for the location and/or need for wildlife undercrossings in the I-4 corridor was determined through this process in addition to coordination with state and federal agencies. The potential for locating one or more wildlife undercrossings within the I-4 project area was considered.

Two recommended wildlife undercrossing locations are proposed in the vicinity of the Green Swamp between the CR 557 and US 27 interchanges (Segment 6), an area of habitat concern that is in need of protection. The proposed habitat connections would coincide with two proposed low-level bridges spanning areas of unsuitable geological stability (deep muck deposits). These locations are about 3.5 km (2.2 mi) and 6.8 km (4.2 mi) east of the CR 557 interchange, respectively. A third I-4 wildlife undercrossing crossing location was identified in the vicinity of Saddle Creek and the Tenoroc Management Area (an area poised for restoration activity in conjunction with the phosphate industry in coordination with FGFWFC). This undercrossing, located about 3.7 km (2.3 mi) east of the SR 33 interchange (Segment 4), would provide a wildlife corridor link within the Peace River drainage basin on either side of I-4. This wildlife undercrossing would also be a low-level bridge spanning a drainage way connecting a series of wetlands north of I-4 to a reclaimed strip mining area south of I-4.

Design criteria for the wildlife undercrossings were established through coordination with the FGFWFC, the USFWS, the FDEP and the SWFWMD and SJRWMD. The design criteria are discussed in Section 9.21. Coordination with the FGFWFC regarding wildlife undercrossings is included in Section 5 of the Appendix. The locations of the proposed wildlife undercrossings are shown on the Concept Plans.

9.23 Access Management

The FDOT adopted a seven classification access management system to be used for all roads on the State Highway System. There is not an adopted access management classification system for county roads. Access management issues were addressed at every interchange with I-4 from just west of Memorial



SPECIAL USE LANE SLIP RAMP

NOT TO SCALE

Special Use Lane Slip Ramp	I-4 Preliminary Engineering Report State Project No. 16320-1402	4 Polk County	FIGURE 9-18

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Boulevard to the Polk/Osceola County line. The access management standards for limited access and controlled access facilities are shown in Table Nos. 9-12 and 9-13.

The state roads which interchange with I-4 are designated with access management Classes 2, 4 and 5. The following provides a definition of each of the access management classifications of the roadways involved with this project (ref: FDOT, Access Management Classification and Connection Permits, updated July 17, 1995):

Access Class 1, Limited Access Highways (I-4): These highways do not provide direct property connections. Highways in this class provide for efficient and safe high speed and high volume traffic movements, serving interstate, interregional, and intercity, and to a lesser degree, intracity travel needs. Federal-Aid Interstate highways and Florida's Turnpike are typical of this class. The interchange spacing standards, based on the Area Type the highway is passing through, are for the through lanes or mainline of the facility (see Table No. 9-12). Interchanges with limited access collector distributor systems do not have to meet these standards, however such connections shall be approved by the Department and FHWA utilizing the Interchange Justification Report Process. In addition to meeting the spacing standard, new interchanges to the Interstate Highway System shall be to other public roads only and warranted based on an engineering analysis of the operation and safety of the system.

Access Class 2 (US 27 @ I-4): These are highly controlled access facilities distinguished by the ability to serve high speed and high volume traffic over long distances in a safe and efficient manner. These highways are distinguished by a system of existing or planned service roads. This access class is distinguished by a highly controlled limited number of connections, median openings, and infrequent traffic signals. Segments of the State Highway System having this classification usually have the access restrictions supported by local ordinances and agreements with the Department.

Table No. 9-12
ACCESS CLASSIFICATION AND STANDARDS
LIMITED ACCESS FACILITIES
INTERCHANGES
I-4 Project Development and Environment Study

Access Class	Segment Location	Applicable Interchange Spacing Standard
1	**Area Type 1** CBD & CBD fringe for cities in urbanized areas	1 mile
1	**Area Type 2** Existing urbanized areas other than Area Type 1	2 miles
1	**Area Type 3** Transitioning urbanized areas and urban areas other than Area Type 1 or 2	3 miles
1	**Area Type 4** Rural areas	6 miles

Reference: 14-97.003 Access Management Classification System and Standards (pg. 9)

Table No. 9-13
CONTROLLED ACCESS FACILITIES
I-4 Project Development and Environment Study

Access Class	Facility Design Features (Median Treatment and access Roads)	Minimum Connection Spacing (ft)	Minimum Median Opening Spacing Directional (ft)	Minimum Median Opening Spacing Full (mi)	Minimum Signal Spacing (mi)
2	Restrictive w/service roads	1320/660	1320	0.5	0.5
3	Restrictive	660/440	1320	0.5	0.5
4	Non-Restrictive	660/440	N/A	N/A	0.5
5	Restrictive	440/245	660	0.5/0.25	0.5/0.25
6	Non-Restrictive	440/245	N/A	N/A	0.25
7	Restrictive	125	330	0.125	0.25

Reference: 14-97.003 Access Management Classification System and Standards (pg. 10)
Note: 1. These minimum spacings may not be adequate if auxiliary lanes and storage are required.
2. Single properties with frontages exceeding the minimum spacing criteria may not receive permits for the maximum possible connections.

Access Class 3 (US 27 North and South of I-4): These facilities are controlled access facilities where direct access to abutting land will be controlled to maximize the operation of the through traffic movement. This class will be used where existing land use and roadway sections have not completely built out to the maximum land use or roadway capacity or where the probability of significant land use change is distinguished by existing or planned restrictive medians and maximum distance between traffic signals and driveway confections. Local land use planning, zoning and subdivision regulations should be such to support the restrictive spacings of this designation.

Access Class 4 (SR 559): These facilities are controlled access highways where direct access to abutting land will be controlled to maximize the operation of the through movement. This class will be used where the existing land use and roadway sections have not completely built out to the maximum land use or roadway capacity or where the probability of significant land use change in the near future is high. These highways will be distinguished by existing or planned non-restrictive median treatments.

Access Class 5 (Memorial Boulevard, Kathleen Road, US 98 and SR 33): This class will be used where existing land use and roadway sections have been built out to a greater extent than those roadway segments classified as Access Classes 3 and 4. These highways will be distinguished by existing or planned restrictive medians.

Access management issues for this project are primarily concerned with the placement of the limits of the limited access right-of-way at each of the improved interchanges. Coordination with the FDOT Access Management Engineer was undertaken throughout project development. The following is a brief description by project segment of the placement of the limits of limited access at the cross road interchanges.

Memorial Boulevard (SR 546) in Segment 2 is a four-lane divided rural roadway designated as access management Class 5. The proposed Memorial Boulevard interchange will remain similar to the existing configuration except a new ramp accessing I-4 eastbound will be added. The limited access limits would be extended eastward along Memorial Boulevard to a point east of the proposed I-4 eastbound ramp. Right-in/right-out driveway connections would be permitted along the north right-of-way of Memorial Boulevard between Crutchfield Road and the proposed ramp. All of the existing median openings on Memorial Boulevard west of Crutchfield Road would be closed. The existing median at Crutchfield Road would remain open. The eastbound left turn lane into Crutchfield Road would also remain open.

Kathleen Road (SR 539) in Segment 2 is a four-lane urban roadway south of I-4 and a two-lane rural roadway north of I-4. Kathleen Road is designated as access management Class 5. The Kathleen Road interchange would be improved to a four-lane divided urban roadway (with future expansion to six lanes). The improvements would transition north of I-4 from the proposed four lanes to the existing two-lane section. The proposed limited access limits for Kathleen Road north of I-4 would end approximately 384 m (1,260 ft) from the centerline of I-4. The first median opening north of I-4 would be approximately 240 m (790 ft) from the north limited access limit. The median openings on Kathleen Road south of I-4 and the side street connections at Margaret Street and Elliott Street would be closed. The median opening at Bella Vista Street would be maintained. Margaret Street would be closed just west of Kathleen Road through the use of a cul-de-sac and access roads connecting Elliott Street to Margaret Street and Bella Vista Street would be constructed.

US 98 (SR 35 & 700) in Segment 8 north of I-4 is currently being improved to expand the existing four-lane divided roadway to six lanes with auxiliary lanes (eight lanes). US 98 south of I-4 is proposed to be improved from four to six lanes. US 98 is a major urban arterial with extensive development along both sides and is designated as access management Class 5. The proposed interchange would be consistent with the proposed improvements to US 98. The existing rural diamond interchange would be modified to a single-point urban type interchange. The existing median of I-4 would be closed north to Crevasse Street and south to Pyramid Parkway. The limits of limited access would be placed at the intersecting point of the existing I-4 right-of-way and the proposed right-of-way of US 98.

Right-in/right-out driveway connections would be permitted between the I-4 ramp terminals and Crevasse Street and Pyramid Parkway. The I-4 ramp intersections with US 98 would be signalized.

In the southeast quadrant, the existing Robson Street intersection will be closed due to its proximity to the I-4 entrance ramp. An access road would be constructed between the Citgo Lakeland Auto/Truck Plaza and the Choice Inn motel connecting Robson Street to US 98. This access road intersection would be aligned with Pyramid Parkway on the west side of US 98. The US 98 improvements would include a traffic signal at the Pyramid Parkway/Access Road/US 98 intersection.

CR 582 (Socrum Loop Road) in Segment 3 is a four-lane, divided, rural roadway near I-4 tapering to a five-lane facility further east. There is no adopted access management classification for CR 582. SR

33 (in the area of the Socrum Loop Road interchange) is an existing four-lane, divided, rural roadway designated as access management Class 5. The existing interchange at CR 582 is a modified diamond with loop ramps in the northeast and southeast quadrants that connects I-4 to two different side roads (SR 33 to the south and CR 582 to the north). The existing interchange geometry could not accommodate the modification of the existing ramps using current standards because the proposed ultimate typical section situates the general purpose lanes closer to the existing right-of-way. The reconfigured CR 582 interchange would be a modified diamond type interchange with ramps connecting I-4 with CR 582 to the north and loop ramps connecting SR 33 to the south. The limits of limited access would be placed at the intersections of the proposed ramp right-of-way and the CR 582 and SR 33 rights-of-way.

SR 33 in Segment 3 is a two-lane, undivided, rural roadway designated as access management Class 4. The proposed typical section is a four-lane divided rural roadway with a raised median. The existing rural type diamond interchange would be modified to a tight diamond urban type interchange. The I-4 ramp intersections with SR 33 would be signalized. The limited access right-of-way would be extended north and south along SR 33.

At the south end of the SR 33 interchange there is an existing driveway connection on the east side of SR 33 within the proposed limited access right-of-way. This driveway would be relocated south of the I-4 eastbound entrance ramp deceleration taper. No median opening would be available for this driveway.

At the north end of the SR 33 interchange, there are several driveways and a county roadway named Tomkow Road which fall within the limited access right-of-way. There are existing driveways for a Polk County Park and Ride, a FDOT maintenance facility and several driveways to the Lakeland Auto Auction. The proposed improvements include relocating the Park and Ride adjacent to Tomkow Road west of SR 33. The FDOT maintenance facility would be closed and the minor driveways to the Lakeland Auto Auction would be closed. The intersection of Tomkow Road falls within the proposed limited access limits. Tomkow Road would be relocated running parallel to SR 33 to a point beyond the limited access right-of-way. The relocated intersection of Tomkow Road would coincide with the main entrance to the Lakeland Auto Auction which would share the full median opening.

SR 559 in Segment 4 is a two-lane rural roadway designated as access management Class 4. The existing rural diamond type interchange would be modified to a tight diamond urban type interchange and SR 559 would be improved to a four-lane divided urban roadway in the area of the interchange. The limited access right-of-way limits would be extended north and south of I-4 along SR 559. The existing frontage road intersection in the southeast quadrant would be relocated to the south and the limited access right-of-way would be extended south to the relocated frontage road.

CR 557 in Segment 5 is a two lane rural roadway. There is no adopted access management classification for CR 557. The proposed CR 557 interchange is a full-service rural diamond type interchange replacing the existing partial cloverleaf with ramp loops in the northwest and southeast quadrants. Additional limited access right-of-way would be required in the northeast and southwest quadrants to accommodate the proposed ramps. The existing CR 557 would be reconstructed as a two-lane rural roadway designed to accommodate expansion to a four-lane roadway in the future.

US 27 in Segment 9 is a four-lane divided rural roadway through the area of the interchange with I-4. The access management classifications for state highways in Polk County were approved and adopted in accordance with Rule Chapter 14-97 F.A.C. on April 13, 1993. At that time, a Class 2 was adopted

for US 27 in the area of the I-4 interchange to allow for the future inclusion of service roads (frontage/backage/access roads). Access management Class 2 is a restrictive facility with service roads. US 27 is designated as access management Class 3 north and south of the I-4 interchange. The requirements for a Class 2 and Class 3 are the same for minimum median opening spacing and minimum signal spacing. The differences are found in the lack of service roads and the reduction of minimum connection spacing from 400 m to 200 m (1,320 ft to 660 ft).

The proposed US 27 interchange configuration is an expansion of the existing partial cloverleaf with loop ramps in the northwest and southeast quadrants. In the northwest quadrant, the limits of limited access would be extended north along the west side of US 27 to a point beyond the I-4 entrance ramp taper. In the northeast quadrant, the limits of limited access would be placed at the intersection of the existing US 27 right-of-way and the proposed I-4 mainline right-of-way. Driveway connections would be permitted along the east side of US 27 in the northeast quadrant. In the southeast quadrant, the limits of limited access would be extended south along the east side of US 27 beyond the I-4 entrance ramp taper to the intersection of Home Run Boulevard. In the southwest quadrant, the limits of limited access would be where the I-4 proposed mainline limited access and the existing US 27 right-of-way intersect. The frontage road would be relocated to match up with the US 27 southbound to I-4 eastbound entrance ramp. Driveway connections would be permitted along the west side of US 27 in the southwest quadrant. The proposed improvements would expand US 27 from a four-lane divided rural roadway to a six-lane divided urban roadway through the area of the interchange.

Since no service roads are planned for the US 27 interchange, it is proposed to change the access management classification from Class 2 to Class 3 to be consistent with the proposed improvements and the classification north and south of the interchange.

The proposed interchange and cross road improvements including the limits of limited access are shown on the Concept Plans.

9.24 Aesthetics and Landscaping

This project will be designed in accordance with the Aesthetic Guidelines for I-4 Corridor, June 1996. The guidelines require that this project comply with Level Two of Section 3.D.2.b of the FDOT Structures Design Guidelines, Levels of Aesthetics with the exception of the US 27 interchange which will comply with Level Three guidelines.

During preparation of the guidelines, coordination with Polk County and the City of Lakeland was initiated to solicit local government input towards the aesthetic appearance of the proposed I-4 improvements. The City of Lakeland expressed a desire for the five Lakeland interchanges (Memorial Boulevard, Kathleen Road, US 98, CR 582, and SR 33) be attractive gateways to the City of Lakeland. The four areas for which input was solicited are bridges, retaining walls, signing and lighting supports, and landscaping (particularly at interchanges).

Adherence to the Aesthetic Guidelines for the I-4 corridor will make the improved roadway aesthetically pleasing to both the road user and the properties with a view of the road. Impacts to the viewshed of the I-4 corridor as a result of the proposed improvements are considered minimal. The goal of the Aesthetic Guidelines for the I-4 Corridor is "to provide uniformity through the corridor with emphasis on providing

harmony with the adjacent land use and local community." The following recommendations are included in the guidelines:

1. The extensive use of retaining walls through the 19.3 km (12.0 mi) urban section (Segments 1, 2, 8 and 3) and for all reinforced earth type bridge abutments within the corridor will be enhanced by using a consistent gray fractured fin wall texturing and a navajo white cap.

2. Bridge piers will generally be T-type, with octagonal columns which extend through trapezoidal concrete caps. Column faces will be finished with fractured fin texturing to match retaining walls and abutments.

3. Understructure lighting will have recessed, non-corrosive fixtures having no exposed conduits or brackets.

4. Bridge superstructures will consist of parallel prestressed concrete girders for tangent alignments and steel girders for long spans and curved alignments.

5. Multilevel interchanges will utilize box girder superstructures (curved where required to accommodate ramp alignments).

6. Xeriscape landscaping will be provided to "announce" interchanges and within interchanges to enhance the visual quality of the ramps and grade separation structures.

7. All sign supports, signal poles, fencing and lighting will be finished in glossy, powder black finish.

9.25 Section 4(f) Properties

There is one Section 4(f) site within the I-4 corridor that could be affected by the proposed improvements to I-4 if the widening were to take place to the left (north) in the area of the school. A Section 4(f) Determination of Applicability (DOA) was submitted for the Wendell Watson Elementary School describing various possible widening scenarios (typical sections and alignments). After review of the DOA, on March 22, 1993, the FHWA determined that the provisions of Section 4(f) do not apply to the Wendell Watson Elementary School, stating that "...no right-of-way will be acquired under the preferred Alternate 3, and constructive use is not expected to significantly diminish the school's vital functions." The Alternate 3 described in the Wendell Watson Elementary School DOA is the preferred alternative 91.4 m (300 ft) urban interstate typical section centered within the existing right-of-way. A description of the Wendell Watson Elementary School is provided below.

Wendell Watson Elementary School - Segment 3 - Wendell Watson Elementary School, located at 6800 Walt Williams Road, is owned by the Polk County School Board. It is located north of I-4 about 2.7 km (1.7 mi) east of Old Combee Road in Section 17, Township 26 South, Range 24 East. The property for the school was acquired by the County in 1990. The property was a former homestead with no public access or facilities. School facilities include: an open athletic field with a perimeter fence, basketball courts, two base (soft) ball fields, vehicle parking and three classroom buildings. A waste water treatment plant is situated on the school property in the southeast corner adjacent to Walt Williams Road. The school property occupies approximately 8.1 ha (20 ac) and is accessible to automobiles and pedestrians from Walt Williams Road.

The nearest facilities with comparable resources are located about 3.2 km (2.0 mi) to the west. These facilities include: Padgett Elementary School, Lake Gibson Junior High School, Lake Gibson High School and Virgil Ramage Stadium, all located west of Wendell Watson Elementary School on North Socrum Loop Road to the north of I-4. North Lakeland Elementary School is about 4.2 km (2.6 mi) to the southwest, south of I-4 and west of County Road 582.

STATE PROJ. NO.	SHEET NO.
16320-1402	1

PROJECT LIMITS
Begin Segment 2

400'

PHOTOGRAPHY DATE: OCT 1993
CONCEPT PLAN DATE: JAN 1998

RUTHVEN INDUSTRIAL CENTER

GLS FIBERGLASS

SW 62nd COURT

SW 62nd TERRACE

SW 62nd TERRACE

SW INDBELL ROAD

NORTH CALLOWAY ROAD

NEWHOME BAPTIST CHURCH & CEMETERY

Doreen Drive

Doreen Drive

Doreen Drive

Doreen Court

WINSTON HEIGHTS SUBDIVISION

WINSTON ELEMENTARY SCHOOL

SW INDBELL ROAD

SUTTON ROAD

PROP R/W

EXIST R/W

PROP R/W

PROP LA R/W

EXIST LA R/W

91.4 m (300 ft) TYP.

EXIST R/W

PROP LA R/W

PROP R/W

PROP LA R/W

MEMORIAL BLVD.

END EXIST. & PROP LA R/W

INTERSTATE BOWLING LANES

END OF EXIST. & PROP LA R/W

COUNTRY HEARTH BAKERY

PROP LA R/W

NORTH CALLOWAY ROAD

NORTH CALLOWAY ROAD

SW 62nd STREET

PROP R/W

POTENTIAL NOISE BARRIER NO. 6

EXIST LA R/W

91.4 m (300 ft) TYP.

EXIST LA R/W

PROP LA R/W

PROP R/W

GENE RYDER TRUCKING CO.

COUNTRY HEARTH BAKERY

RYDER TRUCK RENTAL

SW 62nd TERRACE

COUNTRY HEARTH THRIFT STORE

SW 62nd STREET

Melville Avenue

PROP R/W

OVER HEAD TRANSMISSION LINES

SW 62nd STREET

OAKLAND N.W. WELL FIELD ZONE OF PROTECTION

REVISIONS											
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STATE PROJ. NO.	SHEET NO.
16320-1402	2

POTENTIAL NOISE BARRIER NO. 7

End Segment 7
Begin Segment 8

End Segment 8
Begin Segment 9

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17 SEP 98
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STATE PROJ. NO.	SHEET NO.
16320-1402	3

End Segment 8
Begin Segment 3

400'
PHOTOGRAPHY DATE: OCT 1993
CONCEPT PLAN DATE: JAN 1998

DAN'S AUTO BEAUTY SHOP
EXIST LA R/W
PROP R/W
91.4 m (300 ft) TYP
EXIST LA R/W
PROP LA R/W
CRACKER TRAIL
WILKINS AVENUE
RESORT DRIVE
WEST CYPRESS GARDENS BLVD
DUNTON DRIVE
WEST CYPRESS GARDENS BLVD
N. FLORIDA AVENUE
GARDA DRIVE
PROP R/W
ROSE AVENUE
EXIST LA R/W
WAFFLE HOUSE
AMOCO FOOD SHOP
END EXIST R/W
BUDGETEL
CRACKER BARREL
91.4 m (300 ft) TYP
ARTEVA DRIVE
Road Sign
END EXIST LA R/W
SOCRUM LOOP ROAD
SR 33
CR 582
END PROP
CAR WASH
EXXON
END EXIST LA R/W
LAKE GIBSON CHURCH OF CHRIST
QUALITY INN
SOCRUM LOOP ROAD
PROP LA R/W
EXIST LA R/W
END PROP LA R/W
FORMER REST AREA
END EXIST LA R/W
PROP LA R/W
EXIST LA R/W
END PROP LA R/W
OLD COUNTY ROAD
OLD COUNTY ROAD
FORMER REST AREA
LAKE DESSON POINTE ROAD
POTENTIAL NOISE BARRIER NO. 15

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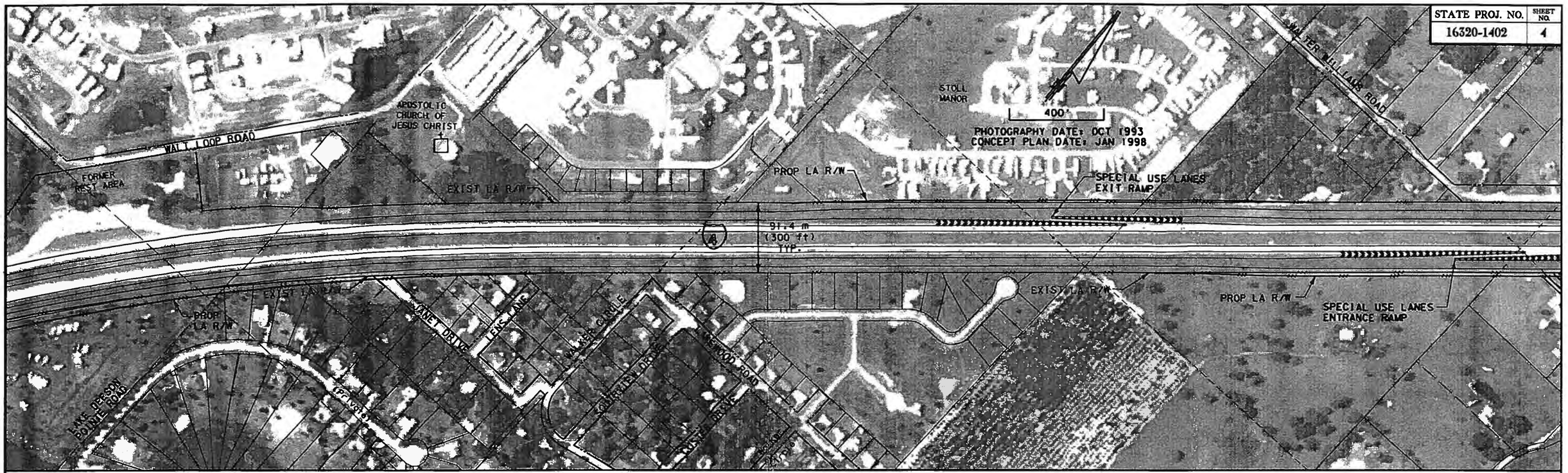

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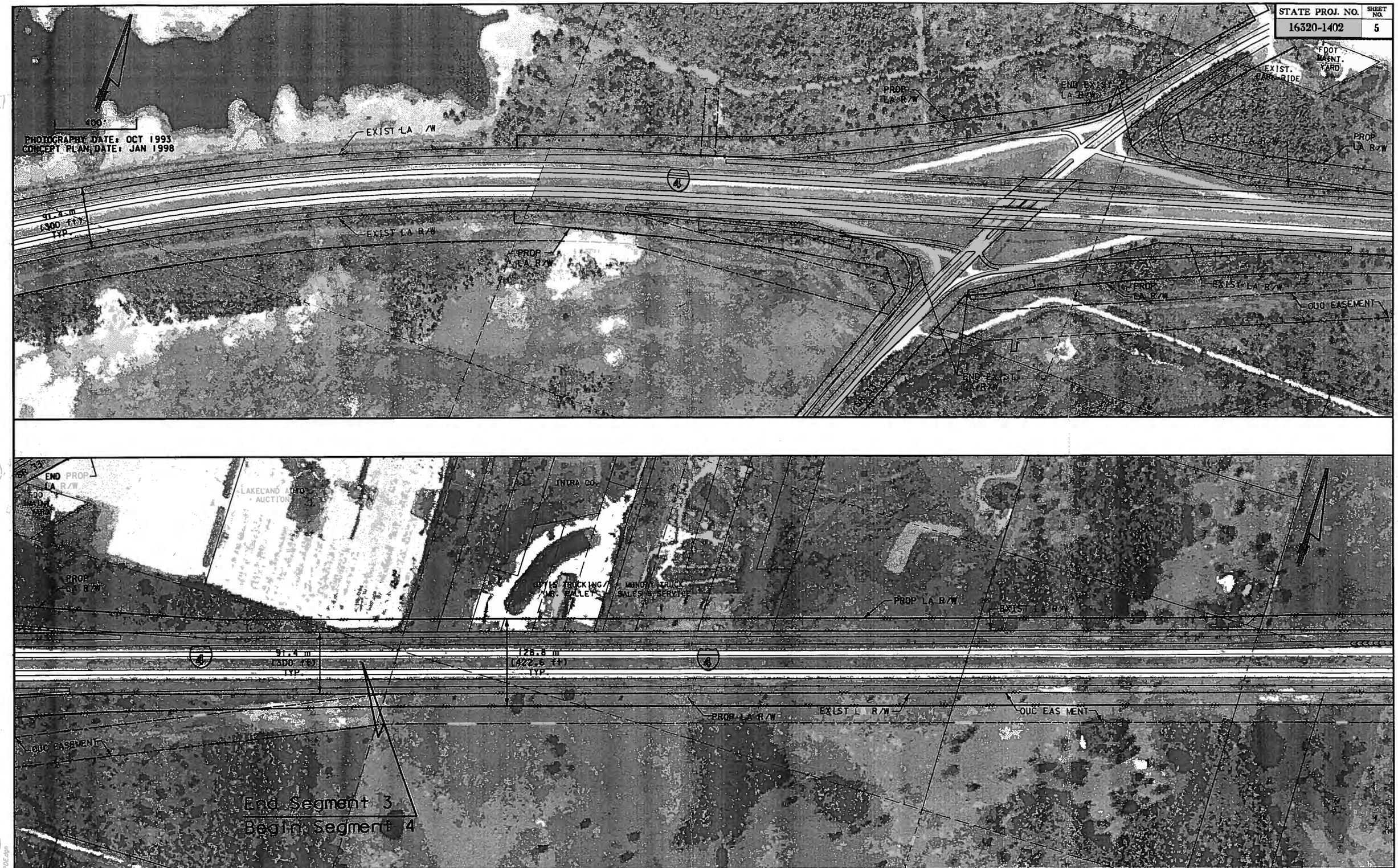

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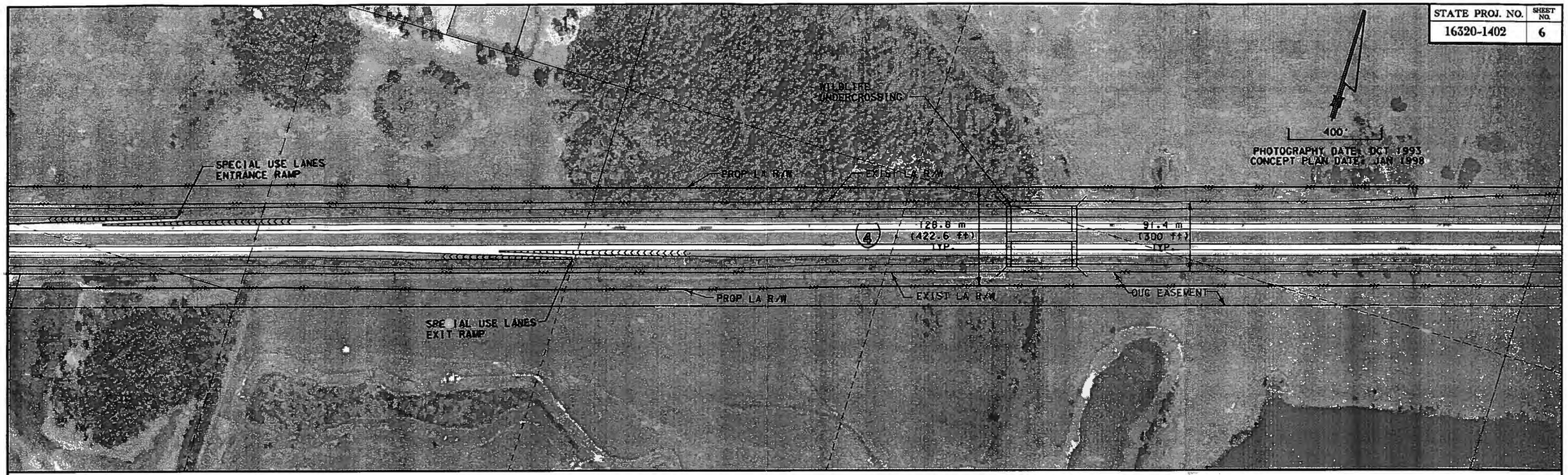

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STATE PROJ. NO.	SHEET NO.
16320-1402	7

LITTLE LAKE AGNES

400'

PHOTOGRAPHY DATE: OCT 1995
CONCEPT PLAN DATE: JAN 1998

PROP LA R/W

EXIST LA R/W

91.4 m (300 ft) TYP.

4

91.4 m (300 ft) TYP.

PROP LA R/W

GROVE ROAD (CR 555)

MOORE ROAD (CR 555)

BERKLEY RD.

128.8 m (422.6 ft) TYP.

EXIST LA R/W

OUC EASEMENT

LITTLE LAKE AGNES

FANTASY OF FLIGHT

FANTASY OF FLIGHT AIRSTRIP

PROP LA R/W

EXIST LA R/W

91.4 m (300 ft) TYP.

LAKE AGNES

END PROP LA R/W

PROP LA R/W

SR 559

SPECIAL USE LANES ENTRANCE RAMP

EXIST LA R/W

OUC EASEMENT

PROP LA R/W

END EXIST LA R/W

END PROP LA R/W

AMOCO STATION

TEXACO STATION

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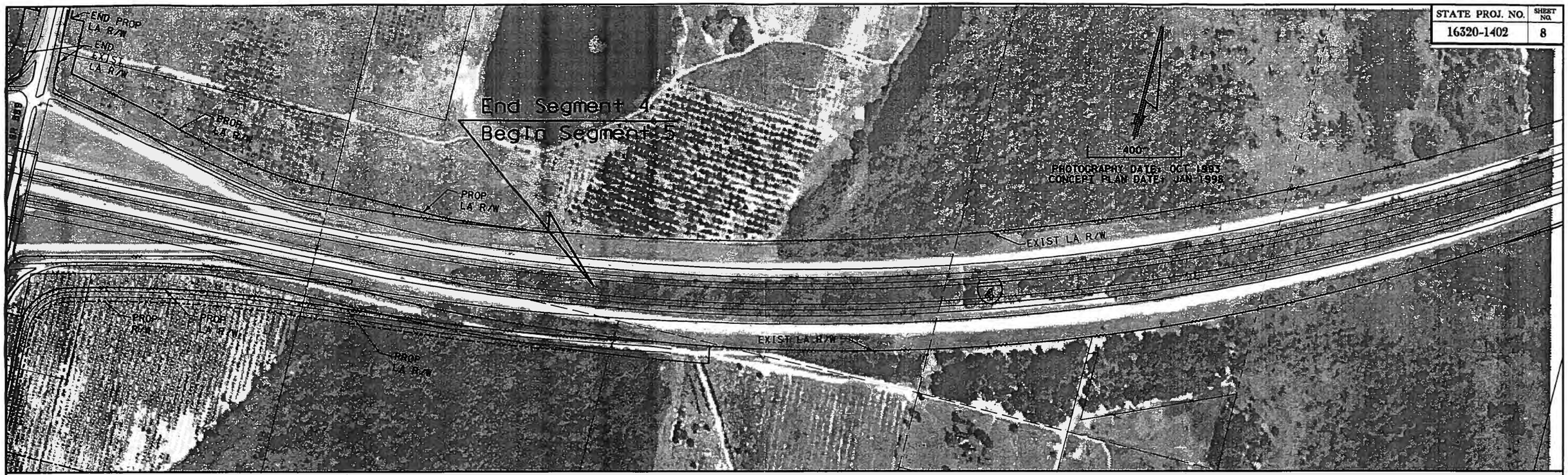

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REST AREA

PROP LA R/W

EXIST LA R/W

400'

PHOTOGRAPHY DATE: OCT 1995
CONCEPT PLAN DATE: JAN 1998

128.8 m
(422.6 ft)
TYP.

91.4 m
(300 ft)
TYP.

PROP LA R/W

EXIST LA R/W

QUIET EASEMENT

START
RACEING SCHOOL
GREEN VALLEY
CORPORATION

End Segment 5
Begin Segment 6

PROP LA R/W

EXIST LA R/W

EXIST LA R/W

PROP LA R/W

EXIST LA R/W

PROP LA R/W

91.4 m
(300 ft)
TYP.

128.8 m
(422.6 ft)
TYP.

QUIET EASEMENT

REVISIONS											
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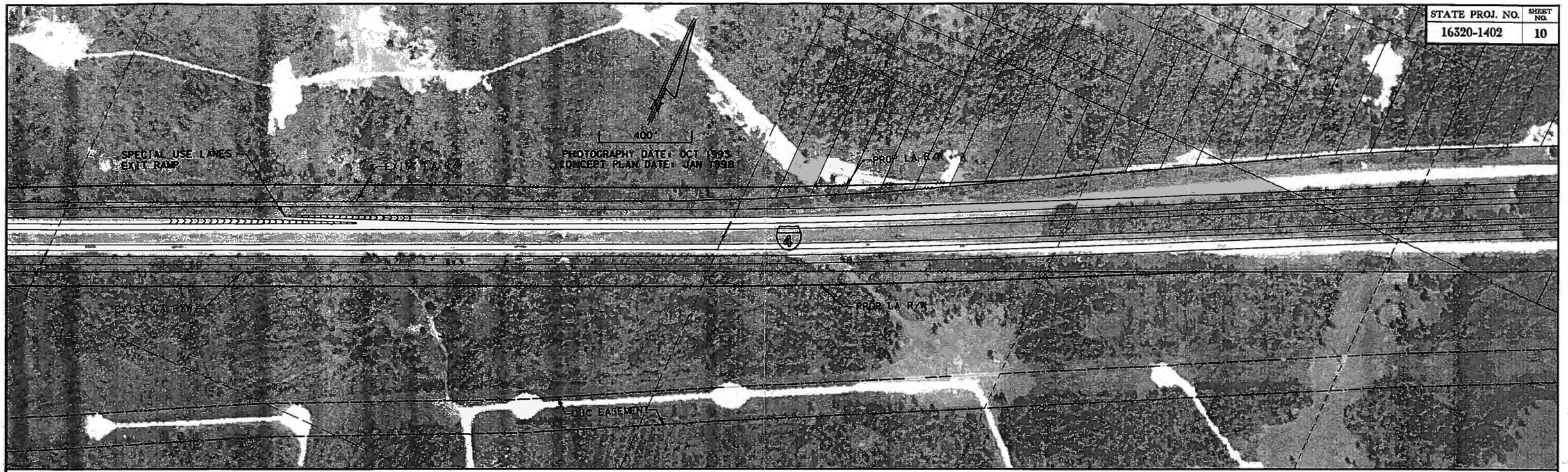

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PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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STATE PROJ. NO.	SHEET NO.
16320-1402	12

End Segment 6
Begin Segment 9

PROP LA R/W
PROP R/W
GTE
WATERLY DR
CHEVRON
COMFORT INN
SPEEDWAY
FLORIDA SOUTHGATE INN
END EXIST LA R/W
EXIST LA R/W
28.8 m (422.6 ft) TYP.
4
PROP LA R/W
THEME WORLD CAMPGROUND
FORT SUMMIT CAMP SITES
HOLIDAY INN EXPRESS
SHELL STATION
TEXACO
U.S. 27
DAYS INN
BOB EVANS
PROP R/W

400'

PHOTOGRAPHY DATE: OCT 1993
CONCEPT PLAN DATE: JAN 1998

POLK CO.
CHEVRON
COMFORT INN
SPEEDWAY
FLORIDA SOUTHGATE INN

End Segment 9
Begin Segment 7

EXIST LA R/W
4
EXIST LA R/W

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Polk County

INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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STATE PROJ. NO.	SHEET NO.
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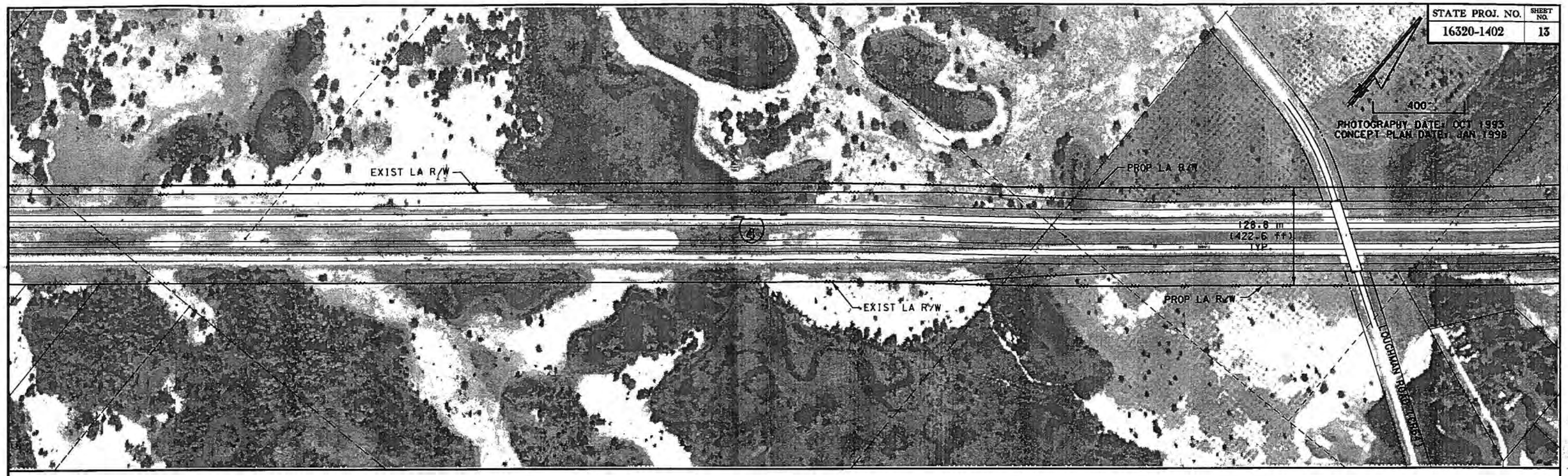

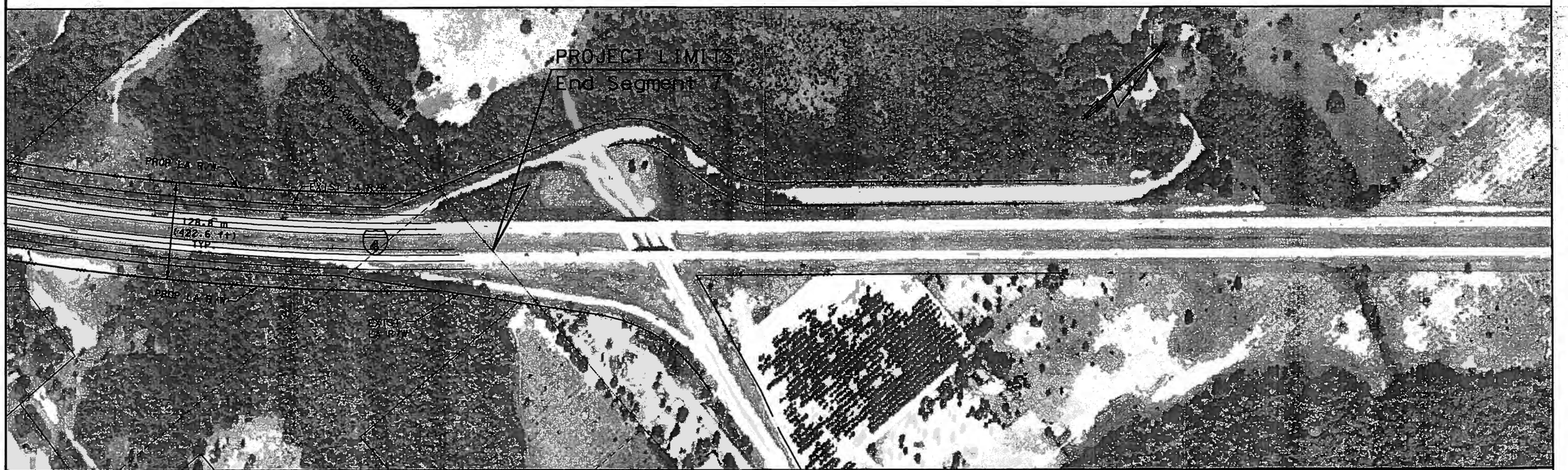

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INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

STATE PROJ. NO.	SHEET NO.
16320-1402	14

PROJECT LIMITS
Begin Segment 2

400 0 400

PHOTOGRAPHY DATE: OCT. 1993
CONCEPT PLAN DATE: JAN. 1998

RUTHVEN INDUSTRIAL CENTER
GLS FIBERGLASS
Bryon Court
Bryon Road
SWINDELL ROAD
NORTH GALLOWAY ROAD
NEWHOME BAPTIST CHURCH & CEMETERY
Dorean Drive
WINSTON HEIGHTS SUBDIVISION
Dorean Dr.
Dorean Ct.
WINSTON ELEMENTARY SCHOOL
SWINDELL ROAD
PROP R/W
SUTTON ROAD
NORTH GALLOWAY ROAD
4
EXIST LA R/W
91.4 m (300 Ft) TYP.
EXIST LA R/W
PROP LA R/W
REMO EXIST LA R/W
MEMORIAL BLVD.
INTERSTATE BOWLING LANES
END OF EXIST PROP LA R/W
PROP LA R/W
PROP R/W
COUNTRY HEARTH BAKERY
RYDER RE
CRUTCHFIELD ROAD
COUNTRY HEARTH THRIFT STORE
END OF EXIST PROP LA R/W
MEMORIAL BOULEVARD (S.R. 546)

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS
TAMPA, FLORIDA

FLORIDA DEPARTMENT OF TRANSPORTATION

4
Polk County

INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

STATE PROJ. NO.	SHEET NO.
16320-1402	15

400'

PHOTOGRAPHY DATE: OCT 1993
CONCEPT PLAN DATE: JAN 1998

SR 539

END PROP LA R/W

POTENTIAL NOISE BARRIER NO. 7

PROP R/W

MADDOX FARM

PROP LA R/W

LAKELAND N.W. WELL FIELD ZONE OF PROTECTION

PROP LA R/W

GRIFFIN ROAD

CR 39A

PROP LA R/W

EXIST LA R/W

98.1 m (322 ft) TYP.

91.4 m (300 ft) TYP.

98. (322 TY

EXIST LA R/W

WELL #1

WELL #2

EXIST LA R/W

WELL #3

EXIST LA R/W

WELL #4

(VACANT)

INTERSTATE DRIVE

OWENS ILLINOIS, INC.

OSY RAILROAD

ELLIOTT

BELL AVENUE

WEST LEIGH STREET

WEST MARCIA STREET

KATHLEEN ROAD

PROP R/W

HEAD START

PROP R/W

PROP LA R/W

END EXIST LA R/W

END PROP LA R/W

LAKELAND N.W. WELL FIELD ZONE OF PROTECTION

PEPPERIDGE FARM, INC.

WHOLESALE TOOL SUPPLY INC.

THOMAS B. WILLIAMS WATER

KATHLEEN ROAD (S.R.539)

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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4 Polk County

INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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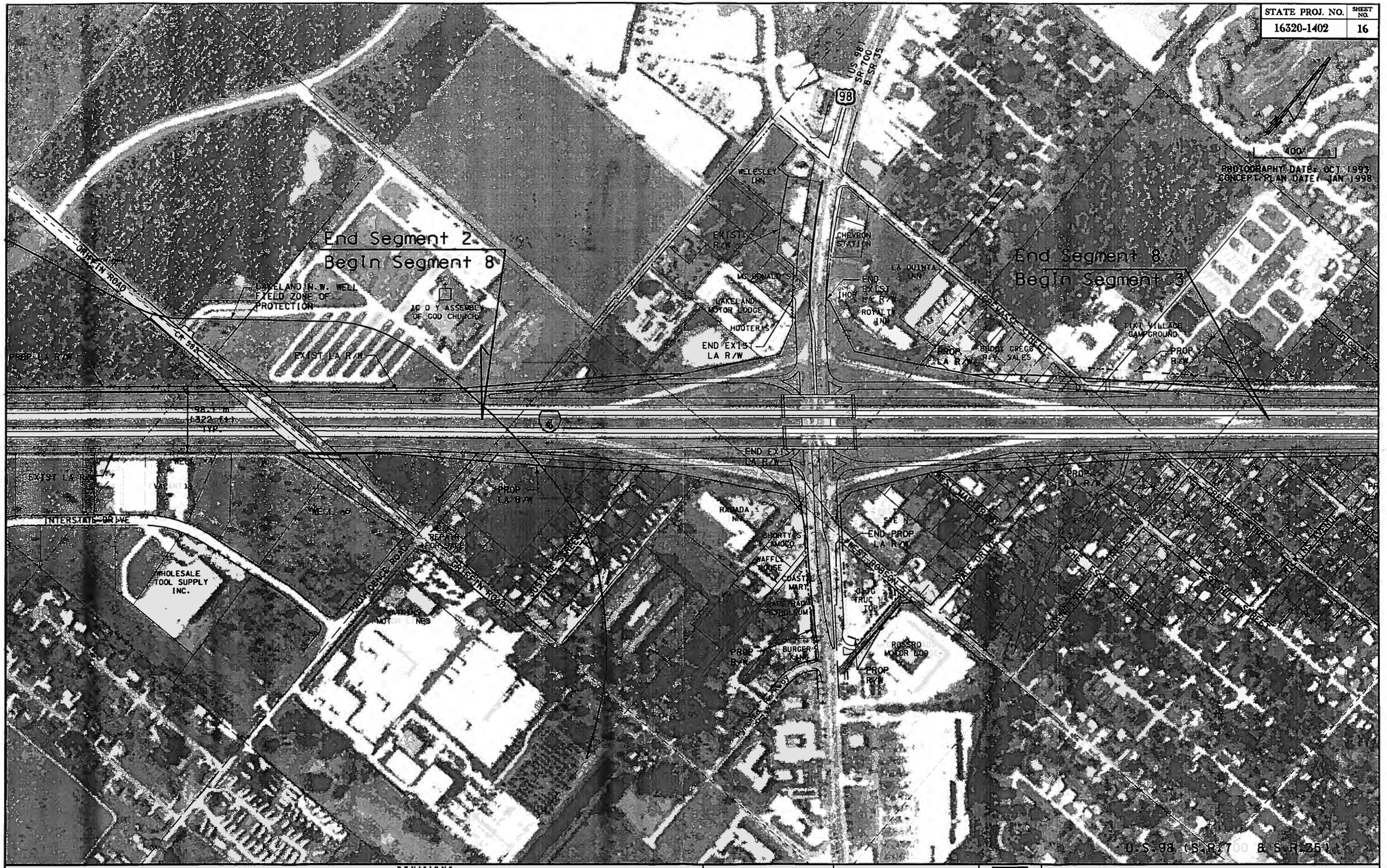
STATE PROJ. NO.	SHEET NO.
16320-1402	16



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INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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STATE PROJ. NO.	SHEET NO.
16320-1402	17

400'

PHOTOGRAPHY DATE: OCT 1993
CONCEPT PLAN DATE: JAN 1998

POTENTIAL NOISE BARRIER NO. 15

SOCRUM LOOP (C.R. 5821) - ALTERNATE 1

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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STATE PROJ. NO.	SHEET NO.
16320-1402	18

400'

PHOTOGRAPHY DATE: OCT 1 93
CONCEPT PLAN DATE: JAN 1998

EXIST R/W
PROP R/W
PROPOSED PARK-AND-RIDE
END PROP LA R/W
TOMKOW ROAD
SR 33
END PROP LA R/W
FDOT MAINT. YARD
EXIST. PARK-RIDE
LAKELAND AUTO AUCTION
END EXIST LA R/W
PROP LA R/W
EXIST LA R/W
PROP LA R/W
EXIST LA R/W
91.4 m (300 FT) TYP.
EXIST LA R/W
PROP LA R/W
EXIST LA R/W
ORG EASEMENT
END PROP LA R/W
End Segment 3
Begin Segment 4
S.R.33

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Polk County

INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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STATE PROJ. NO.	SHEET NO.
16320-1402	19

400'

PHOTOGRAPHY DATE: OCT 1993
CONCEPT PLAN DATE: JAN 1998

PROP R/W

PROP R/W

FANTASY OF FLIGHT

LAKE AGNES

MOBILE HOMES

END PROP LA R/W

END PROP LA R/W

END EXIST LA R/W

PROP LA R/W

End Segment 4
Begin Segment 5

PROP LA R/W

PROP LA R/W

EXIST R/W

EXIST LA R/W

91.4 m (300 FT) TYP.

SR 559

4

END EXIST LA R/W

EXIST LA R/W

PROP LA R/W

END PROP LA R/W

AMOCO STATION

TEXACO STATION

PROP LA R/W

PROP LA R/W

PROP LA R/W

PROP LA R/W

OUC EASEMENT

END PROP LA R/W

S.R. 559

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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4 Polk County

INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

17 SEP 98
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STATE PROJ. NO.	SHEET NO.
16320-1402	20

PROP R/W

PROP R/W

400'

PHOTOGRAPHY DATE: OCT 1997
CONCEPT PLAN DATE: JAN 1998

End Segment 4
Begin Segment 5

FANTASY OF FLIGHT

LAKE AGNES

MOBILE HOMES

END PROP LA R/W

END PROP LA R/W

END EXIST LA R/W

PROP LA R/W

EXIST R/W

EXIST LA R/W

PROP LA R/W

PROP LA R/W

91.4 m (300 FT.) TYP.

SR 559

EXIST LA R/W

END EXIST LA R/W

PROP LA R/W

PROP LA R/W

PROP R/W

PROP LA R/W

END PROP LA R/W

AMOCO STATION

TEXACO STATION

FDOC EASEMENT

END PROP LA R/W

S.R.559

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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STATE PROJ. NO.	SHEET NO.
16320-1402	21

END PROP LA R/W

END EXIST LA R/W

100'

PHOTOGRAPHY DATE: OCT 1995
CONCEPT PLAN DATE: JAN 199

START RACEING SCHOOL GREEN VALLEY CORPORATION

PROP LA R/W

EXIST LA R/W

EXIST LA R/W

PROP LA R/W

4

91.4 m (300 FT) TYP.

EXIST LA R/W

PROP LA R/W

PROP LA R/W

BRG GAS

END EXIST LA R/W

END PROP LA R/W

C-R-257

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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TAMPA, FLORIDA

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4
Polk County

INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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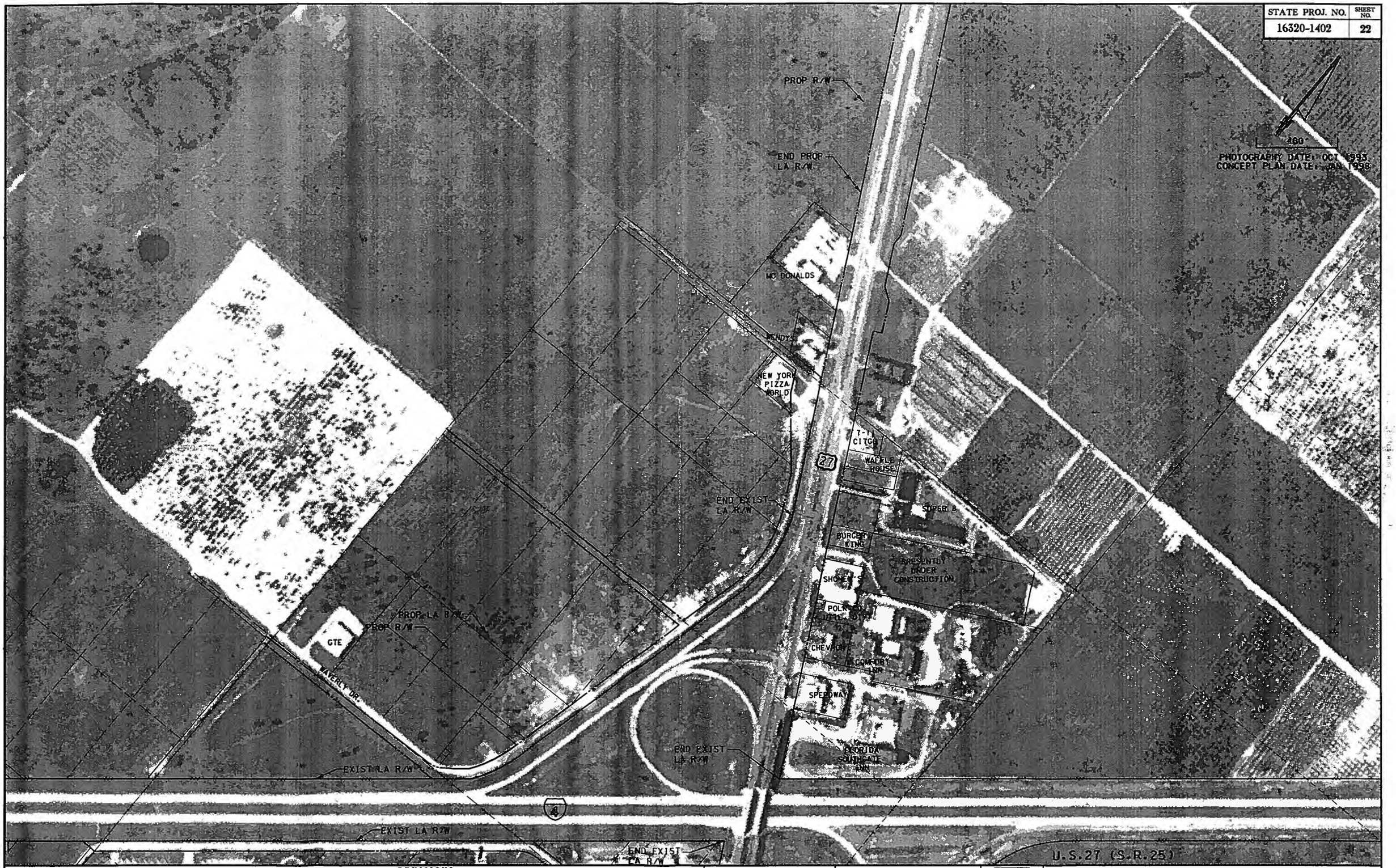

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MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS
TAMPA, FLORIDA

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4
Polk County

INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

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STATE PROJ. NO.	SHEET NO.
16320-1402	23

EXIST LA R/W

END EXIST LA R/W

FLORIDA SOUTHGATE INN

EXIST LA R/W

4

END EXIST LA R/W

FORT SUMMIT CAMP SITES

THEME WORLD CAMPGROUND

HOLIDAY INN EXPRESS

SHELL STATION

TEXACO

Waverly Drive

U.S. 27

PROP R/W

DAYS INN

BOB EVANS

EXXON

PARKING BASEBALL CITY

PROP LA R/W

FIREWORKS ZONE

AMOCO

KEY WEST STYLE SEAFOOD REST.

27

END EXIST LA R/W

HELLER CT.

PERKINS REST.

HARDEE'S

TROPICANA RESORT

DENNY'S

ACME BOOT FACTORY OUTLET

BASEBALL PLAZA

CIRCO/ T-SHIRT KIT

HOME RUN BLVD.

RACETRACK

GREEN LEAF REST.

END PROP LA R/W

U.S. 27 (S.R. 25)

400

PHOTOGRAPHY DATE: OCT 1993
CONCEPT PLAN DATE: JAN 1998

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS
TAMPA, FLORIDA

FLORIDA DEPARTMENT OF TRANSPORTATION

4
Polk County

INTERSTATE 4 - POLK COUNTY
PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY

17 SEP 98
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APPENDIX TO
PRELIMINARY ENGINEERING REPORT

Florida Department of Transportation
District One Bartow, Florida

INTERSTATE 4
(State Road 400)

State Project Number: 16320-1402
Work Program Item Number: 1147948
Federal-Aid Project Number: ACDH-4-1(130)25

Financial Project Number: 201210
Federal Project Number: 0041 130

from West of Memorial Boulevard (State Road 546)
to the Polk/Osceola County Line

June 1998

APPENDIX TO
PRELIMINARY ENGINEERING REPORT

Florida Department of Transportation
District One Bartow, Florida

INTERSTATE 4
(State Road 400)

State Project Number: 16320-1402
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Financial Project Number: 201210
Federal Project Number: 0041 130

from West of Memorial Boulevard (State Road 546)
to the Polk/Osceola County Line

Prepared by:

Michael Baker Jr., Inc.
Consulting Engineers
Tampa, FL

June 1998

APPENDIX - TABLE OF CONTENTS

SECTION 1
CORRIDOR ANALYSIS REPORT

Florida Department of Transportation

CORRIDOR ANALYSIS REPORT

Interstate 4

Project Development and Environment Study

From West of Memorial Boulevard (SR 546)
to the Polk/Osceola County Line
Polk County, Florida

State Project Number: 16320-1402
Work Program Item Number: 1147948
Federal-Aid Project Number: ACDH-4-1(130)25

Prepared by:
MICHAEL BAKER, JR., INC.
Consulting Engineers
Tampa, FL

February 1995
Revised March 1995
Revised April 1995
Revised September 1995

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1.0 INTRODUCTION

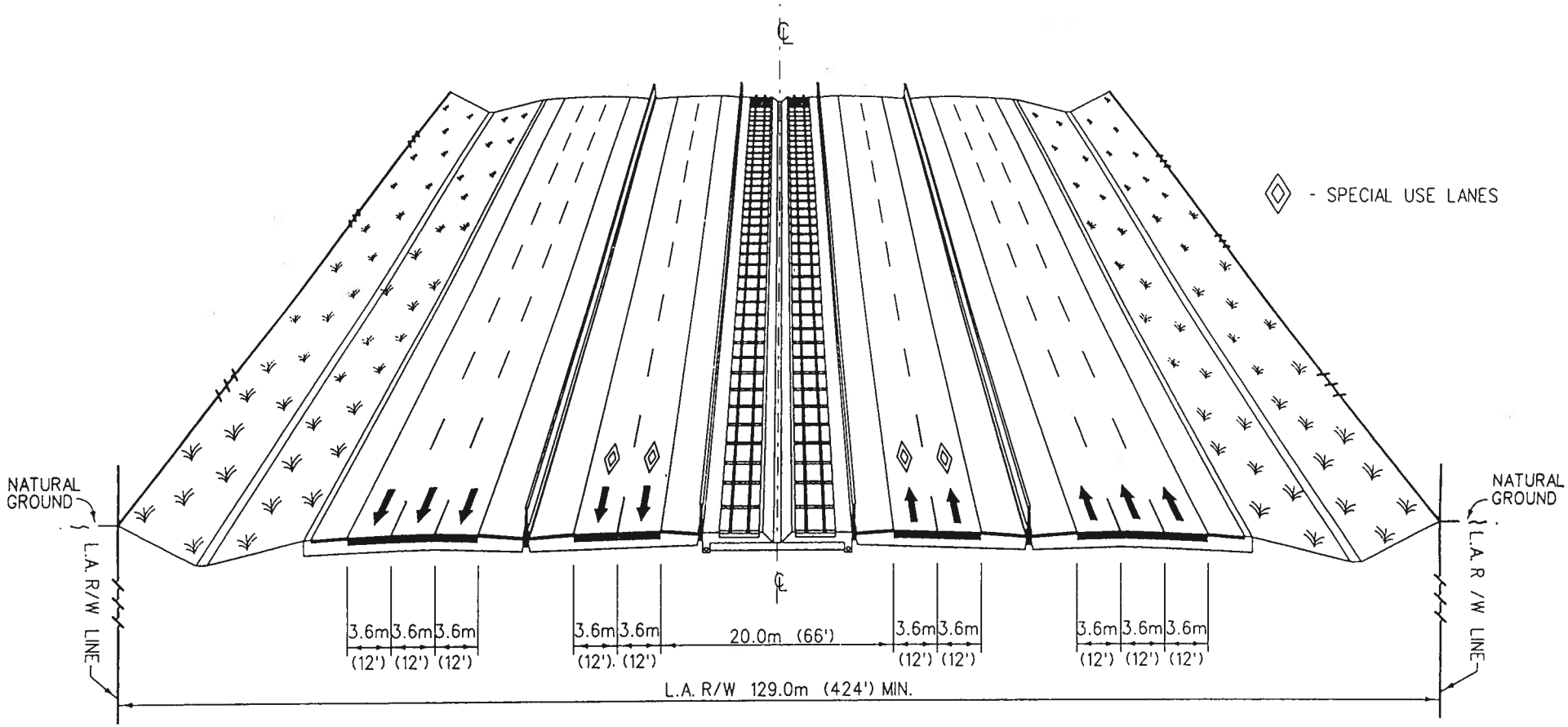
This report has been prepared to supplement the Interstate 4 (I-4) Project Development and Environment Study. It explains the elements considered in determining the avoidance strategy used to recommend shifting the proposed alignment to the right, to the left or to let it remain centered on the existing right-of-way. Left and right are determined by facing up station (east) from the project beginning (west of Memorial Boulevard) at milepost (MP) 2.565. For this project, left is north and right is south. A preliminary evaluation of the existing corridor was conducted using field observations and document research. Once the preferred alternative is selected, more detailed analysis of areas such as flood plains, hazardous materials and petroleum, cultural resources, noise, air quality, wetlands and endangered species will be performed and technical reports will be prepared. The preferred alternative will be developed using the avoidance alignment and typical sections.

This corridor analysis considered the full I-4 Master Plan Ultimate Typical Section right-of-way width of 120.0 m (424 ft) in determining the potential impacts in the existing corridor (see Figure No. 1). Subsequent alternatives analyses may reduce the typical section right-of-way requirements as part of the impact avoidance or minimization. The existing I-4 typical section is shown in Figure No. 2.

Right-of-way costs will be determined during the alternatives analyses for this project and will be a significant consideration in determining the preferred alignment. Costs have not been generated for this analysis but the types of properties involved in potential right-of-way takings have been considered in the avoidance strategy. Engineering constraints and design criteria may also influence the selection of the preferred alternative alignment. This analysis does not consider drainage requirements for storm water management facilities or separation of off site from onsite flows. Subsequent design phases of this project may require adjustment to the recommended typical section and alignment to accommodate drainage requirements.

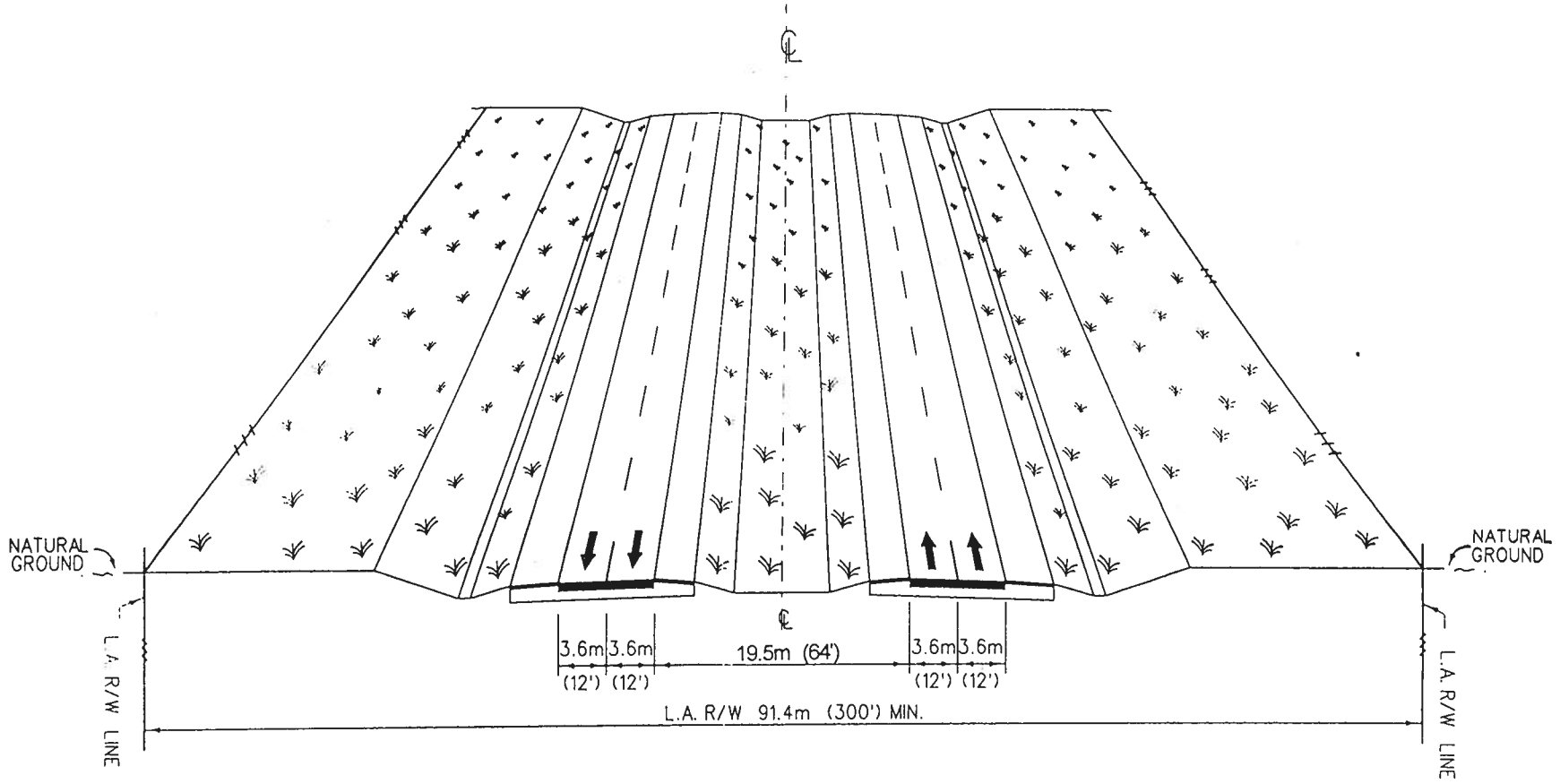
Typical section and preferred alternative development for each of the following segments will utilize the avoidance strategy recommended in this analysis. This strategy is intended to minimize the impacts to wetlands, hazardous materials and petroleum sites, threatened or endangered species, flood plains, noise sensitive sites, historic and archaeologic sites, business and residential relocations, and community services.

The English conversions from metric units in this report are nominal rather than exact. The conversions from metric units reflect former equivalent English standards (where former standards exist). If no former equivalent English standard exists, the conversion from metric units has been rounded to the appropriate proposed level of precision.



I-4 MASTER PLAN ULTIMATE TYPICAL SECTION (6+4 W/ RAIL)
(WEST OF MEMORIAL BLVD. TO THE POLK/OSCEOLA COUNTY LINE)
6 GENERAL PURPOSE LANES
4 SPECIAL USE LANES
RAIL ENVELOPE

FIGURE NO. 1



I-4 EXISTING TYPICAL SECTION (4+0)
4 GENERAL PURPOSE LANES
(WEST OF MEMORIAL BLVD. TO THE POLK/OSCEOLA COUNTY LINE)

FIGURE NO. 2

2.0 ALTERNATE CORRIDORS

The corridor analysis for this project has been limited to the existing corridor. It has been determined by the Florida Department of Transportation (FDOT) that relocation of I-4 to an alternate corridor is not a viable option for this project. Improvements to I-4 in its existing location is an integral part of the overall long-range transportation plan for Polk County and the City of Lakeland. Planned improvements to connecting roadways as well as planned and existing development of the existing corridor are also tied to the improvements to I-4 in its existing location. The FDOT already owns a typically 91.4 m (300 ft) wide right-of-way in the existing corridor. The proposed improvements to I-4 it its existing location would require additional right-of-way, but relocation of the interstate to another area would require the purchase of an entirely new corridor. Many of the environmental impacts encountered some 35 years ago when I-4 was originally constructed would have to be repeated if I-4 were to be moved to a different location (such as the Green Swamp). Development in Polk County has occurred along I-4 because of its function as one of the major east-west travel corridors in the County. Factors such as interchange spacing, gross relocations, community disruption, right-of-way costs and environmental impacts were considered by the FDOT in making the determination that alternate corridors were not available.

3.0 PROJECT DESCRIPTION

This project begins west of Memorial Boulevard at milepost (MP) 2.565 and extends northeasterly to the Polk/Osceola County line (MP 32.022), a study length of about 47.39 km (29.45 mi). The proposed improvements include widening I-4 from four to ten lanes (six general purpose and four special use lanes) with provision for rail service in the median, replacement of all structures and modifying all the interchanges. There are eight interchanges along the project length and one proposed interchange with the Polk County Parkway (by others). I-4 passes through several areas of distinctly different character.

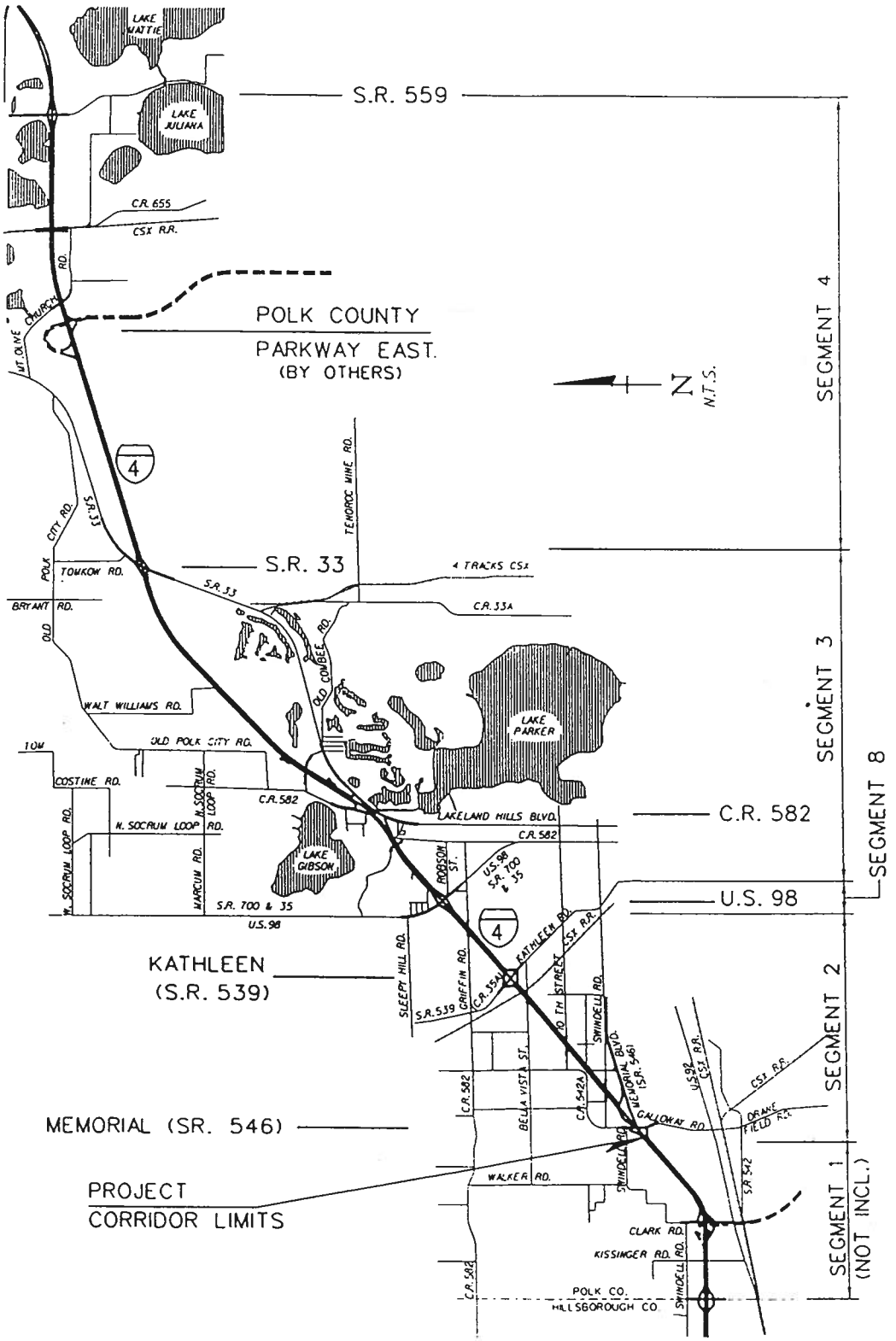
The I-4 PD&E project is comprised of eight segments (numbered 2 through 9). The project segment limits and numbers have been arranged correspond to the anticipated future design contracts for I-4.

Table No. 1
Project Segments
I-4 Project Development and Environment Study

Segment Number	Length	Description
2	5.8 km (3.6 mi)	West of Memorial Boulevard (MP 2.565) to West of US 98 (MP 6.15)
3	9.5 km (5.9 mi)	East of US 98 (MP 6.68) to East of SR 33 (MP 12.608)
4	9.8 km (6,1 mi)	East of SR 33 (MP 12.608) to East of SR 559 (MP 18.669)
5	6.4 km (4.0 mi)	East of SR 559 (MP 18.669) to East of CR 557 (MP 22.647)
6	10 km (6.2 mi)	East of CR 557 (MP 22.647) to West of US 27 (MP 28.838)
7	3.9 km (2.4 mi)	East of US 27 (MP 29.501) to Polk/Osceola County line (MP 32.022)
8	0.8 km (0.5 mi)	US 98 interchange, from West of US 98 (MP 6.15) to East of US 98 (MP 6.68)
9	1.1 km (0.7 mi)	US 27 interchange, from West of US 27 (MP 28.838) to East of US 27 (MP 29.501)

These areas are shown as Segments on the Project Location Map (see Figure No. 3) and are addressed separately in this report. The Segments are addressed in geographical order from west to east in this report (rather than in numerical order).

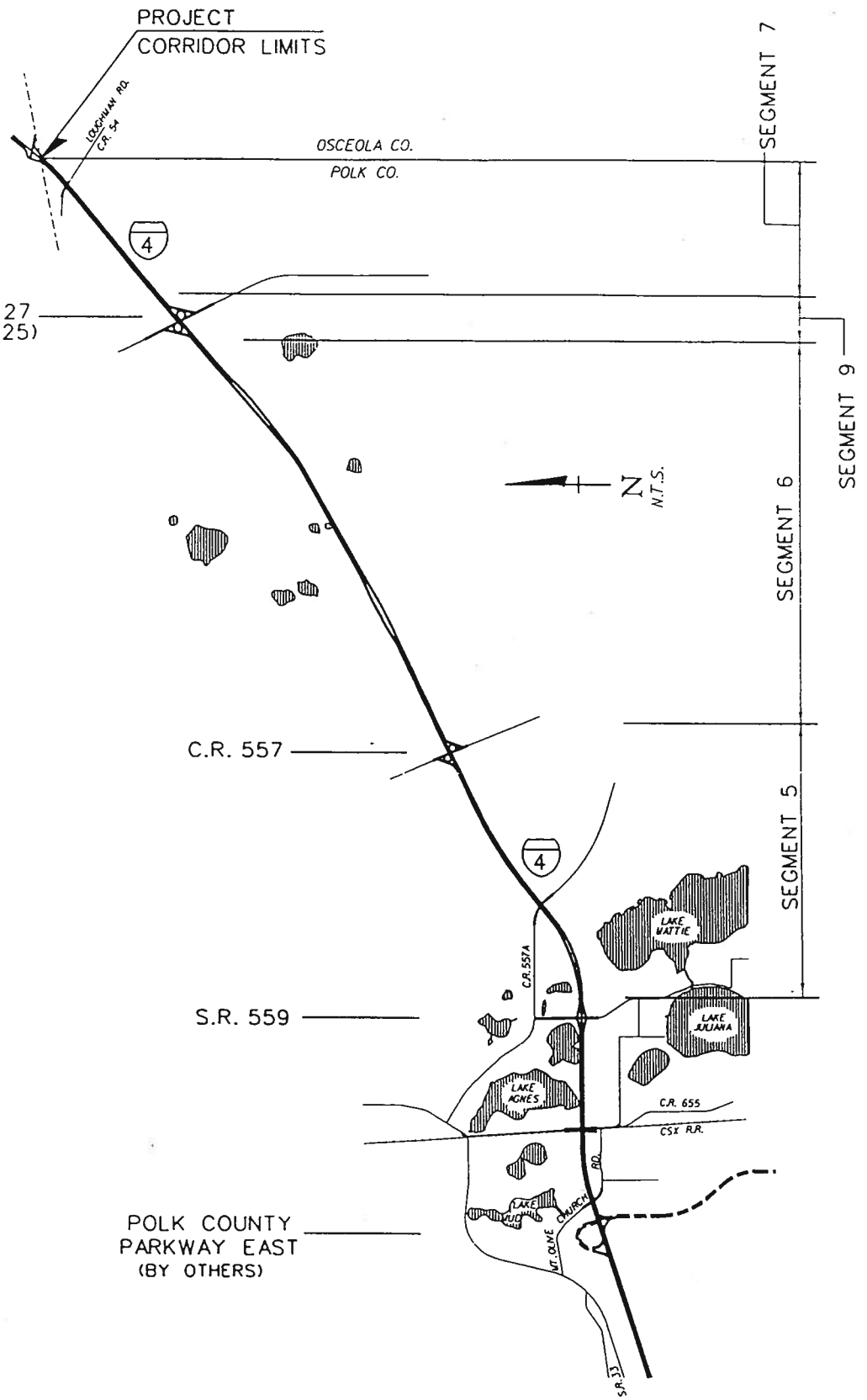
Segment 1 of I-4 is not included in this PD&E Study. Segment 1 covers the area from the Polk/Hillsborough County line to west of Memorial Boulevard, a distance of 5.31 km (3.30 mi). A Design Reevaluation for I-4 Segment 1 was previously conducted in January 1994 as a part of a Design Reevaluation for the Polk County Parkway, in order to evaluate the impacts of the Polk County Parkway interchange on I-4 in the vicinity of Clark Road. This Preliminary Engineering Report excludes Segment 1 of I-4 in Polk County from the Hillsborough/Polk County line to North Galloway Road.



(1 of 2)

PROJECT CORRIDOR LOCATION MAP

FIGURE NO. 3



(2 of 2)

PROJECT CORRIDOR LOCATION MAP

FIGURE NO. 3

3.1 Segment 2 - West of Memorial Boulevard to West of US 98

Segment 2 covers the area from west of Memorial Boulevard (MP 2.565) to west of US 98 (MP 6.15), a length of about 5.8 km (3.6 mi). This area is mixed land use, primarily residential from Memorial Boulevard to 10th Street, mixed residential/commercial/agricultural from 10th Street to Kathleen Road, and commercial from Kathleen Road to west of US 98. I-4 in Segment 2 is classified as an Urban Interstate Highway. Segment 2 contains two interchanges (Memorial Boulevard and Kathleen Road) and five overpasses (Swindell Road, 10th Street, Bella Vista Street, CSX Railroad and Griffin Road).

The New Home Baptist Church and cemetery is situated in the northwest quadrant of the Memorial Boulevard interchange adjacent to the existing right-of-way of the westbound entrance ramp. The Victory Assembly of God Church is located on the left side of I-4 between Griffin Road and US 98.

Wetlands are present adjacent to the right-of-way on both sides of the roadway. Wetland areas are on the left side of I-4, at the Memorial Boulevard interchange, between Swindell Road and North Galloway Road, and between North Galloway Road and 10th Street. Wetlands are also present on the right side of I-4 between 10th Street and Kathleen Road.

Seven potential hazardous materials and petroleum contamination sites are situated on the right side of I-4 in Segment 2. It is anticipated that all of these sites will be ranked as having a LOW potential for contamination problems.

Relocated Crutchfield Road runs adjacent to the right I-4 right-of-way between Swindell Road and 10th Street.

The Lakeland Northwest Well Field has four well heads situated adjacent to the right right-of-way of I-4 between Kathleen Road and Griffin Road. I-4 runs through the well field zone of protection from just west of Kathleen Road to just west of US 98.

A Florida Gas Transmission natural gas pipeline has recently (1994) been constructed within a 12.2 m (40 ft) easement adjacent to the left I-4 right-of-way from Kathleen Road to the eastern end of Segment 2.

Federal Emergency Management Agency (FEMA) 100-year flood plains are located on both sides of I-4 adjacent to the right-of-way between 10th Street and Kathleen Road.

Potentially noise sensitive residential areas are located on the left side of I-4 at the Memorial Boulevard interchange and North Galloway Road and on the right side at 10th Street and the southwest quadrant of the Kathleen Road interchange.

No historic or archaeological sites, threatened or endangered species or community services have been identified in Segment 2.

3.2 Segment 8 - US 98 Interchange

Segment 8 covers the area of the US 98 interchange from MP 6.15 to MP 6.68 , a length of about 0.8 km (0.5 mi). Land use is primarily commercial in all four quadrants of the US 98 interchange with

residential land uses along the right side, east and west of US 98. I-4 is classified as an Urban Interstate Highway in Segment 8.

Eight potential hazardous materials and petroleum contamination sites have been identified in Segment 8, all adjacent to US 98. Four sites are on the left side of I-4 (two in the northwest quadrant and two in the northeast quadrant) and four on the right side (three in the southwest quadrant and one in the south east quadrant). It is anticipated that all of these sites will be ranked as having a MEDIUM or HIGH potential for contamination.

I-4 passes through the Lakeland Northwest Well Field zone of protection at the western end of Segment 8.

Bald eagle nesting territory PO-49A is located about 1.2 km (0.75 mi) south of I-4 and west of US 98. This project falls within the recommended minimum secondary management zone for bald eagle habitat protection, 1.6 km (1.0 mi). These eagles have apparently adapted to their urbanized environment. It is anticipated that the proposed improvements to I-4 would not significantly degrade the eagle's environment.

Two potentially noise sensitive residential areas are on the right side of I-4 at the western and eastern ends of Segment 8.

A Florida Gas Transmission (FGT) natural gas pipeline has recently (1994) been constructed within a 12.2 m (40 ft) easement adjacent to the left right-of-way of I-4 east and west of the US 98 interchange.

No flood plains, wetlands, historic or archaeological sites or community services have been identified in Segment 8.

3.3 Segment 3 - East of US 98 to East of SR 33

Segment 3 covers the area from east of US 98 (MP 6.68) to east of SR 33 (MP 3.033), a length of about 9.5 km (5.9 mi). This area is mixed land use, primarily residential from east of US 98 to Walt Williams Road and agricultural/natural from Walt Williams Road to east of SR 33. I-4 in Segment 3 is classified as an Urban Interstate Highway. Segment 3 contains two interchanges (CR 582 - Socrum Loop Road and SR 33) and two overpasses (Carpenter's Way Road and Old Combee Road).

The Lake Gibson Church of Christ is located in the northeast quadrant of the Socrum Loop Road interchange adjacent to the rights-of-way of I-4 and Socrum Loop Road. The Apostolic Church of Jesus Christ is located left of I-4 at Walt Loop Road. The Wendell Watson Elementary School (a potential Section 4(f) resource) is located left of I-4 at Walt Williams Road.

Wetlands are present along the left side of I-4 from east of US 98 to Socrum Loop Road and both sides of I-4 west of and through the SR 33 interchange area.

Nine potential hazardous materials and petroleum contamination sites are located along the left side of I-4 and six along the right side in Segment 3. It is anticipated that the six sites along the left side will be ranked as having a LOW potential for contamination problems. Of the nine sites along the left side of I-4, two sites between Old Combee Road and SR 33 are anticipated to be ranked as having a

MEDIUM potential for contamination.

Relocated Crevasse Street runs along the left I-4 right-of-way between the US 98 interchange and Carpenter's Way Road. Relocated Walt Williams Road runs adjacent to the left I-4 right-of-way between Old Combee Road and SR 33.

A Florida Gas Transmission (FGT) natural gas pipeline has recently (1994) been constructed within a 12.2 m (40 ft) easement adjacent to the left right-of-way of I-4 for the length of Segment 3.

GTE owns a fiber optic facility building east of the SR 33 ramps at the CR 582 (Socrum Loop Road) interchange.

The Orlando Utility Commission power line easement is adjacent to the right I-4 right-of-way from east of Walt Williams Road to SR 33.

FEMA 100-year flood plains are located along the left side of I-4 between US 98 and Socrum Loop Road and along the right side at Walt Williams Road. FEMA flood plains cross I-4 at two locations, the Socrum Loop Road interchange and Walt Williams Road.

Segment 3 contains two existing rest areas, one on the right (eastbound) between Socrum Loop Road and Old Combee Road and one on the left (westbound) just east of Old Combee Road.

Segment 3 passes through the residential area of North Lakeland west of CR 582. The Paddock Apartment complex lies adjacent to the left right-of-way east of CR 582.

No historic or archaeological sites, threatened or endangered species or community services have been identified in Segment 3.

3.4 Segment 4 - East of SR 33 to East of SR 559

Segment 4 includes the area from east of SR 33 (MP 12.608) to east of SR 559 (MP 18.669), a length of about 9.8 km (6.1 mi). Land use is primarily agriculture/natural with scattered commercial and residential. I-4 is classified as a Rural Interstate in Segment 4. Segment 4 contains two interchanges (Polk County Parkway East, by others, and SR 559) and two overpasses (Mt. Olive Church Road and CR 655/CSX Railroad, abandoned).

Wetlands are present along both sides of I-4 from east of SR 33 to Mt. Olive Church Road. Lake Agnes and Little Lake Agnes are adjacent to the right-of-way on the left side of I-4 just west of SR 559.

FEMA 100-year flood plains are adjacent to both sides of the I-4 right-of-way about midway between SR 33 and Mt. Olive Church Road and again east of CR 655 at Lake Agnes and Little Lake Agnes.

Four potential hazardous materials and petroleum sites are located along the left side of I-4 in Segment 4 and two sites are located along the right side. All of these sites are anticipated to be ranked as having a MEDIUM potential for contamination.

The Orlando Utility Commission power line easement is adjacent to the right I-4 right-of-way from east

of SR 33 to west of Mt. Olive Church Road (at the proposed Polk County Parkway interchange).

No churches, schools, historic or archaeological sites, threatened or endangered species, noise sensitive areas or community services have been identified in Segment 4.

3.5 Segment 5 - East of SR 559 to East of CR 557

Segment 5 covers the area from east of SR 559 (MP 18.669) to east of CR 557 (MP 22.647), a length of about 6.4 km (4.0 mi). Land use in this segment is primarily agriculture/natural. I-4 is classified as a Rural Interstate Highway in Segment 5. Segment 5 contains one interchange (CR 557) and one overpass (CR 557A).

Wetlands are present along both sides of I-4 for the length of Segment 5. Wetlands are also present in the bifurcated median between SR 559 and CR 557A.

One potential hazardous materials and petroleum site is located along the right side of Segment 5 at the CR 557 interchange. It is anticipated that this site will be ranked as having a LOW potential for contamination.

The Orlando Utility Commission power line easement is adjacent to the right I-4 right-of-way about 1.4 km (0.9 mi) east of the CR 557A overpass.

FEMA 100-year flood plains are located along both sides of I-4 for the length of Segment 5.

No churches, schools, historic or archaeological sites, threatened or endangered species, noise sensitive areas or community services have been identified in Segment 5.

3.6 Segment 6 - East of CR 557 to West of US 27

Segment 6 covers the area from east of CR 557 (MP 22.647) to west of US 27 (MP 28.838), a length of about 10.0 km (6.2 mi). Land use in Segment 6 is primarily agriculture/natural/mining. This segment traverses the Green Swamp, designated as a State Area of Critical Concern. I-4 in Segment 6 is classified as a Rural Interstate Highway. Segment 6 does not contain any interchanges or overpasses.

Wetlands are present along both sides of I-4 for the length of Segment 6 and in the bifurcated median areas.

Two potential hazardous materials and petroleum sites have been identified along the right side of I-4 and one site along the left side. These sites are located at the eastern end of Segment 6. It is anticipated that all three sites will be ranked as having a LOW potential for contamination.

FEMA 100-year flood plains are present along both sides of I-4 from east of CR 557 to about 1.2 km (0.75 mi) west of US 27.

The potential exists to encounter threatened or endangered species at any time in the area of the Green Swamp. No listed species or critical habitat areas which would be impacted by the proposed improvements to I-4 were noted in the field reviews of Segment 6.

No churches, schools, historic or archaeological sites, noise sensitive areas or community services have been identified in Segment 6.

3.7 Segment 9 - US 27 Interchange

Segment 9 covers the area of the US 27 interchange from MP 28.838 to MP 29.501, a length of about 1.1 km (0.7 mi). Land use is primarily commercial in the northeast and southwest quadrants of the US 27 interchange and north and south of the interchange along US 27. The eastern and western ends of Segment 9 along I-4 are primarily agricultural. I-4 is classified as a Rural Interstate Highway in Segment 9.

Three potential hazardous materials and petroleum sites have been identified along the left side of I-4 and 12 along the right side. It is anticipated that two of the sites on the left side and 10 along the right side will be ranked as having a medium to high potential for contamination.

No wetlands, flood plains, churches, schools, historic or archaeological sites, threatened or endangered species, noise sensitive areas or community services have been identified in Segment 9.

3.8 Segment 7 - East of US 27 to the Osceola County Line

Segment 7 covers the area from east of US 27 (MP 29.501) to the Polk/Osceola County line (MP 32.022), a study length of 3.9 km (2.4 mi). Land use is primarily agricultural/natural/mining. This segment cuts through an area known as the Davenport Swamp. I-4 is classified as a Rural Interstate Highway in Segment 7. Right-of-way widths vary in this segment due to a bifurcated median about midway through the segment, beginning at about MP 29.75 and ending at about MP 31.35. The existing right-of-way at the beginning and end of the segment is 91.4 m (300 ft). Through the bifurcated area the right-of-way widens to a maximum of 117.7 m (386 ft). There are no interchanges and one overpass (CR 54 - Loughman Road) in Segment 7.

There are approximately 15 properties which could be affected, but no relocations are expected. One of the properties is a University of Florida Agricultural TIITF property.

There are four aerial power lines in the segment (three at the CR 54 crossing).

Wetlands are primarily located along both sides of the roadway in the central and eastern sections of the segment.

Two clans of Florida scrub jays have been identified immediately west of the CR 54 overpass on either side of I-4.

No churches, schools, contamination sites, historic or archaeological sites, noise sensitive areas or community services have been identified in Segment 7.

4.0 PROPOSED ALIGNMENT RECOMMENDATIONS

The proposed alignment recommendations are based on a preliminary corridor reconnaissance and data collected during the master plan phase of the I-4 project. Subsequent detailed analyses of the environmental concerns expressed in this report may alter the final preferred alignment. The alignment recommendations in the following sections of this report were developed as a strategy to avoid and minimize impacts to the human and natural environment of the I-4 corridor.

Generally, a centered alignment for the proposed improvements would make maintenance of traffic (MOT) during construction simpler and less costly. Except in the bifurcated median areas, the existing I-4 lanes could be kept open while the six new general purpose lanes are constructed. This would significantly minimize or completely avoid additional impacts during the construction phase (such as temporary pavement detours outside the proposed right-of-way - construction easements). Because of the simplification of MOT (unless significant environmental impacts dictate otherwise), this report recommends a centered alignment for the proposed improvements to I-4.

Specific alignment recommendations for each of the project segments are described in the following sections:

4.1 Segment 2 - West of Memorial Boulevard to West of US 98

The proposed improvements to I-4 west of this project are shifted to the right to avoid or minimize the business relocations on the left side of I-4 and to avoid impacts to the New Home Baptist Church Cemetery on the left side at the Memorial Boulevard interchange. As such, this project would begin shifted to the right. This analysis recommends that the proposed improvements for this project transition from the right to a centered alignment as quickly as engineering constraints allow and remain centered to west of the Kathleen Road interchange. The alignment should shift to the left between Kathleen Road and US 98 to avoid impacts to the well heads along the right right-of-way. The alignment should transition back to the center west of the US 98 interchange. The proposed improvements to US 98 north of the I-4 interchange (Segment 8) are currently being designed to accommodate a centered I-4 alignment through the interchange. The improvements to US 98 south of I-4 are proposed to accommodate a centered I-4 alignment. Following the above alignment recommendations through Segment 2 would serve to reduce impacts to adjacent commercial and residential properties. The use of a reduced right-of-way typical section (see Section 5.0 of this report) should be considered. The combination of a centered alignment and a reduced right-of-way typical section would serve to minimize impacts to adjoining wetlands and relocations. The area from Kathleen Road to the eastern end of Segment 2 is of critical importance because of the well field zone of protection and the four well heads adjacent to the right right-of-way of I-4 and the Florida Gas Transmission (FGT) pipeline adjacent to the left right-of-way.

4.2 Segment 8 - US 98 Interchange

Because of the recommended centered alignment in Segment 2, the proposed improvements to US 98, the potential business and residential relocations, the well heads and FGT pipeline, this corridor analysis recommends that the proposed improvements to I-4 in Segment 8 be centered on the existing alignment. As with Segment 2, an urban interstate typical section constructed within the existing right-of-way

should also be considered for Segment 8.

4.3 Segment 3 - East of US 98 to East of SR 33

I-4 west of Segment 3 would be centered through the US 98 interchange. The alignment should transition to the right west of the CR 582 interchange and remain to the right through the interchange to minimize impacts to the Lake Gibson Church of Christ, Holiday Inn and the Paddock Club Apartments. A reduced typical section constructed within the existing right-of-way should be considered for use in Segment 3. A centered alignment would minimize impacts to relocated Crevasse Street and Walt Williams Road, which front on the I-4 right-of-way. Centering within the existing right-of-way would avoid impacts to the Wendell Watson Elementary School property, a Section 4(f) resource. The FGT and Orlando Utility Commission (OUC) utilities which border the I-4 right-of-way would not be impacted with a centered alignment and reduced typical section. It is the recommendation of this analysis that I-4 be centered on the existing alignment through Segment 3.

4.4 Segment 4 - East of SR 33 to East of SR 559

The recommendation at the western end of this segment is for a centered alignment. The Polk County Parkway Interchange has been designed to accommodate a centered I-4 alignment. The OUC power line easement is adjacent to the right I-4 right-of-way from the western end of Segment 4 to the Polk County Parkway interchange. A centered alignment (considering a reduced right-of-way typical section) would help to minimize wetland impacts and would not require the relocation of the OUC power poles (the proposed I-4 right-of-way would encroach on the OUC easement, but not the poles). This analysis recommends that the proposed improvements to I-4 be centered on the existing right-of-way from east of SR 33 to west of CR 655. The alignment should shift to the right east of CR 655 to avoid encroaching into Lake Agnes and Little Lake Agnes. The horizontal curve immediately west of CR 655 would be a logical place to transition from a centered alignment to a right alignment. A right alignment would continue through the SR 559 interchange and transition back to a centered alignment immediately east of SR 559.

4.5 Segment 5 - East of SR 559 to East of CR 557

At the western end of Segment 5, I-4 would be centered on the on the existing alignment east of the SR 559 interchange. The use of a reduced typical section constructed within the existing right-of-way should be considered in Segment 5. The proposed rest areas have been designed to accommodate a centered I-4 alignment. This analysis recommends that I-4 be centered on the existing alignment and a reduced typical section be considered for use in Segment 5.

4.6 Segment 6 - East of CR 557 to West of US 27

The alignment recommendations at the western and eastern ends of Segment 6 are for a centered alignment. The bifurcated median areas in this segment provide sufficient existing right-of-way for the proposed improvements using a reduced rural interstate typical section 104.9 m (344 ft). Centering the proposed improvements on the existing alignment would take full advantage of the existing right-of-way and would reduce impacts to wetlands and wildlife habitat in the area of the Green Swamp. This

alignment recommends centering the I-4 alignment and considering a reduced rural typical section.

4.7 Segment 9 - US 27 Interchange

Right-of-way and construction costs would likely be the determining factors regarding the alignment of I-4 through the US 27 interchange area. Several interchange concepts are being considered at US 27, including 3-level and 4-level configurations. Business relocations and damage costs would be significant with any alignment shift in Segment 9. This analysis does not make a specific alignment recommendation for Segment 9.

4.8 Segment 7 - East of US 27 to the Osceola County Line

It is recommended that the alignment be centered on the existing right-of-way at the western end of Segment 7. The alignment should shift to the left within the existing right-of-way in the bifurcated median area to minimize impacts to wetlands and take advantage of the expanded existing right-of-way in the bifurcated area. Centering on the existing right-of-way and stayng within the existing right-of-way would reduce the significance of the wetland impacts by reducing the area of impact on any one side thus making the impacts more of a linear nature. It is anticipated that the proposed I-4 alignment should transition to a centered alignment west of the CR 54 (Loughman Road) overpass and remain centered for the remainder of the project.

5.0 RIGHT-OF-WAY REQUIREMENTS

The existing I-4 mainline right-of-way is typically 91.4 m (300 ft) wide. The I-4 Master Plan Ultimate Section (see Figure No. 1) would typically require 129.0 m (424 ft) of right-of-way or an additional 37.6 m (124 ft). I-4 is classified as an Urban Interstate from west of Memorial Boulevard to SR 33 (Segments 2, 8 and 3) and a Rural Interstate from SR 33 to the Osceola County line (Segments 4, 5, 6, 9 and 7). The proposed ten-lane with rail provision improvements could be constructed within the existing right-of-way of 91.4 m (300 ft). Retaining walls and storm sewer systems would have to be utilized in order to accomplish this, but would effectively avoid or minimize the potential impacts caused by the taking of additional right-of-way. This preliminary corridor analysis recommends that an urban type interstate typical section constructed within the existing right-of-way be evaluated for use from west of Memorial Boulevard to SR 33. This analysis also recommends that a rural interstate typical section with reduced right-of-way be evaluated for use from SR 33 to the Polk/Osceola County line. The 28.7 m (94 ft) border shown on the I-4 Master Plan Ultimate Typical Section could possibly be reduced to about 15 to 18 m (50 to 60 ft). This reduction of additional right-of-way requirements from 37.6 m (124 ft) to about 12 to 15 m (40 to 50 ft) would serve to significantly minimize (or possibly avoid) some of the environmental impacts in the rural area (particularly wetland impacts).

6.0 REFERENCES

Interstate 4 Multimodal Interstate Master Plan, Polk County, Florida Department of Transportation, Michael Baker Jr., Inc., November 1994.

Segment 2
Interstate 4 Section 2, Alignment Analysis, From West of Memorial Boulevard to West of US 98, SPN: 16320-1445, WPI No. 1147955, Polk County, Parsons Brinckerhoff Quade & Douglas, No Date.

Segment 3
Interstate 4 Roadway Improvements, From East of US 98 to East of SR 33, Alignment Analysis Report, State Project No. 16320-1434, W.P.I. No. 1147947, Greiner, Inc., September 1994.

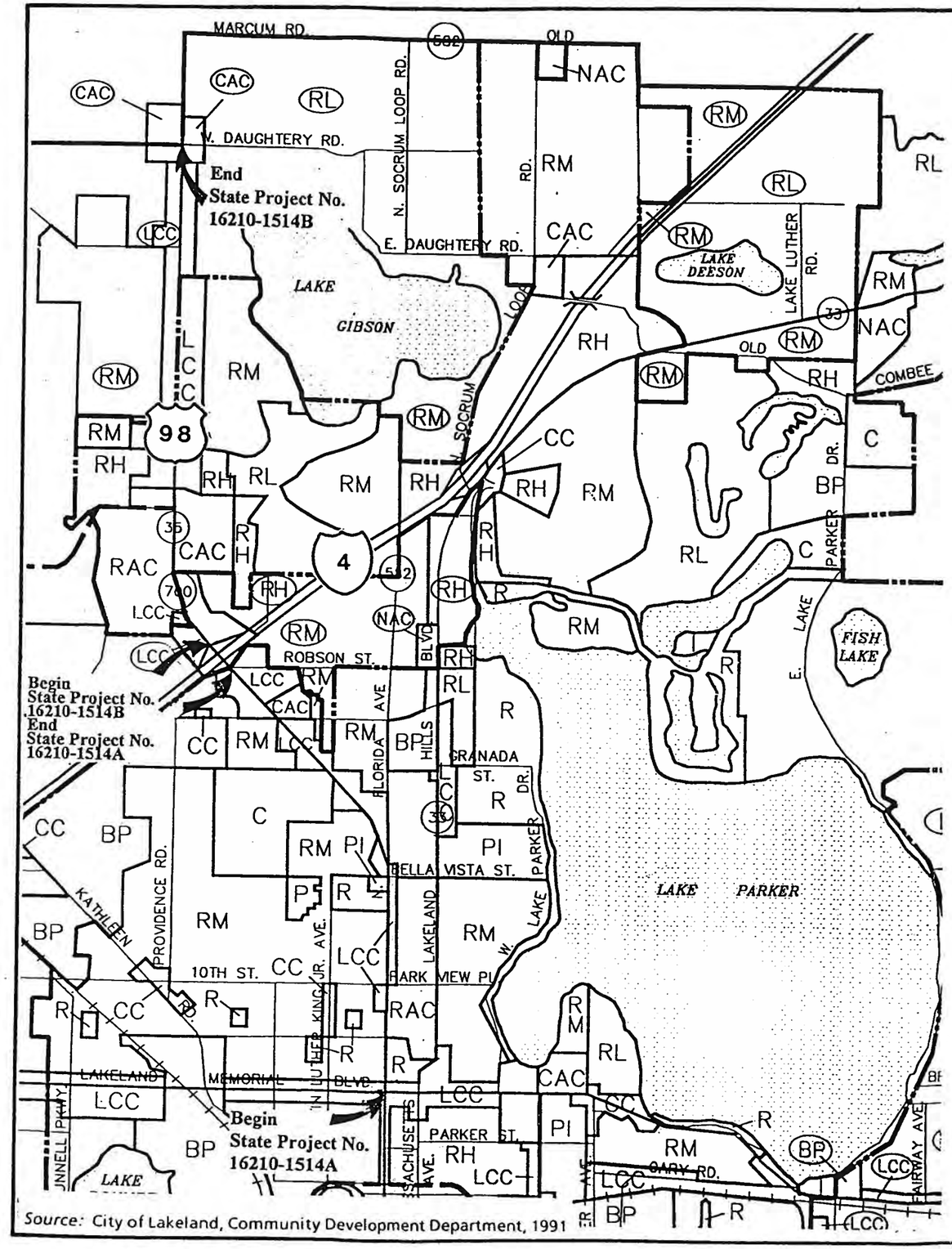
Segment 4
Technical Memorandum, I-4 Polk County, From East of State Road 33 to East of State Road 559 , State Project No. 16320-1436, W.P.I. 1147952, 15 Percent Alignment Analysis, Post, Buckley, Shuh and Jernigan, No Date.

Segment 5
Alignment Analysis, Interstate 4 from State Road 559 to State Road 557 in Polk County, WPI No. 1147953, State Project No. 16320-3440, Bowyer-Singleton Associates, Inc., No Date.

Segment 6
Alignment Justification Report, I-4 (State Road 400), From East of S.R. 557 to West of U.S. 27, Polk County, Florida, David Volkert & Associates, Inc., February 1995.

Segment 7
Alignment Justification Report for I-4 ,From East of US 27 to West of the Osceola County Line, State Project No. 16320-1426, WPI No. 1147943, Tampa Bay Engineering, Inc., November 22, 1994.

SECTION 2
FUTURE LAND USE MAPS
FOR LAKELAND AND POLK COUNTY



Source: City of Lakeland, Community Development Department, 1991

LEGEND

RAC	REGIONAL ACTIVITY CENTER
CAC	COMMUNITY ACTIVITY CENTER
NAC	NEIGHBORHOOD ACTIVITY CENTER
LCC	LINEAR COMMERCIAL CORRIDOR
CC	CONVENIENCE CENTER
BP	BUSINESS PARK
I	INDUSTRIAL
RH	RESIDENTIAL HIGH
RM	RESIDENTIAL MEDIUM
RL	RESIDENTIAL LOW
PI	PUBLIC AND INSTITUTIONAL
R	RECREATION
C	CONSERVATION
P	PRESERVATION

URBAN DEVELOPMENT AREA BOUNDARY

1990 CORPORATE BOUNDARY

FUTURE ROADS

RL — Suggested compatible land use contiguous to 1990 corporate boundary

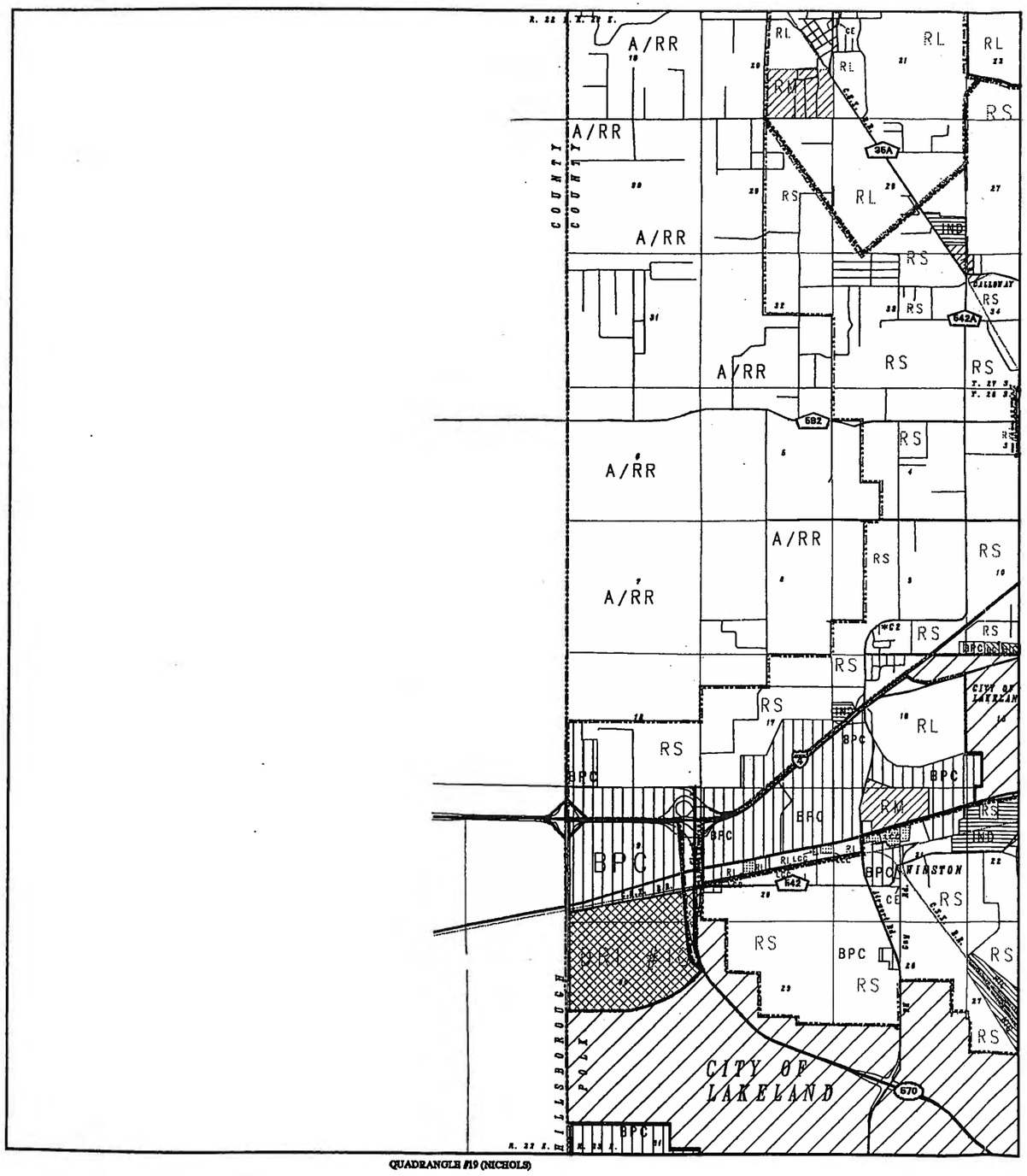
LAKES

Lakeland Year 2000 Land Use Plan

QUADRANGLE # 12
PLANT CITY EAST, FLA.

2010 FUTURE LAND USE

QUADRANGLE #06 (SOCRUM)



QUADRANGLE #19 (NICHOLS)

QUADRANGLE #13 (LAKELAND)

LEGEND

DEVELOPMENT-AREA BOUNDARIES

- Urban-Development Areas (UDA) (Public Water & Sewer--Existing and Proposed within 5 years)
- Urban-Growth Areas (UGA) (Public Water & Sewer Proposed within 6-10 years)
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- Utility-Enclave Areas (UEA) (Isolated Existing Sewered Areas)

LAND-USE CATEGORIES

- RCC — Rural-Cluster Center
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- DRI — Development of Regional Impact
- PRE-DRI — DRI Scale Projects
- SPA — Ridge Special Protection Area
- SPA — Rural Special Protection Area
- SPA — Polk City Special Protection Area
- SAP — Selected-Area Plan
- X — Indicates Extra Dev. Std's (see text)

GENERAL LEGEND

- Incorporated Area
- Interstate Highway
- U.S. Highway
- State Highway
- County Roads
- Paved County Roads
- Polk County Boundary
- Green Swamp Area of Critical State Concern Boundary
- Proposed Transportation Linkages
- Railroad Lines
- Section Lines
- 24 Section Numbers
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- Lakes/Water
- Proposed Interchanges
- * County Recreation Areas

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1,000 SCALE 1:63,360

PREPARED BY THE
POLK COUNTY
BOARD OF COUNTY COMMISSIONERS
PLANNING DIVISION
PLOTDATE: FEBRUARY 13, 1998

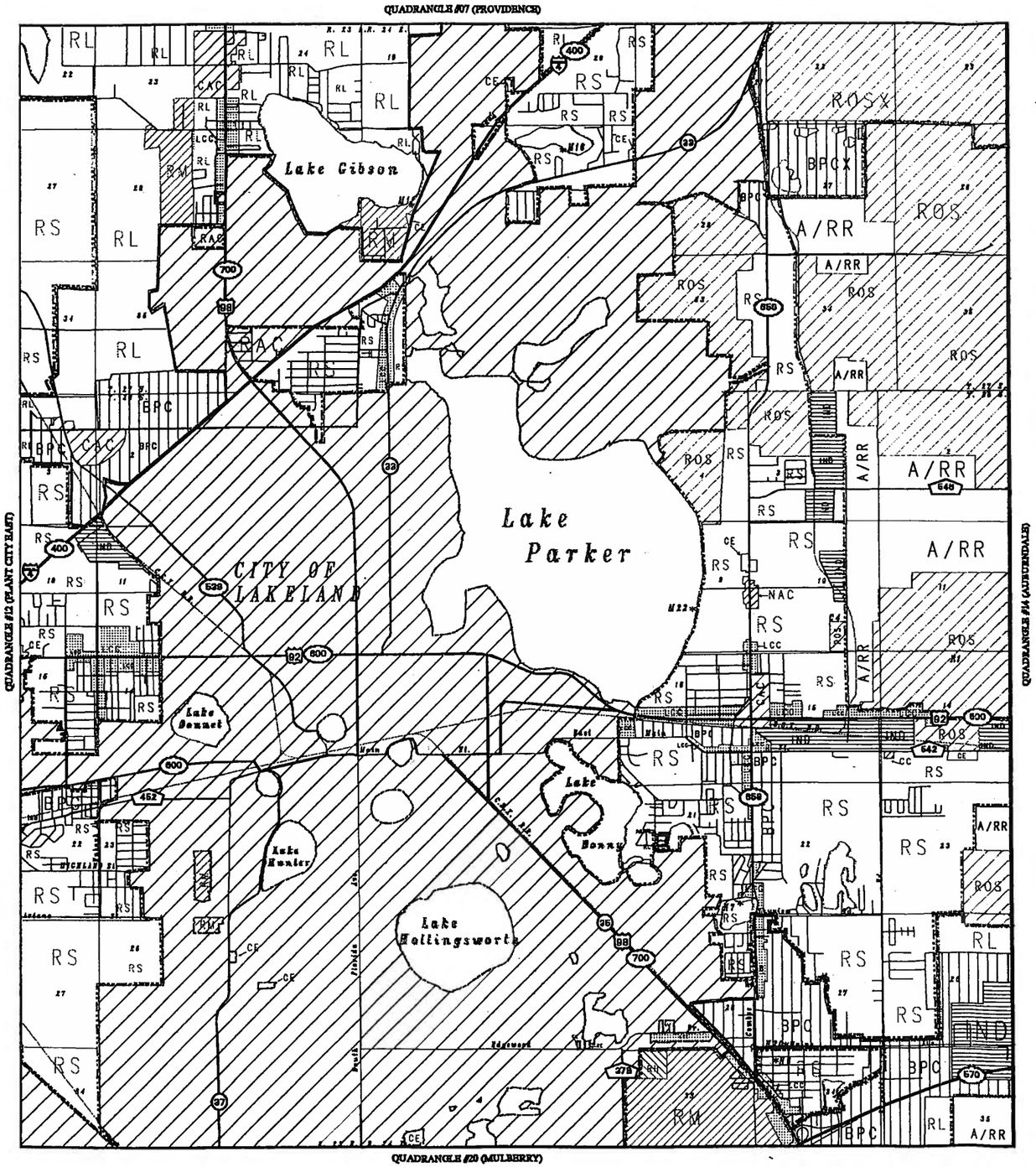
THIS IS ONE OF THE "POLK COUNTY FUTURE LAND USE MAP SERIES" IT MUST BE INTERPRETED IN CONJUNCTION WITH OTHER MAPS OF THE SERIES, AND THE OBJECTIVES AND POLICIES OF THE "POLK COUNTY COMPREHENSIVE PLAN" -- SPECIFICALLY THE "FUTURE LAND USE ELEMENT".

REVISIONS

NO.	DESCRIPTION	DATE
93A-02	154 ACS FROM RS TO BPC & LCC, US 92/COUNTY LINE RD., 20 & 21-28-23	25 MAY 93
93B-01	70 ACS FROM RS TO BPC, COUNTY LINE & SWINDELL RD, 18-28-23	31 JAN 94
93B-19	750 ACS FROM SDA TO UDA, COUNTY LINE ROAD/S OF I-4, 19 & 30-28-23	31 JAN 94
94S-03	2.03 ACS FROM BPC TO CE, EAST OF CR 542, 21-26-23	30 AUG 94
95A-01	1,015 ACS FROM SDA TO UDA,125 ACS FROM RS TO RL, 3,16,17,20,21,-28 -23, 27,28,33-28 -24.	17 OCT 95
96A-12	DEVELOPMENT AREA CHANGE	19 DEC 96
98S-04	6.12 ACS OF BPC TO HIC AT 3225 SWINDELL RD. E OF CRUTCHFIELD RD., 10-28-23	17 FEB 98

POLK COUNTY, FLORIDA
COMPREHENSIVE PLAN
GENERALIZED
2010 FUTURE LAND USE
NOVEMBER 18, 1992
QUADRANGLE # 12
PLANT CITY EAST, FLA.

QUADRANGLE # 13
LAKELAND, FLA.



2010 FUTURE LAND USE

LEGEND

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1,000 SCALE 1:63,360

PREPARED BY THE
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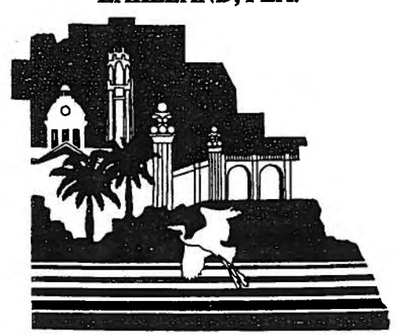
REVISIONS

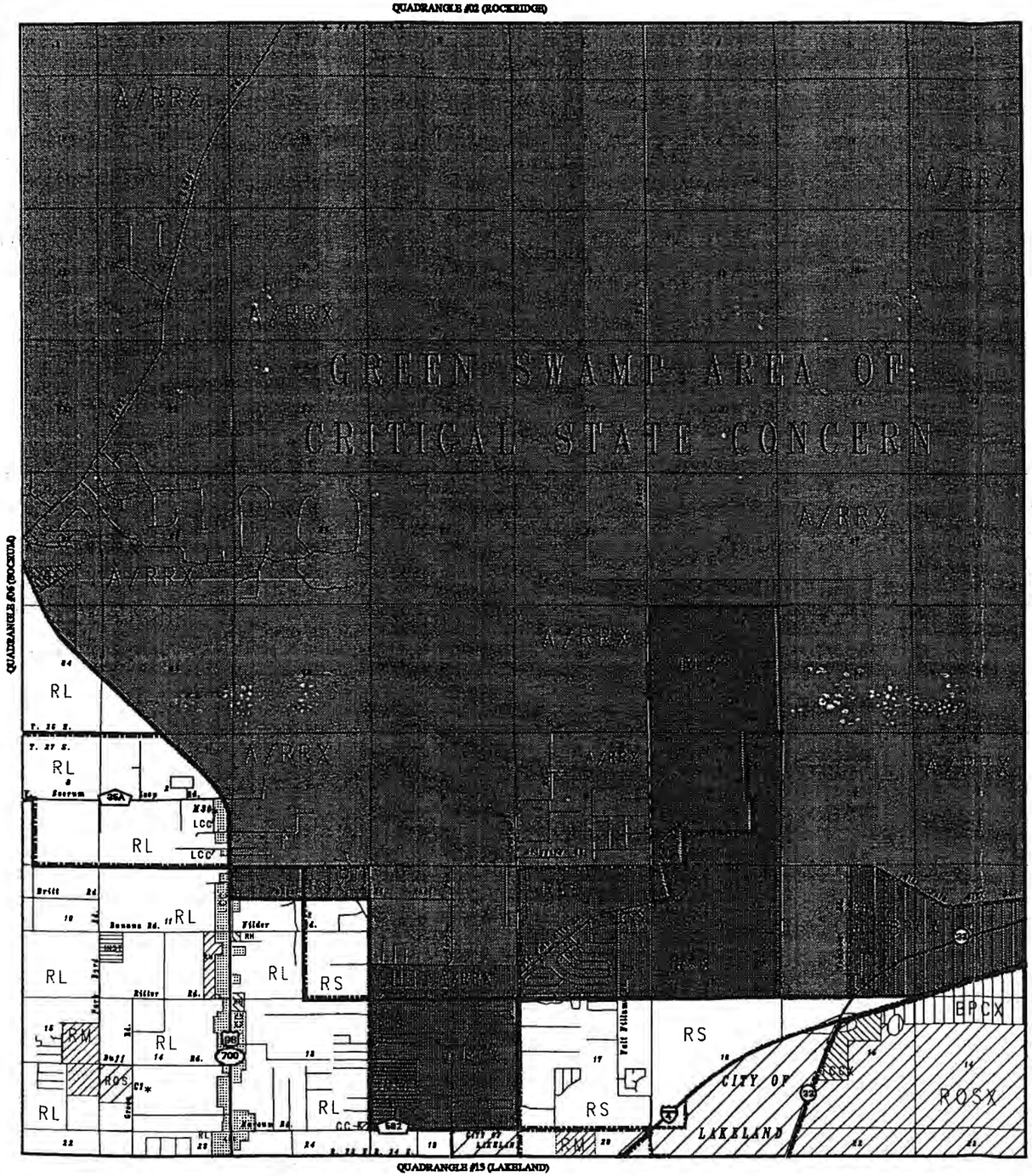
NO.	DESCRIPTION	DATE
93A-06	5 ACS FROM CITY TO CE, RIDGEWOOD DR 29-28-24	25 MAY 93
93A-08	1 ACRE FROM RL TO LCC, US 98/ GIB-GALLOWAY, 23-27-23	25 MAY 93
93B-02	4 ACS FROM RS/SDA TO INST/UDA, 7 ACS FROM RS/SDA TO RL/UDA, LONGFELLOW BLVD, 21-28-24	31 JAN 94
93B-09	160 ACS FROM BPC TO IND, MAINE AVE, 26 & 35-28-24	31 JAN 94
94A-13	8 ACS FROM RS TO LCC, US 92 & N CHESTNUT RD, 10-28-23	04 OCT 94
94A-16	3 ACS FROM RS TO CE, E OF COMBEE RD, 10-28-23	04 OCT 94
95A-01	1015 ACS FROM SDA TO UDA, 125 ACS FROM RS TO RL. 3, 16, 17, 20, 21 -28 -23, 27, 28, 33-28-24.	17 OCT 95
95S-13	2 ACS FROM RS TO CE, N SIDE OF SR 33, 29-27-24.	05 DEC 95
96S-11	8.99 ACS FROM IND TO LCC, NE COR OF CR 542 & SR 33A, 15-28-24	15 OCT 96
96A-12	DEVELOPMENT AREA CHANGE	19 DEC 96
97S-22	0.517 ACS FROM RS TO LCC, SE COR OF E. MAIN ST. & UTAH AVE., 16-28-24	02 DEC 97
97S-23	10 ACS FROM RL TO LCC, W OF SW COR OF MARCUM RD. & US HWY 98, 23-27-23	02 DEC 97
98S-02	0.85 ACS OF RS TO LCC, W SIDE OF S. COMBEE RD. S OF E. CIVITAN AVE., 28-28-24	17 FEB 98
98S-03	10 ACS RS TO IND, N OF WEST 10TH ST., W OF THE RAILROAD & S OF FAIRBANKS ST., 11-28-23	17 FEB 98
98S-09	1.07 ACS RM TO CE, INT. OF LK GIBSON PARK RD. & SR 582, SE OF LK GIBSON, 30-27-24	17 FEB 98

POLK COUNTY, FLORIDA
COMPREHENSIVE PLAN
GENERALIZED
2010 FUTURE LAND USE
NOVEMBER 18, 1992
QUADRANGLE # 13
LAKELAND, FLA.



QUADRANGLE # 07
PROVIDENCE, FLA.

2010 FUTURE LAND USE



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1,000 SCALE 1:63,360

PREPARED BY THE
POLK COUNTY
BOARD OF COUNTY COMMISSIONERS
PLANNING DIVISION
PLOTDATE: NOVEMBER 26, 1997

THIS IS ONE OF THE "POLK COUNTY FUTURE LAND USE MAP SERIES" IT MUST BE INTERPRETED IN CONJUNCTION WITH OTHER MAPS OF THE SERIES, AND THE OBJECTIVES AND POLICIES OF THE "POLK COUNTY COMPREHENSIVE PLAN" -- SPECIFICALLY THE "FUTURE LAND USE ELEMENT".

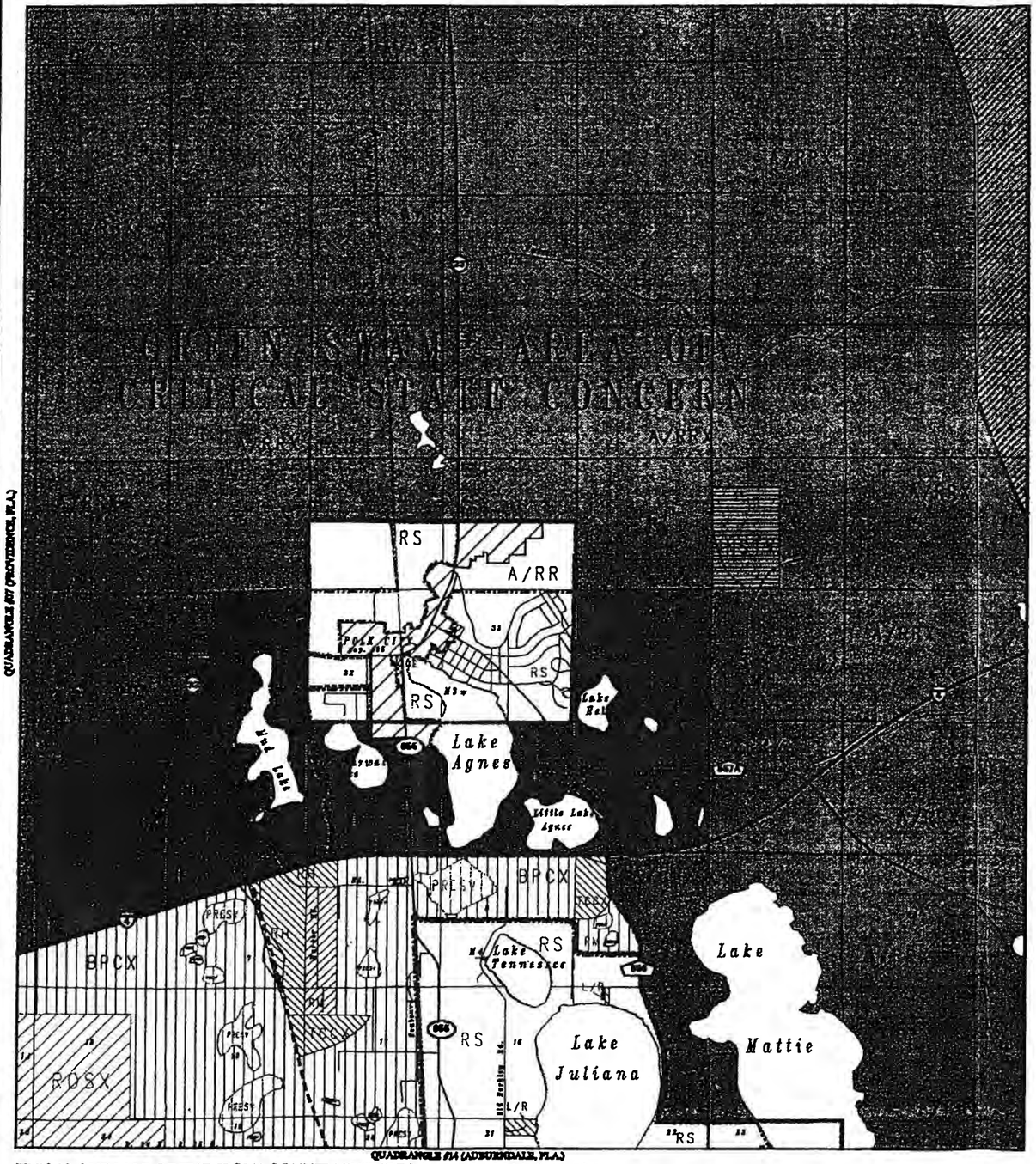
REVISIONS

NO.	DESCRIPTION	DATE
93B-10	10 ACS FROM INST, CE & RL TO LCC, US 98/CR 35-A, 2-27-23	31 JAN 94
93B-16	86 ACS FROM RM TO RL, 18-27-24, SPAs included in CARMP	31 JAN 94
95A-17	2,660 ACS FROM UGA/RL TO UDA/RL & SDA/RS, N LAKELAND. 4, 8, 9, 15, 16, 17 -27 -24.	17 OCT 95
96A-12	DEVELOPMENT AREA CHANGE	19 DEC 96
97S-15	2.94 ACS FROM RL TO CC, NW COR OF MARCUM RD & SOCRUM LOOP RD, 13-27-23	17 JUN 97
97S-23	10 ACS FROM RL TO LCC, W OF SW COR OF MARCUM RD. & US HWY 98, 23-27-23	02 DEC 97

POLK COUNTY, FLORIDA
COMPREHENSIVE PLAN
GENERALIZED
2010 FUTURE LAND USE
NOVEMBER 18, 1992
QUADRANGLE # 07
PROVIDENCE, FLA.

POLK CITY, FLA.

QUADRANGLE #05 (FOYNER, FLA.)



QUADRANGLE #14 (AUBURNDALE, FLA.)

QUADRANGLE #07 (DRONTEN, FLA.)

QUADRANGLE #10 (WINTER HAVEN, FLA.)

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2010 FUTURE LAND USE

POLK COUNTY, FLORIDA

LEGEND

DEVELOPMENT-AREA BOUNDARIES

- Urban-Development Areas (UDA) (Public Water & Sewer--Existing and Proposed within 5 years)
- Urban-Growth Areas (UGA) (Public Water & Sewer Proposed within 6-10 years)
- Suburban-Development Areas (SDA) (Non-Sewered)
- Utility-Enclave Areas (UEA) (Included Existing Sewered Areas)

LAND-USE CATEGORIES

Activity Centers

- RCC ... Rural-Cluster Center
- CC ... Convenience Center
- NAC ... Neighborhood Activity Center
- CAC ... Community Activity Center
- RAC ... Regional Activity Center
- HIC ... High-Impact Commercial Center
- TCC ... Tourism Commercial Center
- BPC ... Business Park Center
- TC ... Town Center
- CORE ... CARMP Core
- LCC ... Linear Commercial Corridor
- CE ... Commercial Enclave
- IND ... Industrial
- PM ... Phosphate Mining
- L/R ... Leisure/Recreation
- INST ... Institutional
- ROS ... Recreation and Open Space
- PRESV ... Preservation

RESIDENTIAL LAND USES

- RS ... Residential-Suburban
- RL ... Residential-Low (Up to 5.00 DU/AC)
- RM ... Residential-Medium (Up to 10.00 DU/AC)
- RH ... Residential-High (Up to 15.00 DU/AC)
- A/RR ... Agriculture/Residential-Rural
- DRI ... Development of Regional Impact
- PRE-DRI ... DRI Scale Projects
- SPA ... Ridge Special Protection Area
- SPA ... Rural Special Protection Area
- SPA ... Polk City Special Protection Area
- SAP ... Selected-Area Plan
- X ... Indicates Extra Dev. Std's (see text)

GENERAL LEGEND

- Incorporated Area
- Interstate Highway
- U.S. Highway
- State Highway
- County Roads
- Paved County Roads
- Polk County Boundary
- Green Swamp Area of Critical State Concern Boundary
- Proposed Transportation Linkages
- Railroad Lines
- Section Lines
- 24 ... Section Numbers
- Airport Runways
- Lakes/Water
- Proposed Interchanges
- * ... County Recreation Areas

2,000 0 1 MILE

2,000 SCALE 1:63,360

Prepared for the POLK COUNTY BOARD OF COUNTY COMMISSIONERS PLANNING DIVISION FLORIDA'S FUTURE STARTS HERE

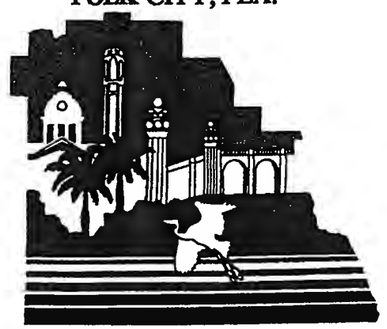
SOURCE: POLK COUNTY PLANNING DIVISION

REVISIONS

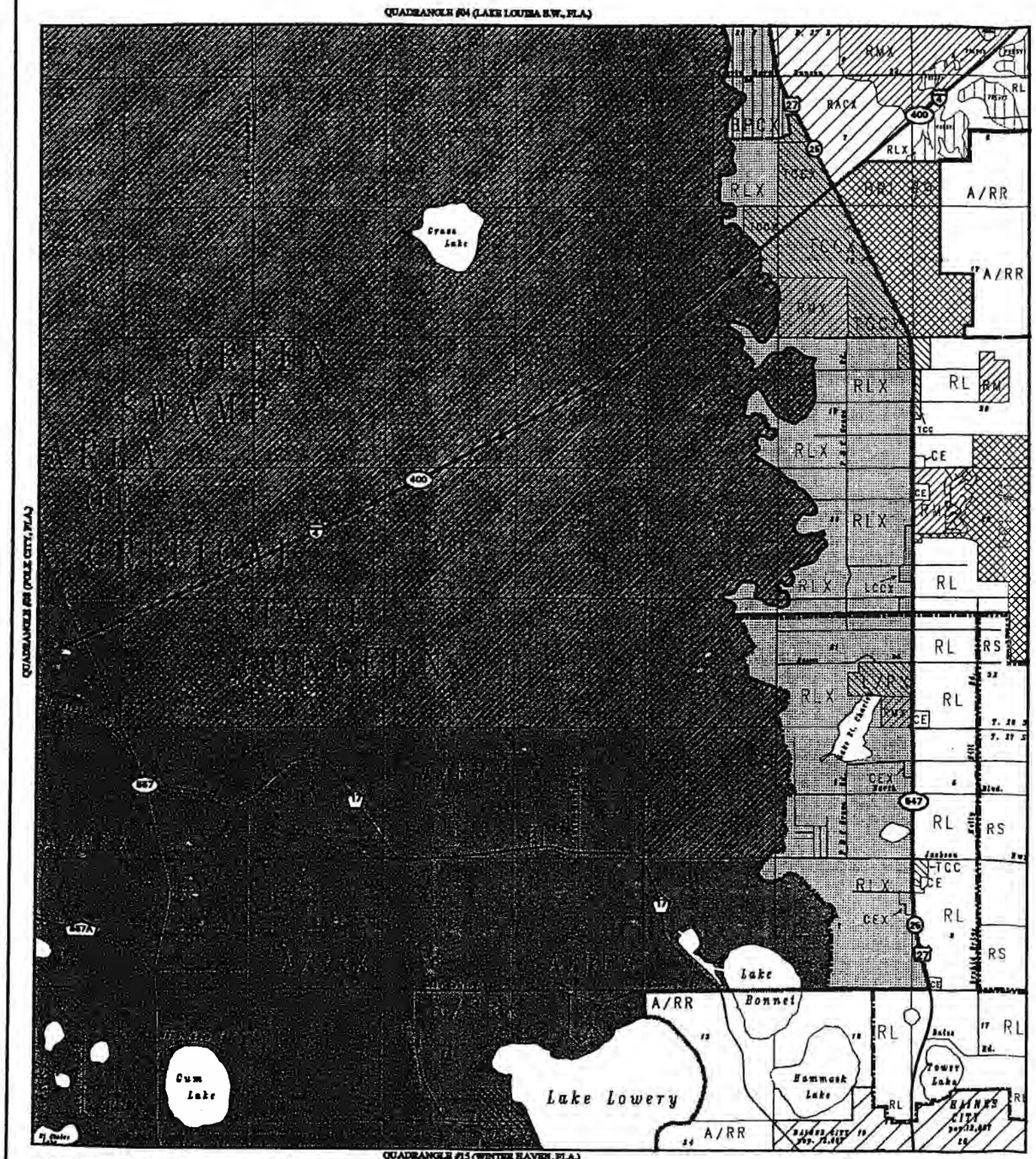
NO.	DESCRIPTION	DATE
93B-16	SPAs included in CARMP	31 JAN 94
96A-18	233.8 ACRES FROM SDA/RSX TO RDA/I A/RRX, BETTWEEN LAKES JULIANNA AND MATTIE, 14 & 15 -27-25	03 DEC 96

COMPREHENSIVE PLAN

POLK COUNTY, FLORIDA
NOVEMBER 18, 1992
GENERALIZED
FUTURE LAND USE
QUADRANGLE #08
POLK CITY, FLA.



QUADRANGLE #09
GUM LAKE, FLA.



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2010 FUTURE LAND USE

POLK COUNTY, FLORIDA

LEGEND

DEVELOPMENT-AREA BOUNDARIES

- Urban-Development Areas (UDA) (Public Water & Sewer--Existing and Proposed within 5 years)
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LAND-USE CATEGORIES

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GENERAL LEGEND

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- Railroad Lines
- Section Lines
- 24 Section Numbers
- Airport Runways
- Lakes/Water
- Proposed Interchanges
- * County Recreation Areas

2,000 0 1 MILE
1,000 SCALE 1:63,360

PREPARED BY THE POLK COUNTY BOARD OF COUNTY COMMISSIONERS PLANNING DIVISION FLORIDA'S MARCH 27, 1997
SOURCE: POLK COUNTY PLANNING DIVISION

REVISIONS Exhibit "A"

NO.	DESCRIPTION	DATE
93A-10	2 ACRES FROM RL TO LCC, US27/I-4, 30-26-27	25 MAY 93
93B-16	REMOVE FAC, I-4/SR 557, 31-26-26 REMOVE 179 ACRES FROM TCC TO RL, US27/I-4 19,29-26-27, SPAs included in CARMP	31 JAN 94
94S-06	18.9 ACRES FROM RL TO TCC, US 27 & CR 547, 8-27-27	30 AUG 94
94A-12	Correct Land-Use Development -Area Boundaries to be Consistent With the Critical Area Resource Management Plan (CARMP) Map	04 OCT 94
95S-05	8.4 ACRES FROM RL TO TCC, 20-26-27	16 MAY 95
95S-06	7.5 ACRES FROM RL TO CE, 32-26-27	16 MAY 95
96A-12	DEVELOPMENT AREA CHANGE	19 DEC 96
97S-06	8 ACRES FROM RM TO CE, E SIDE OF US 27, 29-26-27	18 MAR 97

COMPREHENSIVE PLAN

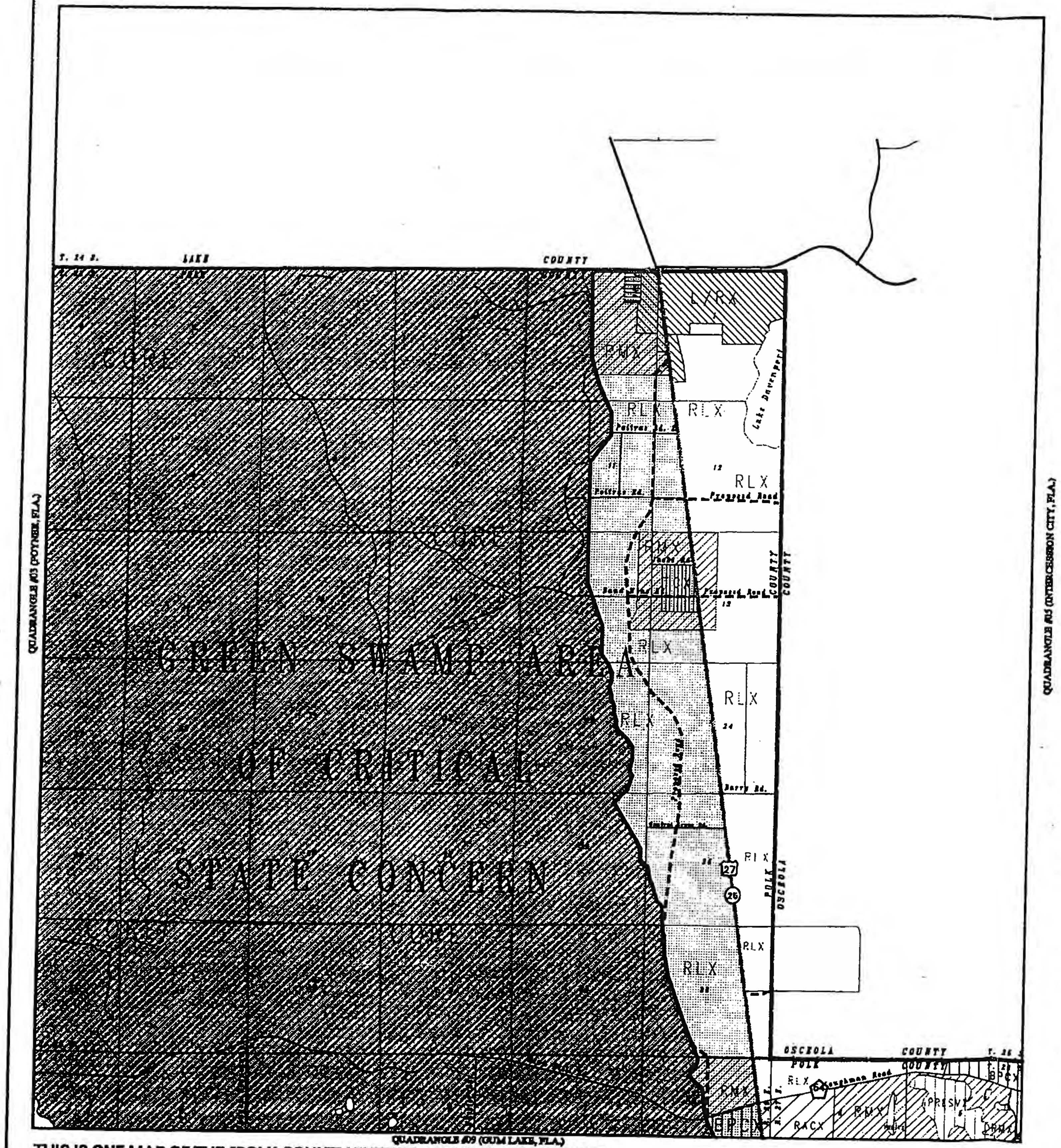
POLK COUNTY, FLORIDA
NOVEMBER 18, 1992

GENERALIZED

FUTURE LAND USE

QUADRANGLE #09
GUM LAKE, FLA.

QUADRANGLE #04
LAKE LOUISA S.W., FLA.



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2010 FUTURE LAND USE

POLK COUNTY, FLORIDA

LEGEND

DEVELOPMENT-AREA BOUNDARIES

Urban-Development Areas (UDA) (Public Water & Sewer--Existing and Proposed within 5 years)
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U.S. Highway
State Highway
County Roads
Paved County Roads
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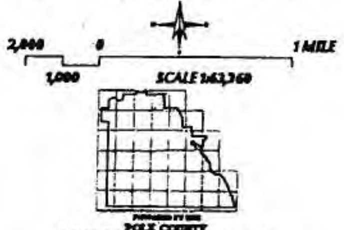
Green Swamp Area of Critical State Concern Boundary
Proposed Transportation Linkages
Railroad Lines
Section Lines
24 Section Numbers
Airport Runways
Lakes/Water
Proposed Interchanges
County Recreation Areas



PREPARED BY THE
POLK COUNTY
BOARD OF COUNTY COMMISSIONERS
PLANNING DIVISION
PLOTDATE: DECEMBER 18, 1996
SOURCE: POLK COUNTY PLANNING DIVISION

REVISIONS

NO.	DESCRIPTION	DATE
93B-16	SPAs included in CARMP	31 JAN 94
94A-12	Correct Land-Use Development -Area Boundaries to be Consistent With the Critical Area Resource Management Plan (CARMP) Map	04 OCT 94
96A-09	MODIFICATION OF US HWY 27 SAP PROPOSED ROAD NETWORK.	03 DEC 96
96A-12	DEVELOPMENT AREA CHANGE	19 DEC 96

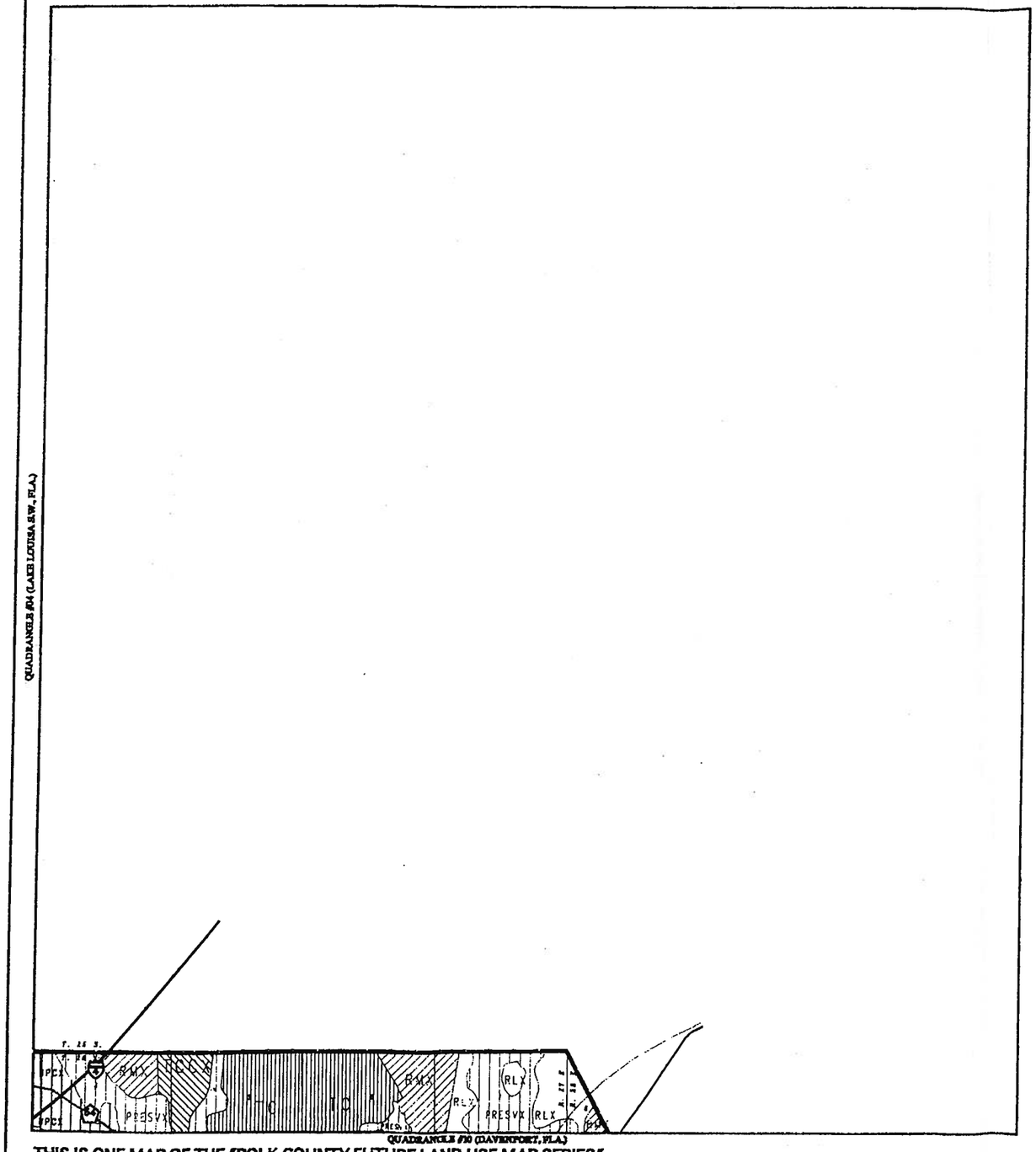
COMPREHENSIVE PLAN

POLK COUNTY, FLORIDA
NOVEMBER 18, 1992

GENERALIZED FUTURE LAND USE

QUADRANGLE #04
LAKE LOUISA S.W., FLA.

QUADRANGLE #05
INTERCESSION CITY, FLA.



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2010 FUTURE LAND USE

POLK COUNTY, FLORIDA

LEGEND

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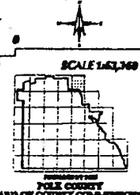


POLK COUNTY
BOARD OF COUNTY COMMISSIONERS
PLANNING DIVISION
PLOTTED: DECEMBER 27, 1995
SOURCE: POLK COUNTY PLANNING DIVISION

REVISIONS

NO.	DESCRIPTION	DAT
96A-12	DEVELOPMENT AREA CHANGE	19 DEC

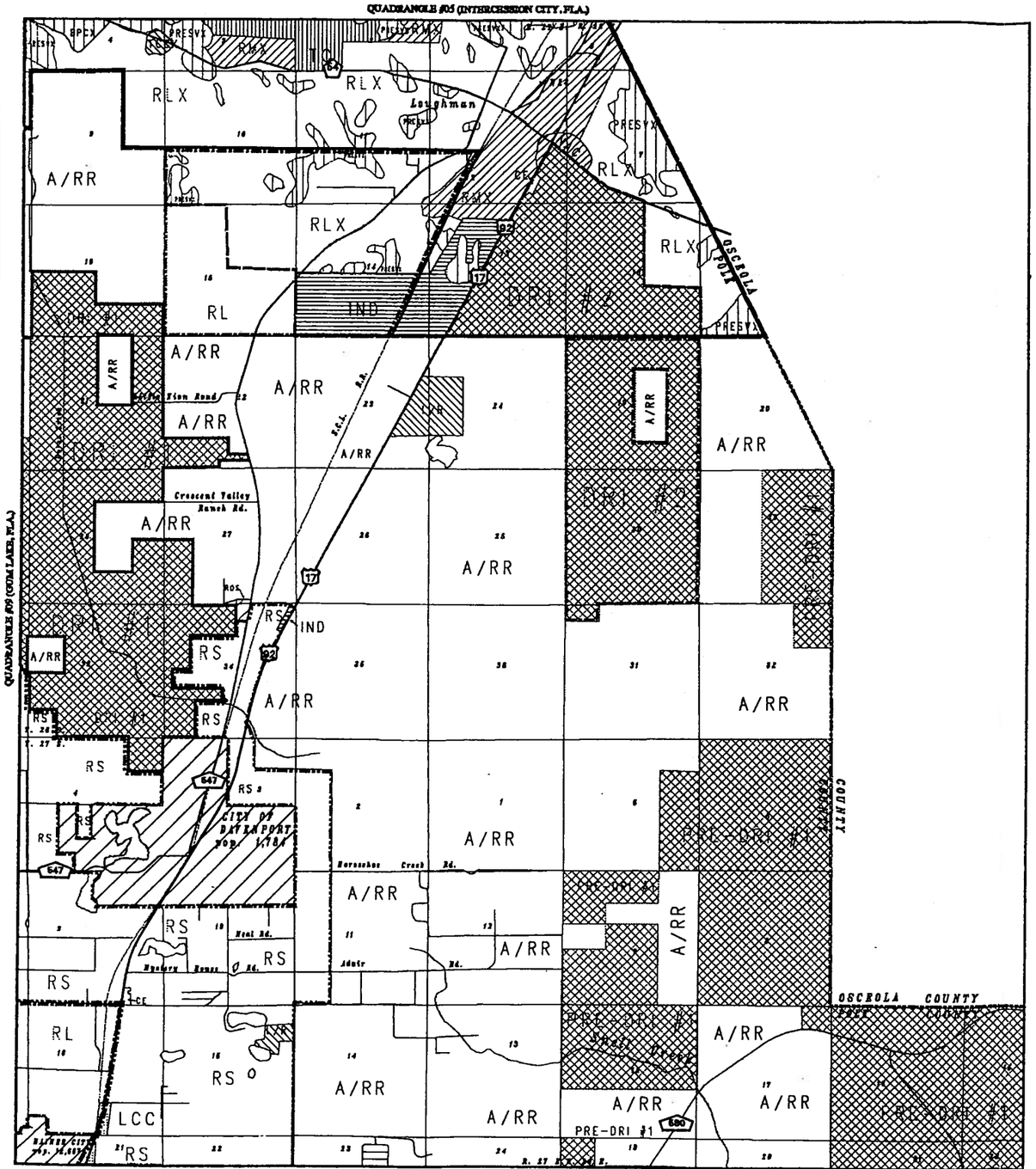
COMPREHENSIVE PLA

POLK COUNTY, FLORIDA
NOVEMBER 18, 1992

GENERALIZED
FUTURE LAND USE

QUADRANGLE #05
INTERCESSION CITY, FLA.

QUADRANGLE #10
DAVENPORT, FLA.



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2010 FUTURE LAND USE

POLK COUNTY, FLORIDA

LEGEND

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- 24 Section Numbers
- Airport Runways
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- * County Recreation Areas

2,000 0 1 MILE
1,000
SCALE 1:63,360

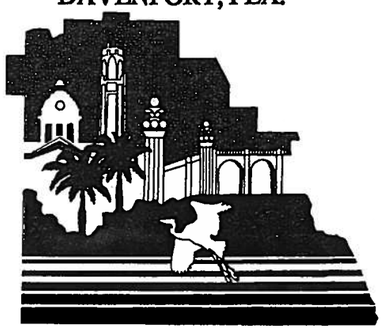
PREPARED BY THE POLK COUNTY BOARD OF COUNTY COMMISSIONERS PLANNING DIVISION
PLOTTED ON: DECEMBER 27, 1994
SOURCE: POLK COUNTY PLANNING DIVISION

REVISIONS

NO.	DESCRIPTION	DATE
94A-19	5 ACRES FROM RS TO IND, WEST SIDE OF US 17/92, 34-26-27	04 OCT 94
96S-05	5.8 ACRES FROM DRI #2 TO CE, EAST SIDE U.S. 17/92. 12-26-27	19 MAR 96
96S-18	2.75 ACRES FROM RS TO CE, EAST SIDE OF US 17/92, IN SE CORNER OF 9-27-27	19 NOV 96
96A-12	DEVELOPMENT AREA CHANGE	19 DEC 96
96B-12	20 ACRES FROM A/RR TO DRI #2, E OF US 17/92, 31-26-28.	19 DEC 96

COMPREHENSIVE PLAN

POLK COUNTY, FLORIDA
NOVEMBER 18, 1992
GENERALIZED
FUTURE LAND USE
QUADRANGLE #10
DAVENPORT, FLA.



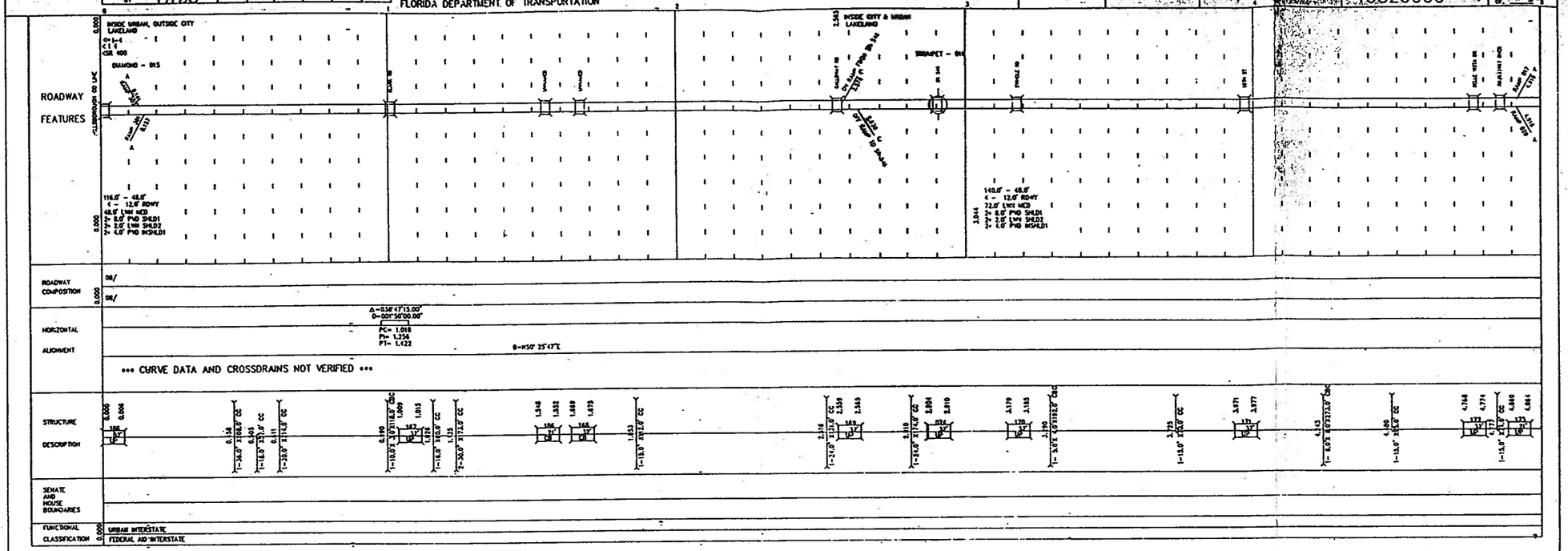
SECTION 3
STRAIGHT LINE DIAGRAMS

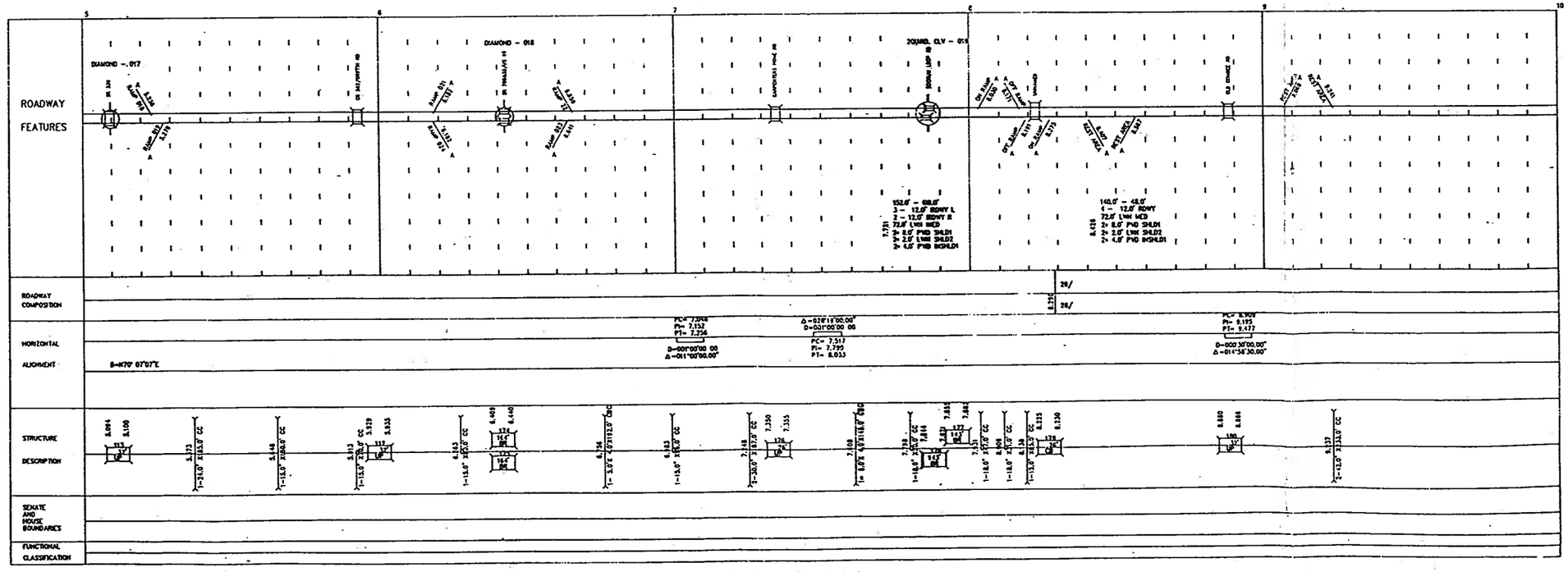
STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION

DATE	CHECKED	REVISED
BY	5-17-90 HBS	

INT. or U.S. ROUTE NO	STATE ROAD NO.	COUNTY NO.	SECTION	SHEET NO.
I – 4	SR 400	POLK	16320000	1 OF 4





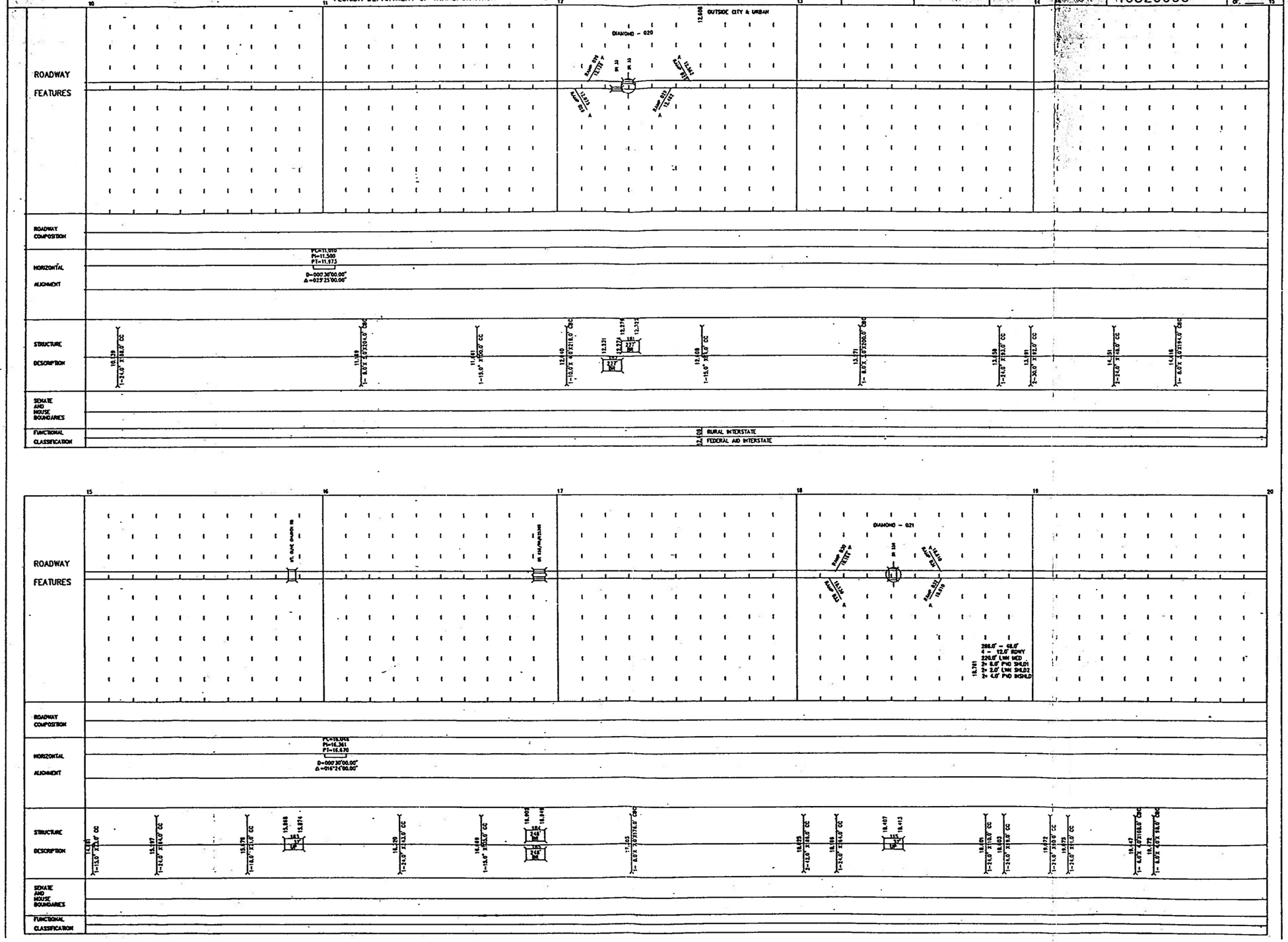
STRAIGHT LINE DIAGRAM
POLK COUNTY - SR 400 - INTERSTATE 4

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION

DATE	INVENTORIED	REVISED
BY	HBS	

INT. or U.S. ROUTE NO	STATE ROAD NO.	COUNTY	SECTION	SHEET NO.	OF.
I – 4	SR 400	POLK	16320000	2	4



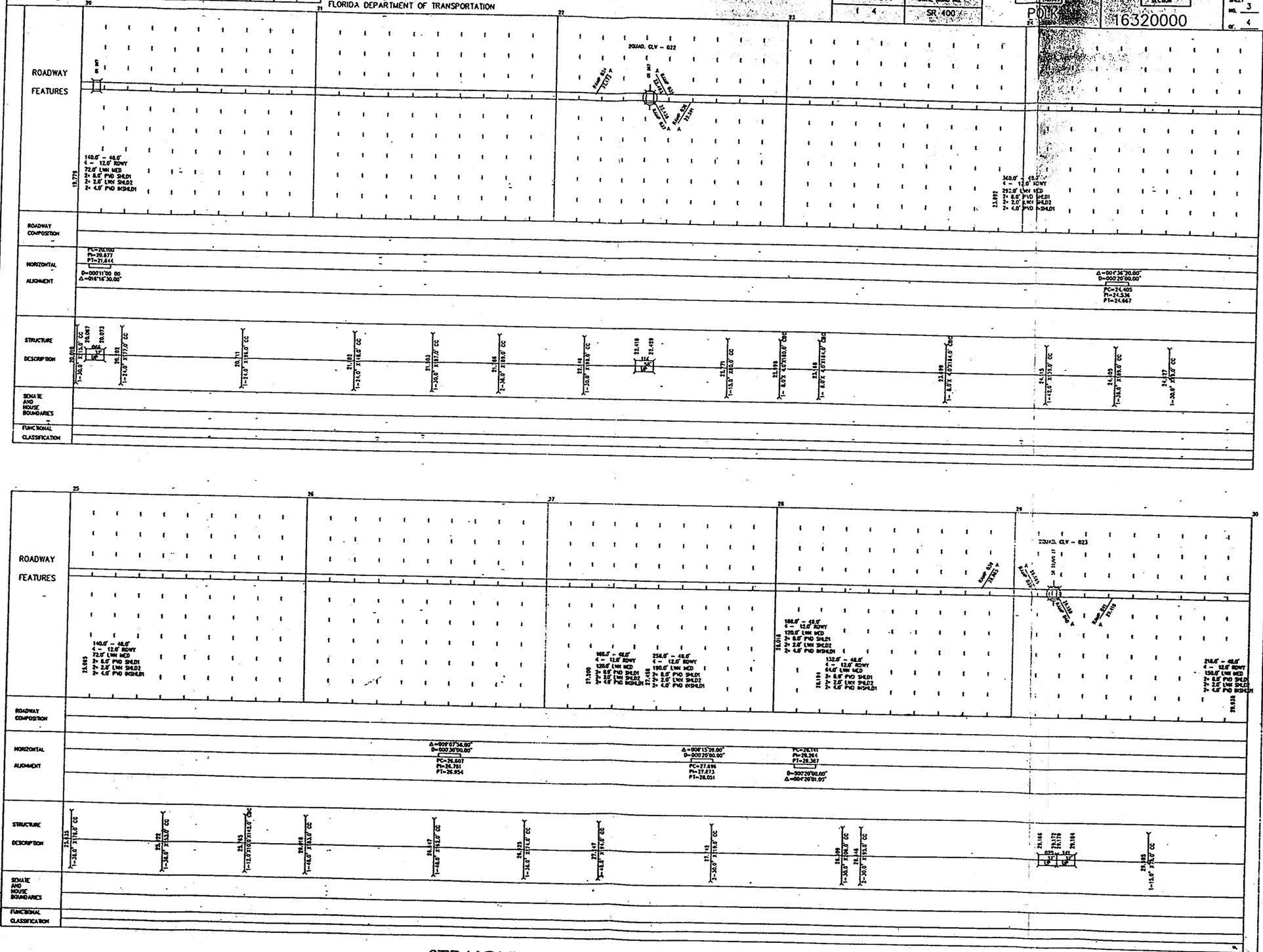
STRAIGHT LINE DIAGRAM
POLK COUNTY - SR 400 - INTERSTATE 4

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION

DATE	BY	INVENTORIED	REVISED
		5-17-90 HBS	

INT. or U.S. ROUTE NO.	STATE ROAD NO.	COUNTY	SECTION	SHEET NO.	OF
I 4	SR 400	POLK	16320000	3	4



STRAIGHT LINE DIAGRAM
POLK COUNTY - SR 400 - INTERSTATE 4

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION

DATE	INVENTORIED	REVISED
BY	5-17-90 HBS	

INT. or U.S. ROUTE NO	STATE ROAD NO.	COUNTY	SECTION	SHEET NO.	OF
I - 4	SR-400	POLK	16320000	4	4

30 31 32 33 34 35

ROADWAY FEATURES

OSCEOLA CO. LINE

32.022

140.0' - 48.0'
4 - 12.0' RDWY
72.0' LNVL MED
2- 8.0' PVD SHLDI
2- 2.0' PVD SHLD2
2- 4.0' PVD SHLD3

31.073

31.947

195.0' - 48.0'
4 - 12.0' RDWY
108.0' LNVL MED
2- 8.0' PVD SHLDI
2- 2.0' PVD SHLD2
2- 4.0' PVD SHLD3

ROADWAY COMPOSITION

HORIZONTAL ALIGNMENT

Δ=010°20'20.00"
D=000°30'00.00"
PC=31.551
PI=31.787
PT=31.852

STRUCTURE DESCRIPTION

30.115 1-36.0' X 159.0' CC

30.153 1-36.0' X 21.6' CC

30.149 1-36.0' X 20.0' CC

30.178 2-36.0' X 198.0' CC

31.125 1-36.0' X 20.0' CC

31.510

31.518

31.774 2-36.0' X 107.0' CC

SENATE AND HOUSE BOUNDARIES

FUNCTIONAL CLASSIFICATION

35 36 37 38 39 40

ROADWAY FEATURES

ROADWAY COMPOSITION

HORIZONTAL ALIGNMENT

STRUCTURE DESCRIPTION

SENATE AND HOUSE BOUNDARIES

FUNCTIONAL CLASSIFICATION

STRAIGHT LINE DIAGRAM
POLK COUNTY - SR 400 - INTERSTATE 4

SECTION 4
STRUCTURE INVENTORY APPRAISAL SHEETS

********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 160074
(5) INVENTORY ROUTE (ON/UNDER) - ON = 1310004S0
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 35950
(6) FEATURES INTERSECTED - I-4/SR-400 S
(7) FACILITY CARRIED - SR/545MEPBLVD
(9) LOCATION - 3.3 MI W SR-37/SR-35/US98
(11) MILEPOINT 000.320
(16) LATITUDE 28 D 03.1' (17) LONGITUDE 082 D 01.1'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL *********
(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 010395
(30) YEAR OF ADT 1988 (109) TRUCK ADT 00 %
(19) BYPASS, DETOUR LENGTH 02 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN 0103 FT
(49) STRUCTURE LENGTH 000324 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.2 FT
(52) DECK WIDTH OUT TO OUT 034.3 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 040 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 00 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 29.2 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY - 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 02 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 12.5 FT
(56) MIN LAT UNDERCLEAR LT 25.5 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****
SUFFICIENCY RATING = 077.0
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - FEDERAL AID PRIMARY 2
(26) FUNCTIONAL CLASS - URBAN OTHER PRINCIPAL A 14
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 6
(59) SUPERSTRUCTURE 6
(60) SUBSTRUCTURE 6
(61) CHANNEL & CHANNEL PROTECTION 7
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE
(31) DESIGN LOAD - M 13 4
(64) OPERATING RATING - HS-20 TRU 256
(66) INVENTORY RATING - HS-20 TRU 243
(70) BRIDGE POSTING - EQ OR ST LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 6
(68) DECK GEOMETRY 3
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 7
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 6
(36) TRAFFIC SAFETY FEATURES 0111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 000000
(115) YEAR OF FUTURE ADT 20

********** INSPECTIONS **********
(90) INSPECTION DATE 01/90 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

160170

NATIONAL BRIDGE INVENTORY - - - - - - - STRUCTURE INVENTORY AND APPRAISAL 08/04/93

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER #
(5) INVENTORY ROUTE (ON/UNDER) - [redacted] = 141OC0000
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - I-4/SR 400
(7) FACILITY CARRIED - SWINDELL RD
(9) LOCATION - 3.2 MILES EAST OF HILLS C
(11) MILEPOINT 003.173
(16) LATITUDE 28 D 03.3' (17) LONGITUDE 082 D 00.9'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 000
(107) DECK STRUCTURE TYPE - SIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 007500
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 02 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0107 FT
(49) STRUCTURE LENGTH 000329 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 036 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 50 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 28.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 04 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 09.0 FT
(56) MIN LAT UNDERCLEAR LT 30.0 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 077.2
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - NON FEDERAL AID 3
(26) FUNCTIONAL CLASS - RURAL INTERSTATE 01
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD - M 30 4
(64) OPERATING RATING - MS 22.0 TON 31
(65) INVENTORY RATING - MS 13.2 TON 21
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED -
DESCRIPTION - OPEN, NO RESTRICTION A

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 7
(36) TRAFFIC SAFETY FEATURES 0111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS ********** CODE

(75) TYPE OF WORK - NO IMPROVEMENT PLANNED 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 014370
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 93/06 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE
(8) STRUCTURE NUMBER #
(5) INVENTORY ROUTE (ON/UNDER) - 01 = 1410000C
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 38250
(6) FEATURES INTERSECTED - I-75
(7) FACILITY CARRIED - TENTH STREET
(9) LOCATION - 2.4 MILES WEST US 98
(11) MILEPOINT 000.000
(16) LATITUDE 28 D 03.7' (17) LONGITUDE 082 D 00.1'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 019000
(30) YEAR OF ADT 1990 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 03 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN 0107 FT
(49) STRUCTURE LENGTH 000830 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 036 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 40 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 280 FT
(52) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 03 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 098 FT
(56) MIN LAT UNDERCLEAR LT 30.5 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 080.7
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH Y YES
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS - RURAL LOCAL 09
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********** CODE
(31) DESIGN LOAD - MS 18 4
(64) OPERATING RATING - HS-20 TRU 35.4
(65) INVENTORY RATING - HS-20 TRU 23.2
(70) BRIDGE POSTING - 5 OR MORE LEGAL LOAD NO 8 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY 7
(72) APPROACH ROADWAY ALIGNMENT 7
(36) TRAFFIC SAFETY FEATURES 0110
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 001860
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********
(90) INSPECTION DATE 93/08 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE 12
(8) STRUCTURE NUMBER # 160172
(5) INVENTORY ROUTE (ON/UNDER) - ON = 1410000C0
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 38250
(6) FEATURES INTERSECTED - I 4 / SR 400 *
(7) FACILITY CARRIED - BELLAVISTA DR
(9) LOCATION - 4.36 MI EAST HILLS CO LN
(11) MILEPOINT 000.000
(16) LATITUDE 28 D 04.1' (17) LONGITUDE 081 D 59.2'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY CODE 11
UNDER - HIGHWAY
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 001500
(30) YEAR OF ADT 1990 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 02 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN 0106 FT
(49) STRUCTURE LENGTH 000388 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.1 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 036 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 50 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 23.1 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 15 FT 05 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 10.2 FT
(56) MIN LAT UNDERCLEAR LT 99.1 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 083.4
STATUS - NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS - RURAL LOCAL 09
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE
(31) DESIGN LOAD - M 18 4
(64) OPERATING RATING - HS-20 TRU 344
(66) INVENTORY RATING - HS-20 TRU 236
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 5
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 4
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0110
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $ .000
(95) ROADWAY IMPROVEMENT COST $ .000
(96) TOTAL PROJECT COST $ .000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 00
(114) FUTURE ADT 002700
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********
(90) INSPECTION DATE 93/08 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

160173

NATIONAL BRIDGE INVENTORY - - - - - - - - STRUCTURE INVENTORY AND APPRAISAL 11/24/93

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 12
(8) STRUCTURE NUMBER #
(5) INVENTORY ROUTE (ON/UNDER) - ON = 1
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 35950
(6) FEATURES INTERSECTED - I-4
(7) FACILITY CARRIED - CSXRR
(9) LOCATION - 0.3 MILES WEST OF SR-35A
(11) MILEPOINT 000.000
(16) LATITUDE 28 D 03.5' (17) LONGITUDE 082 D 00.0'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - STEEL
TYPE - GIRDER & FLOORBEAM SYSTEM CODE 303
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - NOT APPLICABLE CODE N
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - NOT APPLICABLE CODE N
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1923
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - OTHER
UNDER - OTHER CODE 00
(28) LANES: ON STRUCTURE 00 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 000000
(30) YEAR OF ADT 19 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 00 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0000 FT
(49) STRUCTURE LENGTH 000000 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 008.0 FT
(52) DECK WIDTH OUT TO OUT 010.0 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 020 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 10 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 00.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 17 FT 00 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 11.5 FT
(56) MIN LAT UNDERCLEAR LT 13.9 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 000.0
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH - Y
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS -
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - HIGHWAY TRAFFIC NOT 0
(103) TEMPORARY STRUCTURE -
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - RAILROAD 27
(22) OWNER - RAILROAD 27
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK N
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE

(31) DESIGN LOAD - PEDESTRIAN 1
(64) OPERATING RATING - PEDESTRIA 82
(66) INVENTORY RATING - PEDESTRIA 51
(70) BRIDGE POSTING - EQUAL OR HIGHER THAN LEGAL LOAD 8
(41) STRUCTURE OPEN, POSTED OR CLOSED A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY 7
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES NNNN
(113) SCOUR CRITICAL BRIDGES 6

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 000000
(115) YEAR OF FUTURE ADT 20

********** INSPECTIONS **********

(90) INSPECTION DATE [redacted] (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE [redacted]
(8) STRUCTURE NUMBER # 1
(5) INVENTORY ROUTE (ON/UNDER) - 01 = 131005390
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 30250
(6) FEATURES INTERSECTED - I 4 / SR 400 *
(7) FACILITY CARRIED - SR-539/KATHLEEN RD
(9) LOCATION - 2.4 MILES NORTH OF SR-563
(11) MILEPOINT 002.404
(16) LATITUDE 28 D 04.2' (17) LONGITUDE 081 D 59.2'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 012987
(30) YEAR OF ADT 1990 (109) TRUCK ADT 10 %
(19) BYPASS, DETOUR LENGTH 03 MI

********** GEOMETRIC DATA **********
(43) LENGTH OF MAXIMUM SPAN 0069 FT
(49) STRUCTURE LENGTH 000213 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.2 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 044 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 11 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 28.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY - 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 05 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 10.0 FT
(56) MIN LAT UNDERCLEAR LT 30.5 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 076.2
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS - URBAN MINOR ARTERIAL 16
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION 8
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE
(31) DESIGN LOAD - MS 18 2
(64) OPERATING RATING - HS-20 TRU 052
(66) INVENTORY RATING - HS-20 TRU 244
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY 7
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0110
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 024373
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********
(90) INSPECTION DATE [redacted] (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE 12
(8) STRUCTURE NUMBER #
(5) INVENTORY ROUTE (ON/UNDER) - ON =
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 38250
(6) FEATURES INTERSECTED - I 4 / SR 400
(7) FACILITY CARRIED GRIFFIN RD/C-582
(9) LOCATION 0.7 MI W OF US-98
(11) MILEPOINT 000.000
(16) LATITUDE 28 D 04.5' (17) LONGITUDE 081 D 58.4'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE MAIN: MATERIAL = PRESTRESS CONCR
TYPE = STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL = OTHER
TYPE = OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE = CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE = CONCRETE CODE 1
B) TYPE OF MEMBRANE = NONE CODE 0
C) TYPE OF DECK PROTECTION = NONE CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON = HIGHWAY
UNDER = HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 004000
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 12 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN 0106 FT
(49) STRUCTURE LENGTH 000385 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 040 FT
(33) BRIDGE MEDIAN = NO MEDIAN CODE 0
(34) SKEW 50 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 28.0 FT
(53) MIN VERT CLEAR OVER BRIDGE ROWY = 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF = HIGHWAY 16 FT 08 IN
(55) MIN LAT UNDERCLEAR RT REF = HIGHWAY 09.0 FT
(56) MIN LAT UNDERCLEAR LT 30.5 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL = NOT APPLICABLE N CODE N
(111) PIER PROTECTION = NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 073.2
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM = STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS = URBAN MINOR ARTERIAL 16
(100) DEFENSE HIGHWAY = NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE = NONE EXISTS N
(102) DIRECTION OF TRAFFIC = TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE = NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK = NOT PART OF N 0
(20) TOLL = ON FREE ROAD 3
(21) MAINTAIN = STATE HIGHWAY AGENCY 01
(22) OWNER = STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE = NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********** CODE
(31) DESIGN LOAD = M 20 4
(64) OPERATING RATING = HS-20 TRU 244
(66) INVENTORY RATING = HS-20 TRU 236
(70) BRIDGE POSTING = EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED = A
DESCRIPTION = OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 3
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0110
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK = NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST = $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 006907
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********
(90) INSPECTION DATE (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION (93) CFI DATE
A) FRACTURE CRIT DETAIL = NO __ MO A)
B) UNDERWATER INSP = NO __ MO B)
C) OTHER SPECIAL INSP = NO __ MO C)

160174

NATIONAL BRIDGE INVENTORY - - - - - - - STRUCTURE INVENTORY AND APPRAISAL 11/24/93

********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE [redacted]
(3) STRUCTURE NUMBER # 160174
(5) INVENTORY ROUTE (ON/UNDER) - 01 = 111000040
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 38250
(6) FEATURES INTERSECTED - US-98/SR-35 *
(7) FACILITY CARRIED - I-4/SR-400 WB
(9) LOCATION - INTERSECTION I-4 & US-98
(11) MILEPOINT 006.409
(16) LATITUDE 28 D 05.1' (17) LONGITUDE 081 D 58.2'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 022769
(30) YEAR OF ADT 1990 (109) TRUCK ADT 30 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN 0045 FT
(49) STRUCTURE LENGTH 000163 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB T) CURB 038.0 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 046 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 02 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 28.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 15 FT 08 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 09.9 FT
(56) MIN LAT UNDERCLEAR LT 07.2 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****
SUFFICIENCY RATING = 073.7
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH Y YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - URBAN INTERSTATE 11
(100) DEFENSE HIGHWAY - DEFNS HW CVR OR UNDER D 2
(101) PARALLEL STRUCTURE - LEFT STRUCTURE L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE
(31) DESIGN LOAD - HS 20+MOD 6
(64) OPERATING RATING - HS-20 TRU 271
(66) INVENTORY RATING - HS-20 TRU 250
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 2
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0110
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - WIDEN DECK W NO REHAB CODE 331
(76) LENGTH OF STRUCTURE IMPROVEMENT 000163 FT
(24) BRIDGE IMPROVEMENT COST $ 430,000
(25) ROADWAY IMPROVEMENT COST $ 43,000
(96) TOTAL PROJECT COST $ 645,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 031196
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS [redacted]91) **********
(90) INSPECTION DATE [redacted]91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER [redacted]
(5) INVENTORY ROUTE (ON/UNDER) 04 = 111000040
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 38250
(6) FEATURE(S) INTERSECTED - US-98/SR-35 *
(7) FACILITY CARRIED I-4/SR-400 EB
(9) LOCATION - INTERSECTION I-4 & US-98
(11) MILEPOINT 006.409
(16) LATITUDE 28 0 05.1' (17) LONGITUDE 081 0 58.2'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY CODE 11
UNDER - HIGHWAY
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 024154
(30) YEAR OF ADT 1990 (109) TRUCK ADT 30 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0045 FT
(49) STRUCTURE LENGTH 000163 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.2 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 046 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 02 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 24.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY - 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 15 FT 08 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 09.9 FT
(56) MIN LAT UNDERCLEAR LT 07.2 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 073.6
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - URBAN INTERSTATE 11
(100) DEFENSE HIGHWAY - DEFNS HW OVR OR UNDER D 2
(101) PARALLEL STRUCTURE - RIGHT STRUCTURE R
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE

(31) DESIGN LOAD - MS-20+MOD 5
(64) OPERATING RATING - MS-20 TRU 262
(66) INVENTORY RATING - MS-20 TRU 255
(70) BRIDGE POSTING - 80 OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 2
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 4
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 7
(36) TRAFFIC SAFETY FEATURES 0110
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - WIDEN DECK W NO REHAB CODE 331
(76) LENGTH OF STRUCTURE IMPROVEMENT 000031 FT
(94) BRIDGE IMPROVEMENT COST $ 82,000
(95) ROADWAY IMPROVEMENT COST $ 8,000
(96) TOTAL PROJECT COST $ 123,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 032722
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE [redacted] (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 12
(8) STRUCTURE NUMBER #
(5) INVENTORY ROUTE (ON/UNDER) - ON =
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 38250
(6) FEATURES INTERSECTED - I 4 / SR 400 *
(7) FACILITY CARRIED - CARPENTERS HOME RD
(9) LOCATION - 0.1 MILE NORTH OF SR-33
(11) MILEPOINT 000.000
(16) LATITUDE 28 D 05.4' (17) LONGITUDE 081 D 57.3'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN - MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: 01 - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 301600
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 05 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0068 FT
(49) STRUCTURE LENGTH 000209 FT
(50) CURB OR SIDEWALK: LEFT 01.5 FT RIGHT 01.5 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 024.1 FT
(52) DECK WIDTH OUT TO OUT 029.2 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 036 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 00 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 24.0 FT
(53) MIN VERT CLEAR OVER BRIDGE ROWY - 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 04 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 09.6 FT
(56) MIN LAT UNDERCLEAR LT 30.3 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 077.2
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS - RURAL LOCAL 09
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - 0 FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD - M 13 2
(64) OPERATING RATING - HS-20 TRU 246
(66) INVENTORY RATING - HS-20 TRU 239
(70) BRIDGE POSTING - 80 OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 2
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 7
(36) TRAFFIC SAFETY FEATURES 0110
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - REPLACE STRUCTURE (POO CODE 311
(76) LENGTH OF STRUCTURE IMPROVEMENT 000209 FT
(94) BRIDGE IMPROVEMENT COST $ 515,000
(95) ROADWAY IMPROVEMENT COST $ 57,000
(96) TOTAL PROJECT COST - $ 657,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 002790
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

160177

NATIONAL BRIDGE INVENTORY - - - - - - - - STRUCTURE INVENTORY AND APPRAISAL 11/24/93

```
********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA                          CODE [redacted]
(8) STRUCTURE NUMBER                    #
(5) INVENTORY ROUTE (ON/UNDER)  3)      =  111300040
(2) STATE HIGHWAY DEPARTMENT DISTRICT                01
(3) COUNTY CODE     105     (4) PLACE CODE        38250
(6) FEATURES INTERSECTED - COUNTY ROAD 582             *
(7) FACILITY CARRIED     - I 4 N-B
(9) LOCATION             - 7.344 MI E OF COUNTY LINE
(11) MILEPOINT                                 007.855
(16) LATITUDE  28 D 11.0' (17) LONGITUDE  081 D 44.4'
(98) BORDER BRIDGE STATE CODE    000    % SHARE   00 %
(99) BORDER BRIDGE STRUCTURE NO.      #

********** STRUCTURE TYPE AND MATERIAL *********
(43) STRUCTURE TYPE MAIN:  MATERIAL - PRESTRESS CONCR
       TYPE - STRINGER/MULTI-BEAM OR GIR     CODE 502
(44) STRUCTURE TYPE APPR:  MATERIAL - OTHER
       TYPE - OTHER                          CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT                   003
(46) NUMBER OF APPROACH SPANS                      0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC  CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
  A) TYPE OF WEARING SURFACE - CONCRETE         CODE 1
  B) TYPE OF MEMBRANE       - NONE              CODE 0
  C) TYPE OF DECK PROTECTION - NONE             CODE 0

********** AGE AND SERVIC **********
(27) YEAR BUILT                                    1951
(106) YEAR RECONSTRUCTED                           1993
(42) TYPE OF SERVICE:  ON - HIGHWAY
       UNDER - HIGHWAY                          CODE  11
(28) LANES:  ON STRUCTURE   03    UNDER STRUCTURE  04
(29) AVERAGE DAILY TRAFFIC                      021068
(30) YEAR OF ADT    1990     (109) TRUCK ADT      30 %
(19) BYPASS, DETOUR LENGTH                      01 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN                     0063 FT
(49) STRUCTURE LENGTH                         000163 FT
(50) CURB OR SIDEWALK:   LEFT 00.0 FT   RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB          048.0 FT
(52) DECK WIDTH OUT TO OUT                      050.8 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS)       058 FT
(33) BRIDGE MEDIAN - NO MEDIAN                CODE  0
(34) SKEW      35 DEG     (35) STRUCTURE FLARED    NO
(10) INVENTORY ROUTE MIN VERT CLEAR        99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR       48.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY       99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF -  HIGHWAY    16 FT 07 IN
(55) MIN LAT UNDERCLEAR RT  REF - HIGHWAY      05.7 FT
(56) MIN LAT UNDERCLEAR LT                     03.3 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N      CODE  N
(111) PIER PROTECTION - NOT APPLICABLE          CODE  N
(39) NAVIGATION VERTICAL CLEARANCE                 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR          000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE              0000 FT

**************************************************

SUFFICIENCY RATING =  087.2
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION **********          CODE
(112) NBIS BRIDGE LENGTH                          YES
(104) HIGHWAY SYSTEM  - STRUCTURE IS ON NHS       1
(26) FUNCTIONAL CLASS  - URBAN INTERSTATE         11
(100) DEFENSE HIGHWAY  - DEFENSE HIGHWAY          1
(101) PARALLEL STRUCTURE  - LEFT STRUCTURE        L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC      2
(103) TEMPORARY STRUCTURE  - NOT APPLICABLE       N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET   1
(20) TOLL     - ON FREE ROAD                      3
(21) MAINTAIN - STATE HIGHWAY AGENCY              01
(22) OWNER    - STATE HIGHWAY AGENCY              01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR   5

********** CONDITION **********              CODE
(58) DECK                                         6
(59) SUPERSTRUCTURE                               6
(60) SUBSTRUCTURE                                 6
(61) CHANNEL & CHANNEL PROTECTION                 N
(62) CULVERTS                                     N

********** LOAD RATING AND POSTING ********* CODE
(31) DESIGN LOAD  -                HS-20+MOD    5
(64) OPERATING RATING -            HS-20 TRU  256
(66) INVENTORY RATING -            HS-20 TRU  251
(70) BRIDGE POSTING  - EQUAL OR GT LEGAL LOAD NO P  5
(41) STRUCTURE OPEN, POSTED OR CLOSED -             A
       DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL **********             CODE
(67) STRUCTURAL EVALUATION                        3
(68) DECK GEOMETRY                                4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL       4
(71) WATERWAY ADEQUACY                            N
(72) APPROACH ROADWAY ALIGNMENT                   7
(36) TRAFFIC SAFETY FEATURES                   1110
(113) SCOUR CRITICAL BRIDGES                      N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - WIDEN DECK W NO REHAB  CODE  331
(76) LENGTH OF STRUCTURE IMPROVEMENT       000142 FT
(94) BRIDGE IMPROVEMENT COST                $ 375,000
(95) ROADWAY IMPROVEMENT COST               $  39,000
(96) TOTAL PROJECT COST                     $ 562,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE          20
(114) FUTURE ADT                             031196
(115) YEAR OF FUTURE ADT                       2011

********** INSPECTIONS **********
(90) INSPECTION DATE [redacted]  (91) FREQUENCY   24 MO
(92) CRITICAL FEATURE INSPECTION:      (93) CFI DATE
  A) FRACTURE CRIT DETAIL -  NO   __ MO   A)
  B) UNDERWATER INSP      -  NO   __ MO   B)
  C) OTHER SPECIAL INSP   -  NO   __ MO   C)
```

**** IDENTIFICATION ********
(1) STATE NAME - FLORIDA CODE [redacted]
(8) STRUCTURE NUMBER [redacted]
(5) INVENTORY ROUTE (ON/UNDER) - ON = 1 [redacted]
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (+) PLACE CODE 38250
(6) FEATURE INTERSECTED - C.R. 209 #
(7) FACILITY CARRIED - I 10/SR 10 EB
(9) LOCATION - 7.24 MI N OF COUNTY LINE
(11) MILEPOINT 007.944
(16) LATITUDE 30 DEG 03.37 (17) LONGITUDE 081 DEG 37.1*
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE, MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 302
(44) STRUCTURE TYPE, APP: MATERIAL - PRES
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 003
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE 1
B) TYPE OF MEMBRANE - NONE 0
C) TYPE OF DECK PROTECTION - NONE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 1996
(42) TYPE OF SERVICE: ON - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 050035
(30) YEAR OF ADT 1990 (109) TRUCK ADT 10 %
(13) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN 0060 FT
(49) STRUCTURE LENGTH 000159 FT
(50) CURB OR SIDEWALK: LEFT 00.0 FT RIGHT 00.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 040.0 FT
(52) DECK WIDTH OUT TO OUT 042.0 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 046 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 35 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLR 040.0 FT
(53) MIN VERT CLEAR OVER DECK 99 FT 99 IN
(54) MIN VERT UNDER CLEAR - HIGHWAY 16 FT 07 IN
(55) MIN LAT UNDERCLEAR RT - HIGHWAY 03.7 FT
(56) MIN LAT UNDERCLEAR LT - 03.3 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE 0
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

********** STRUCTURE OPEN, POSTED OR CLOSED **********
SUFFICIENCY RATING = 099.3
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - URBAN INTERSTAT 11
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - NO RIGHT STRUCTURE N
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION 7
(62) CULVERTS N

********** LOAD RATING AND POSTING ********** CODE
(31) DESIGN LOAD - MS 18+MSC 5
(64) OPERATING RATING - MS-20 TRU 036
(65) INVENTORY RATING - MS-20 TRU 024
(70) BRIDGE POSTING - EQUAL OR ORDER THAN LEGAL LOAD 5
(41) STRUCTURE OPEN, POSTED OR CLOSED A
CONDITION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 7
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY 7
(72) APPROACH ROADWAY ALIGNMENT 7
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES 7

********** PROPOSED IMPROVEMENTS ********** CODE
(75) TYPE OF WORK - WIDEN DECK & INCREASE 331
(76) LENGTH OF STRUCTURE IMPROVEMENT 000140 FT
(94) BRIDGE IMPROVEMENT COST $ 378,000
(95) ROADWAY IMPROVEMENT COST $ 31,000
(96) TOTAL PROJECT COST $ 452,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 92
(114) FUTURE ADT 020000
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********
(90) INSPECTION DATE [redacted] (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE - (92) CRI DATE
A) FRACTURE CRIT DETAIL - NO 00 00 A)
B) UNDERWATER INSP - NO 00 00 B)
C) OTHER SPECIAL INSP - NO 00 00 C)

NATIONAL BRIDGE INVENTORY - - - - - - - STRUCTURE INVENTORY AND APPRAISAL 11/29/2

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 12
(8) STRUCTURE NUMBER # 160180
(5) INVENTORY ROUTE (ON/UNDER) - ON = 1419C0004
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 38250
(6) FEATURES INTERSECTED - I-4/SR-400
(7) FACILITY CARRIED - OLD COMJEE RD
(9) LOCATION - 0.5 MILES NORTH OF SR-33
(11) MILEPOINT 000.000
(16) LATITUDE 28 D 06.4' (17) LONGITUDE 081 D 56.3'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 001500
(30) YEAR OF ADT 1990 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 02 MI

********** GEOMETRIC DATA **********

(49) LENGTH OF MAXIMUM SPAN 0075 FT
(48) STRUCTURE LENGTH 000274 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 024.2 FT
(52) DECK WIDTH OUT TO OUT 029.0 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 040 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 26 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 24.2 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 03 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 09.2 FT
(56) MIN LAT UNDERCLEAR LT 30.2 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 076.9
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CO

(112) NBIS BRIDGE LENGTH - Y
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS
(26) FUNCTIONAL CLASS - URBAN MINOR ARTERIAL 16
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY
(101) PARALLEL STRUCTURE - NONE EXISTS
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC
(103) TEMPORARY STRUCTURE - NOT APPLICABLE
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF
(20) TOLL - 01 FREE ROAD
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CO

(58) DECK
(59) SUPERSTRUCTURE
(60) SUBSTRUCTURE
(61) CHANNEL & CHANNEL PROTECTION
(62) CULVERTS

********** LOAD RATING AND POSTING ******** CO

(31) DESIGN LOAD - H 15
(64) OPERATING RATING - MS-32 TON
(65) INVENTORY RATING - MS-18 TON
(70) BRIDGE POSTING - 50 OR MORE PCT LEGAL LOAD
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CO

(67) STRUCTURAL EVALUATION
(68) DECK GEOMETRY
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL
(71) WATERWAY ADEQUACY
(72) APPROACH ROADWAY ALIGNMENT
(36) TRAFFIC SAFETY FEATURES 011
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - REPLACE STRUCTURE (POO CODE 311
(76) LENGTH OF STRUCTURE IMPROVEMENT 000274 MT
(94) BRIDGE IMPROVEMENT COST $ 515,000
(95) ROADWAY IMPROVEMENT COST $ 57,000
(96) TOTAL PROJECT COST $ 657,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 002790
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 93/08 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CRIT DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

160181

ORIGINAL PRINT INVENTORY - FLORIDA STRUCTURE INVENTORY AND APPRAISAL 08/16/93

********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE 12
(8) STRUCTURE NUMBER # [redacted]
(5) INVENTORY ROUTE (ON/UNDER) - 2 = 11[redacted]
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - SR 34 *
(7) FACILITY CARRIED - I-4 / SR-400 WB
(9) LOCATION - 12.33 MILES E OF POLK CO
(11) MILEPOINT 012.321
(16) LATITUDE 28 02 03.6 (17) LONGITUDE 081 40 53.3
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** LOCATION & SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 150146
(30) YEAR OF ADT 1991 (109) TRUCK ADT 00 %
(14) BYPASS, DETOUR LENGTH 00 MI

********** GEOMETRIC DATA **********
(41) LENGTH OF MAXIMUM SPAN 0061 FT
(49) STRUCTURE LENGTH 000233 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.0 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 046 FT
(33) BRIDGE MEDIAN NO MEDIAN
(34) SKEW 00 (35) STRUCTURE FLARED N
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 000 FT
(32) MIN VERT CLEAR OVER BRIDGE ROAD 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 14 FT 09 IN
(55) MIN LAT UNDERCLEAR RT 999 - RAILROAD 15.5 FT
(56) MIN LAT UNDERCLEAR LT 00.0 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N
(111) PIER PROTECTION - NOT APPLICABLE
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

SUFFICIENCY RATING = 079.0
STATUS = POTENTIALLY DEFICIENT

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - URBAN INTERSTATE 11
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - NOT PARALLEL 0
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE 0
(110) DESIGNATED NATIONAL NETWORK - NOT ON NET 1
(112) ICLL - NOT ON ICLL 0
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

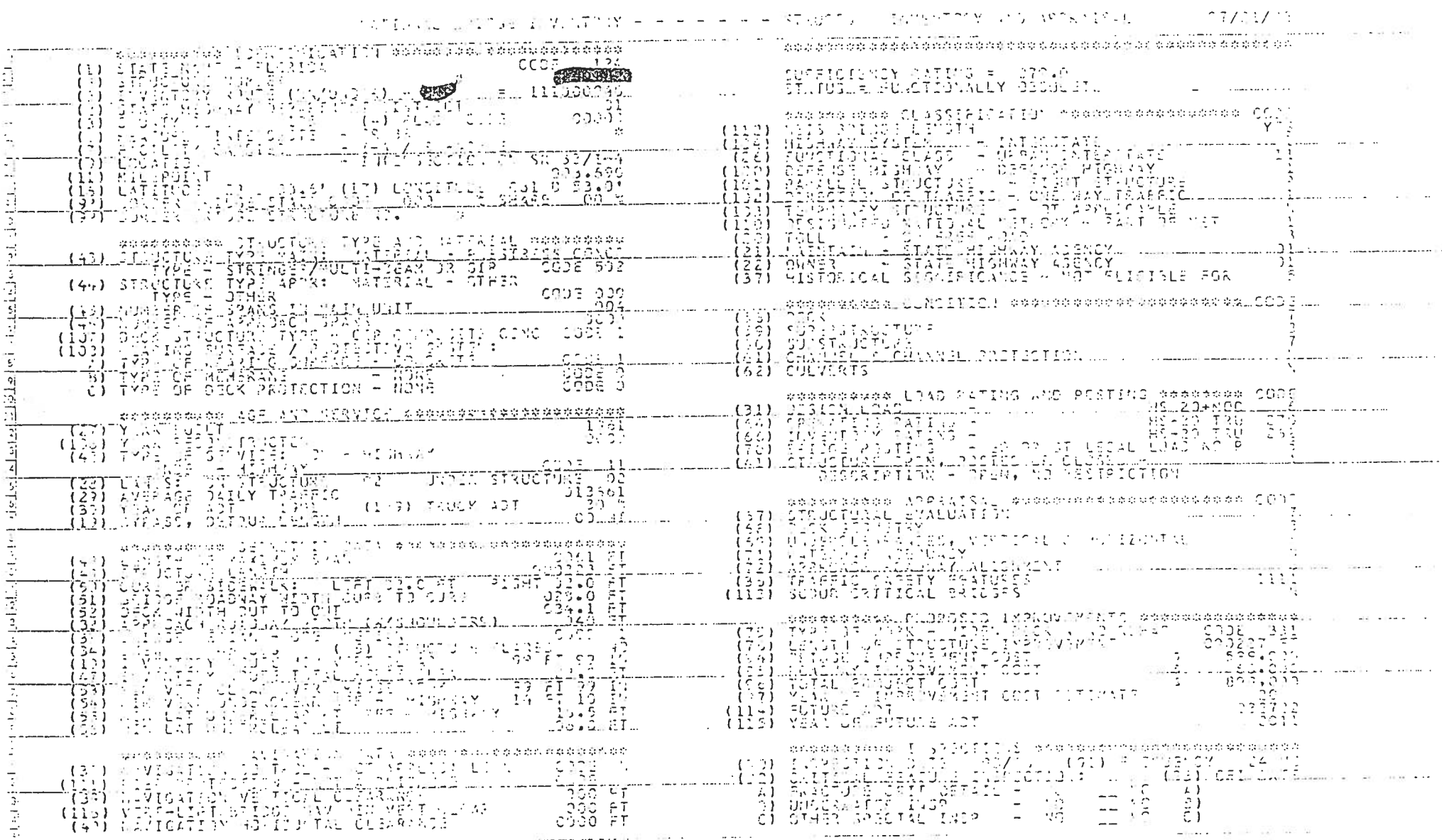
********** LOAD RATING AND POSTING ********* CODE
(31) DESIGN LOAD - MS 20+TRK 5
(64) OPERATING RATING - MS-20 TRK 27.0
(66) INVENTORY RATING - MS-20 TRK 20.0
(70) BRIDGE POSTING - EQUAL OR EXCEEDS LEGAL LOAD 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 3
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATERWAY ADEQUACY 7
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 111
(113) SCOUR CRITICAL BRIDGES 3

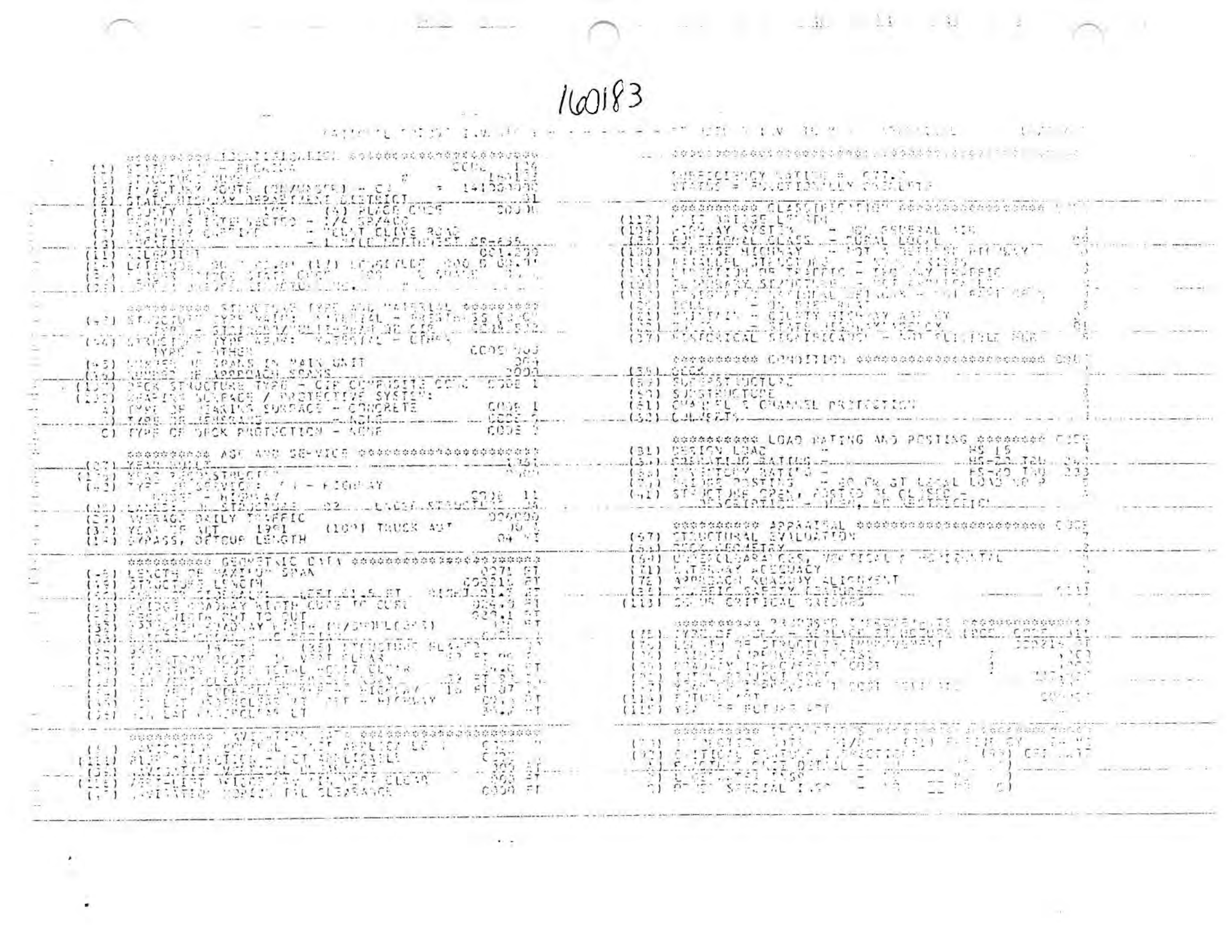
********** PROPOSED IMPROVEMENT **********
(75) TYPE OF WORK - REPLACE BRIDGE 31
(76) LENGTH OF STRUCTURE IMPROVEMENT 000233 FT
(94) BRIDGE IMPROVEMENT COST $ 598,000
(95) ROADWAY IMPROVEMENT COST $ 90,000
(96) TOTAL PROJECT COST $ 940,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 93
(114) FUTURE ADT 049303
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********
(90) INSPECTION DATE 03/93 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) DATE
A) FRACTURE CRIT DETAIL - NO 0
B) UNDERWATER INSP - NO 0
C) OTHER SPECIAL INSP - NO 0

160182



160183



********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE 12
(8) STRUCTURE NUMBER # 160184
(5) INVENTORY ROUTE (ON/UNDER) - ON = 111000040
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - SCLRR/CR-655 *
(7) FACILITY CARRIED - I-4 / SR-400 NB
(9) LOCATION - 4.6 MILES EAST OF SR-33
(11) MILEPOINT 016.902
(16) LATITUDE 28 D 09.1' (17) LONGITUDE 081 D 41.1'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE - MAIN: MATERIAL - PRESTRESS CONCR CODE 5
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 02
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER CODE 0
TYPE - OTHER CODE 00
(45) NUMBER OF SPANS IN MAIN UNIT 005
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY CODE 1
UNDER - HIGHWAY-RAILROAD CODE 4
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 02
(29) AVERAGE DAILY TRAFFIC 014860
(30) YEAR OF ADT 1989 (109) TRUCK ADT 00 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN 0059 FT
(49) STRUCTURE LENGTH 000247 FT
(50) CURB OR SIDEWALK: LEFT 01.5 FT RIGHT 01.5 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 048 FT
(33) BRIDGE MEDIAN - OPEN MEDIAN CODE 1
(34) SKEW 02 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 23.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - RAILROAD 22 FT 06 IN
(55) MIN LAT UNDERCLEAR RT REF - RAILROAD 09.5 FT
(56) MIN LAT UNDERCLEAR LT 00.0 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****
SUFFICIENCY RATING = 076.5
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH
(104) HIGHWAY SYSTEM - INTERSTATE 1
(26) FUNCTIONAL CLASS - URBAN INTERSTATE 11
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - LEFT STRUCTURE L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 8
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE
(31) DESIGN LOAD - HS-20+MOD 6
(64) OPERATING RATING - HS-20 TRU 263
(66) INVENTORY RATING - HS-20 TRU 260
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 8
(68) DECK GEOMETRY 3
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 5
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 1111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - WIDEN BR W DECK REHAB CODE 341
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $ 196,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 000000
(115) YEAR OF FUTURE ADT 20

********** INSPECTIONS **********
(90) INSPECTION DATE 91/08 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTIONS: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA CODE 12
(3) STRUCTURE NUMBER # 160155
(5) INVENTORY ROUTE (HWY/NUMBER) 1 1 1 00340
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - CR-655 *
(7) FACILITY CARRIED - I-7 / SR-400 EB
(9) LOCATION - 4.6 MILES EAST OF SR-33
(11) MILEPOINT 016.902
(16) LATITUDE 28 D 10.6' (17) LONGITUDE 081 D 50.3'
(98) BORDER BRIDGE STATE CODE (99) * SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********
(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONC
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 005
(46) NUMBER OF APPROACH SPANS 0030
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY CODE 11
UNDER - HIGHWAY
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 02
(29) AVERAGE DAILY TRAFFIC 015300
(30) YEAR OF ADT 1991 (109) TRUCK ADT 30 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN 0059 FT
(49) STRUCTURE LENGTH 000347 FT
(50) CURB OR SIDEWALK: LEFT 01.5 FT RIGHT 01.5 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 043 FT
(33) BRIDGE MEDIAN - OPEN MEDIAN CODE 1
(34) SKEW 02 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 23.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 22 FT 00 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 03.0 FT
(56) MIN LAT UNDERCLEAR LT 00.0 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****
SUFFICIENCY RATING = 075.5
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - URBAN INTERSTATE 11
(100) DEFENSE HIGHWAY - DEFENSE HIGHWAY 1
(101) PARALLEL STRUCTURE - RIGHT STRUCTURE R
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE
(58) DECK 7
(59) SUPERSTRUCTURE 6
(60) SUBSTRUCTURE 9
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE
(31) DESIGN LOAD - HS-20+MOD 5
(64) OPERATING RATING - HS-20 TRU 268
(66) INVENTORY RATING - HS-20 TRU 260
(70) BRIDGE POSTING - EQ OR ST LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION 6
(68) DECK GEOMETRY 3
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 5
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - WIDEN DECK W NO REHAB CODE 331
(76) LENGTH OF STRUCTURE IMPROVEMENT 000247 FT
(94) BRIDGE IMPROVEMENT COST $ 346,000
(95) ROADWAY IMPROVEMENT COST $ 33,000
(96) TOTAL PROJECT COST $ 518,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 078094
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********
(90) INSPECTION DATE 93/07 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

NATIONAL BRIDGE INVENTORY — STRUCTURE INVENTORY AND APPRAISAL — 09/30/93

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA — CODE 124
(8) STRUCTURE NUMBER — # 160115
(5) INVENTORY ROUTE (ON/UNDER) - ON = 131005590
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED I-4
(7) FACILITY CARRIED - SR 559
(9) LOCATION - 2.4 MI. NORTH OF SR 33
(11) MILEPOINT 007.638
(16) LATITUDE 28 D 12.3' (17) LONGITUDE 081 D 45.4'
(98) BORDER BRIDGE STATE CODE COD % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 003622
(30) YEAR OF ADT 1991 (109) TRUCK ADT 07 %
(19) BYPASS, DETOUR LENGTH 04 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0067 FT
(49) STRUCTURE LENGTH 000208 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.2 FT
(52) DECK WIDTH OUT TO OUT 030.2 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 040 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 00 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 23.2 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 03 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 09.6 FT
(56) MIN LAT UNDERCLEAR LT 30.5 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 077.5
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS - RURAL MINOR ARTERIAL 06
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********** CODE

(31) DESIGN LOAD - M 20 4
(64) OPERATING RATING - HS-20 TRU 252
(66) INVENTORY RATING - HS-20 TRU 244
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

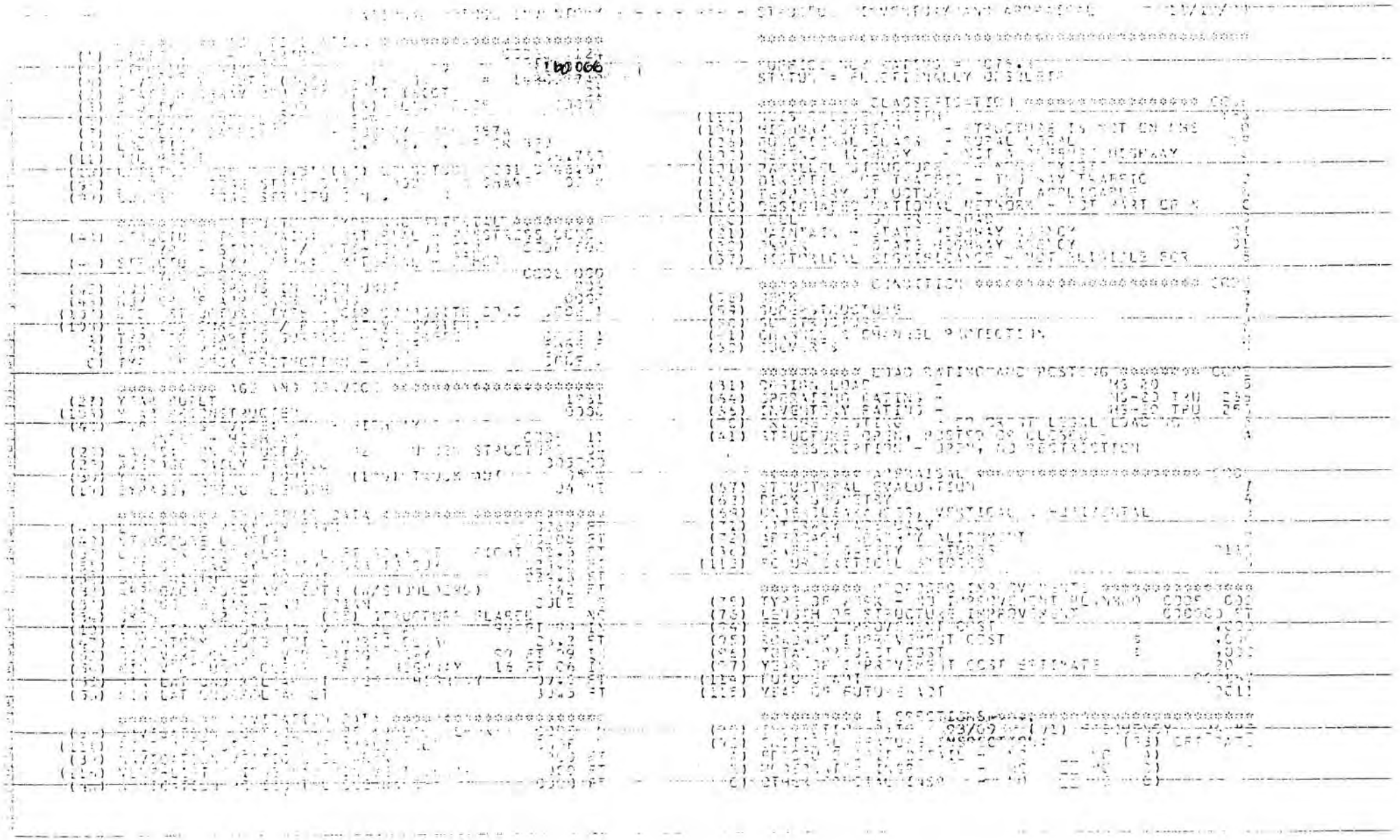
(67) STRUCTURAL EVALUATION *
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 2
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - REPLACE STRUCTURE (POO CODE 311
(76) LENGTH OF STRUCTURE IMPROVEMENT 000208 FT
(94) BRIDGE IMPROVEMENT COST $ 515,000
(95) ROADWAY IMPROVEMENT COST $ 57,000
(96) TOTAL PROJECT COST $ 667,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 007272
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 93/09 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)



160066

NATIONAL BRIDGE INVENTORY - - - - - - - - STRUCTURE INVENTORY AND APPRAISAL 11/24/93

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 12
(8) STRUCTURE NUMBER # [160114]
(9) INVENTORY ROUTE (ON/U-DER) ON 1 3100557
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 00000
(5) FEATURES INTERSECTED - I-4/SR 400
(7) FACILITY CARRIED - SR-557
(9) LOCATION - 5.5 MI. NORTH OF US 92
(11) MILEPOINT 006.452
(16) LATITUDE 28 ° 11.0' (17) LONGITUDE 081 ° 44.4'
(99) BORDER BRIDGE - STATE CODE 000 % SHARE 00 %
(98) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR CODE 5
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 02
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER CODE 0
TYPE - OTHER 00
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: 01 - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 004259
(30) YEAR OF ADT 1991 (109) TRUCK ADT 05 %
(19) BYPASS, DETOUR LENGTH 00 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0073 FT
(49) STRUCTURE LENGTH 000215 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 029.0 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 038 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 00 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 38.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 15 FT 11 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 14.6 FT
(56) MIN LAT UNDERCLEAR LT 30.5 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 082.0
STATUS - NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH Y
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS - RURAL MINOR ARTERIAL 16
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 8
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ******** CODE

(31) DESIGN LOAD H-20 4
(64) OPERATING RATING - HS-20 TRU 256
(66) INVENTORY RATING - HS-20 TRU 248
(70) BRIDGE POSTING - 30 OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 5
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0111
(113) SCOUR CRITICAL BRIDGES A

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - REPLACE STRUCTURE (POO CODE 311
(76) LENGTH OF STRUCTURE IMPROVEMENT 000215 FT
(94) BRIDGE IMPROVEMENT COST $ 515,000
(95) ROADWAY IMPROVEMENT COST $ 57,000
(96) TOTAL PROJECT COST $ 667,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 010955
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 93/08 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA CODE 124
(8) STRUCTURE NUMBER # 160141
(5) INVENTORY ROUTE (ON/UNDER) - ON = 121000270
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - I 4/SR 400 *
(7) FACILITY CARRIED - SR-25 / US 27 N B
(9) LOCATION - US 27 AND I 4
(11) MILEPOINT 023.968
(16) LATITUDE 28 D 13.9' (17) LONGITUDE 081 D 38.5'
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1961
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 004400
(30) YEAR OF ADT 1993 (109) TRUCK ADT 30 %
(19) BYPASS, DETOUR LENGTH 01 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0075 FT
(49) STRUCTURE LENGTH 000221 FT
(50) CURB OR SIDEWALK: LEFT 02.0 FT RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 040 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 12 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 28.0 FT
(53) MIN VERT CLEAR OVER BRIDGE ROWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 01 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 13.9 FT
(56) MIN LAT UNDERCLEAR LT 30.0 FT

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 077.6
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH YES
(104) HIGHWAY SYSTEM - STRUCTURE IS ON NHS 1
(26) FUNCTIONAL CLASS - RURAL OTHER PRINCIPAL A 02
(100) DEFENSE HIGHWAY - DEFNS HW OVR OR UNDER D 2
(101) PARALLEL STRUCTURE - RIGHT STRUCTURE R
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC 1
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET 1
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD - HS 20 5
(64) OPERATING RATING - HS-20 TRU 269
(66) INVENTORY RATING - HS-20 TRU 260
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 7
(68) DECK GEOMETRY 3
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 5
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 7
(36) TRAFFIC SAFETY FEATURES 0111
(113) SCOUR CRITICAL BRIDGES N

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - WIDEN DECK W NO REHAB CODE 331
(76) LENGTH OF STRUCTURE IMPROVEMENT 000221 FT
(94) BRIDGE IMPROVEMENT COST $ 309,000
(95) ROADWAY IMPROVEMENT COST $ 31,000
(96) TOTAL PROJECT COST $ 464,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 027462
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 93/08 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO -- MO A)
B) UNDERWATER INSP - NO -- MO B)
C) OTHER SPECIAL INSP - NO -- MO C)

```
********** IDENTIFICATION **********
(1) STATE NAME - FLORIDA                          CODE   124
(8) STRUCTURE NUMBER                    #          160920
(5) INVENTORY ROUTE (ON/UNDER) - ON     =       121000270
(2) STATE HIGHWAY DEPARTMENT DISTRICT                  01
(3) COUNTY CODE     105    (4) PLACE CODE          00000
(6) FEATURES INTERSECTED - I 4/ SR 400                  #
(7) FACILITY CARRIED     - US 27/SR 25 S/B
(9) LOCATION             - US-27 & I-4
(11) MILEPOINT                                  023.968
(16) LATITUDE  28 D 13.9' (17) LONGITUDE  081 D 39.5'
(98) BORDER BRIDGE STATE CODE   000    % SHARE   00 %
(99) BORDER BRIDGE STRUCTURE NO.      #

********** STRUCTURE TYPE AND MATERIAL *********
(43) STRUCTURE TYPE MAIN:  MATERIAL - PRESTRESS CONCR
       TYPE - STRINGER/MULTI-BEAM OR GIR    CODE 502
(44) STRUCTURE TYPE APPR:  MATERIAL - OTHER
       TYPE - OTHER                         CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT                  004
(46) NUMBER OF APPROACH SPANS                      0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC  CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
  A) TYPE OF WEARING SURFACE - CONCRETE          CODE 1
  B) TYPE OF MEMBRANE        - NONE              CODE 0
  C) TYPE OF DECK PROTECTION - NONE              CODE 0

********** AGE AND SERVICE **********
(27) YEAR BUILT                                    1961
(106) YEAR RECONSTRUCTED                           0000
(42) TYPE OF SERVICE:  ON - HIGHWAY
       UNDER - HIGHWAY                         CODE  11
(28) LANES:  ON STRUCTURE   02    UNDER STRUCTURE  04
(29) AVERAGE DAILY TRAFFIC                     004633
(30) YEAR OF ADT    1991    (109) TRUCK ADT        30 %
(19) BYPASS, DETOUR LENGTH                     01 MI

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN                    0075 FT
(49) STRUCTURE LENGTH                        000221 FT
(50) CURB OR SIDEWALK:   LEFT 02.0 FT   RIGHT 02.0 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB         028.0 FT
(52) DECK WIDTH OUT TO OUT                     034.1 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS)      040 FT
(33) BRIDGE MEDIAN - NO MEDIAN                 CODE  0
(34) SKEW     12 DEG     (35) STRUCTURE FLARED     NO
(10) INVENTORY ROUTE MIN VERT CLEAR        99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR         26.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY       99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF -  HIGHWAY    16 FT 01 IN
(55) MIN LAT UNDERCLEAR RT  REF - HIGHWAY      14.3 FT
(56) MIN LAT UNDERCLEAR LT                     30.0 FT

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - NOT APPLICABLE N     CODE  N
(111) PIER PROTECTION - NOT APPLICABLE         CODE  N
(39) NAVIGATION VERTICAL CLEARANCE             000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR      000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE           0000 FT

**********

SUFFICIENCY RATING =  077.5
STATUS = FUNCTIONALLY OBSOLETE

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH                          YES
(104) HIGHWAY SYSTEM     - STRUCTURE IS ON NHS      1
(26) FUNCTIONAL CLASS    - RURAL OTHER PRINCIPAL A  02
(100) DEFENSE HIGHWAY    - DEFENSE HIGHWAY          1
(101) PARALLEL STRUCTURE - LEFT STRUCTURE           L
(102) DIRECTION OF TRAFFIC - ONE WAY TRAFFIC        1
(103) TEMPORARY STRUCTURE  - NOT APPLICABLE         N
(110) DESIGNATED NATIONAL NETWORK - PART OF NET     1
(20) TOLL                - ON FREE ROAD             3
(21) MAINTAIN - STATE HIGHWAY AGENCY               01
(22) OWNER    - STATE HIGHWAY AGENCY               01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR    5

********** CONDITION ********** CODE
(58) DECK                                          6
(59) SUPERSTRUCTURE                                7
(60) SUBSTRUCTURE                                  8
(61) CHANNEL & CHANNEL PROTECTION                  N
(62) CULVERTS                                      N

********** LOAD RATING AND POSTING ******** CODE
(31) DESIGN LOAD      -                HS 20       5
(64) OPERATING RATING -                HS-20 TRU  269
(66) INVENTORY RATING -                HS-20 TRU  260
(70) BRIDGE POSTING   - EQ OR GT LEGAL LOAD NO P   5
(41) STRUCTURE OPEN, POSTED OR CLOSED -            A
       DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION                         7
(68) DECK GEOMETRY                                 3
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL        5
(71) WATERWAY ADEQUACY                             N
(72) APPROACH ROADWAY ALIGNMENT                    7
(36) TRAFFIC SAFETY FEATURES                    0111
(113) SCOUR CRITICAL BRIDGES                       N

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - WIDEN DECK W NO REHAB   CODE  331
(76) LENGTH OF STRUCTURE IMPROVEMENT      000221 FT
(94) BRIDGE IMPROVEMENT COST                $  309,000
(95) ROADWAY IMPROVEMENT COST               $   31,000
(96) TOTAL PROJECT COST                     $  464,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE           20
(114) FUTURE ADT                               010436
(115) YEAR OF FUTURE ADT                         2011

********** INSPECTIONS **********
(90) INSPECTION DATE   93/08   (91) FREQUENCY   24 MO
(92) CRITICAL FEATURE INSPECTION:      (93) CFI DATE
  A) FRACTURE CRIT DETAIL -  NO    __ MO   A)
  B) UNDERWATER INSP      -  NO    __ MO   B)
  C) OTHER SPECIAL INSP   -  NO    __ MO   C)
```

NATIONAL BRIDGE INVENTORY — STRUCTURE INVENTORY AND APPRAISAL — 09/30/93

********** IDENTIFICATION **********

(1) STATE NAME - FLORIDA — CODE 124
(8) STRUCTURE NUMBER — # 160105
(5) INVENTORY ROUTE (ON/UNDER) - 01 = 141000540
(2) STATE HIGHWAY DEPARTMENT DISTRICT 01
(3) COUNTY CODE 105 (4) PLACE CODE 00000
(6) FEATURES INTERSECTED - I-4/ SR 400
(7) FACILITY CARRIED - LOUGHMAN RD/CR-54
(9) LOCATION - 5.9 MILES NW OF US-92
(11) MILEPOINT 000.000
(16) LATITUDE 28 0 15.4* (17) LONGITUDE 081 0 37.7*
(98) BORDER BRIDGE STATE CODE 000 % SHARE 00 %
(99) BORDER BRIDGE STRUCTURE NO. #

********** STRUCTURE TYPE AND MATERIAL **********

(43) STRUCTURE TYPE MAIN: MATERIAL - PRESTRESS CONCR
TYPE - STRINGER/MULTI-BEAM OR GIR CODE 502
(44) STRUCTURE TYPE APPR: MATERIAL - OTHER
TYPE - OTHER CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 004
(46) NUMBER OF APPROACH SPANS 0000
(107) DECK STRUCTURE TYPE - CIP COMPOSITE CONC CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - CONCRETE CODE 1
B) TYPE OF MEMBRANE - NONE CODE 0
C) TYPE OF DECK PROTECTION - NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1960
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON - HIGHWAY
UNDER - HIGHWAY CODE 11
(28) LANES: ON STRUCTURE 02 UNDER STRUCTURE 04
(29) AVERAGE DAILY TRAFFIC 001100
(30) YEAR OF ADT 1993 (109) TRUCK ADT 01 %
(19) BYPASS, DETOUR LENGTH 16 MI

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 0075 FT
(49) STRUCTURE LENGTH 000225 FT
(50) CURB OR SIDEWALK: LEFT 01.5 FT RIGHT 01.5 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 028.0 FT
(52) DECK WIDTH OUT TO OUT 034.2 FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 040 FT
(33) BRIDGE MEDIAN - NO MEDIAN CODE 0
(34) SKEW 24 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 28.0 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN
(54) MIN VERT UNDERCLEAR REF - HIGHWAY 16 FT 02 IN
(55) MIN LAT UNDERCLEAR RT REF - HIGHWAY 13.3 FT
(56) MIN LAT UNDERCLEAR LT 29.9 FT

********** NAVIGATION DATA **********

(30) NAVIGATION CONTROL - NOT APPLICABLE N CODE N
(111) PIER PROTECTION - NOT APPLICABLE CODE N
(39) NAVIGATION VERTICAL CLEARANCE 000 FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR 000 FT
(40) NAVIGATION HORIZONTAL CLEARANCE 0000 FT

****

SUFFICIENCY RATING = 093.9
STATUS = NO SIGNIFICANT DEFICIENCY

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH — YES
(104) HIGHWAY SYSTEM - STRUCTURE IS NOT ON NHS 0
(26) FUNCTIONAL CLASS - RURAL MINOR ARTERIAL 06
(100) DEFENSE HIGHWAY - NOT A DEFENSE HIGHWAY 0
(101) PARALLEL STRUCTURE - NONE EXISTS N
(102) DIRECTION OF TRAFFIC - TWO WAY TRAFFIC 2
(103) TEMPORARY STRUCTURE - NOT APPLICABLE N
(110) DESIGNATED NATIONAL NETWORK - NOT PART OF N 0
(20) TOLL - ON FREE ROAD 3
(21) MAINTAIN - STATE HIGHWAY AGENCY 01
(22) OWNER - STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE - NOT ELIGIBLE FOR 5

********** CONDITION ********** CODE

(58) DECK 7
(59) SUPERSTRUCTURE 7
(60) SUBSTRUCTURE 7
(61) CHANNEL & CHANNEL PROTECTION N
(62) CULVERTS N

********** LOAD RATING AND POSTING ********** CODE

(31) DESIGN LOAD - H 20 4
(64) OPERATING RATING - HS-20 TRU 252
(63) INVENTORY RATING - HS-20 TRU 244
(70) BRIDGE POSTING - EQ OR GT LEGAL LOAD NO P 5
(41) STRUCTURE OPEN, POSTED OR CLOSED - A
DESCRIPTION - OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION *
(68) DECK GEOMETRY 5
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL 5
(71) WATERWAY ADEQUACY N
(72) APPROACH ROADWAY ALIGNMENT 9
(36) TRAFFIC SAFETY FEATURES 0111
(113) SCOUR CRITICAL BRIDGES

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK - NO IMPROVEMENT PLANNED CODE 000
(76) LENGTH OF STRUCTURE IMPROVEMENT 000000 FT
(94) BRIDGE IMPROVEMENT COST $,000
(95) ROADWAY IMPROVEMENT COST $,000
(96) TOTAL PROJECT COST $,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE 20
(114) FUTURE ADT 001305
(115) YEAR OF FUTURE ADT 2011

********** INSPECTIONS **********

(90) INSPECTION DATE 93/08 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO __ MO A)
B) UNDERWATER INSP - NO __ MO B)
C) OTHER SPECIAL INSP - NO __ MO C)

SECTION 5
CORRESPONDENCE AND COORDINATION

Florida Department of Transportation
ENVIRONMENTAL DETERMINATION

1. GENERAL INFORMATION

County: Polk
Project Name: I-4 PD&E Study
Project Limits: From West of Memorial Boulevard (SR 546) to the Polk/Osceola County line

Project Numbers:	16320-1402	ACDH-4-1(130)25	1147948
	State	Federal	WPI

2. PROJECT DESCRIPTION

a. **Existing:** The project limits for the Interstate 4 (I-4) corridor are from west of Memorial Boulevard (SR 546) to the Polk/Osceola County line, a distance of about 47.4 km (29.5 mi); see Figure No. 1. See page 4 for continuation of Existing discussion.

Need for Project: The Florida Department of Transportation (FDOT) proposes to improve the operational and roadway network characteristics of I-4 from west of Memorial Boulevard to the Polk/Osceola County line, in Polk County, Florida (see Figure No. 1). The project is part of an improvement program which includes all of I-4 from Interstate 275 in Tampa to Interstate 95 near Daytona Beach. See page 4 for continuation of **Need for Project** discussion.

b. **Proposed Improvements:** The proposed improvements include widening of I-4 to ten (10) lanes: six (6) general purpose lanes physically separated from four (4) special use lanes and sufficient right-of-way for future inclusion of rail service in the median. See page 4 for continuation of **Proposed Improvements** discussion.

3. CLASS OF ACTION

a. **Class of Action**
- [X] Environmental Assessment
- [ ] Environmental Impact
- [ ] Type 2 Categorical Exclusion

b. **Other Actions (ONLY FOR EA or EIS)**
- [ ] Section 4(f) Statement
- [ ] Section 106 Consultation
- [X] Endangered Species Assessment

c. **Public Involvement**

1. [ ] A public hearing is not required, therefore, approval of this Type 2 Categorical Exclusion constitutes acceptance of the location and design concepts for this project.
2. [ ] A public hearing was held on _____ and a transcript is included with the environmental determination. Approval of this Type 2 Categorical Exclusion determination constitutes acceptance of the location and design concepts for this project.

   [ ] An opportunity for a public hearing was afforded and a certification of opportunity is included with the environmental determination. Approval of the Type 2 Categorical Exclusion determination constitutes acceptance of the location and design concepts for this project.
3. [ ] A public hearing will be held and the public hearing transcript will be provided at a later date. Approval of this Type 2 Categorical Exclusion DOES NOT constitute acceptance of the project's location and design concepts.

   [ ] An opportunity for a public hearing will be afforded and a certification of opportunity will be provided at a later date. Approval of this Type 2 Categorical Exclusion determination DOES NOT constitute acceptance of the project's location and design concepts.

d. **Cooperating Agency:** [X] COE [ ] USCG [ ] FWS [ ] EPA [ ] NMFS [ ] None

4. REVIEWER'S SIGNATURE

FDOT Project Engineer	11,28,95 Date
FDOT Environmental Specialist	11,28,95 Date
FHWA Area Engineer	4,22,96 Date

5. FHWA CONCURRENCE

(For) Division Administrator	4,22,96 Date

U.S. Department of Transportation
Federal Highway Administration

Florida Division Office

227 N. Bronough St.
Room 2015
Tallahassee, Florida 32301

February 9, 1995

IN REPLY REFER TO: HDA-FL

Mr. Frank Carlile
Assistant Secretary for Transportation Policy
Florida Department of Transportation
Tallahassee, Florida

Dear Mr. Carlile:

Subject: Florida - FAP No. ACDH-4-1(130)25
State Project No. 16320-1402
Interstate 4 Multimodal Master Plan
Polk County

Your January 20, 1995 letter requested our concurrence of the Interstate 4 Multimodal Master Plan for Polk County. Since all of our previous concerns were satisfied with your November 9, 1994 response, we concur with the subject Master Plan. This concurrence is given subject to compliance with applicable Federal requirements.

Your letter also requested approval for additional lanes to be constructed with the Master Plan on Interstate 4 in Polk County. At the present time, we can only grant approval for one additional lane in each direction since the Master Plans for Districts One and Five have not been completed or developed.

We look forward to working with you on the development of the environmental document and interchange modification reports (IMR's). For the IMR's, we highly encourage a system-level approach since each interchange modification has a tremendous affect on the entire Interstate operation in the area. The detailed aspects of this approach will have to be resolved, including the grouping of the IMR's based upon their planned construction and the associated Interstate improvements needed to support the new or improved interchange modifications.

Sincerely yours,

J. R. Skinner
Division Administrator

FLORIDA DEPARTMENT OF STATE
Sandra B. Mortham
Secretary of State
DIVISION OF HISTORICAL RESOURCES
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Director's Office (904) 488-1480
Telecopier Number (FAX) (904) 488-3353

August 2, 1995

Mr. J. R. Skinner
Division of Administration
Federal Highway Administration
U.S. Department of Transportation
227 N. Bronough Street, Room 2015
Tallahassee, Florida 32301

In Reply Refer To:
Frank J. Keel
Historic Sites Specialist
(904) 487-2333
Project File No. 952245

RE: Cultural Resource Assessment Review Request
A Cultural Resources Assessment Survey, Interstate 4, Polk County, Florida. By Archaeological Consultants, Inc., March 1995 (revised April and May 1995)
SPN: 16320-1402
WPN: 1147948
FPN: ACDH-4-1(130)25

Dear Mr. Skinner:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), as well as the provisions contained in Chapter 267.061, *Florida Statutes* and Chapter 1A-46, *Florida Administrative Code*, we have reviewed the results of the field survey of the referenced project performed by Archaeological Consultants, Inc., and find them to be complete and sufficient.

We note that 14 previously unrecorded archaeological sites (8PO4104-4109, 4111, 4113-4119) and seven previously unrecorded historic structures (8PO5056-4057, 4059-4062 and 4612) were located during the course of this survey. We also note the five previously recorded historic properties (8PO111, 1549, 2256, 4042 and 4100) were revisited. Based on the results of the survey, all historic properties were determined to be ineligible for listing in the *National Register of Historic Places*, or otherwise of historical or architectural value. This office concurs with this determination. Therefore, it is the opinion of this office that the proposed undertakings will have no effect of historic properties listed or eligible for listing in the *National Register of Historic Places*, or otherwise of historical or architectural value.

If you have any questions concerning our comments, please do not hesitate to contact us. Your interest in protecting Florida's archaeological and historic resources is appreciated.

Sincerely,

Laura A. Kammerer

for George W. Percy, Director
Division of Historical Resources
and
State Historic Preservation Officer

GWP/Kfk
xc: C. L. Irwin, FDOT
C. O. Morgan, FDOT, District 1

U.S. Department of Transportation
Federal Highway Administration

Florida Division Office

227 N. Bronough St.
Room 2015
Tallahassee, Florida 32301

March 22, 1993

IN REPLY REFER TO: HPO-FL

Mr. David May
District Secretary
Florida Department of Transportation
801 North Broadway
Bartow, Florida 33830-1249

Attention: Ms. Kimberly Warren

Dear Mr. May:

Subject: Florida - Project No. ACDH-4-1(130)25
State Project No. 16320-1402
Section 4(f) Applicability
Wendell Watson Elementary School
Polk County

Reference is made to Ms. Kimberly Warren's letters dated February 27, 1995 (submitted by your March 20, 1995 route slip), requesting our review and determination of Section 4(f) applicability to the subject Property.

As documented in the Wendell Watson Elementary School Section 4(f) Determination of Applicability Report, no right-of-way will be acquired under the preferred Alternate 3, and constructive use is not expected to significantly diminish the school's vital functions. Therefore, we have determined that Section 4(f) does not apply to the Wendell Watson Elementary School for Alternate 3.

Sincerely yours,

Melvin L. Anderson

for J. R. Skinner
Division Administrator

cc: Mr. Leroy Irwin, FDOT (MS-37)

Baker

Michael Baker Jr., Inc.
1408 North Westshore Boulevard
Austin Center West, Tower II, Suite 612
Tampa, Florida 33607
Box 21387, Tampa, FL 33622-1387

(813) 289-7546
FAX (813) 289-5651

August 10, 1995

Mr. Charles O. Morgan, P.E.
District Environmental Management Engineer
Florida Department of Transportation
801 North Broadway
P.O. Box 1249
Bartow, FL 33830-1249

Project: I-4 Project Development and Environment Study
Polk County, Florida
State Project No. 16320-1402
Work Program Item No. 1147948
Federal-Aid Project No. ACDH-4-1(130)25

Subject: Slip Ramp Concepts

Dear Mr. Morgan:

In a recent meeting with you, we discussed the concerns raised by the Federal Highway Administration and shared by you regarding the operation and safety of the slip ramp concepts proposed for I-4 in Polk County. This letter (with attachments) is a summary of our research and analysis done on this matter.

During the development of the 1994 I-4 Master Plan for Polk County, we discussed at length, the operation of slip ramps with Don Capelle and Kevin Haboian (project team members and nationally renowned consultants on design and operation of HOV/Special Use Lanes). Some of the concerns addressed were the need for acceleration/deceleration lanes and the length of opening in the barrier wall between the special use and general purpose lanes.

Generally, the level of service has degraded to such a level before the addition of HOV lanes that no serious concerns are raised regarding speed change. I-4 in Polk County, due to its function as a primary arterial for inter-regional traffic with a relatively high percentage of tourist and truck traffic traveling at or near the design speed of 110 km/h (70 mph), is not a typical multi-modal facility.

The 1994 I-4 Master Plan reflects a slip ramp (Single Movement Alternative, Master Plan Exhibit No. 9-5) which requires an additional 3.6 m (12 ft) of width between the special use and general purpose lanes as shown in the attached Exhibit No. 1 and Appendix "A". During preliminary design, a slip ramp which required no additional width was proposed by a design consultant and found to meet criteria by the I-4 General Engineering Consultant, Sverdrup Civil, Inc. This design has an opening of 542.9 m (1,781.2 ft), a 2^0 departure angle and a 50:1 entrance taper as shown in the attached Exhibit No. 2 and Appendix "B".

The major concern with the large opening in the barrier wall is the susceptibility to reverse flow from the general purpose lanes to the special use lanes in the case depicted. If the full shoulder of 3.0 m (10 ft) plus a 0.6 m (2 ft) clear zone from the barrier is to be maintained from all through lanes and ramps, the only apparent means of reducing the opening is to spread the lanes apart and extend the wall to a point within the gore of the ramp which is 3.6 m (12 ft) equidistant from the through lane and the ramp.

Utilizing the 2° departure angle to compute the added protection, a 104.8 m (343.8 ft) reduction in opening is realized with each 3.6 m (12 ft) of width added to the median. Assuming a vehicle is traveling at a design speed of 110 km/h (70 mph) or 30.6 meters per second, it would take that vehicle 17.7 seconds to travel the length of the 542.9 m (1,781.2 ft) opening and 10.9 seconds to travel the length of the 333.3 m (1,093.5 ft) opening. (See the following table and Exhibit Nos. 1 and 2.) If a decision time of 2.5 seconds is required to begin braking after the driver has recognized the opening, the 333.3 m (1,093.5 ft) opening would not preclude the contra-flow movement, but would significantly reduce the number of drivers which would consider such a move.

Alternative	Length of Opening	Travel Time at Design Speed
Preliminary Design	542.9 m (1,781.2 ft)	17.7 seconds
Preliminary Design plus 3.6 m	438.1 m (1,437.3 ft)	14.3 seconds
I-4 Master Plan	438.1 m (1,437.3 ft)	14.3 seconds
I-4 Master Plan plus 3.6 m	333.3 m (1,093.5 ft)	10.9 seconds

The only sure ways to stop this move is to continue to widen the median until no opening is apparent or to build a flyover ramp which would allow the wall to remain unbroken. Neither of these solutions seem to be economically reasonable, therefore no further investigation into these options has been done.

Consideration should be given to providing either a 70:1 taper or an acceleration lane for the ramps since the majority of the users will not be commuters, but tourists with a great number being elderly drivers. An entrance movement from the left into the high speed lane is a difficult one and we are of the opinion that a capacity analysis alone fails to recognize this safety issue.

The information in this letter is a PD&E type analysis and therefore has not attempted to design each of the slip ramp conditions, but has attempted to point out particular issues which the designer may want to consider.

We trust that this letter is sufficient for its intended purpose, but should you have any questions, please contact T.J. Martin or Jeff Sawyer at (813) 289-7546.

Sincerely,

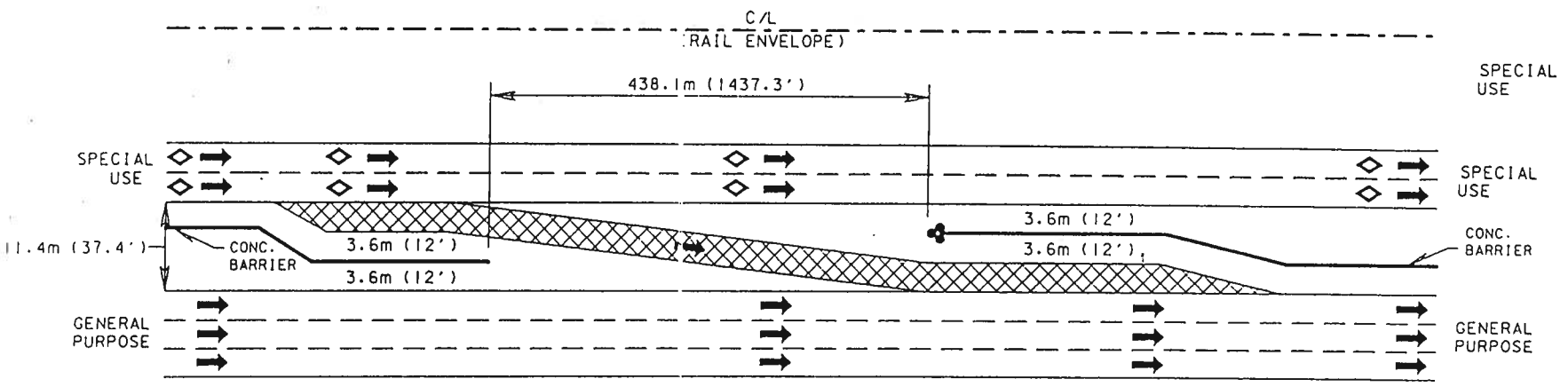
MICHAEL BAKER JR.,INC.

T. Martin

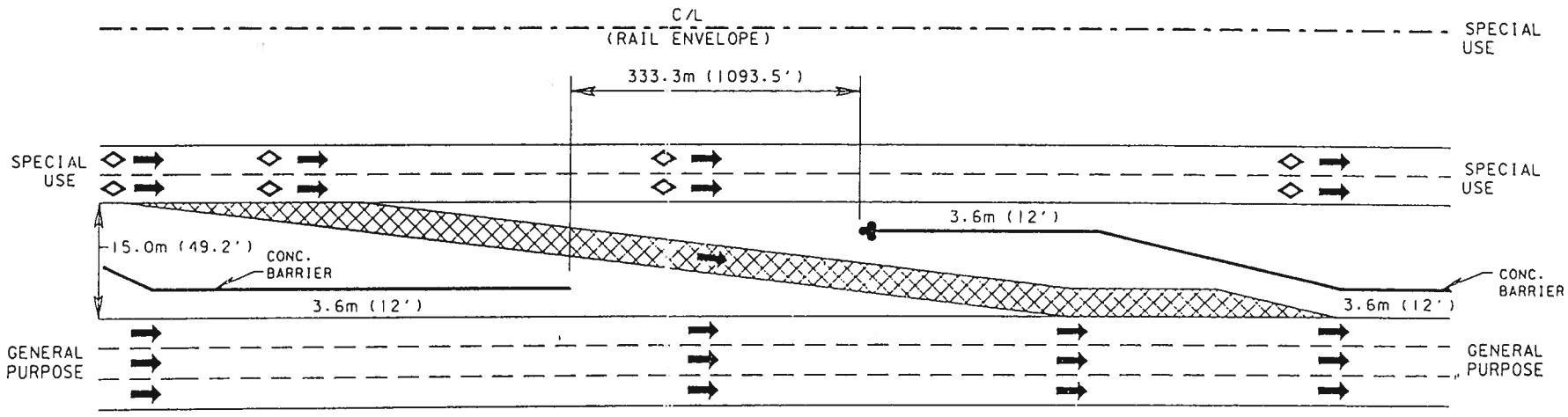
T.J. Martin, P.E.
Project Manager

Attachments

SLIP RAMP CONCEPTS



MASTER PLAN



MASTER PLAN PLUS 3.6m (12')

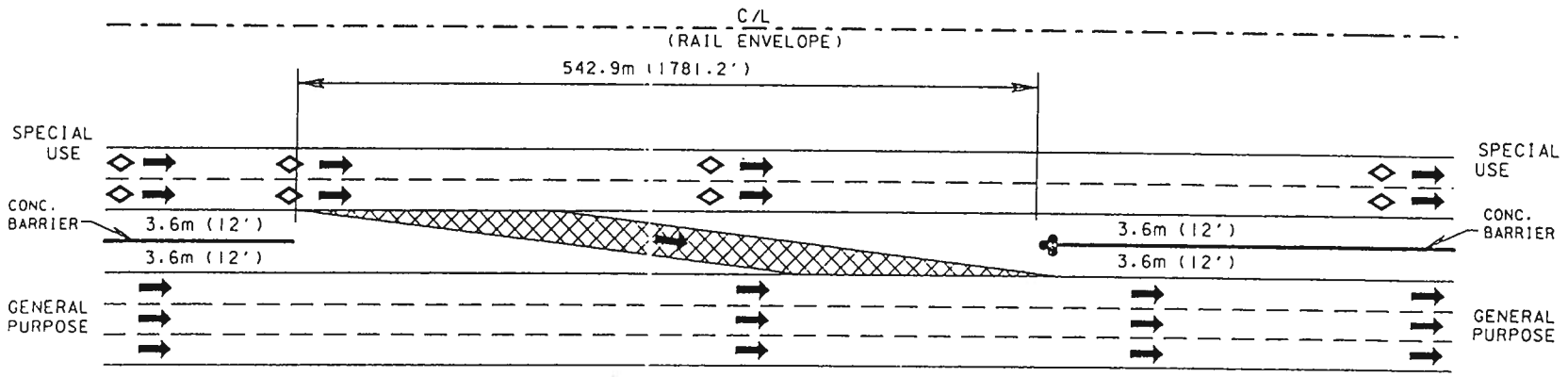
N.T.S.

I-4 Project Development & Environment Study
State Project No. 16320-1402

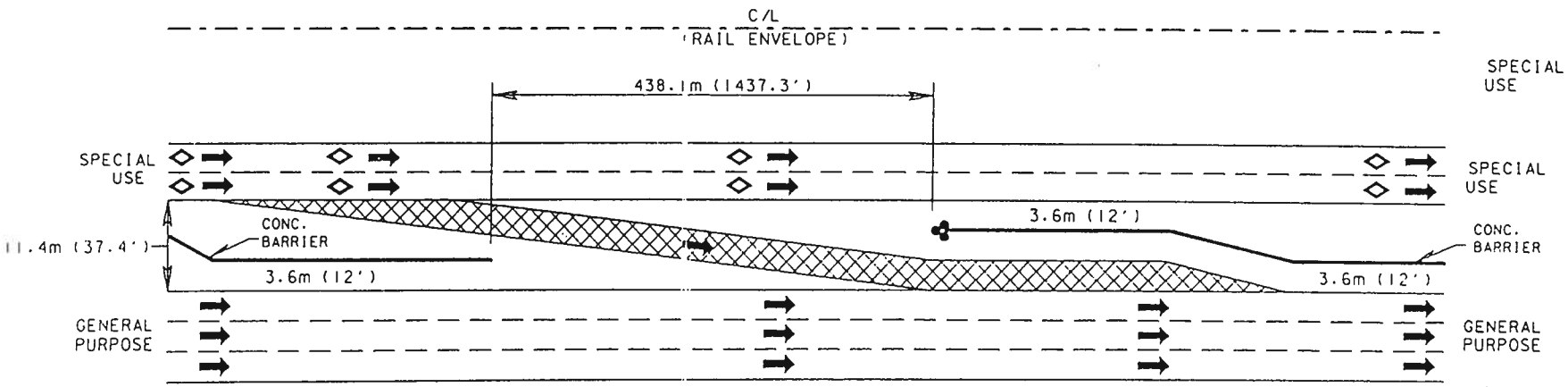
Polk County

EXHIBIT 1

SLIP RAMP CONCEPTS



PRELIMINARY DESIGN



PRELIMINARY DESIGN PLUS 3.6m (12')

N.T.S.

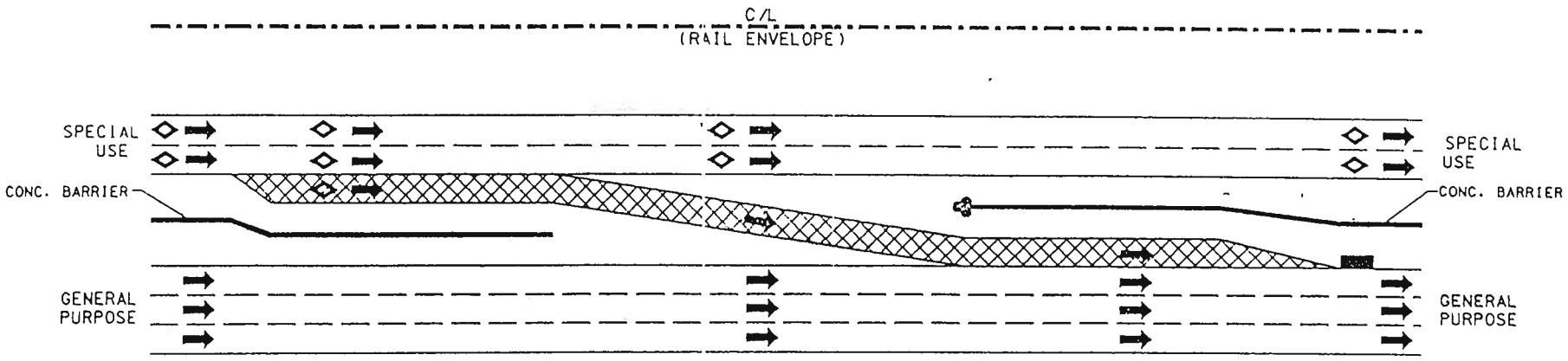
I-4 Project Development & Environment Study
State Project No. 16320-1402

Polk County

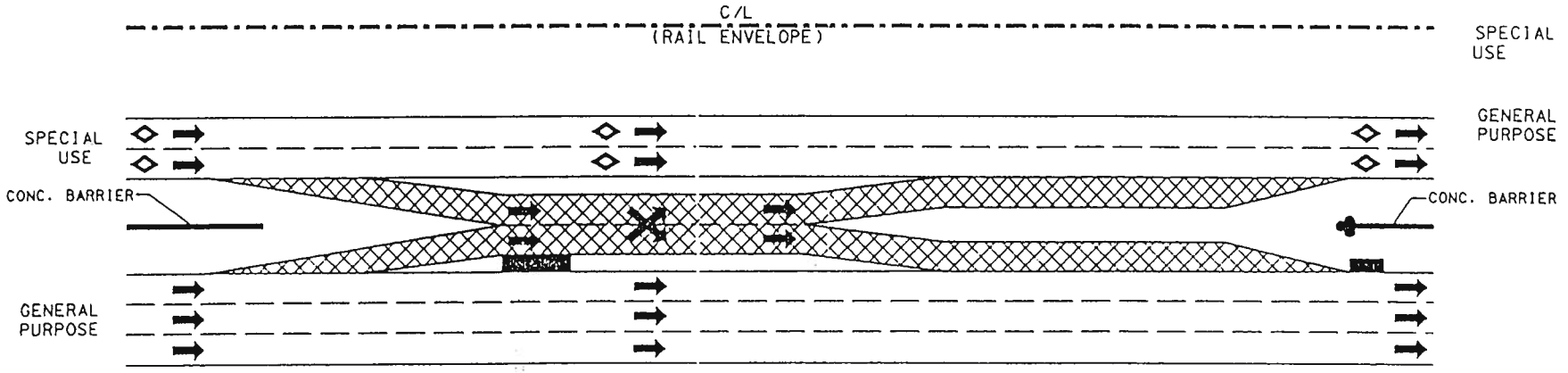
EXHIBIT 2

APPENDIX A

STATE PROJ. NO.	
16320-1402	



SINGLE MOVEMENT ALTERNATIVE



DUAL MOVEMENT ALTERNATIVE

NOTE:
DESIGN FEATURES WILL MEET MINIMUM AASHTO/FDOT CRITERIA.

ENFORCEMENT AREA

61-6

I-4 Multimodal Interstate Master Plan

SPECIAL USE LANE INGRESS/EGRESS ALTERNATIVES

EXHIBIT NO. 9-5

SHT. 1 of 1

APPENDIX B

I-4 WIDENING PROGRAM
FDOT DISTRICT ONE
POLK COUNTY

SLIP RAMP DESIGN

INTRODUCTION

Slip ramps will be required along I-4 in the future when the special use lanes are constructed, to allow vehicles to enter or exit the special use lanes from and to the general use lanes. The slip ramp design must be considered during the design of the six general use lanes, however, primarily to verify that the vertical alignment and the drainage design are workable for both the initial and ultimate construction.

It should be noted that the final slip ramp design for any specific location on I-4 will be dependent upon the required capacity and operational analyses for that location, and the slip ramp may need to be longer than shown in this concept design. Capacity analysis to verify 'ramp terminal' levels of service and highway weaving analysis must be performed on a site-specific basis and may affect slip ramp length and placement. This analysis, using the Highway Capacity Manual procedures, will be required to ensure that the slip ramp placement in relationship to an exiting or entering interchange ramp provides adequate weave distances. Therefore, this proposed concept design should be considered a minimum acceptable length.

SLIP RAMP DESIGN CRITERIA

Design Speed:	V_d = 110 km/h (68.4 mph)
Exit Terminal :	2° - 5° Taper
Entrance Terminal Type:	50:1 - 70:1 Taper
Ramp Width:	4.5 m (14.8')
Length of Horizontal Curvature:	$6V_d$ ($3V_d$ min.) - metric units $30V_d$ ($15V_d$ min.) - English units

PROPOSED SLIP RAMP DESIGN

The geometric requirements of an 'exit' slip ramp and 'entrance' slip ramp are equivalent. For the purposes of this discussion, an 'exit' type slip ramp is presented here and will be discussed in three parts: the exit, the cross-over, and the entrance portions of the slip ramp. (See attached sketch.)

Exit

AASHTO allows taper type exit ramps with an angle of divergence from 2° to 5°. FDOT utilizes a 4° taper type exit ramp as standard. Under standard conditions a 4° exit would be appropriate, however for an exit from the special use lanes it appears that an exit angle as flat as allowable is most appropriate. A

flatter divergence angle is superior for two reasons. First, the distance between the edges of pavement of the special use lanes and the general use lanes is relatively small, 7.8 m (25.6'). A flatter transition exit angle permits a longer, more gradual transition across this narrow distance. Larger angles of divergence would result in rather abrupt geometry as the 'exit' portion of the slip ramp intersects the 'cross-over' portion of the ramp. Secondly, for any given curve in the cross-over portion, a larger angle of departure results in a shorter curve length. Horizontal curvature should be utilized for the cross-over portion of the slip ramp design (see cross-over discussion, following), and the flattest curve with the greatest length possible should be utilized.

Therefore, a 2° departure angle with a taper type exit from the special purpose lanes is recommended.

Cross-Over

The cross-over portion of the slip ramp is a continuation of the diverge movement and provides a parallel portion of the slip ramp to accommodate the merge from the slip ramp into the general use lanes. For purposes of this design, the gap acceptance length recommended by AASHTO has been utilized.

Due to the desirability of maintaining highway design speeds through the slip ramp, horizontal curvature is recommended. To avoid edge of pavement break-over problems between the slip ramp, the special use lanes, and the general use lanes, the maximum horizontal curvature without superelevation should be utilized. The minimum radius curve without superelevation for a design speed of 110 km/h (68.4 mph) is 4350.0 m (14271.7'), which was used for this design. Although superelevation is not required for this curve, a cross slope transition will be required as the slip ramp exits the special use lanes with a 0.02 cross slope and transitions to a 0.02 cross slope in the opposite direction (a change of 0.04) on the left lane of the general use lanes. This cross slope transition may be accommodated utilizing normal superelevation transition criteria applied to the beginning of the horizontal curve on this portion of the slip ramp.

Utilizing a 4350.0 m radius curve with the 2° departure on the exit portion of the slip ramp results in a curve length of 151.8 m (498.0'). This curve length does not meet the general minimum curve length criteria for 'open-highway' horizontal alignment design (330.0 m (1082.7')), however, the criteria does not apply in this situation. There are two main reasons that curve length criteria is typically applied: first, for aesthetics, to avoid the appearance of 'kinks' in roadway alignments, and second, to allow for a minimum length of full superelevation within the curve. For the slip ramp design, aesthetics is not a concern, as it would be for mainline or 'open-highway' geometrics. Additionally, since the proposed horizontal curvature does not require superelevation, then full superelevation within the curve is also not an issue. Therefore, 'open-highway' minimum curve length criteria is not applicable to slip ramp design, and a 151.8 m curve is acceptable for the slip ramp cross-over.

Entrance

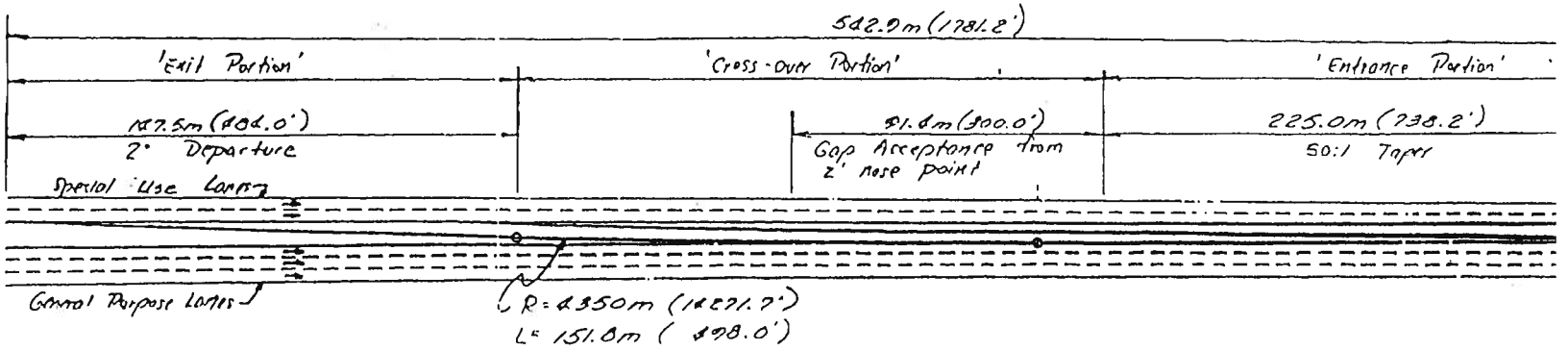
AASHTO allows tapers for entrance ramps in the range of 50:1 to 70:1. FDOT standard practice utilizes a 50:1 taper. A significant volume of traffic will in all likelihood utilize the parallel portion of the slip ramp for the majority of merge maneuvers. Therefore, a FDOT standard 50:1 taper appears adequate for the entrance portion of the slip ramp.

Barrier Wall Opening

The theoretical end/begin barrier wall separating the special use and general use lanes is the point of diverge (2° departure angle) from the travel lane and the point of intersection of the 50:1 taper with the travel lane. These locations are believed to be reasonable maximum limits since any location that reduces the opening of 543.0 m (1781.5') is also reducing the 3.6 m clearance between edge of travel lane and the wall. A reduction in the prevailing "system" shoulder width would violate driver expectency. Attenuation devices, designed in accordance with current standards and guidelines, will be required at the approach ends of the barrier wall, and their length should not encroach into the 543.0 m (1781.5) barrier wall opening area.

SUMMARY

A slip ramp design which results in a total minimum length (barrier opening) of approximately 543.0 m (1781.5'), as shown in the attached sketch, is recommended. This design is a combination of a 2° departure exit from the special use lanes, a 4350.0 m (14271.7') radius curve that is 151.8 m (498.0') in length for the cross-over portion of the slip ramp, and a 50:1 entrance taper to the general use lanes. The geometrics for an 'entrance' type slip ramp would be similar. Site-specific capacity analyses to analyze ramp terminal level of service will be required to establish the actual slip ramp length. Additionally, the designer must perform the weave analysis as presented in the Highway Capacity Manual to ensure that the longitudinal placement of the slip ramp between interchange ramps provides adequate weave distances to negotiate the crossing of the general purpose lanes to exit I-4 or enter the special use lanes.



Slip Ramp Design Concept

N.T.S.

4.5m (14.8') Lane Width

Orig: I-4 PD&E Project File. 20741-2201
XC: TJM/DAJ/SDE/JLS/Project Book
PER Appendix, C and C Report

SCHOOL BOARD OF POLK COUNTY

P.O. BOX 391 • 1915 SOUTH FLORAL AVE. • BARTOW, FLORIDA 33831

941-534-0500 • Suncom 549-0500 • (FAX) 941-534-0705

SVERDRUP COPIES/ROUTING		
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PROJ: 002		

RECEIVED

AUG 04 1995

SVERDRUP CORPORATION
BARTOW, FLORIDA

FRED L. MURPHY
Assistant Superintendent
Transportation Services

(941) 534-7300

SUNCOM 549-7309
(FAX) 941-534-7336

August 1, 1995

Mr. C.O. (Charlie) Morgan, P.E.
District Environmental Management Engineer
Florida Department of Transportation
P.O. Box 1249
Bartow, Florida 33831-1249

RE: I-4 Project Development and Environmental Study
W.P.I. No.: 1147948
State Project No.: 16320-1402
Federal-Aid Project No. ACDH-4-1(130)25
Polk County
Request upgrade of Bridge Crossing at Swindell Road, Tenth Street and Bella Vista Street to provide safer crossings for nonmotorized Traffic

Dear Mr. Morgan:

The purpose of this letter is to provide the Department with information which will justify enhancement of the referenced bridges to make them more accessible and safer for use by our students and other pedestrians in the area.

Meetings were held at the School Board of Polk County with Mr. Jeff Fee, the Director of Pupil Accounting, and Mr. Jerry Briggs, Assistant Project Manager for Sverdrup Civil, Inc. The following summaries, using data gathered during these meetings, depict the use of these facilities by our department now and what we feel would make these crossings safer for anticipated future use:

-Swindell Road currently has 107 pupils which are bussed from the east side of I-4 to Winston Elementary School. Proposed eight-foot sidewalks on this bridge would be beneficial as this would supply a safe means of access for pupils and a deterrent to having them bussed.

-Tenth Street currently has 25 pupils which are bussed from the east side of I-4 to Winston Elementary School. Although there are less students being bussed at the Tenth Street location, we again recommend that eight-foot sidewalks be provided on the bridge due to potential growth in the area and possible split in pupils walking across Swindell Road and Tenth Street to Winston Elementary.

-Bella Vista Street has pupils which are being bussed from the east side of I-4 to Winston Elementary, however the distance from this crossing to Winston

Elementary is beyond the safe limits to be walking to school. There are no plans for an additional school in this area at this time. Although this bridge is not anticipated to be a primary school pedestrian route in the future, we concur that proposed five-foot sidewalks would be beneficial and improve safety at this location for occasional pedestrians which are using this crossing now and for anticipated future use.

If you have any questions or need additional information, please contact me.

Sincerely,

Fred L. Murphy
Assistant Superintendent, Transportation Services
Polk County Public Schools

cc: John DeWinkler, P.E., FDOT
Jerry W. Briggs, Sverdrup
Jeff Fee, Polk County School Board

Orig: I-4 PD&E Project File 20741-00.
XC: JLS/DGJ/PRB/Project Book.

8/6/98

From: Patti Baker
To: JSAWYER
Date: 8/5/98 1:31pm
Subject: I-4 PD&E -- FHWA Comments

Wednesday, August 5, 1998

The following telephone contacts are submitted to file:

With regard to FIRM's for Polk County:

Dawn Burkhart (941-534-6767)
Surface Water Management Division
Polk County Engineering Department
Re: Status of Polk County FIRM Maps

Dawn informed me that the Polk County FIRM's are still in the preliminary format (9/96). Polk County has submitted, (through their consultant, Advisors, Inc.) an appeal to FEMA for re-evaluation for three areas within Polk County. She referred me to Juan Carrizo at Advisors, Inc. for more specific information regarding the Itchepakassassa Creek-Tributary 1 floodplain crossing on the I-4 corridor.

I spoke to Juan and he explained the reason for the appeal for the area at Itchepakassassa Creek -- Polk County data differs from the FEMA Study Contractor data for this area. The differences will not raise the floodplain levels, in fact, the levels are anticipated to remain as is or become lower based on the re-evaluation. Therefore, it is Juan's opinion that the floodplain values will not increase for this crossing. We also spoke about the Lake Gibson Drain at Socrum Loop Road. Juan does not recall any problems with this area.

With regards to Air Quality Plans for Polk County:

Gene Henry, Planner (941-534-6034)
Polk County Planning Department

I asked Gene if there was an Air Quality Specialist and/or an Air Quality Plan in effect for Polk County. Gene explained that although there used to be an Air Quality Specialist, that position was discontinued about two years ago. The air quality issues are now combined with the long range transportation planning issues. He referred me to the MPO to follow up with Davis Hyslop (941-534-6486).

Davis told me virtually the same thing as Polk County...there is not presently anyone in the position of Air Quality Specialist...in fact, because Lakeland and Polk County have established receptor sites (2) are currently a non-containment county, there is no immediate plans to renew that position. The MPO does not have any current air quality plans either. It seems all air quality issues are still effective only as far as the last data released (over two years ago) indicate.

(I called City of Lakeland Community Development office to inquire as to their air quality standards, and they also do no have a plan other than what the Polk County Planning staff has already indicated.)

FLORIDA GAME AND FRESH WATER FISH COMMISSION

110 43rd Ave., S.W
Vero Beach, FL 32968
January 23, 1996

Mr. Jeffrey L. Sawyer
Michael Baker Jr., Inc.
1408 North Westshore Blvd.
Austin Center West, Tower II
Suite 612
Tampa, FL 33607

RE: Endangered Species Biological Assessment, I-4
Project Development and Environment Study, Polk
County, FL

Dear Mr Sawyer

The Office of Environmental Services has reviewed the document referenced above and offer the following comments

According to the assessment, no Florida mice were captured or observed during sampling for this species of special concern on the site of the proposed eastbound rest area. To determine the status of the Florida mouse throughout the corridor, we recommend that sampling be continued wherever gopher tortoise burrows and appropriate habitat exist.

Two families of Florida scrub jays (threatened) occur along the I-4 corridor at county road 54. The Florida Department of Transportation (FDOT) has proposed to purchase acreage in a 1700 acre FDOT mitigation bank in Highlands county as mitigation for impacts to jays. In your cover letter you have asked for our concurrence on this proposed mitigation concept. Usually for projects requiring scrub jay mitigation we defer to the guidance of the U. S. Fish and Wildlife Service (USFWS). Please contact the USFWS to determine if the proposed mitigation concept is adequate.

Sincerely

John M. Wrublik

John M. Wrublik
Wildlife Biologist

JAN 26 1996

JMW, rs
ENV 1-13-2
HESBA.LET

MICHAEL BAKER, JR., INC.
TAMPA, FL

XC: ~~[illegible]~~ / Project Book
PBQD - Dave Reutter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Box 2676
Vero Beach, Florida 32961-2676

April 16, 1996

IN REPLY REFER TO:

RECEIVED

APR 24 1996

MICHAEL BAKER, JR., INC.
TAMPA, FL

Jeff Sawyer
Baker Engineering
1408 NW Shore Blvd., Suite 612
Tampa, Florida 33607

Project: Interstate 4, Project Development and Environmental Study
State Project No.: 16320-1402
Counties: Polk & Osceola

Dear Mr. Sawyer:

Reference is made to the Florida Department of Transportation's (FDOT) Biological Assessment, dated October, 1995, concerning the federally listed Florida scrub jay (*Aphgelocoma coerulescens coerulescens*) and the proposed widening of Interstate 4 from a four-lane divided rural freeway to a ten-lane divided urban and rural expressway, in Polk County, Florida. This letter is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The information available to us indicates that two families of the threatened Florida scrub jays exist in the corridor immediately west of the County Road 54 (Loughman Road) crossing. The widening of I-4 would directly affect about 1.4 acres of scrub habitat, but would not affect the adjacent scrub habitat which supports the two families. As mitigation for the loss of scrub habitat, FDOT proposes to purchase credits through the use of the FDOT's Highlands County Mitigation Bank.

As a general guide, individual scrub jay families require approximately 25 acres of contiguous suitable habitat. The U.S. Fish and Wildlife Service (FWS) supports a regionally-based approach to scrub jay conservation in Highlands County. Therefore, the FWS recommends a 2:1 ratio for mitigation of active scrub jay habitat in Highlands County, equating to 2.8 acres of habitat preservation and long-term maintenance as compensation for the 1.4 acres of impact.

For more information regarding scrub jay and survey methodologies, the FWS recommends the Florida Game and Fresh Water Fish Commission's Nongame Wildlife Program Technical Report No. 8 entitled, "Ecology and Development-Related Habitat Requirements of the Florida Scrub Jay (*Aphelocoma coerulescens coerulescens*)."

We have provided for your consideration a list of species that are protected as either threatened or endangered under the Endangered Species Act (16 U.S.C. 1531 et seq.) as well as candidates for listing which may be present on or near the project site. Since this list does not include State-listed species, the Florida Game and Fresh Water Fish Commission should be contacted to identify those species potentially present in the vicinity.

In addition, we are providing you with a list of species that we would consider during our review of any proposal associated with this project. This list represents species that the FWS is required to protect and conserve under other authorities, such as Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and the Migratory Bird Treaty Act (16 U.S.C. 701 et seq.). We are providing this list as technical assistance only. If you would like to discuss means and methods to conserve these species, feel free to contact this office.

Thank you for the opportunity to comment on this project. If you have any questions, feel free to contact John Tichy at (407) 562-3909.

Sincerely yours,

Craig Johnson
Supervisor, South Florida Ecosystem Office

CC:

FG&FWFC, Vero Beach, FL

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES
AND CANDIDATES FOR FEDERAL LISTING
IN POLK COUNTY

Scientific Name	Common Name	Status
Amphibians and Reptiles		
Alligator mississippiensis	American alligator	T(S/A)
Drymarchon corais couperi	Eastern indigo snake	T
Eumeces egregius lividus	Blue-tailed mole skink	T
Neoseps reynoldsi	Sand skink	T
Birds		
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E
Aphelocoma coerulescens coerulescens	Florida scrub jay	T
Campephilus principalis principalis	Ivory-billed woodpecker (probably extinct in south Florida)	E
Haliaeetus leucocephalus	Bald eagle	T
Mycteria americana	Wood stork	E
Picoides borealis	Red-cockaded woodpecker	E
Polyborus (=Caracara) plancus audubonii	Audubon's crested caracara	T
Vermivora bachmanii	Bachman's warbler	E
Mammals		
Ursus americanus floridanus	Florida black bear	C
Plants		
Family Agavaceae		
Nolina brittoniana	Britton's beargrass	E
Family Asteraceae		
Liatris ohlingerae	Scrub blazing star	E
Family Brassicaceae		
Warea amplexifolia	Clasping warea	E
Warea carteri	Carter's mustard	E
Family Caryophyllaceae		
Paronychia chartacea	Papery whitlow-wort	T

Scientific Name	Common Name	Status
Family Convolvulaceae		
Bonamia grandiflora	Florida bonamia	T
Family Fabaceae		
Clitoria fragrans	Pigeon wing	T
Crotalaria avonensis	Avon Park harebells	E
Lupinus aridorum	Scrub lupine	E
Family Hypericaceae		
Hypericum cumulicola	Highlands scrub hypericum	E
Family Lamiaceae		
Conradina brevifolia	Short-leaved rosemary	E
Family Oleaceae		
Chionanthus pygmaeus	Pygmy fringetree	E
Family Polygalaceae		
Polygala lewtonii	Lewton's polygala	E
Family Polygonaceae		
Eriogonum longifolium var. *gnaphalifolium*	Scrub buckwheat	T
Polygonella basiramia	Wireweed	E
Polygonella myriophylla	Sandlace	E
Family Rhamnaceae		
Ziziphus celata	Florida ziziphus	E
Family Rosaceae		
Prunus geniculata	Scrub plum	E
Cladonia perforata	Florida perforate cladonia (Deer moss)	E

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES
AND CANDIDATES FOR FEDERAL LISTING
IN OSCEOLA COUNTY

Scientific Name	Common Name	Status
Amphibians and Reptiles		
Alligator mississippiensis	American alligator	T(S/A)
Drymarchon corais couperi	Eastern indigo snake	T
Birds		
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E
Aphelocoma coerulescens coerulescens	Florida scrub jay	T
Campephilus principalis principalis	Ivory-billed woodpecker (probably extinct in south Florida)	E
Haliaeetus leucocephalus	Bald eagle	T
Mycteria americana	Wood stork	E
Picoides borealis	Red-cockaded woodpecker	E
Polyborus (=Caracara) plancus audubonii	Audubon's crested caracara	T
Vermivora bachmanii	Bachman's warbler	E
Mammals		
Ursus americanus floridanus	Florida black bear	C
Plants		
Family Agavaceae		
Nolina brittoniana	Scrub beargrass	E
Family Convolvulaceae		
Bonamia grandiflora	Florida bonamia	T
Family Fabaceae		
Clitoria fragrans	Pigeon wing	T
Family Oleaceae		
Chionanthus pygmaeus	Pygmy fringetree	E
Family Polygalaceae		
Polygala lewtonii	Lewton's polygala	E

Scientific Name	Common Name	Status
Family Polygonaceae		
Eriogonum longifolium var. *gnaphalifolium*	Scrub buckwheat	T
Polygonella myriophylla	Sandlace	E

MIGRATORY BIRDS OCCURRING IN SOUTH FLORIDA

ORDER GAVIIFORMES

FAMILY GAVIIDAE

Gavia stellata, Red-throated Loon
Gavia immer, Common Loon
Gavia pacifica, Pacific Loon

ORDER PODICIPEDIFORMES

FAMILY PODICIPEDIDAE

Tachybaptus dominicus, Least Grebe
Podilymbus podiceps, Pied-billed Grebe
Podiceps auritus, Horned Grebe
Podiceps nigricollis, Eared Grebe

ORDER PROCELLARIIFORMES

FAMILY PROCELLARIIDAE

Calonectris diomedea, Cory's Shearwater
Puffinus gravis, Greater Shearwater
Puffinus griseus, Sooty Shearwater
Puffinus puffinus, Manx Shearwater
Puffinus lherminieri, Audubon's Shearwater

FAMILY HYDROBATIDAE

Oceanites oceanicus, Wilson's Storm-Petrel
Oceanodroma leucorhoa, Leach's Storm-Petrel
Oceanodroma castro, Band-rumped Storm-Petrel

ORDER PELECANIFORMES

FAMLY PHAETHONTIDAE

Phaethon lepturus, White-tailed Tropicbird
Phaethon aethereus, Red-billed Tropicbird

FAMILY SULIDAE

Sula dactylatra, Masked Booby
Sula leucogoster, Brown Booby
Sula sula, Red-footed Booby
Sula bassanus, Northern Gannet

FAMILY PELECANIDAE

Pelecanus erythrorhynchos, American White Pelican
Pelecanus occidentalis, Brown Pelican

FAMILY PHALACROCORACIDAE

Phalacrocorax carbo, Great Cormorant
Phalacrocorax auritus, Double-crested Cormorant

FAMILY ANHINGIDAE

Anhinga anhinga, Anhinga

FAMILY FREGATIDAE

Fregata magnificens, Magnificent Frigatebird

ORDER CICONIIFORMES

FAMILY ARDEIDAE

Botaurus lentiginosus, American Bittern
Ixobrychus exilis, Least Bittern
Ardea herodias, Great Blue Heron
Casmerodius albus, Great Egret
Egretta thula, Snowy Egret
Egretta caerulea, Little Blue Heron
Egretta tricolor, Tricolored Heron
Egretta rufescens, Reddish Egret
Bubulcus ibis, Cattle Egret
Butorides striatus, Green-backed Heron
Nycticorax nycticorax, Black-crowned Night Heron
Nycticorax violaceus, Yellow-crowned Night Heron

FAMILY THRESKIORNITHIDAE

Eudocimus albus, White Ibis
Eudocimus ruber, Scarlet Ibis
Plegadis falcinellus, Glossy Ibis
Plegadis chihi, White-faced Ibis
Ajaia ajaja, Roseate Spoonbill

FAMILY CICONIIDAE

Mycteria americana, Wood Stork

ORDER PHOENICOPTERIFORMES

FAMILY PHOENICOPTERIDAE

Phoenicopterus ruber, Greater Flamingo

ORDER ANSERIFORMES

FAMILY ANATIDAE

Dendrocygna bicolor, Fulvous Whistling-Duck
Dendrocygna autumnalis, Black-bellied Whistling-Duck
Anser albifrons, Greater White-fronted Goose
Chen caerulescens, Snow Goose
Branta bernicla, Brant
Branta canadensis, Canada Goose
Aix sponsa, Wood Duck
Anas crecca, Green-winged Teal
Anas rubripes, American Black Duck
Anas fulvigula, Mottled Duck
Anas platyrhynchos, Mallard
Anas bahamensis, White-cheeked Pintail
Anas acuta, Northern Pintail
Anas discors, Blue-winged Teal
Anas cyanoptera, Cinnamon Teal
Anas clypeata, Northern Shoveler
Anas strepera, Gadwall
Anas penelope, Eurasian Wigeon
Anas americana, American Wigeon
Aythya valisineria, Canvasback
Aythya americana, Redhead
Aythya collaris, Ring-necked Duck
Aythta marila, Greater Scaup
Aythya affinis, Lesser Scaup
Somateria mollissima, Common Eider
Somateria spectabilis, King Eider
Histrionicus histrionicus, Harlequin Duck
Clangula hyemalis, Oldsquaw
Melanitta nigra, Black Scoter
Melanitta perspicillata, Surf Scoter
Melanitta fusca, White-winged Scoter
Bucephala clangula, Common Goldeneye
Bucephala albeola, Bufflehead
Lophodytes cucullatus, Hooded Merganser
Mergus merganser, Common Merganser
Mergus serrator, Red-breasted Merganser
Oxyura jamaicensis, Ruddy Duck
Oxyura dominica, Masked Duck

ORDER FALCONIFORMES

FAMILY CATHARTIDAE

Coragyps atratus, Black Vulture
Cathartes aura, Turkey Vulture

FAMILY ACCIPITRIDAE

Pandion haliaetus, Osprey
Elanoides forficatus, American Swallow-tailed Kite
Elanus caeruleus, Black-shouldered Kite
Rhostrhamus sociabilis, Snail Kite
Ictinia mississippiensis, Mississippi Kite
Haliaeetus leucocephalus, Bald Eagle
Circus cyaneus, Northern Harrier
Accipiter striatus, Sharp-shinned Hawk
Accipiter cooperii, Cooper's Hawk
Buteo lineatus, Red-shouldered Hawk
Buteo platypterus, Broad-winged Hawk
Buteo brachyurus, Short-tailed Hawk
Buteo swainsoni, Swainson's Hawk
Buteo jamaicensis, Red-tailed Hawk

FAMILY FALCONIDAE

Polyborus plancus, Crested Caracara
Falco sparverius, American Kestrel
Falco columbarius, Merlin
Falco peregrinus, Peregrine Falcon

ORDER GRUIFORMES

FAMILY RALLIDAE

Coturnicops noveboracensis, Yellow Rail
Laterallus jamaicensis, Black Rail
Rallus longirostris, Clapper Rail
Rallus elegans, King Rail
Rallus limicola, Virginia Rail
Porzana carolina, Sora
Porphyrula martinica, Purple Gallinule
Gallinula chloropus, Common Moorhen
Fulica americana, American Coot

FAMILY ARAMIDAE

Aramus guarauna, Limpkin

FAMILY GRUIDAE

Grus canadensis, Sandhill Crane

ORDER CHARADRIIFORMES

FAMILY CHARADRIIDAE

Pluvialis squatarola, Black-bellied Plover
Pluvialis dominica, Lesser Golden-Plover

Charadrius alexandrinus, Snowy Plover
Charadrius wilsonia, Wilson's Plover
Charadrius semipalmatus, Semipalmated Plover
Charadrius melodus, Piping Plover
Charadrius vociferus, Killdeer
Charadrius montanus, Mountain Plover

FAMILY HAEMATOPODIDAE

Haematopus palliatus, American Oystercatcher

FAMILY RECURVIROSTRIDAE

Himantopus mexicanus, Black-necked Stilt
Recurvirostra americana, American Avocet

FAMILY SCOLOPACIIDAE

Tringa melanoleuca, Greater Yellowlegs
Tringa flavipes, Lesser Yellowlegs
Tringa solitaria, Solitary Sandpiper
Catoptrophorus semipalmatus, Willet
Actitus macularia, Spotted Sandpiper
Bartramia longicauda, Upland Sandpiper
Numenius phaeopus, Whimbrel
Numenius americanus, Long-billed Curlew
Limosa limosa, Black-tailed Godwit
Limosa haemastica, Hudsonian Godwit
Limosa fedoa, Marbled Godwit
Arenaria interpres, Ruddy Turnstone
Aphriza virgata, Surfbird
Calidris canutus, Red Knot
Calidris alba, Sanderling
Calidris pusilla, Semipalmated Sandpiper
Calidris mauri, Western Sandpiper
Calidris minutilla, Least Sandpiper
Calidris fuscicollis, White-rumped Sandpiper
Calidris bairdii, Baird's Sandpiper
Calidris melanotos, Pectoral Sandpiper
Calidris acuminata, Sharp-tailed Sandpiper
Calidris maritima, Purple Sandpiper
Calidris alpina, Dunlin
Calidris ferruginea, Curlew Sandpiper
Calidris himantopus, Stilt Sandpiper
Tryngites subruficollis, Buff-breasted Sandpiper
Philomachus pugnax, Ruff
Limnodromus griseus, Short-billed Dowitcher
Limnodromus scolopaceus, Long-billed Dowitcher
Gallinago gallinago, Common Snipe
Scolopax minor, American Woodcock
Phalaropus tricolor, Wilson's Phalarope
Phalaropus lobatus, Red-necked Phalarope
Phalaropus fulicaria, Red Phalarope

FAMILY LARIDAE

Stercorarius pomarinus, Pomarine Jaeger
Stercorarius parasiticus, Parasitic Jaeger
Stercorarius longicaudus, Long-tailed Jaeger
Larus atricilla, Laughing Gull
Larus pipixcan, Franklin's Gull
Larus minutus, Little Gull
Larus ridibundus, Common Black-headed Gull
Larus philadelphia, Bonaparte's Gull
Larus delawarensis, Ring-billed Gull
Larus argentatus, Herring Gull
Larus thayeri, Thayer's Gull
Larus fuscus, Lesser Black-backed Gull
Larus hyperboreus, Glaucous Gull
Larus marinus, Great Black-backed Gull
Rissa tridactyla, Black-legged Kittiwake
Xema sabini, Sabine's Gull
Sterna nilotica, Gull-billed Tern
Sterna caspia, Caspian Tern
Sterna maxima, Royal Tern
Sterna sandvicensis, Sandwich Tern
Sterna dougallii, Roseate Tern
Sterna hirundo, Common Tern
Sterna paradisaea, Arctic Tern
Sterna forsteri, Forster's Tern
Sterna antillarum, Least Tern
Sterna anaethetus, Bridled Tern
Sterna fuscata, Sooty Tern
Chlidonias niger, Black Tern
Anous stolidus, Brown Noddy
Anous minutus, Black Noddy
Rynchops niger, Black Skimmer

FAMILY ALCIDAE

Alle alle, Dovekie
Alca torda, Razorbill

ORDER COLUMBIFORMES

FAMILY COLUMBIDAE

Columba squamosa, Scaly-naped Pigeon
Columba leucocephala, White-crowned Pigeon
Columba fasciata, Band-tailed Pigeon
Zenaida asiatica, White-winged Dove
Zenaida aurita, Zenaida Dove
Zenaida macroura, Mourning Dove
Columbina passerina, Common Ground-Dove

Geotrygon chrysia, Key West Quail-Dove
Geotrygon montana, Ruddy Quail-Dove

ORDER CUCULIFORMES

FAMILY CUCULIDAE

Coccyzus erythropthalmus, Black-billed Cuckoo
Coccyzus americanus, Yellow-billed Cuckoo
Coccyzus minor, Mangrove Cuckoo
Crotophaga ani, Smooth-billed Ani
Crotophaga sulcirostris, Groove-billed Ani

ORDER STRIGIFORMES

FAMILY TYTONIDAE

Tyto alba, Common Barn-Owl

FAMILY STRIGIDAE

Otus asio, Eastern Screech-Owl
Bubo virginianus, Great Horned Owl
Athene cunicularia, Burrowing Owl
Strix varia, Barred Owl
Asio otus, Long-eared Owl
Asio flammeus, Short-eared Owl
Aegolius acadicus, Northern Saw-whet Owl

ORDER CAPRIMULGIFORMES

FAMILY CAPRIMULGIDAE

Chordeiles acutipennis, Lesser Nighthawk
Chordeiles minor, Common Nighthawk
Chordeiles gundlacchii, Antillean Nighthawk
Caprimulgus carolinensis, Chuck-will's-widow
Caprimulgus vociferus, Whip-poor-will

ORDER APODIFORMES

FAMILY APODIDAE

Chaetura pelagica, Chimney Swift
Tachornis phoenicobia, Antillean Palm Swift

FAMILY TROCHILIDAE

Amazilia yucatenensis, Buff-bellied Hummingbird
Calliphlox evelynae, Bahama Woodstar
Archilochus colubris, Ruby-throated Hummingbird
Archilochus alexandri, Black-chinned Hummingbird
Selasphorus rufus, Rufous Hummingbird

ORDER CORACIIFORMES

FAMILY ALCEDINIDAE

Ceryle alcyon, Belted Kingfisher

ORDER PICIFORMES

FAMILY PICIDAE

Melanerpes erythrocephalus, Red-headed Woodpecker
Melanerpes carolinus, Red-bellied Woodpecker
Sphyrapicus varius, Yellow-bellied Sapsucker
Picoides pubescens, Downy woodpecker
Picoides villosus, Hairy woodpecker
Picoides borealis, Red-cockaded woodpecker
Colaptes auratus, Northern Flicker
Dryocopus pileatus, Pileated Woodpecker
Campephilus principalis, Ivory-billed Woodpecker

ORDER PASSERIFORMES

FAMILY TYRANNIDAE

Contopus borealis, Olive-sided flycatcher
Contopus virens, Eastern Wood-Pewee
Empidonax flaviventris, Yellow-bellied Flycatcher
Empidonax virescens, Acadian Flycatcher
Empidonax alnorum, Alder Flycatcher
Empidonax traillii, Willlow Flycatcher
Empidonix minimus, Least Flycatcher
Sayornis nigricans, Black Phoebe
Sayornis phoebe, Eastern Phoebe
Sayornis saya, Say's Phoebe
Pyrocephalus rubinus, Vermilion Flycatcher
Myiarchus cinerascens, Ash-throated Flycatcher
Myiarchus crinitus, Great Crested Flycatcher
Myiarchus tyrannulus, Brown-crested Flycatcher
Tyrannus vociferans, Cassin's Kingbird
Tyrannus verticalis, Western Kingbird
Tyrannus tyrannus, Eastern Kingbird
Tyrannus dominicensis, Gray Kingbird
Tyrannus caudifasciatus, Loggerhead Kingbird
Tyrannus forficatus, Scissor-tailed Flycatcher
Tyrannus savana, Fork-tailed Flycatcher

FAMILY ALAUDIDAE

Eremophila alpestris, Horned Lark

FAMILY HIRUNDINIDAE

Progne subis, Purple Martin
Tachycineta bicolor, Tree Swallw
Tachycineta cyaneoviridis, Bahama Swallow
Stelgidopteryx serripennis, Northern Rough-winged Swallow
Riparia riparia, Bank Swallow
Hirundo pyrrhonota, Cliff Swallow
Hirundo fulva, Cave Swallow
Hirundo rustica, Barn Swallow

FAMILY CORVIDAE

Cyanocitta cristata, Blue Jay
Aphelocoma coerulescens, Scrub Jay
Corvus brachyrhynchos, American Crow
Corvus ossifragus, Fish Crow

FAMILY PARIDAE

Parus carolinensis, Carolina Chickadee
Parus bicolor, Tufted Titmouse

FAMILY SITTIDAE

Sitta canadensis, Red-breasted Nuthatch
Sitta pusilla, Brown-headed Nuthatch

FAMILY CERTHIIDAE

Certhia americana, Brown creeper

FAMILY TROGLODYTIDAE

Thryothorus ludovicianus, Carolina Wren
Troglodytes aedon, House Wren
Troglodytes troglodytes, Winter Wren
Cistothorus platensis, Sedge Wren
Cistothorus palustris, Marsh Wren

FAMILY MUSCICAPIDAE

SUBFAMILY SYLVIINAE

Regulus satrapa, Golden-crowned Kinglet
Regulus calendula, Ruby-crowned Kinglet
Polioptila caerulea, Blue-gray Gnatcatcher

SUBFAMILY TURDINAE

Oenanthe oenanthe, Northern Wheatear
Sialis sialis, Eastern Bluebird
Catharus fuscescens, Veery
Catharus minimus, Gray-cheeked Thrush
Catharus ustulatus, Swainson's Thrush
Catharus guttatus, Hermit Thrush
Hylocichla mustelina, Wood Thrush
Turdus migratorius, American Robin
Ixoreus naevius, Varied Thrush

FAMILY MIMIDAE

Dumetella carolinensis, Gray Catbird
Mimus polyglottos, Northern Mockingbird
Toxostoma rufum, Brown Thrasher

FAMILY MOTACILLIDAE

Anthus spragueii, Sprague's Pipit

FAMILY BOMBYCILLIDAE

Bombycilla cedrorum, Cedar Waxwing

FAMILY LANIIDAE

Lanius ludovicianus, Loggerhead Shrike

FAMILY VIREONIDAE

Vireo griseus, White-eyed Vireo
Vireo bellii, Bells' Vireo
Vireo solitarius, Solitary Vireo
Vireo flavifrons, Yellow-throated Vireo
Vireo gilvus, Warbling Vireo
Vireo philadelphicus, Philadelphia Vireo
Vireo olivaceus, Red-eyed Vireo
Vireo altiloquus, Black-whiskered Vireo

FAMILY EMBERIZIDAE

SUBFAMILY PARULINAE

Vermivora bachmanii, Bachman's Warbler
Vermivora pinus, Blue-winged Warbler
Vermivora chrysoptera, Golden-winged Warbler
Vermivora peregrina, Tennessee Warbler
Vermivora celata, Orange-crowned Warbler
Vermivora ruficapilla, Nashville Warbler
Parula americana, Northern Parula
Dendroica petechia, Yellow Warbler
Dendroica pensylvanica, Chestnut-sided Warbler
Dendroica magnolia, Magnolia Warbler

Dendroica tigrina, Cape May Warbler
Dendroica caerulescens, Black-throated Blue Warbler
Dendroica coronata, Yellow-rumped Warbler
Dendroica nigrescens, Black-throated Gray Warbler
Dendroica townsendi, Townsend's Warbler
Dendroica virens, Black-throated Green Warbler
Dendroica fusca, Blackburnian Warbler
Dendroica dominica, Yellow-throated Warbler
Dendroica pinus, Pine Warbler
Dendroica kirtlandii, Kirtland's Warbler
Dendroica discolor, Prairie Warbler
Dendroica palmarum, Palm Warbler
Dendroica castanea, Bay-breasted Warbler
Dendroica striata, Blackpoll Warbler
Dendroica cerulea, Cerulean Warbler
Mniotilta varia, Black-and-White Warbler
Setophaga ruticilla, American Redstart
Protonotaria citrea, Prothonotary Warbler
Helmitheros vermivorus, Worm-eating Warbler
Limnothlypis swainsonii, Swainson's Warbler
Seiurus aurocapillus, Ovenbird
Seiurus noveboracensis, Northern Waterthrush
Seiurus motacilla, Louisiana Waterthrush
Oporornis formosus, Kentucky Warbler
Oporornis agilis, Connecticut Warbler
Oporornis philadelphia, Mourning Warbler
Geothlypis trichas, Common Yellowthroat
Wilsonia citrina, Hooded Warbler
Wilsonia pusilla, Wilson's Warbler
Wilsonia canadensis, Canada Warbler
Icteria virens, Yellow-breasted Chat

SUBFAMILY THRAUPINAE

Spindalis zena, Stripe-headed Tanager
Piranga rubra, Summer Tanager
Piranga olivacea, Scarlet Tanager
Piranga ludoviciana, Western Tanager

SUBFAMILY CARDINALINAE

Cardinalis cardinals, Northern Cardinal
Pheucticus ludovicianus, Rose-breasted Grosbeak
Pheucticus melanocephalus, Black-headed Grosbeak
Guiraca caerulea, Blue Grosbeak
Passerina amoena, Lazuli Bunting
Passerina cyanea, Indigo Bunting
Passerina ciris, Painted Bunting
Spiza americana, Dickcissel

SUBFAMILY EMBERIZINAE

Pipilo erythrophthalmus, Rufous-sided Towhee
Tiaris bicolor, Black-faced Grassquit
Aimophila aestivalis, Bachman's Sparrow
Spizella passerina, Chipping Sparrow
Spizella pallida, Clay-colored Sparrow
Spizella pusilla, Field Sparrow
Pooecetes gramineus, Vesper Sparrow
Chondestes grammacus, Lark Sparrow
Calamospiza melanocorys, Lark Bunting
Passerculus sandwichensis, Savannah Sparrow
Ammodramus savannarum, Grasshopper Sparrow
Ammodramus henslowii, Henslow's Sparrow
Ammodramus leconteii, Le Conte's Sparrow
Ammodramus caudacutus, Sharp-tailed Sparrow
Ammodramus maritimus, Seaside Sparrow
Melospiza melodia, Song Sparrow
Melospiza lincolnii, Lincoln's Sparrow
Melospiza georgiana, Swamp Sparrow
Zonotrichia albicollis, White-throated Sparrow
Zonotrichia leucophrys, White-crowned Sparrow
Zonotrichia querula, Harris' Sparrow
Junco hyemalis, Dark-eyed Junco
Calcarius lapponicus, Lapland Longspur

SUBFAMILY ICTERINAE

Dolichonyx oryzivorus, Bobolink
Agelaius phoeniceus, Red-winged Blackbird
Sturnella magna, Eastern Meadowlark
Sturnella neglecta, Western Meadowlark
Xanthocephalus xanthocephalus, Yellow-headed Blackbird
Euphagus carolinus, Rusty Blackbird
Euphagus cyanocephalus, Brewer's Blackbird
Quiscalus major, Boat-tailed Grackle
Quiscalus quiscula, Common Grackle
Molothrus bonariensis, Shiny Cowbird
Molothrus aeneus, Bronzed Cowbird
Molothrus ater, Brown-headed Cowbird
Icterus spurius, Orchard Oriole
Icterus galbula, Northern Oriole

FAMILY FRINGILLIDAE

SUBFAMILY CARDUELINAE

Carpodacus purpureus, Purple Finch
Carduelis pinus, Pine Siskin
Carduelis tristis, American Goldfinch

Orig to file
xc: Project Book-Environmental MS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecosystem Office
P.O. Box 2676
Vero Beach, Florida 32961-2676

May 8, 1997

Mark A. Schulz
Environmental Project Manager
Florida Department of Transportation
P.O. Box 1249
Bartow, FL 33831-1249

FWS Log No.: 4-1-97-I-524
Federal Aid Project No.: ACDH-41 (130) 25
State Project No.: 16320-1402
Dated: March 18, 1997
Applicant: Florida Department of Transportation
County: Polk

Dear Mr. Schulz:

Thank you for your March 18, 1997, letter to the U.S. Fish and Wildlife Service (FWS) requesting our review of the project referenced above. This letter represents the FWS' view on the effects of the proposed action in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). We have assigned FWS Log Number 4-1-97-I-524 to this consultation.

The Florida Department of Transportation (FDOT) is currently conducting a Project Development and Environmental Study (PD & E) for improvements to Interstate 4 from west of Memorial Boulevard to the Polk/Osceola County Line in Polk County, Florida. The purpose of the study is to provide detailed information necessary for the FDOT to reach a decision on the type and design of the road improvements that are warranted within the study area. The study area length is approximately 29.5 miles (47.4 km) long to accommodate present and future traffic demands. The project involves the widening of Interstate-4 from a four-lane, divided highway to a six-lane general purpose highway, which includes four special-use lanes for high occupancy/ single occupancy vehicles with provisions for rail service in the median.

On October 22, 1993, a letter was submitted to your office enclosing a list of threatened and endangered species that may be present in Polk County. On October 19, 1994, we submitted a letter clarifying the status of three federally threatened bald eagle *(Haliaeetus leucocephalus)* nests, PO-49, PO-50, and PO-64, which were found in the vicinity of the project area. Currently, PO-49 is located approximately 1,900 feet south of the project and was documented as "deteriorating" in the 1995-96 nesting season. In accordance with the *Habitat Management*

Guidelines for the Bald Eagle in the Southeast Region (FWS 1987) (Guidelines), this nest site is considered active for a period of five consecutive breeding seasons subsequent to the 1995-96 season, even if the eagles do not return to the site during that time period. PO-50 is located approximately 3,700 feet north of the project. This nest site was documented as "down" during the 1993-94 nesting season. However, a new nest was established during the 1991-92 nesting season, designated as PO-50A, which is currently active. PO-64 is located approximately one mile south of the proposed project. This nest was documented as "down" during the 1990-91 nesting season. A new nest was constructed during the 1991-92 nesting season and was designated as PO-64A. This nest was documented as "down" during the 1993-94 nesting season. Currently, our information indicates that no new nests have been designated within the PO-64 nesting area. In addition, since this nesting site is a mile from the project area, we do not anticipate that the proposed activities will affect the bald eagle at PO-64A.

Given the above information, it appears that Bald Eagle Nests PO-49 and PO-50A may be affected by the proposed project and should be considered in the project plans. In accordance with the Guidelines, we recommend that no construction activities occur within primary zones for bald eagle nests and further recommend that any activities within the secondary zones of bald eagle nests occur outside of the nesting season (typically October 1 through May 15). In order to establish protection zones for these nests, we need additional information. We recommend FDOT submit a blue-line aerial map indicating the nest's location in reference to the proposed project. This map should identify surrounding development and vegetation within one mile of the project. Once we receive this information, we will make protection zone determinations for the nests. In addition, given the pre-development phase of this project, we recommend that the project alignment be surveyed at least two weeks prior to construction to determine if any new nests are present within one mile of the proposed project.

Information available to us indicates that suitable habitat for the federally threatened Florida scrub jay *(Aphelocoma coerulescens)* is documented within 8,500 feet of the proposed project and, therefore, may be affected. As outlined in previous letters, dated October 19, 1994 and April 16, 1996, we concurred with your determination to conduct surveys in scrub habitat along I-4, between the county line and U.S. 27, using guidelines outlined in *Ecology and Development-Related Habitat Requirements of the Florida Scrub Jay*, published by the Florida Game and Fresh Water Fish Commission (620 South Meridian Street, Tallahassee, Florida 32399-1600). Also, we understand that FDOT has agreed to purchase credits in the Highlands Mitigation Bank at a 2:1 ratio for the 1.4 acres of impact, equating to 2.8 acres. Based on the information available, we conclude that the proposed project is not likely to adversely affect the Florida scrub jay. No critical habitat has been designated for the Florida scrub jay.

The upland habitat on the project site contains state-listed gopher tortoise *(Gopherus polyphemus)* burrows. The federally threatened eastern indigo snake *(Drymarchon corais couperi)* is strongly associated with high, dry, well-drained sandy soils, closely paralleling the sandhill habitat preferred by the gopher tortoise. Also, indigo snakes have been documented using inactive gopher tortoise burrows. Since gopher tortoise burrows are present, the eastern indigo snake may also occur at the project site and, therefore, may be affected. In view of this, we recommend that the Standard Protection Measures for the Eastern Indigo Snake (enclosed) be

followed during any construction phase of this project. As a reminder, part of the Standard Protection Measures for the Eastern Indigo Snake requires that we approve the protection/education plan, the biologist who will be on-site, and any relocation site prior to initiation of any clearing/construction activities. In addition, only a qualified biologist, who has either been authorized by a section 10(a)(1)(A) permit issued by the FWS or has been designated as an agent of the State of Florida by the Florida Game and Fresh Water Fish Commission for such activities, is permitted to come into contact with or relocate an eastern indigo snake. We look forward to reviewing this information. All of the above determinations have not been verified by a site visit.

Thank you for your cooperation in the effort to protect endangered and threatened species. If you have any questions, please contact Grant Webber at (561) 562-3909.

Sincerely,

Thomas E Grahl

Thomas E. Grahl
Acting Field Supervisor
South Florida Ecosystem Office

Enclosure

cc:

GFC, Vero Beach, FL (w/o enclosure)
COE, Vero Beach, FL (w/o enclosure)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecosystem Office
P.O. Box 2676
Vero Beach, Florida 32961-2676

August 27, 1997

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AUG 29 1997
District One
Environmental Management

Mark A. Schulz
Environmental Project Manager
Florida Department of Transportation
P.O. Box 1249
Bartow, FL 33830-1249

FWS Log No.: 4-1-97-I-524
Federal Aid Project No.: ACDH-4-1(130) 25
State Project No.: 16320-1402
Dated: March 18, 1997
Applicant: Florida Department of Transportation
County: Polk

Dear Mr. Schulz:

Thank you for your July 28, 1997, letter to the U.S. Fish and Wildlife Service (FWS) submitted in response to our May 8, 1997, letter requesting additional information for the proposed road-widening project referenced above. This letter represents the FWS' view on the effects of the proposed action in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). We have assigned FWS Log Number 4-1-97-I-524 to this consultation.

The Florida Department of Transportation (FDOT) is currently conducting a Project Development and Environmental Study for improvements to Interstate 4 from west of Memorial Boulevard to the Polk/Osceola County line in Polk County, Florida. The purpose of the study is to provide detailed information necessary for the FDOT to reach a decision on the type and design of the road improvements that are warranted within the study area. The study area length is approximately 29.5 miles (47.4 km) long to accommodate present and future traffic demands. The project involves the widening of Interstate 4 from a four-lane, divided highway to a six-lane general purpose highway, which includes four special-use lanes (high occupancy/single occupancy vehicles) with provisions for rail service in the median.

Our May 8, 1997, letter requested additional information concerning three federally threatened bald eagle *(Haliaeetus leucocephalus)* nests, PO-49, PO-50A and PO-64, which are in the vicinity of the project area. Available information indicates that PO-49 was blown out of the tree, and the nest tree was destroyed. A new nest, PO-49A, was constructed approximately 4,100

feet south of the proposed project. We have designated a primary zone for this nest to extend 750 feet in all directions from the nest and a secondary zone to extend an additional 750 feet from the boundary of the primary zone, for a total distance of 1,500 feet from the nest. Information indicates that nest PO-50A is located 3,800 feet northwest of the project area. Given the surrounding habitat and development, we have designated a primary zone that extends 750 feet from the nest and a secondary zone that extends an additional 750 feet from the boundary of the primary zone, for a total distance of 1,500 feet from the nest. As stated in our May 8, 1997, letter, PO-64A is approximately one mile from the project area.

Given the above information, the proposed project is located outside of the protection zones for bald eagle nests PO-49, PO-49A, PO-50A, and PO-64A. Therefore, we conclude that the proposed project is not likely to adversely affect the aforementioned bald eagle nests.

Although this does not constitute a Biological Opinion described under section 7 of the ESA, it does fulfill the requirements of the ESA, and no further action is required. If modifications are made to the project or if additional information involving potential impacts on listed species becomes available, reinitiation of consultation may be necessary.

Thank you for your cooperation in the effort to protect endangered and threatened species. If you have any questions, please contact Grant Webber at (561) 562-3909.

Sincerely,

Thomas E. Grahl
Acting Field Supervisor,
South Florida Ecosystem Office

cc:
GFC, Vero Beach, FL
COE, Tampa, FL

United States Department of the Interior
FISH AND WILDLIFE SERVICE
P.O. BOX 2676
VERO BEACH, FLORIDA 32961-2676

June 11, 1998

Bryan Williams
District Environmental Manager
Florida Department of Transportation
P.O. Box 1249
Bartow, FL 33830-1249

FWS Log No.: 4-1-97-I-524
Federal Aid Project No.: ACDH-4-1(130) 25
State Project No.: 16320-1402
Dated: February 13, 1998
Applicant: Florida Department of Transportation
County: Polk

Dear Mr. Williams:

Thank you for your February 13, 1998, letter to the U.S. Fish and Wildlife Service (FWS) reinitiating section 7 consultation under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). We have assigned FWS Log Number 4-1-97-I-524 to this consultation.

We understand that the Florida Department of Transportation (FDOT) is proposing to widen Interstate 4 from west of Memorial Boulevard to the Polk/Osceola County line in Polk County, Florida. The proposed project area is approximately 29.5 miles (47.4 km) long and will widening Interstate 4 from a four-lane, divided highway to a six-lane general purpose highway, which includes four special-use lanes (high occupancy/single occupancy vehicles) with provisions for rail service in the median.

In your February 13, 1998, letter, you indicated that your project had been modified and will affect an additional 1.77 acres of occupied Florida scrub-jay *(Aphelocoma coerulescens)* habitat. With this modification, a total of 3.17 acres of occupied Florida scrub-jay habitat will be affected by the proposed action. Furthermore, you stated that FDOT is proposing to compensate for this lost habitat by withdrawing credits from your Highlands Mitigation Bank. We support your efforts to compensate for lost habitat by withdrawing 6.34 acre credits from your Mitigation Bank.

☆U.S. GOVERNMENT PRINTING OFFICE: 1990-735-06

In addition, we recommend that FDOT modified the project plans to include the planting of sod along the roadway in a manner that minimizes the exposure of bare sand, thus deterring any roadside foraging of scrub-jays. Also, since the right-of-ways have been clearly defined, these areas shall be clearly marked and avoided to prevent further degradation of occupied scrub habitat due to construction activities.

Your project is proposing to remove habitat that is occupied by the Florida scrub-jay and may affect the species. Based on the fact that you are proposing to affect wetlands of the United States and will be applying to the Department of Army for a permit, the U.S. Army Corps of Engineers will consult with the FWS under section 7 of the ESA during the public notice comment period. At that time we will provide comments concerning the proposed actions.

Thank you for your cooperation in the effort to protect endangered and threatened species. If you have any questions, please contact Grant Webber at (561) 562-3909.

Sincerely,

James J. Slack
Project Leader
South Florida Field Office

cc:
GFC, Vero Beach, FL
COE, Tampa, FL

Minutes of Meeting

Sverdrup CORPORATION

I-4 WIDENING PROGRAM - DISTRICT ONE
COORDINATION FOR WILDLIFE CROSSINGS
DESIGN SECTIONS 4 AND 6

DATE: May 26, 1995

TIME: 1:30 p.m.

PARTICIPANTS: (see attached sign-in sheet)

The referenced meeting was held in Sverdrup's Bartow office. The purpose was for the affected design consultants to present concepts for the proposed wildlife crossings to Mary Ann Poole of Florida Game and Fresh Water Fish Commission (FGFWFC), to ensure that concepts being developed will meet the agency's requirements. The PD&E consultant was also represented at the meeting so that the environmental document currently being prepared will also accurately address the wildlife crossings.

Section 6. Brian McDermott of David Volkert Associates presented the crossing concept being developed for Design Section 6. Bridges are proposed at two locations within Section 6 because of poor geotechnical conditions (deep muck deposits). These bridges will also function as wildlife crossings. Anticipated lengths are approximately 110m and 128m. Feasible structure types include AASHTO girders (approx. 18.33m spans) and flat slab (approx. 9.17m spans). It was agreed that the AASHTO girder alternate would be preferable because: 1) it is expected to be more economical because fewer piers are required than with the flat slab alternate; 2) it should be less noisy than the flat slab alternate, and 3) it provides for a more open, less restricted area for wildlife to cross underneath. Unless other significant factors come to light during the preparation of the Bridge Development Report (BDR), it is expected that the two bridges will be AASHTO girder structures. Final span lengths will be determined in the BDR, but span lengths of less than 12.2m will not be recommended, since that is the minimum span length that has been constructed to date and has been documented to function (Alligator Alley).

- MORE -

DISTRIBUTION: Participants
Bradley J. Hartman (FGFWFC, Tallahassee)
Terry Gilbert (FGFWFC, Tallahassee)
Tim King (FGFWFC, Lakeland)
Dan Pennington (FDEP, Tallahassee)
Bud Cates (FDEP, Tallahassee)
Lance Hart (SJRWMD, Orlando)
Rebecca Jetton (DCA, Bartow)
Jim Wilt (FDOT District 1)
JRM, DPG, CLC, RAF, GJR

FILE: 08, 36 - 004, 006
h:\013266\admn\min0041.caj

INC.

335 East Van Fleet Drive, Bartow, FL 33830 (P.O. Box 1636 / 33831) - Telephone (813) 534-8500

The vertical clearance under the bridges will be 2.5m above Seasonal High Water (SHW). At the bridge ends, normal slope protection will be provided. Then, level, 3.0m wide maintenance berms at an elevation of approximately 0.3m above SHW will be constructed. From there the fill will slope at a rate of 10:1 down to the water and/or existing ground.

The ground conditions under the crossing were discussed. The existing roadway embankment (which is located where the future special purpose/HOV lanes will be) will be removed down to match the elevation of the existing ground along the north and south R/W lines. The remainder of the area under the bridges will be left as is. No provisions will made to specifically provide for part of the crossing to be wet and part dry.

It was agreed that high fencing should be provided across the median, between each pair of dual bridges, to keep wildlife from entering the median area. The configuration of fencing along the R/W lines will be determined at a future date and will be affected by whether the adjacent property is public or private at the time of construction.

Section 4. Steve Molecki of Post Buckley Schuh & Jernigan presented the wildlife crossing concept developed for Design Section 4. The proposed pair of bridges will be located near the eastern boundary of the large wetland area that straddles I-4 between SR 33 and the Polk County Parkway interchange. They will provide for a 30m crossing from toe of embankment slope to toe of embankment slope under the bridges. PBS&J has looked at two- and three-span structure alternates, using Type III and Type II AASHTO girders, respectively. They will also evaluate a flat slab structure type in the BDR. As with Section 6, span lengths of less than 12.2m will not be recommended.

A drainage channel will be constructed under the bridges to accommodate the drainage that is currently being carried in the existing box culvert located approximately at Station 378. The side slopes of the channel will be as flat as possible, while still meeting hydraulic requirements. Unless roadway design constraints dictate otherwise (such as location of future proposed slip ramp), the bridges will be centered lengthwise over the existing culvert/channel location.

The vertical clearance under the bridges will be 2.5m above dry ground (since SHW is below the existing ground elevation). At the bridge ends, normal slope protection will be provided, down to existing ground.

The existing roadway embankment (which is located where the future special purpose/HOV lanes will be) will be removed down to match the elevation of the existing ground along the north and south R/W lines. The remainder of the area under the bridges will be left as is, except for construction of the drainage channel as discussed above. The requirements for fencing will be the same as for Section 6.

Wild life Crossing Coordination

5/26/95 1:30

Name	Representing	Phone
Cheryl Jones	Sverdrup	(813) 534-8500
John H. DeWinkler	FDOT - D1	(813) 533-8161
Mary Ann Poole	FGFWFC	407-778-5094
Pete Kellenburg	PBS+J	(813) 877-7275
Steve Malecki	PBS&J	877-7275
Shelly Flaherty	Baker	(813) 289-7546
JEFF SAWYER	BAKER	"
RICHARD REYNOLDS	VOLKERT	(813) 875-1365
JACK ROBERTS	VOLKERT	" "
Brian McDermott	Volkert	" "
Jeff Toussaint	Sverdrup	813 534 8500
Nicole Whittaker	PB	(813) 874-5300
Ray G. Moses	sverdrup	813 - 534 - 8500
DAVID REUTER	PB	[illegible]

FLORIDA GAME AND FRESH WATER FISH COMMISSION

OFFICE OF ENVIRONMENTAL SERVICES
BRADLEY J. HARTMAN, Director
FARRIS BRYANT BUILDING
620 South Meridian Street
Tallahassee, FL 32399-1600
(904) 488-6661
SUNCOM 278-6661
FAX (904) 922-5679
TDD (904) 488-9542

May 12, 1995

Mr. John H. DeWinkler, P.E.
Florida Department of Transportation
P.O. Box 1249
Bartow, Florida 33830

Re: I-4 Widening: Underpass at Green Swamp Creek, Polk County

Dear Mr. DeWinkler:

The Office of Environmental Services of the Florida Game and Fresh Water Fish Commission (GFC) has reviewed your request regarding justification and design specifications for installing an underpass that would accommodate wildlife at some location between CR 557 and US 27, and provides the following information.

JUSTIFICATION

This portion of I-4 lies within the Green Swamp Area of Critical State Concern's core area of habitat, as identified by the Green Swamp Task Force of Polk County in 1992 (see attached map). This area is also one of two (the other being the Saddle Creek area) regionally significant wildlife habitat systems that the GFC recognizes as having been functionally impaired by the habitat barrier imposed by the construction of I-4 in Polk County. Based on the following analyses, we believe that the justification exists to construct one or more wildlife-friendly underpasses within this area.

1. Contiguity and extent of habitat. Our LANDSAT-based vegetation map indicates that I-4 splits a discrete, north-south system of previously contiguous strands of cypress and hardwood swamp separated by upland ridges lying between CR 557 and US 27. This system, which is roughly 20 miles long and 6 miles wide, lies within the headwaters of the Oklawaha River basin in Polk and Lake counties. The northern portion of this area abuts a second, larger area of relatively undeveloped land, most of which is in public ownership (i.e., the Green Swamp Wildlife Management Area, Withlacoochee State Forest, Save Our Rivers land) or is targeted for acquisition through various state, regional, and local conservation programs.

2. Relative intactness of habitat. The wetland strands on either side of the I-4 corridor are still relatively intact, and provide similar

habitat of similar quality. The upland areas have, for the most part, been altered to support agriculture, but remain remote enough from intensive human activities to maintain some degree of habitat quality for species that are adapted to prairie-like conditions, forested edges, and systems characterized by upland-wetland mosaics.

3. Habitat quality. Analyses of our LANDSAT/GIS data indicate that this area is important for 4 to 6 listed species; it is highly ranked in terms of biodiversity, providing habitat for at least 7 focal wildlife species (i.e., those whose habitat requirements umbrella a variety of other species' requirements); it is also highly ranked in terms of species diversity, providing habitat for over 40 species of wildlife; and it provides sufficiently high quality habitat to rank as a Strategic Habitat Conservation Area.

4. Genetic exchange. Currently, I-4 poses an obstacle, but probably not a complete barrier, to genetic exchange for terrestrial wildlife species on either side of this major transportation corridor that, with the exception of the eastern coastal ridge, divides Florida. An unpublished roadkill study conducted by the League of Environmental Organizations indicated that there is a surprisingly diverse array of wildlife that lives adjacent to this corridor in the referenced portion within Polk County. Some of these species are wide-ranging mammals that may be able to incorporate an underpass within their home range, while others are amphibian and reptile species that, while not necessarily wide ranging, are a critical component of the diet of avian species, which may not otherwise be directly affected by a physical barrier on the ground.

Unless some form of wildlife-friendly underpasses were constructed, we anticipate that the build-out design, which includes four solid walls, would bar genetic exchange to all land-dwelling species north and south of the alignment, except for those few individuals that manage to cross via vehicular bridges or underpasses. A structure that would allow at least occasional movement of individuals without the immediate threat of traffic mortality would ensure that the proposed road improvement did not effectively isolate regional populations of wildlife species.

Overall, we believe that there is clear justification to construct wildlife-friendly underpasses within the referenced portion of I-4; however, we believe that the location will be driven by non-wildlife issues, such as the possible need to improve hydrological connection in the Oklawaha headwaters, the geotechnical constraints (e.g., muck deposits) identified by your staff, or land acquisition programs. In terms of maintaining suitability for wildlife use in the long term, the critical component will be the ability to maintain or improve, as appropriate, the current local habitat values. Unlike the Saddle Creek area, the planning framework within which to protect the contiguity of habitat is minimal. The current wetland regulatory structure makes it unlikely that the large hardwood and cypress swamps in this area would be eliminated, but the upland habitat could be further developed,

and the wetlands fragmented. If this occurs, then the justification would be greatly weakened unless the Florida Department of Environmental Protection or the St. Johns River Water Management District (SJRWMD) can identify some compelling reason to protect or restore hydrological connections in this area, and those connections consist of jurisdictional wetlands wide enough on either side of I-4 to provide relatively good habitat value regardless of future upland disturbance.

In order to maintain this justification in the long term, we therefore recommend that the main focus of mitigation for wetland impacts be aimed at the acquisition of land on either side of I-4 at the same location as the underpasses. If this land were managed for conservation, then wildlife-friendly underpasses could be piggybacked either with structural considerations for the muck deposits or hydrological connections, or both. If this acquisition is not possible, due to an unwilling seller, then acquisition of land adjacent to publicly owned land would be the next-best alternative. The issue of whether to construct wildlife-friendly underpasses would hinge on whether SJRWMD identifies jurisdictional wetland systems of substantial width occurring on both sides of I-4 at the same location and extending for a considerable distance.

DESIGN CRITERIA

Designing a successful wildlife underpass is currently not an exact science, since relatively few underpasses have been constructed and monitored in Florida. Based on information on use by various species at the underpasses along Alligator Alley, SR 46, and SR 29, we anticipate that an underpass that incorporates an 8-foot-high by 100-foot-wide opening (minimum) would be large enough to allow for some minimum wildlife movement. This opening should be located so that there is a wetland at each end, and the bottom should be contoured to reestablish an appropriate hydrological connection, the exact dimensions of which would be determined by SJRWMD hydrologists. The bottom of the opening should be composed of soil, and stabilized by standard methods until native vegetation can be reestablished.

The exact dimensions and shape of a wildlife-friendly underpass would vary depending on the primary reason to construct a bridge or large box culvert and road-grade design limitations. If hydrological protection and restoration are required by the SJRWMD, then we would recommend that the width span the 10-year floodplain or be a minimum of 100 feet wide, whichever is greatest, in order to form a riparian corridor that includes land that is usually dry, thereby accommodating wildlife species that ordinarily travel on dry land.

If no hydrological connections beyond standard culverts are deemed necessary, then the two major muck deposits would be logical places to construct an underpass, since it is our understanding that it may be in your best interest to bridge them for geotechnical reasons. In this case, the

widths of these deposits, which we understand are on the order of 400 feet, would determine the ultimate interior width of each underpass. Since the muck deposits are so extensive, it would not be necessary to provide an 8-foot ceiling for a width of 100 feet; rather, there is the latitude in this case to design the bridge with a peak ceiling height of 8 feet, and taper this ceiling to the ground at a point roughly corresponding to the edges of the deposits. The location of this 8-foot-high peak would be driven by the most cost-effective design from your standpoint, but placing it over a hydrological connection between wetlands that occur on both sides of the roadway, should the SJRWMD decide that such connections are desirable, would probably maximize the extent to which these bridges are wildlife friendly. We also believe that a bifurcated roadway, separated by a grassed median, would be an important design consideration to minimize the tunnel effects and enhance animal use of the structure. If a rail line is eventually constructed in the I-4 median, we recommend use of a trestle bridge at this location to maximize light penetration to the ground below.

We appreciate the opportunity to assist you in this planning effort that has so much potential to impact the region's wildlife. If there is any further information that you require, please do not hesitate to contact me or Ms. Mary Ann Poole, at our field office in Vero Beach (407-778-5094), or Mr. Terry Gilbert, at our headquarters in Tallahassee (904-488-6661).

Sincerely,

Bradley J. Hartman

Bradley J. Hartman, Director
Office of Environmental Services

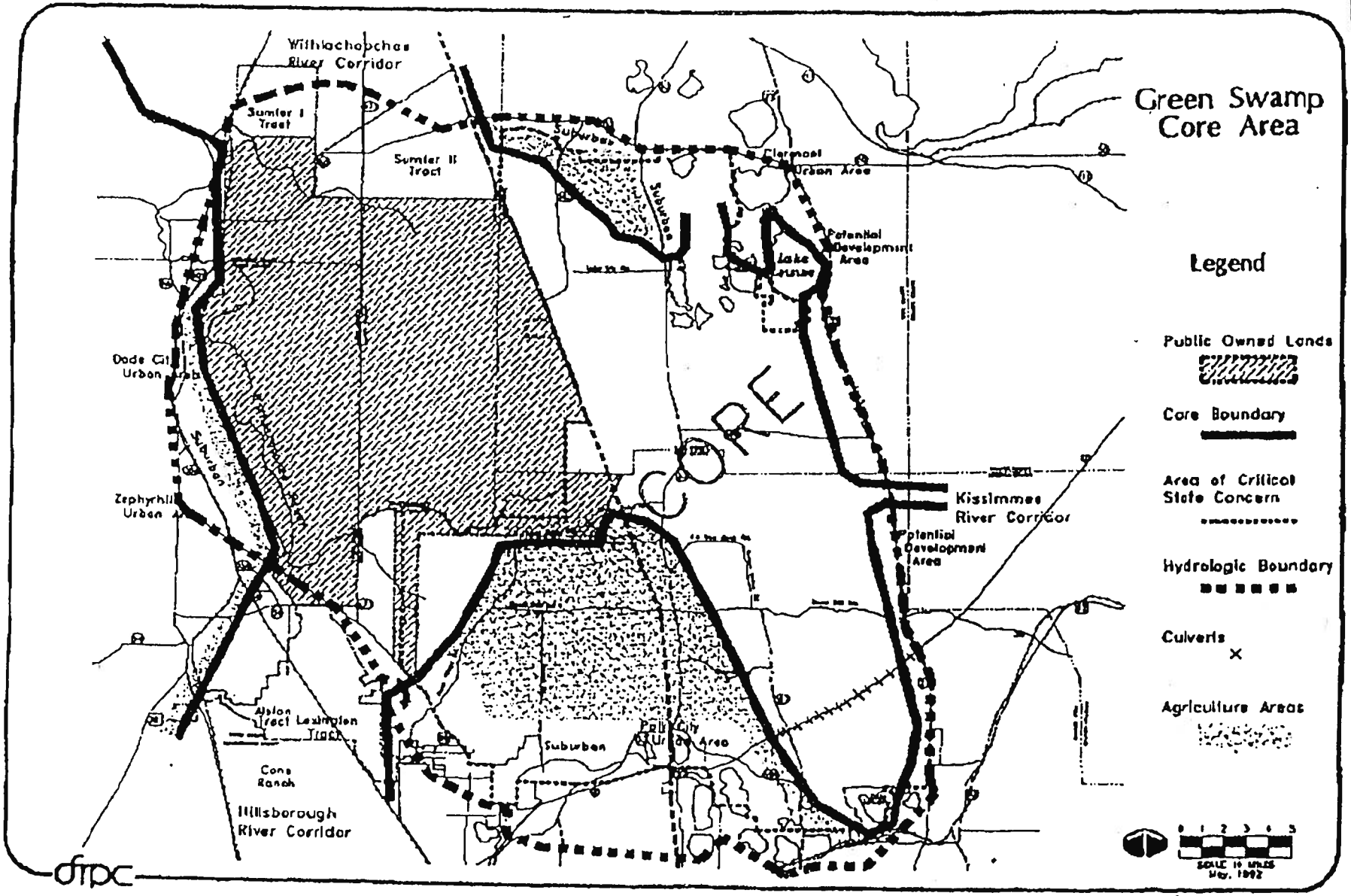
BJH/MAP
ENV 1-13-2
ENV 1-3-2
i4green.dot
Attachment
cc: Ms. Cheryl A. Jones, P.E.
Sverdrup Civil, Inc.
P.O. Box 1636
Bartow, Florida 33831

Mr. Dan Pennington, FDEP, Tallahassee

Mr. Bud Cates, FDEP, Tallahassee

Mr. Lance Hart, SJRWMD, Orlando

Ms. Rebecca Jetton, DCA, Bartow



Post-it Fax Note			
To JOHN DEWINKLER		From JACK MONTPETIT	
Co./Dept. FDOT		Co. SVERDRUP	
Phone # (941) 519-2804		Phone # (941) 534-8500	
Fax # (941) 534.0915		Fax # (941) 533-6692	

Parsons Brinckerhoff

To Jack Montpetit
Sverdrup, Bartow

From Abe Neemeh
Project Manager

Subject I-4 Design, Sec. 2
WPI 1147955
SPN 16320-1455
Polk County
VALUE ENGINEERING RECOMMENDATIONS

Date October 25,1995

We have reviewed the recommendations of the Value Engineering Study found in the October 9-13, 1995 Value Engineering Summary Report (VESR). The VESR evaluated different cost-saving options for several elements within this section of I-4, and concluded with the team's recommendations.

SVERDRUP		
COPIES/ROUTING		
C	INTL.	R
✓	JRM	
✓	EDM	
	CAJ	✓
✓	JHD	
KWD: 41		
PROJ: 002		

The following is a list of the V.E. recommendations with our responses:

A. Ramp 'A':

V.E. Recommendation:

Utilize concrete box bridge, instead of steel box girders.

Response:

This option was considered earlier in the design. The detailed estimated construction cost for Ramp A indicates that the C.I.P. concrete box girder bridge is $61,039 more expensive than the steel box alternative.

The acute skew angle will not induce "large torques" into the structure as noted by the VE Team, thus will not require excessive plate sizes. The top flange plate sizes for the Ramp 'A' bridge are around 50 mm thick; 50 mm plate is very common in bridge construction. The bottom flange for the box girder is around 12 to 20 mm thick; once again this is a common plate thickness.

The proposed C.I.P. concrete box (Alternative AA-3) is a post tensioned structure. The unit cost for the Country Way Mall bridge is a good indicator of the unit prices in this area.

The unit price for Concrete Class IV (mass) of $392/M3 is an acceptable value for this area. We recently acquired the statewide bid prices from January 1994 to June 1995, and found that the average price for Concrete Class IV (mass) was $319.30/M3 (average price for project area is generally higher). Thus the value of $293/M3 used in the V.E. alternative may be too low.

Furthermore, the concrete box girder has some disadvantages related to the construction sequence. The time from which the first section is poured until the middle closure pour is made could be as long as 21 months. This extreme length of time would result in large differential deflections between the two flanking unit cantilevers.

B. Swindell Road:

V.E. Recommendation:

Realign Swindell Road to cross I-4 at 90 degree angle, and provide a Florida Bulb "T" bridge.

Response:

1. Approximate savings from using the bridge type recommended by the VE:

$1,667,299 (Design Alt.) - $959,651 (VE Alt.) = $706,648.

2. After implementing the appropriate horizontal curves for 70 km/h design at the approaches, it was noted that (12) new relocations would be required. Furthermore, the required ROW would increase by 15± acres. See attached drawing.

3. The realigned alternative would impact an additional 2.6± acres of wetlands. See attached drawing.

Based on the VE ROW cost of approximately $70,000 per acre, the cost for the additional 15 acres of ROW would be $1,050,000. This additional cost alone would exceed the $706,648 savings. Therefore, the realignment option should be dropped from further considerations.

C. W. 10th Street:

V.E. Recommendation:

Realign W. 10th Street to cross I-4 at 90 degree angle, and provide a Florida Bulb "T" bridge.

Response:

1. Approximate savings from using the bridge type recommended by the VE:

$1,665,907 (Design Alt.) - $959,651 (VE Alt.) = $706,256.

2. After implementing the appropriate horizontal curves for 70 km/h design at the approaches, it was noted that (14) new relocations would be required. Furthermore, the required ROW would increase by 15± acres. See attached drawing.

3. The realigned alternative would impact an additional 2.2± acres of wetlands. See attached drawing.

Similar to Swindell Road, the cost for the additional 15 acres of ROW would be $1,050,000. This additional cost alone would exceed the $706,256 savings. Therefore, the realignment option should be dropped from further considerations.

D. Bella Vista Street:

V.E. Recommendation:

Option 1: Eliminate the bridge overpass and cul-de-sac Bella Vista St. on both sides of I-4.

Option 2: Realign Bella Vista Street to cross I-4 at 90 degree angle, and provide a Florida Bulb "T" bridge.

Response:

Option 1: Eliminating the bridge overpass is not consistent with the PD&E study. This may require reevaluation of the PD&E phase and be presented to the public before acceptance.

Option 2: This option is not feasible from geometry standpoint. If this option were to be implemented, the Railroad crossing south of I-4 would fall in the horizontal curve. This would place a superelevated road (at 0.085m/m) at a RR crossing, which is not feasible.

If the horizontal curve were to be shifted far enough to avoid super over the RR, the geometry of the road north of I-4 will not converge for a very long distance. See attached drawing.

E. Kathleen Road:

V.E. Recommendation:

Use Florida Bulb "T" center span and AASHTO Type IV end spans instead of Steel Box Girders, for an approximate savings of $431,105.

Response:

1. The Florida Department of Transportation (FDOT) felt that esthetics was an important factor in this section of I-4. Therefore, it was noted in the esthetic guidelines that the same structure material should considered where possible. Should the VE option be adopted, the structural material would be different, and would not comply with the set guidelines.

2. The VE alternative would increase the structural depth by approximately one foot. This increase is critical in this area, since I-4 is already being cut to maintain the existing RR grade.

3. The lowering of I-4 as noted in item 2 above, would require additional underdrains, temporary sheet piles during construction and additional retaining wall heights. The approximate costs for these items would be $288,000.

It should be noted that the cost savings shown in the VE report compared the construction cost of the Bulb "T" alternative to the overall cost of the Steel box girders, instead of only the construction cost. When the comparison is adjusted to consider only construction costs for both alternatives, then the difference becomes only $284,541. Since the savings and the additional costs are comparable, there would be no advantage in revising the design alternative.

F. Griffin Road:

V.E. Recommendation:

Use a concrete box bridge, instead of Steel Box Girders.

Response:

This option was evaluated in the Bridge Development Report (BDR). The construction costs for the VE alternative (Concrete Box) is $2.98 million, while the cost of the Design Alternative (Steel Box Girder) is $2.78 million. See the revised October 1995 BDR.

G. Retaining Walls:

V.E. Recommendation:

Establish MSE wall requirements after the maximum amount of fill has been placed (at maximum slope) while utilizing all available ROW.

Response:

Throughout the majority of this project, the area between the ROW line and the MSE wall will be used for drainage conveyance. Steep slopes were considered previously, but eliminated after coordination with FDOT Maintenance. The area behind the walls has to be maintained, therefore, the slopes have to be flat enough to be accessible.

The height of walls within this project, however, is being evaluated in more detail between the 30% and 60% design phases. Where possible, wall heights as suggested, are being lowered.

H. Pavement Type:

V.E. Recommendation:

Use asphalt pavement, instead of concrete.

Response:

The District is currently preparing a Pavement Type Selection Report, which will address this issue.

Greiner

Greiner, Inc.
P.O. Box 31646 (33631-3416)
7650 West Courtney Campbell Causeway
Tampa, Florida 33607-1462
(813) 286-1711
FAX: (813) 287-8591

F.06.10

C102855.00
October 26, 1995

MEMORANDUM

TO: Jack Montpetit, Project Manager

FROM: Jimmie Gill

PROJECT: **I-4 Roadway Improvements**
From East of U.S. 98 to East of S.R. 33
State Project No. 1632-1434

SUBJECT: **Response to Draft Value Engineering Report**

Recomendation Number 1: Use asphalt pavement in lieu of concrete pavement for I-4 mainline and ramps.

Response: Currently a Pavement Selection Report is being prepared by the Department. As the Design Consultant we will design for whichever pavement type is selected. In the design process for I-4 the profile has been raised sufficiently above the existing profile to eliminate any design high water problems that may have occured in the past and is suitable for either concrete or asphalt pavement.

Recomendation Number 2: Use 3.0 meter paved shoulder in lieu of 3.6 meter as proposed.

Response: The current 1995 FDOT **ROADWAY PLANS PREPARATION MANUAL** states that for FREEWAYS, 3-lanes, full shoulder width (without shoulder gutter) should be 3.6 meters (see Section 2.3 Shoulders, Table 2.3.1 SHOULDER WIDTHS AND SLOPES). The same reference states that paved width should be 3.0 meters. The Typical Section for this project utilizes an "Urban" type section with a barrier wall at the edge of the required 3.6 meter shoulder. The pavement was extended an additional

0.6 meters to minimize problems with maintainance and drainage. In addition, the 1994 AASHTO Green Book A Policy on Geometric Design of Highways and Streets, p. 557, states that "The usable paved width of the right shoulder should be at least 3.0 m and where truck traffic exceeds 250 DDHV it should preferably be 3.6 m. Also stated is "On freeways of six or more lanes, the usable paved width of the median shoulder should also be 3.0 m and preferably 3.6 m where the truck traffic exceeds 250 DDHV". DDHV truck traffic for the design year 2020 is 1,392 and for the year 2000 is 721. It is our recommendation that shoulder pavement remain at 3.6 meters.

Recommendation Number 3: Reduce the height of the retaining wall in cut sections by using a 4:1 backslope.

Response: In general there are 5 to 5.5 meters from the back of retaining wall to the existing right-of-way. We concur that in areas of cut a 4:1 slope can be used to minimize height, providing adequate drainage, maintainance,and access for maintainance can be provided. However; as design proceeds evaluations will be made on the cost of fill and wall height to allow runoff to flow away from the project, versus the cost of additional inlets, storm sewer systems, retention systems and right-of-way required to to collect and treat / retain the additional runoff

50th Anniversary

DAVID VOLKERT & ASSOCIATES, INC.

Engineers • Architects • Planners

November 27, 1995

Project 403100.13

Mr. Jeff Toussant, P.E.
Project Manager
Sverdrup Civil, Inc.
P.O. Box 1636
Bartow, FL 33831

Reference: I-4 Design - Section 6
WPI No.: 1147954
S.P. No.: 16320-1444
Polk County

Subject: Value Engineering Review Comments.

Dear Mr. Toussant:

Please find enclosed two (2) copies of the comments on the Value Engineering Report.

If you require any additional information or documents, please contact our office.

Very truly yours,

DAVID VOLKERT & ASSOCIATES

Martin E. Marquez, P.E.
Project Manager

MEM/ma
Enclosures

cc: John DeWinkler, P.E., FDOT, District One
T.J. Martin, P.E., Michael Baker Jr., Inc.
Jack W. Roberts, P.E., Volkert
Thomas C. White, P.E., Volkert
Jerome G. Tharpe, Volkert

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50th Anniversary

DAVID VOLKERT & ASSOCIATES, INC.

Engineers • Architects • Planners

SUMMARY OF RECOMMENDATIONS
I-4 from East S.R. 557 to West of U.S. 27
S.P. No. 16320-1444
W.P.I. No. 1147954
PSI Project No. 775-45048
Polk County, Florida

Recommendation No. 1 - **MUCK REMOVAL AND BRIDGES OVER MUCK AREAS**

The Value Engineering Team recommends that Value Engineering Alternative No. 2 be implemented. This alternative removes 1 meter of muck, stabilizes remaining muck with surcharge and geogrid material and does not bridge deep muck areas.

Response to Recommendation No. 1:

As stated in the Preliminary Roadway Soil Survey and Stormwater Management Areas Report dated March 30, 1995, approximately 70% of the proposed I-4 alignment traverses muck deposits. The maximum thickness of the muck deposits encountered was approximately 27.0 meters. The majority of the mucks were sandy peats. Surcharging the mucks with geogrid was evaluated as an alternative, however, due to concerns regarding long construction time, safety concerns during construction and long term performance problems this alternative was eliminated. Nevertheless, due to the recommendation of the Value Engineering Team, this alternative has been further evaluated, taking into consideration the Team points and suggestions. The following are some of our findings.

1. The function of the wick drains is to provide additional drain paths to the surrounding soils and reduce the time to complete the consolidation settlements. Settlements of the sandy peats are mainly due to the secondary compression (creep) resulting from particle orientations. This is different from the consolidation settlements resulting from dissipation of porewater pressures. Therefore, it is our opinion that the wick drains will not provide any benefit to accelerate the secondary compression (creep) of the sandy peats (mucks).

   It is estimated that the time required to complete 90% of the total settlement (creep) of a 3.0 meter embankment with 3.5 meter surcharging over 20 meters of muck deposits is on the order of 18 months. In addition to the time of surcharging, it will require four (4) to six (6) months for the controlled stage construction of the surcharge embankment over the soft muck deposits. Therefore, a 24 month waiting period is realistic when considering the surcharging alternative.

An extensive construction monitoring and instrumentation program will also be required to ensure the stability of the embankment and prevent the occurrence of mud waves during the construction. If mud waves cannot be controlled by stage construction and geogrids, a temporary sheet pile wall system may be required to stabilize the embankments. The cost of just construction monitoring is estimated to be in the order of $300,000 to $500,000.

2. Because of the high creep characteristics of sandy peats (muck), the long term settlement can not be completely eliminated from the surcharging program. Therefore, there is a high possibility that resurfacing will be required within 5 to 10 years due to the excessive residual settlements.

3. Owing to the long period of surcharging, the public safety will become a major concern regarding the maintenance problems of the 7 to 8 meter high surcharge embankments along the both sides of the existing I-4 travel lanes and/or the median in addition to the roadway drainage problems.

4. According to the surcharge recommendations by the Value Engineering Team, only the proposed roadway limits will be subjected to surcharging. Therefore, if the future high speed rail is located within the existing I-4 right-of-way, the construction of a high speed rail will greatly impact the performance of the I-4 roadway. Surcharging of the high speed rail areas will impose additional loadings on the mucks underneath the I-4 roadway and cause severe settlement problems. If the high speed rail is to be supported on a bridge, the vibrations of pile driving also will cause severe settlement problems of the I-4 roadway. To eliminate the potential construction problems of the high speed rail, a surcharging program will also need to be completed within the potential high speed rail areas during this surcharging stage.

Based on the previous discussion, the surcharging alternative may require a 24 month waiting period for surcharging, additional budget for construction monitoring, more surcharge areas for high speed rail areas and potential resurfacing within 5 to 10 years. These disadvantages in addition to the public safety concerns make this alternative less favorable. Although the alternative of the muck removal and bridges over deep muck areas require relatively high initial construction cost, it is our opinion that this is the optimal solution to the widening of the I-4 roadway through the Green Swamp Area in considering the advantages of long term performance of the roadway and less public safety concerns during construction.

Recommendation No. 2 - WILDLIFE CROSSING AND FENCING

The Value Engineering Team recommends that the Value Engineering Alternative No. 1 be implemented. This alternative eliminates the fence and crossing entirely by eliminating the bridges over the muck area and uses the existing cattle crossing as a wildlife/cattle crossing.

Response to Recommendation No. 2:

This alternative is based exclusively on the elimination of the proposed wildlife crossing, and the assumption that the use of the cattle crossing as a wildlife crossing is sufficient to satisfy the Florida Game and Fresh Water Fish Commission.

Reasons not to eliminate the bridge crossings are provided previously in the comments to Value Engineering Alternative No. 1 -muck removal and bridges over muck areas. In regard to the use of the cattle crossing as wildlife crossing, according to the Florida Game and Fresh Water Fish Commission letter to Mr. John DeWinkler dated May 12, 1995. "There is justification to construct one or more wildlife-friendly

underpasses within this area". As explained in this letter some of the analysis used to make this determination were: contiguity and extend of habitat, relative intactness of habitat, habitat quality and genetic exchange.

No specific guidelines have been established for the design of wildlife-friendly underpasses. However, based on information obtained from other projects such as S.R. 46, S.R. 29 and Alligator Alley, it can be anticipated that an overpass that incorporates an 8-foot high by 100-foot wide minimum opening would be large enough to allow for some minimum wildlife movement. The opening should be located so that there is a wetland at each end, and the bottom should be contoured to reestablish an appropriate hydrological connection, the exact dimensions of which would be determined by SJRWMD hydrologists. The bottom of the opening should be composed of soil, and stabilized by standard methods until native vegetation can be reestablished. The existing cattle crossing is a 10' x 12' box culvert located in the highest section of the corridor, and do not meet any of the previously mentioned criteria. Given all the circumstances described above. It is our opinion that the construction of the proposed wildlife crossings is the most efficient and environmentally sound alternative.

Recommendation No. 3 - **DRAINAGE STRUCTURES**

The Value Engineering Team recommends that Value Engineering Alternative be implemented. This alternative salvages and utilizes the existing drainage structures and extends the existing structures to the ultimate typical section.

Response to Recommendation No. 3:

The proposed design alternative does not require the removal or replacement of all the existing cross drains in the project with all new structures at the same location and the same elevations. We proposed to analyse each cross drain within the project in order to determine their function and need under the proposed design, keeping in mind the long range goals and the construction of the ultimate typical section. Some of the issues upon which this analysis will be performed are described below.

1. There are actually 16 cross drains located throughout the corridor. Of this 16 locations, 13 covey regional surface waters under the existing I-4. Two (2) locations are use exclusively for draining a portion of the median, and the remaining structure is the 10' x 12' box culvert used as cattle crossing. As a result the two structures used for draining portion of the existing median will no longer be necessary under the proposed design.

2. The 10' x 12' box culvert (Cattle Crossing) does not serve any drainage purpose. Furthermore this structure is to be extended and not to be removed.

3. The proposed wildlife crossings locations coincide with the location of some of this existing structures making them expendable.

4. FDOT Drainage Manual stipulates that the inside crown elevation of cross drains should be placed at the design high water elevation. At least two of the existing culvert locations in the eastern half of the project violate this criteria. In addition one structure has been observed to be totally submerged when "dry weather" conditions were still present and water stages would still be at or near their seasonal low. This may require some of these structures to be replaced at elevations higher than their present position.

5. As indicated in the Preliminary Soil Survey and Stormwater Management Areas Report dated March 30, 1995. 70% of the proposed I-4 alignment traverses muck deposits. Our alternative proposes to demuck all those muck deposits not deeper than 4.5 meters. This demucking combined with the increase weigh related with the additional fill required by the new proposed roadway, may cause differential settlement problems for some of the existing structures.

6. The resultant increased head loss caused by the additional pipe/culvert length, coupled with the significant change in headwater stage, may cause a reduction in both the peak and average rate of discharge at each regional cross drain. This in turn means that the duration of flood stages may be expected to be longer than those observed in March and September of 1960, unless other mean is available to restore the apparent or potential movement of surface water.

7. As indicated in the value engineering report, the existing drainage structures used by the department were designed for a 100 years service life. However, despite the fact of the long service life of concrete culverts, the culverts within this section of I-4 are sitting in an area where conditions do not allow for proper inspection, their evaluation is essentially limited to conclusions drawn from what is visible at each end of the culvert. Therefore, their actual physical conditions is virtually unknown. In addition, these structures will be more than half their design service life spans, by the time the last phase of construction is completed.

It is our opinion that a great number of structures within the project will need to be removed or replaced due to the reasons previously mentioned. However, the actual number of structures to be removed will not be known until an in-depth analysis is performed on each individual structure.

Recommendation No. 4 - **MAINTENANCE OF TRAFFIC**

The Value Engineering Team recommends that Value Engineering Alternative No. 2 be implemented. This alternative stabilizes the existing median in the bifurcated area No. 1 and builds six lanes of the new permanent roadway with a median in this bifurcated area, stabilizes the existing median in the bifurcated area No. 2 and builds four lanes of temporary detour road with a median in this bifurcated area, uses the combination of the new permanent roadway, the new temporary roadway and the existing I-4 roadway to maintain traffic while allowing the construction of both sides of the new I-4 roadways at the same time.

If this recommendation can be implemented, there is no apparent savings, however, the Value Engineering team estimates as much as one year may be saved in construction time.

Response to Recommendation No. 4:

The Value Engineering team recommended that Value Engineering Alternative No. 2 be implemented. The Value Engineering Team assumed that the implementation of this value engineering alternative will save as much as one year of construction time without any additional cost.

1. As indicated in our comments to Recommendation No. 1, Muck Removal and Bridges Over Muck Areas, a total of 24 months may be required for surcharging before roadway construction begins.

2. An estimated cost of $500,000 will be required for construction monitoring in addition to the cost of roadway safety devices related to the maintenance of traffic, while the surcharging is taking place. This is evident in the high surcharge embankments along both sides of the existing I-4 travel lanes and the median.

3. As indicated in our comments to Recommendation No. 1, in order to eliminate the potential construction problems related to the high speed rail, a surcharging program will also need to be completed within the potential high speed rail areas (median). This requirement will not allow the use of the existing lanes for traffic maintenance purposes in various segments of the roadway. In particular, the area between station 570+00 to 572+00 where the surcharge footprint has the potential to exceed the existing right-of-way limits.

4. Another important aspect of the value engineering alternative is the assumption that there are very minimal transition curvatures or detours in their proposal. However, the grade differential between the proposed and existing roadway, combined with the simultaneous construction of both sides of the new I-4 roadways, will require the use of additional detours to avoid the encroachment of the proposed roadway embankment into the existing road. This problem could be remedy by the use of retaining walls. However, this solution will add cost and construction time to the project.

Based on the previous discussion, it is evident that the value engineering alternative will require more construction time and additional cost. These disadvantages, in addition to public safety concerns, make this alternative less favorable. It is our opinion that our proposed alternative represents the Most viable solution to the maintenance of traffic problems related to I-4 construction.

Recommendation No. 5 - RIGHT OF WAY

The Value Engineering Team recommends that Value Engineering Alternative be implemented. This alternative matches the 344' typical of the proposed project on each side of this project.

Response to Recommendation No. 5 - Right-of-Way:

With regards to the Value Engineering Team Recommendation No. 5 - Right-of-Way, the surface water management needs of this project have a direct relationship to the right-of-way requirements needed to implement the master multimodal transit plan, this requirement is dependent upon which storm water management method is selected as the design to be used for construction.

On the basis of the comparative cost estimates presented in the Pond Siting Report, Retention via Percolating Roadside Swales is our recommended alternative. This alternative is also recommended in part because the typical section includes grass swales, which allows for a greater degree of treatment of on-site water. On a conceptual basis this alternative is the same as the one proposed by the Team on page 133. The alternative in the Pond Siting Report differs primarily in addressing the needs of the master multimodal transit plan, not Phase I Construction only. In addition, the Pond Siting Report alternative and related computations, give consideration to the physical characteristics of the area. The resultant cross-sections clearly indicate a right-of-way width of 344 feet (± 105) will prove inadequate in meeting the requirements associated with implementation of the master multimodal transit plan where storm water treatment of the project is accomplished via percolating roadside swales.

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FLORIDA DEPARTMENT OF TRANSPORTATION

LAWTON CHILES
GOVERNOR

BEN G. WATTS
SECRETARY

MEMORANDUM

Date: August 11, 1997

To: Mr. G. E. Carrigan, District Director of Production

From: M. H. Dougherty, Jr., Interstate Program Manager

Copies: N. L. Bright, J. P. Toussant (w/ 2 copies of report)

Subject: **Value Engineering Report**
I-4 from East of S.R. 33 to East of S.R. 559
W.P.I. No. 1147952
State Project No. 16320-1436
Polk County

I have read the subject report and partially agree with its recommendations. I wish to make known my recommendations for areas of approval so you may be more informed when making your final decision on the necessary approvals. My recommendations are as follows:

Study: Change the grade separation with C.R. 655 to result in the interstate at grade and C.R. 655 on structure over interstate

I agree with this approach in light of the life cycle cost savings and in its common sense approach to the grade separation.

Study: Investigate alternate alignments between Mt. Olive Church Road overpass and east of S.R. 559 to offset the mainline away form Lake Agnes, Little Lake Agnes and the runway while introducing no additional curves.

I cannot agree with this concept as no violation of alignment criteria has been discovered in the original design and considerable re-engineering would be necessary.

Study: Stub the access road at the last property line instead of a cul-de-sac in the northwest quadrant of S.R. 559.

I cannot agree with this approach as a cul-de-sac is a County requirement for development of new roadways.

I trust you will find everything in order to finalize your decisions. Please do not hesitate to contact me should you have any questions about my recommendations or have need for further clarification.

MHD/

District One * Post Office Box 1249 * Bartow, Florida 33831-1249
(941) 519-2294 * (941) 534-7039 (Fax) * MS 1-20

Original to file
XC: DJS
SDB/ Project Book

Transmittal

Sverdrup
CORPORATION

TO: Post, Buckley, Schuh & Jernigan, Inc.
5300 West Cypress Street
Suite 300
Tampa, Florida 33607-1066

ATTN: Mr. Peter Kelliher, P.E.
Project Manager

FROM: Jeffrey P. Toussant
Program Manager JPT

Post-it® Fax Note 7671	Date 6/19	# of pages ▶ 19
To Jeff Sawyer	From Jeff Toussant	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

DATE: June 19, 1997

SUBJECT: **Draft Value Engineering Report**

W.P.I. No.:	1147952
State Project No.:	16320-1436
FAP Number:	N/A
County:	Polk
Description:	SR 400 (I-4); Section 4; From East of SR 33 to East of SR 559

Transmitted herewith is a copy of a memorandum from Marshall Dougherty, dated 6/19/97, and a copy of the draft V.E. report for the above project. Please review these enclosures and provide a written response to me, regarding the V.E. recommendations, by June 23, 1997.

I realize that this is pretty short notice, so response by FAX will be acceptable.

Feel free to call me to discuss. We are concurrently providing a copy of this report to Michael Baker, Inc. for their review and comments, since the PD&E study may be impacted .

CC: Marshall Dougherty (FDOT), Jeff Sawyer (Michael Baker), JRM
FILE: 013266-41-004

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FLORIDA DEPARTMENT OF TRANSPORTATION
LAWTON CHILES
GOVERNOR
BEN G. WATTS
SECRETARY

MEMORANDUM

Date: June 19, 1997

To: Mr. Jeff Toussant, Sverdrup Program Manager

From: M. H. Dougherty, Jr., Interstate Program Manager

Copies: N. L. Bright

Subject: **Draft Value Engineering Report**
I-4 From East of SR 33 to East of SR 559, Segment 4
W.P.I. No. 1147952
State Project No. 16320-1436
Polk County

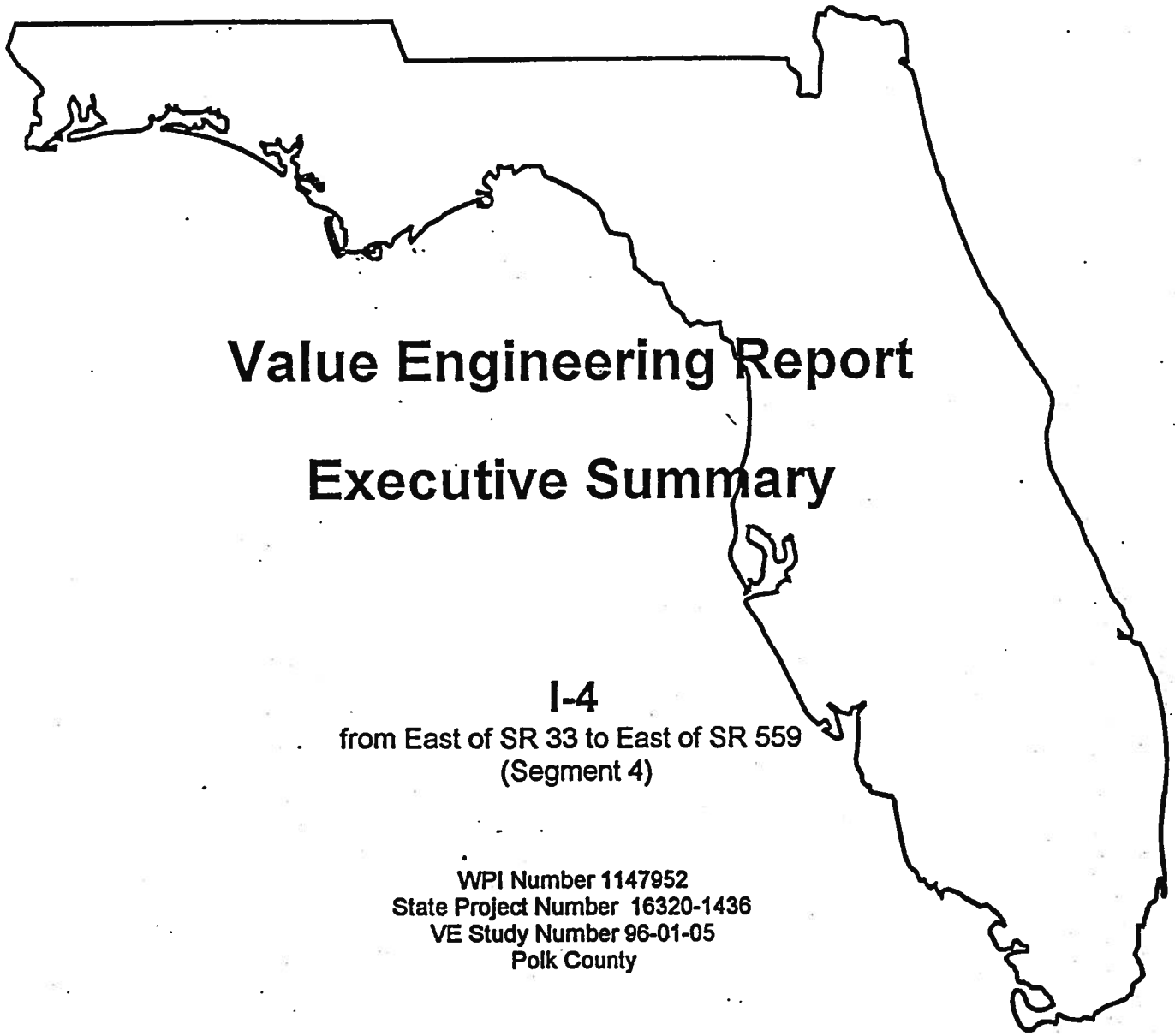
The attached materials consist of three (3) copies of the subject value engineering report for the subject project. It details the process the value team undertook to evaluate the project as well as outlines their findings and recommended areas of savings. One of the recommended areas appears to have very good merit. It deals with the elimination of the I-4 over CR 655 and railroad concept and replaces it with a CR 655 over I-4 concept. The rail corridor is evidently abandoned.

Please distribute this material to the appropriate individuals for review and comment. Nancy Bright had asked our comments be returned to her by June 24, 1997. Please coordinate your response with her should this time frame not be achievable. I, as always, would like a copy of your comments for my files.

Please do not hesitate to contact me should you have any questions concerning this request.

MHD/mhd
Attachments

District One * Post Office Box 1249 * Bartow, Florida 33831-1249
(941) 519-2294 * (941) 534-7039 (Fax) * MS 1-20



Value Engineering Report

Executive Summary

I-4

from East of SR 33 to East of SR 559
(Segment 4)

WPI Number 1147952
State Project Number 16320-1436
VE Study Number 96-01-05
Polk County

May 15, 1997

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Florida Department of Transportation, an agency of the State of Florida and that this study has been performed in accordance with current applicable FDOT Value Engineering Procedures & Techniques hereby reported for

I-4
from East of SR 33 to East of SR 559
(Segment 4)

State Project No: 16320-1436
WPI No: 1147952
Value Engineering Job No: VE-96-01-05

in Polk County, Florida

This report includes a summary of the data collection, alternative analyses, and value engineering recommendations. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of value engineering as applied through professional judgement and experience.

NAME: Nancy L. Bright
FLORIDA REGISTERED ENGINEER NO. 45160

SIGNATURE: Nancy L Bright DATE: 8/4/97

NANCY L. BRIGHT
NO. 45160
STATE OF FLORIDA
REGISTERED ENGINEER

Table of Contents

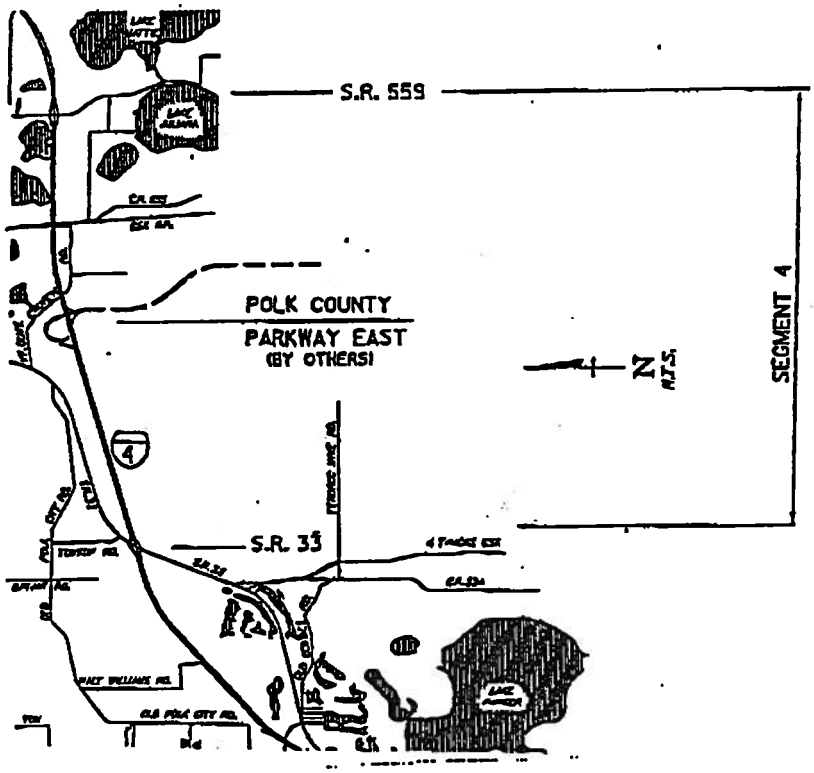
PROJECT:

Thirty percent design plans for I-4 from east of SR 33 to east of SR 559 (Segment 4), in Polk County were reviewed by the Value Engineering Team (see location map for details). The team consisted of employees from Maintenance, Design, Construction, District Environmental Management Office, and District Value Engineering.

The project proposed constructs six general use lanes, of the ultimate interstate ten lane concept approved in the "Interstate 4 Multimodal Interstate Master Plan for Polk County". The plans for constructing a new Mt. Olive Church Road overpass adjacent to the existing structure, constructing new underpasses for CR 655 and the adjacent abandoned rail right of way, using a right side alignment to avoid Lake Agnes and the runway clearances, and reconstructing the SR 559 interchange. The Polk County Parkway interchange is within the limits of this project, but are not included. The plans provide for the ultimate drainage system to be constructed with this interim project.

The estimated cost of the project as proposed is:

Right of Way	$ 5 510 000
Construction	$ 35 193 091
Total	$ 40 703 091



IDENTIFIED SAVINGS POTENTIAL:

The team identified the following potential savings:

RECOMMENDATIONS	SAVINGS
* Change the grade separation with CR 655 to result in the interstate at grade and CR 655 on structure over the interstate.	initially $ 4 200 000 ultimate section $ 7 690 000 Life Cycle $ 4 936 200
* Between Mr. Olive Church Road overpass and east of SR 559 interchange, investigate alternative alignments to off-set the mainline away from Lake Agnes, Little Lake Agnes, and the runway while introducing no additional curves.	$ 269 211
* In the northwest quadrant of SR 559 interchange stub access road at last property line instead of cul-de-sac.	$ 9446

CONSTRAINTS:

There are constraints on this project and the value engineering team because the facility being reviewed is a rural interstate facility. There are no constraints involving the non-interstate facilities in the project.

HIGHLIGHTS:

The team concentrated on overpass/underpass, alignment, and access issues.

Overpass/Underpass Issues

The team looked at several alternatives to reduce the expenses of interstate bridges over CR 655 (Berkley Rd). The project as proposed provides for 58.8 m horizontal clearances for a 7.2 m roadway and 12.2 m bicycle path. The team evaluated reducing the structure length to 35.1 m which would allow for two lanes of Berkley Rd and a pedestrian/equestrian path in accordance with the standards of the Greenways Program. This alternative would save approximately $ 514 195.

In researching the purchase of the abandoned rail right

of way for the purpose of creating a pedestrian/ bicycle/ equestrian trail we uncovered several interesting facts.

* The rail right of way has been abandoned and purchased by several private property owners, of which one is Tampa Electric Company.

* The Department of Environmental Protection, Greenways Program does not have this corridor identified for purchase or trail development.

* Polk County Transportation Planning Organization has the corridor identified on their long range plans for a bicycle path. There are no plans in the immediate future for purchase or development.

* A developer has approached the Central Florida Regional Planning Council about developing the property north of I-4 along Berkley Rd. The development would qualify for processing as a Development of Regional Impact. It is reasonable to expect that Berkley Rd would require multi-laning because of the development. The plans are in the early development stages.

As a result of this information the team began looking at another alternative: the ability to place I-4 at grade and put Berkley Rd on structure over I-4. This can be accomplished easily with the closing of Berkley Rd during construction. Future widening or bicycle paths would require additional bridge structure(s) with little impact to the interstate system.

Initially, this alternative would save approximately $ 4 200 000 and would save an additional $ 3 490 000 during the addition of the special use lanes on the interstate, total savings of $7 690 000. Over 50 years, there would be a life cycle cost savings of $4 936 200.

The team recommends constructing I-4 at grade and constructing Berkley Rd on structure over the interstate. This has an estimated initial savings of $ 4 200 000.

Alignment Issues

The project as proposed introduced four additional curves off-setting the alignment to avoid Lake Agnes, Little Lake Agnes, and the airport runway. The team evaluated the potential of accomplishing the alignment off-set by adjusting the existing curves just east of Mt. Olive Church Road and east of SR 559 interchange. This could have some minor affects on the SR 559 interchange, depending on the specific adjustments needed.

This alternative would not affect the amount of needed right of way, but could reduce the number of parcels involved by 10. The resulting right of way administrative cost differential was calculated at $ 269 211.

The Value Engineering team recommends investigating alternative alignments to off-set the mainline away from Lake Agnes, Little Lake Agnes, and the runway while introducing no additional curves. Estimated savings is $ 269 211.

Access Issues

The proposed design provides access to the northwest quadrant of SR 559 interchange through a frontage road. The frontage road ends with a cul-de-sac. The County requested the frontage road end in a cul-de-sac for ease of use associated with emergency service and solid waste operations. Although the cul-de-sac is nice, it is not necessary.

The Value Engineering team recommends the design stub the access road at the last property line instead of cul-de-sac. Estimated savings is $ 9446 plus the cost of right of way.

IMPLEMENTATION:

Implementing the value engineering recommendations involve the following steps:

* Decide to implement recommendations and notify the District Value Engineer in writing.
* Make the necessary changed to the Project Development and Environment Study and proceed with that process.
* Coordinate with Polk County regarding access and proposed changes to Berkley Road.
* Coordinate with Segment 5 project team regarding alignment potentials.
* Make changes in plans.
* Proceed with the production process.

APPENDIX

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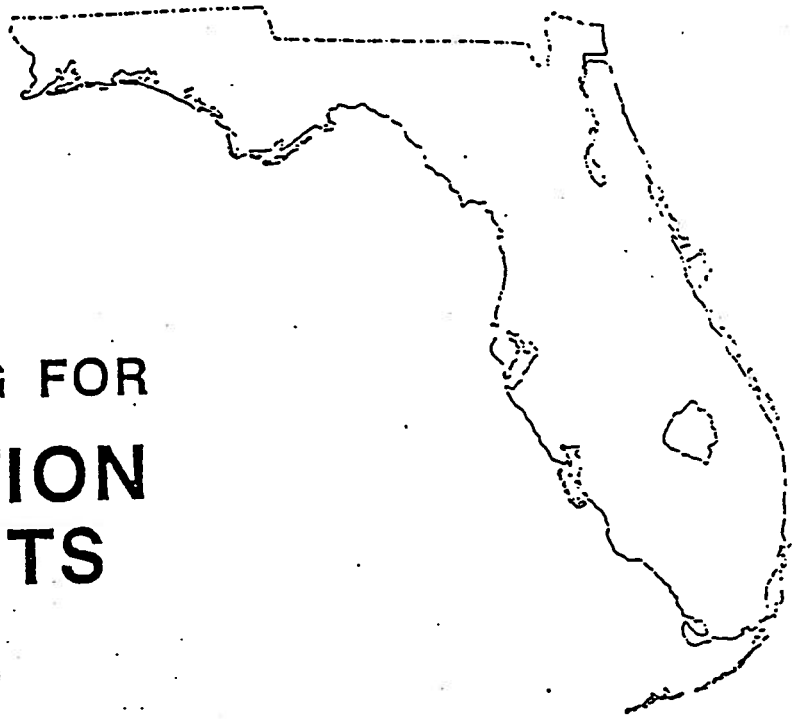
Appendix



VALUE ENGINEERING FOR

TRANSPORTATION IMPROVEMENTS

VALUE ENGINEERING

STUDY SUMMARY

GETTING THE BEST VALUE
OUT OF OUR COMMON CENTS

STATE PROJECT NUMBER: 16320-1436

FED. AID PROJECT NUMBER:

PROJECT DESCRIPTION: I-4 from E of SR33 to E of SR559 (Segment 4), Polk

DATE: May 12-15, 1997

PROJECT DEVELOPMENT PHASE				STUDY IDENTIFICATION NO.												
P. D. & E.	DESIGN 30%		OTHER	WPI NUMBER							V.E. ITEM NO.					
											YR.		DIST.		NO.	
	X			1	1	4	7	9	5	2	9	6	0	1	0	5

:ORM 625-030-001-a
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STUDY SUMMARY

JDY SUMMARY

STUDY IDENTIFICATION NO.												
WPI NUMBER							V.E. ITEM NO					
1	1	4	7	9	5	2	9	6	0	1	0	5

PROJECT DEVELOPMENT PHASE BEING REVIEWED

REVIEW	NO REVIEW (SEE BELOW)	P.D.&E.	DESIGN 30%	DESIGN 60%	OTHER (EXPLAIN)
DATE			5/12-15/97		

MULTIDISCIPLINE STUDY TEAM PARTICIPANTS

	SIGN IN	ORGANIZATION	TELEPHONE
TEAM LEADER	Nancy L. Bright	Value Engineering	519-2574
	Gwen G. Pipkin	Dist Env. Mgmt Office	519-2375
	James E. Watts	Design	519-2542
	Scott Woss	Construction	648-3170
	Mike T. Yen CSO	Maintenance	534-7030

PROJECT DESIGN DEVELOPMENT SERVICES ARE: ☐ INTERNAL ☐ EXTERNAL

REASON V.E. SELECTION STUDY WAS NOT PERFORMED:

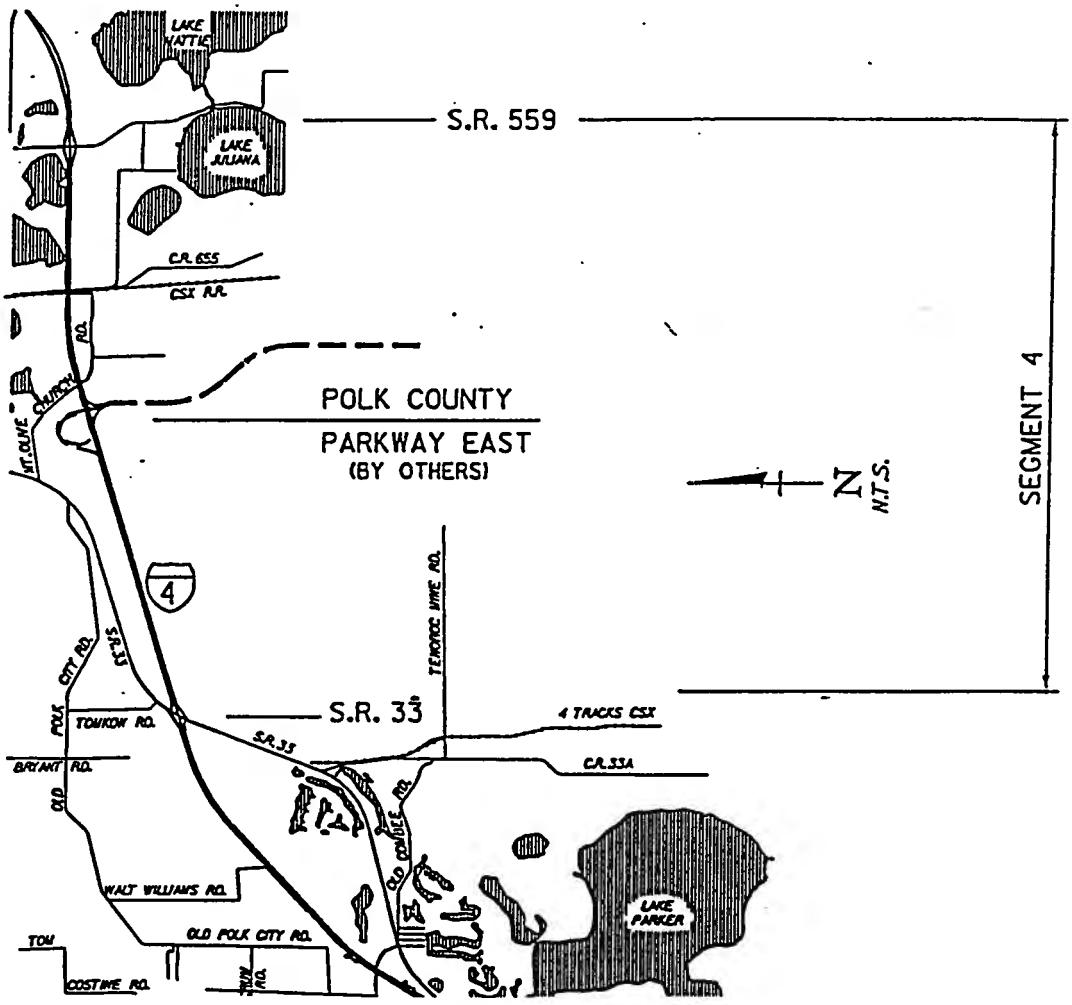
ATTEST: VALUE ENGINEERING COORDINATOR

MAJOR PROJECTS (OVER $2 MILLION CONSTRUCTION COST) CAN BE WAIVED ONLY BY DEPUTY ASSISTANT SECRETARY

WAIVED: DEPUTY ASSISTANT SECRETARY

THIS STUDY SUMMARY (AS A MINIMUM) MUST BE COMPLETED ON EVERY PROJECT AND INCLUDED IN THE PROJECT FILE AS WELL AS APPROPRIATE V.E. DISTRIBUTION.

Project Location Map



I-4 Segment 4

VE 96-01-05

Polk County

FORM 625-030-002-8
09/87

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INVESTIGATION PHASE							POTENTIAL STUDIES
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

PROJECT DESCRIPTION: I-4 Segment 4

LIST ALL SPECIFIC ITEMS, AREAS, COMPONENTS, ELEMENTS, DESIGNS OR MATERIALS WITHIN THE PROJECT WHICH ARE POTENTIAL STUDY AREAS (DO NOT ATTEMPT TO RANK)

Areas of Concern
- Slip Ramps
- Animal Crossings
- Access Management
- Utility Relocation
- Drainage
- Parkway Interchange
- Frontage Roads
- Lake Agnes / Alignment
- Overpasses.

Roadway
- ~~Typical Section~~
- Alignment
- Frontage Roads
- ~~Shoulder~~
- ~~Median~~

Bridges
- Overpass
- Underpass
- interchange
- ~~wildlife Crossing~~

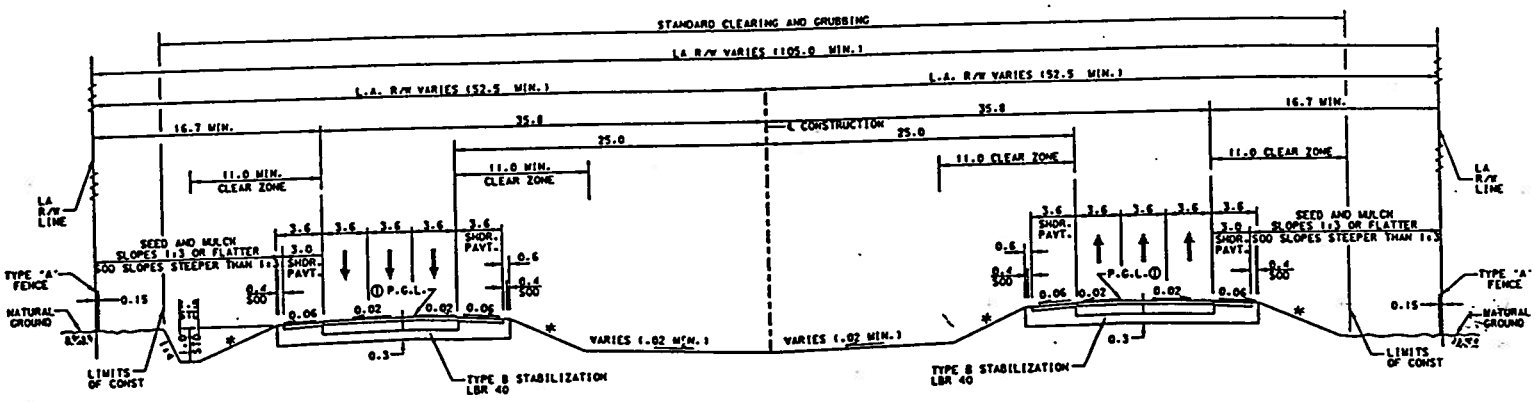
Ponds
- ~~ultimate~~

Ramps
- slip
- ~~interchange~~

SEARCH FOR GREATEST VALUE IMPROVEMENT

7/35

STATE PROJ NO	SHEET NO
16320-3436	4



TYPICAL SECTION

I-4 MAINLINE

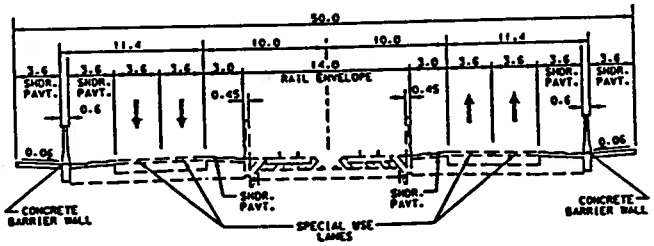
EAST OF S.R. 33 & EAST OF S.R. 559
STA 351+00 TO STA 447+00.928

TRAFFIC DATA

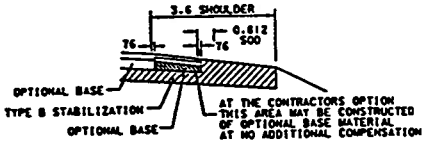
CURRENT YEAR	1993 ADT 42,000
ESTIMATED OPENING YEAR	1998 ADT 64,045
DESIGN YEAR	2018 ADT 127,032

E = 9.0% D = 55.0% T = 11.0%(24 HR)
DESIGN SPEED 110 km/hr

* 1:6 FILLS TO 1.5
1:6 TO EDGE OF CLEAR ZONE & 1:4 FOR FILLS 1.5 TO 3.0
1:6 TO EDGE OF CLEAR ZONE & 1:3 FOR FILLS 3.0 TO 6.0
1:2 (WITH GUARDRAIL) FILLS OVER 6.0



FUTURE CONSTRUCTION IN MEDIAN



SHOULDER PAVEMENT DETAIL
N.T.S.

NOTES
① PGL SHIFT 3.6m TO INSIDE EDGE OF TRAVEL LANE AT STA 443+19.514 TO END OF PROJECT.

REVISIONS							
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

PBSJ PIVEL, BICKLEY, SCHUH & JONSEAU ENGINEERING · PLANNING · ARCHITECTURE

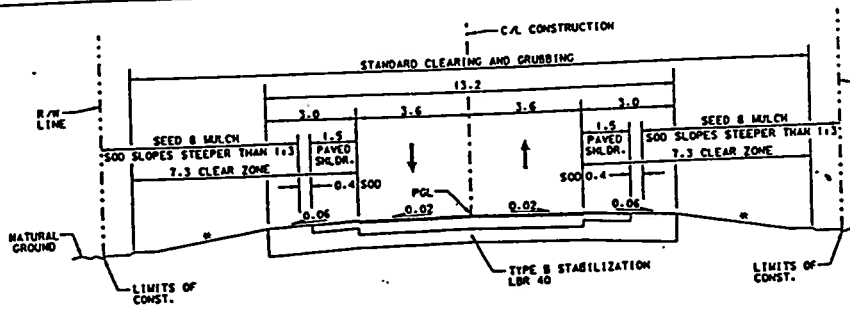
FLORIDA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION
I-4 MAINLINE

As Proposed

9/35

STATE PROJ NO	SHEET NO
16320-3436	6



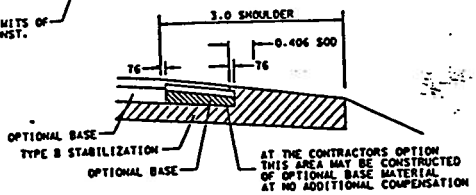
* 1:6 FILLS TO 1.5
1:6 TO EDGE OF CLEAR ZONE & 1:4 FOR FILLS 1.5 TO 3.0
1:6 TO EDGE OF CLEAR ZONE & 1:3 FOR FILLS 3.0 TO 6.0
1:2 (WITH GUARDRAIL) FILLS OVER 6.0

MT. OLIVE ROAD TRAFFIC DATA

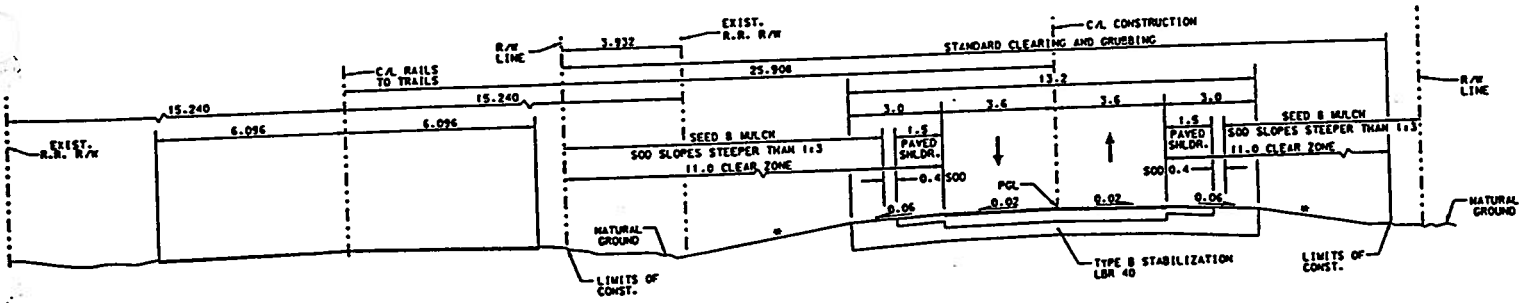
CURRENT YEAR	1993 ADT 1880
ESTIMATED OPENING YEAR	2000 ADT 2183
DESIGN YEAR	2020 ADT 3047

K = 11.0% D = 55.0% T = 7.3%
DESIGN SPEED 80 km/h

TYPICAL SECTION
MT. OLIVE ROAD
STA 24+90 TO STA 34+30



SHOULDER PAVEMENT DETAIL
N.T.S.



C.R. 655 TRAFFIC DATA

CURRENT YEAR	1993 ADT 2433
ESTIMATED OPENING YEAR	2000 ADT 4020
DESIGN YEAR	2020 ADT 8552

K = 11.0% D = 55.0% T = 7.3%
DESIGN SPEED 100 km/h

TYPICAL SECTION
C.R. 655
STA 28+20 TO STA 31+80

* 1:6 FILLS TO 1.5
1:6 TO EDGE OF CLEAR ZONE & 1:4 FOR FILLS 1.5 TO 3.0
1:6 TO EDGE OF CLEAR ZONE & 1:3 FOR FILLS 3.0 TO 6.0
1:2 (WITH GUARDRAIL) FILLS OVER 6.0

REVISIONS								
NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

PBS&J PIEL, BICKLEY, SQUIRE & JENNEMAN ENGINEERING · PLANNING · ARCHITECTURE

FLORIDA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
MOUNT OLIVE ROAD AND C.R. 655

As Proposed.

11/35

09/87

STUDY SUMMARY

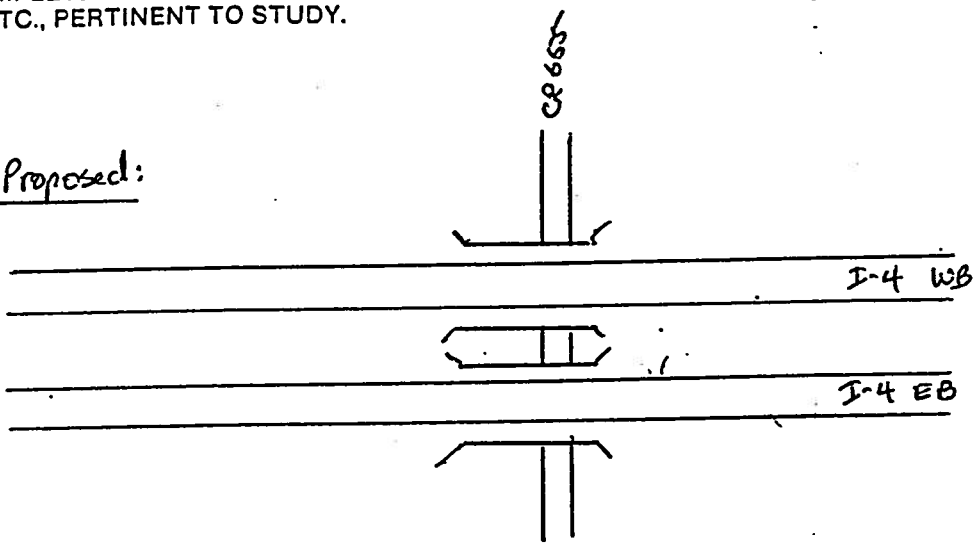
INVESTIGATION PHASE						
E. ITEM NO.	YEAR		DISTRICT		NUMBER	
	9	6	0	1	0	5

SKETCH OF DESIGN (AS PROPOSED)

STUDY I-4 Segment 5

OBTAIN COMPLETED AND UP-TO-DATE GRAPHIC DATA, DRAWINGS, SKETCHES, PHOTOS, STANDARDS, MANUALS, ETC., PERTINENT TO STUDY.

As Proposed:



Not to Scale

WHAT IS TO BE STUDIED

FORM 625-030-007-a
09/87

STATE OF FLORIDA DEPARTMENT OF ...

ANALYSIS PHASE							PRESENT FUNCTIONS
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

IDENTIFYING FUNCTIONS STUDY SUBJECT	WHAT DOES IT DO?	
	VERB	NOUN
Roadway	carries	traffic
	spans	distance
	connects	points
	supports	loads
	provides	access
Bridges	spans	something
	separates	traffic
	eliminates	intersectrai
Barrier Wall	separates	traffic
	provides	safety
	creates	hazard
	prevents	crossing
	redirects	traffic

CLASSIFYING FUNCTIONS STUDY SUBJECT	WHAT MUST IT DO?	
	VERB	NOUN
Roadway	carries	traffic
Bridges	spans	something
Barrier Wall	prevents	crossing

USE ONLY TWO WORDS - A VERB AND A NOUN

15/3

FORM 625-030-007-a
09/87

STATE OF FLORIDA DEPARTMENT OF ...

ANALYSIS PHASE							PRESENT FUNCTIONS
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

IDENTIFYING FUNCTIONS STUDY SUBJECT	WHAT DOES IT DO?	
	VERB	NOUN
Maintenance of Traffic	maintains	traffic
	avoid	distraction
	presents	closures
	protects	workers
	defines	work zones
	minimizes	delays
Drainage Structures	conveys	water
	increase	cost
	collects	trash
	increase	maintenance
Ditches	convey	water
	increase	cost
	collects	trash
	increase	maintenance

CLASSIFYING FUNCTIONS STUDY SUBJECT	WHAT MUST IT DO?	
	VERB	NOUN
Maintenance of Traffic	maintains	traffic
Drainage Structures	conveys	water
Ditches	conveys	water

USE ONLY TWO WORDS - A VERB AND A NOUN

09/87

ANALYSIS PHASE							PRESENT FUNCTIONS
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

IDENTIFYING FUNCTIONS STUDY SUBJECT	WHAT DOES IT DO? VERB	 NOUN
Median	separates	traffic
	reserves	R/W
	increases	R/W
	collects	water
	conveys	water
	increases	safety
	increases	driver comfort
	limits	access
	allows	expansion
Utilities	increase	cost
	impacts	schedule
	provides creates	service conflict
	creates	delay
	decreases	safety

CLASSIFYING FUNCTIONS STUDY SUBJECT	WHAT MUST IT DO? VERB	 NOUN
Median	separates	traffic
Utilities	provides	service

USE ONLY TWO WORDS - A VERB AND A NOUN

19/35

FORM 625-030-013-a
09/87

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECULATION PHASE							ALTERNATES IDEA LIST
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

FUNCTION TO BE PERFORMED

THIS IS THE CREATIVE STAGE OF VALUE ENGINEERING. GENERATE MANY IDEAS, METHODS OR ELEMENT TO FULFILL THE FUNCTION THAT THE ITEM UNDER STUDY MUST PERFORM. DO NOT EVALUATE IDEAS. USE SEPARATE SPECULATION WORKSHEET FOR EACH BASIC FUNCTION.

What is Important	How Important
Safety	10
Maintenance of Traffic	10
Initial Cost	8
Long Term Cost	7
Schedule / Delays	10
Expandability	10
Political Issues	9
Constructability	10
~~Maintainability~~ : (in long term cost)	
~~Satisfy need~~	
~~functions to expectations~~	
Environmentally Friendly	5
Aesthetics	7

LIST EVERYTHING - DEFER JUDGMENT

2
25

FORM 625-030-013-a
09/87

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECULATION PHASE							ALTERNATES IDEA LIST
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

FUNCTION TO BE PERFORMED

THIS IS THE CREATIVE STAGE OF VALUE ENGINEERING. GENERATE MANY IDEAS, METHODS OR ELEMENT TO FULFILL THE FUNCTION THAT THE ITEM UNDER STUDY MUST PERFORM. DO NOT EVALUATE IDEAS. USE SEPARATE SPECULATION WORKSHEET FOR EACH BASIC FUNCTION.

CR 655 Underpass

- I-4 under CR655 over
- Reduce bridge length to 30.5m and realign bicycle path
- Reduce bridge length to 35.1m, leave bicycle path alone.

Lake Agnes Alignment.

- Modify existing curves on either side to off-set entire section away from the lakes.
- Modify proposed alignment shift to remove broken back curve.

SR 559 Interchange

- Modify sidewalk - construct on west side only (keep both on brid
- Remove cul-de-sac in North west quadrant - provide stub access to last property line.

LIST EVERYTHING - DEFER JUDGMENT

09.87

SPECULATION PHASE							ADVANTAGES/DISADVANTAGES
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

FUNCTION TO BE PERFORMED

THIS IS THE CREATIVE STAGE OF VALUE ENGINEERING. GENERATE MANY IDEAS, METHODS OR ELEMENT TO FULFILL THE FUNCTION THAT THE ITEM UNDER STUDY MUST PERFORM. DO NOT EVALUATE IDEAS. USE SEPARATE SPECULATION WORKSHEET FOR EACH BASIC FUNCTION.

Change Alignment

Advantages

Same number of curves
flexibility for Special Use Lane placement
higher speed potential for rail service
increases driver comfort
Saves lake
more aesthetically pleasing
better meets driver expectancy
falls within AASHTO recommendations

Disadvantages

increased right of way
possibly more impact to SR 559 interchange
must coordinate with segment 5 designers
redesign work.

LIST EVERYTHING - DEFER JUDGMENT

EVALUATION PHASE

V.E. ITEM NO.	YEAR		DISTRICT	NUMBER	
	9	6	0	1	0 5

EVALUATION MATRIX

I-4 Segment 4

List the best ideas from suitability evaluation.
Determine which one ranks best against the desired criteria.
Work down.
4 - Excellent
3 - Good
2 - Fair
1 - Poor

OBJECTIVES OR CRITERIA

ALTERNATIVES	WEIGHT	Contribution to or effect on: Safety (a)	MOT (b)	Init'l $ (c)	Ann Term $ (d)	Schedule/ Delays (e)	Expanda bility (f)	Political Issues (g)	Constructability (h)	Environmental Issues (i)	Aesthetics (j)	TOTAL (k)	RANKING	USE NOW	HOLD	REJECT	MODIFY HOW?
CR655 Underpass																	
As proposed		4 40	2 20	2 20	4 40	3 30	1 9	2 20	3 15	2 14		231	3		✓		
30.5 m		3 30	4 40	3 30	3 30	2 20	1 9	4 40	2 10	3 21		270	2	✓			
35.1 m		4 40	4 40	4 40	3 30	3 30	1 9	3 30	3 15	4 28		277	1	✓			
L. Agnes Alignment																	
As Proposed		3 30	3 30	4 40	3 30	3 30	3 27	3 30	3 15	3 21		266	2				
Modify Curves		4 40	3 30	3 30	3 30	4 40	4 36	4 40	3 15	4 28		304	1				
SR 559 sidewalk																	
As proposed		4 40	2 20	3 30	2 14	3 30	3 27	3 30	3 15	4 28		248					
One side only		3 30	2 20	2 20	3 21	3 30	3 27	3 30	3 15	3 21		246					

SHEET TOTAL

ESTIMATE NO. _____

ALTERNATE As Proposed 25 parcels SHEET NO. _____

WPI NO.: - SEC/JOB: DISTRICT: One

COUNTY: - FAP NO.: DATE:

Local Description: - I-4 Segment 4
(Mt Olive Church Rd to SR 559 Interchange)

R/W Support Costs (Phase 30)
1. $10,000 x 25 Parcel — PHASE 30 TOTAL $ 250 000

R/W Ops. Costs (Phase 32)
2. $ 11000 x 25 Parcel — PHASE 32 TOTAL $ 275 000

R/W Land Costs (Phase 31)

3. Storm Water Management (Land, Imps. & S/D)	$	
4. Main-line Right Of Way (Land, Imps. & S/D)	$	778 508
5. Administrative & Legal Settlements Line 3 & 4 x factor 50 (Use factor for average $ per parcel)	$	389 254
6. Defendant Attorney & Court Costs Line 3 & 4 x factor 20 (Use factor for average $ per parcel)	$	155 701
7. Property Owner Appraisal Fees 25 Parcels x 25% x $5,000	$	31 250
8. Owner CPA Fees	$	0
9. Business damages	$	0

PHASE 31 TOTAL $ 1354 713

Relocation Costs (Phase 38) — PHASE 38 TOTAL $ 0

RIGHT OF WAY COSTS/SHEET TOTAL $ 1879 713

REMARKS: Mainline R/W estimate for VE Alternative comparison purposes ONLY! Business damages / CPA fees / and Relocation costs (if there are any) would be the same for all alternatives so therefore logged as $0.

RIGHT OF WAY ESTIMATE REQUESTED BY: _____

RIGHT OF WAY ESTIMATE PREPARED BY: _____

279/35

CONCEPTUAL COST ESTIMATE
SHEET TOTAL

ESTIMATE NO. ____

ALTERNATE VE Alternative (25 - 10 parcels) SHEET NO. ____

WPI NO.: - SEC/JOB: DISTRICT: One

COUNTY: - FAP NO.: DATE:

Local Description: - I-4 Segment 4
(Mt olive Church Rd to SR 559 Interchange)

R/W Support Costs (Phase 30)
1. $10,000 x 15 Parcel — PHASE 30 TOTAL $ 150 000

R/W Ops. Costs (Phase 32)
2. $ 11000 x 15 Parcel — PHASE 32 TOTAL $ 165 000

R/W Land Costs (Phase 31)

3. Storm Water Management (Land, Imps. & S/D)	$	
4. Main-line Right Of Way (Land, Imps. & S/D)	$	778 508
5. Administrative & Legal Settlements Line 3 & 4 x factor 44 (Use factor for average $ per parcel)	$	342 543
6. Defendant Attorney & Court Costs Line 3 & 4 x factor 20 (Use factor for average $ per parcel)	$	155 701
7. Property Owner Appraisal Fees 15 Parcels x 25% x $5,000	$	18 750
8. Owner CPA Fees	$	0
9. Business damages	$	0

PHASE 31 TOTAL $ 1 295 502

Relocation Costs (Phase 38) — PHASE 38 TOTAL $ 0

RIGHT OF WAY COSTS/SHEET TOTAL $ 1 610 502

REMARKS:

As proposed 1 879 713
VE Alt 1 610 502
Savings 269 211

RIGHT OF WAY ESTIMATE REQUESTED BY: ____

RIGHT OF WAY ESTIMATE PREPARED BY: ____

09/87

STUDY SUMMARY

DEVELOPMENT PHASE							COST CALCULATIONS
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

DOCUMENT THE BEST AVAILABLE ESTIMATES OF QUANTITIES AND COST. LIFE CYCLE COST SHOULD BE OBTAINED FOR EACH PROPOSED ITEM.

		Source:
I-4 over Berkley Rd (1219 m roadway & bridge)		
6 lane interstate	$ 7 070 000	1995 LRE Manual
4 lane interstate (future special use lanes)	5 060 000	
I-4 at grade (1219 m roadway)		
6 lane interstate	1 960 000	1995-96 Transportation Costs
4 lane interstate	1 570 000	
Berkley Rd bridge over Interstate		
2 lanes	910 000	BDR SR557 adjusted in VE96-06
2 lanes additional (future 4 lanes)	910 000	
Bicycle/Pedestrian overpass	1 080 000	1995 LRE Manual

STUDY SUMMARY

DEVELOPMENT PHASE							COST CALCULATIONS
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

DOCUMENT THE BEST AVAILABLE ESTIMATES OF QUANTITIES AND COST. LIFE CYCLE COST SHOULD BE OBTAINED FOR EACH PROPOSED ITEM.

	As Proposed	VE Alternative	SAVINGS
Interstate	$ 7 070 000	$ 1 960 000	
Berkley Rd	0	910 000	
Subtotal	$ 7 070 000	$ 2870 000	$ 4 200 000
Special Use Lanes	5 060 000	1 570 000	
Subtotal	$ 12 130 000	$ 4 440 000	$ 7 690 000
Berkley Rd 4 lanes (added cost only)	0	910 000	
Bicycle/Ped Opass (added cost only)	0	1 080 000	
	$ 12 130 000	$ 6 430 000	$ 5 700 000

STUDY SUMMARY

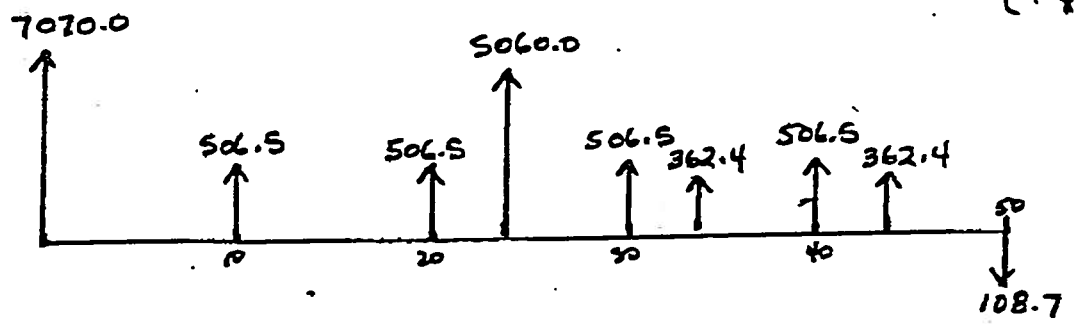
DEVELOPMENT PHASE							COST CALCULATIONS
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

DOCUMENT THE BEST AVAILABLE ESTIMATES OF QUANTITIES AND COST. LIFE CYCLE COST SHOULD BE OBTAINED FOR EACH PROPOSED ITEM.

As Proposed

7%
($ x 1000)



Assume:

Construction of 4 lanes (special use) - year 23

Resurfacing every 10 years.

$$P_W = 7070.0 + 506.5\,[(P/F,7,10) + (P/F,7,20) + (P/F,7,30) + (P/F,7,40)] + 5060.0\,(P/F,7,23) + 362.4\,[(P/F,7,33) + (P/F,7,43)] - 108.7\,(P/F,7,50)$$

$$P_W = 7070.0 + 488.7 + 1067.4 + 58.6 - 3.7$$

$$P_W = 8681.0$$

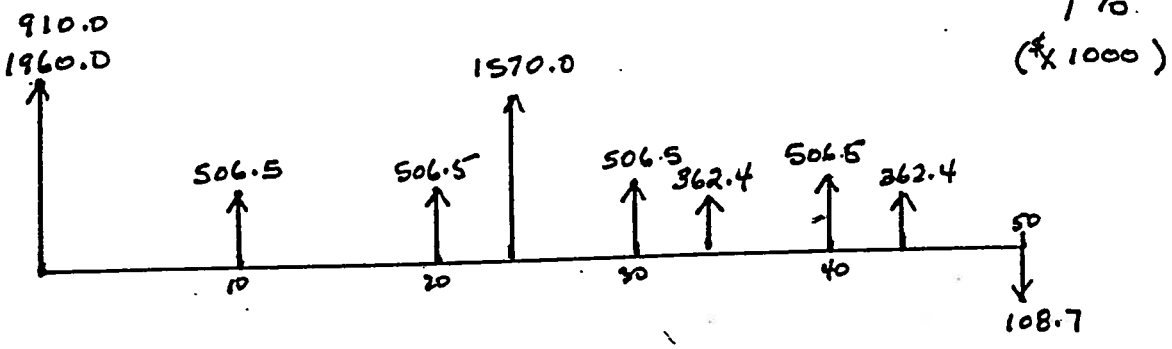
STUDY SUMMARY

DEVELOPMENT PHASE							COST CALCULATIONS
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

DOCUMENT THE BEST AVAILABLE ESTIMATES OF QUANTITIES AND COST. LIFE CYCLE COST SHOULD BE OBTAINED FOR EACH PROPOSED ITEM.

Alternative: I-4 at Grade; Berkley Rd on structure over interstate



7%
($ x 1000)

Assume:

Construction of 4 lanes (special use) - year 23

Resurfacing every 10 years

$$P_W = 1960.0 + 910.0 + 506.5\left[(p|f,7,10)+(p|f,7,20)+(p|f,7,30)+(p|f,7,40)\right] + 1570.0\,(p|f,7,23) + 362.4\left[(p|f,7,53)+(p|f,7,43)\right] - 108.7\,(p|f,7,50)$$

$$P_W = 1960.0 + 910.0 + 506.5\,(0.50835 + 0.25842 + 0.13137 + 0.06678) + 1570.0\,(0.21095) + 362.4\,(0.10723 + 0.05451) - 108.7\,(0.03395)$$

$$P_W = 1960.0 + 910.0 + 506.5\,(0.96492) + 1570.0\,(0.21095) + 362.4\,(0.16174) - 108.7\,(0.03395)$$

$$P_W = 1960.0 + 910.0 + 488.7 + 331.2 + 58.6 - 3.7 = 3744.8$$

Life Cycle Savings $8681.0 - 3744.8 = \$4\,936.2$ (x 1000)

$= \$4\,936\,200$

INITIAL • OPERATING • MAINTENANCE • DISPOSAL

FORM 625-030-020-s
09/87

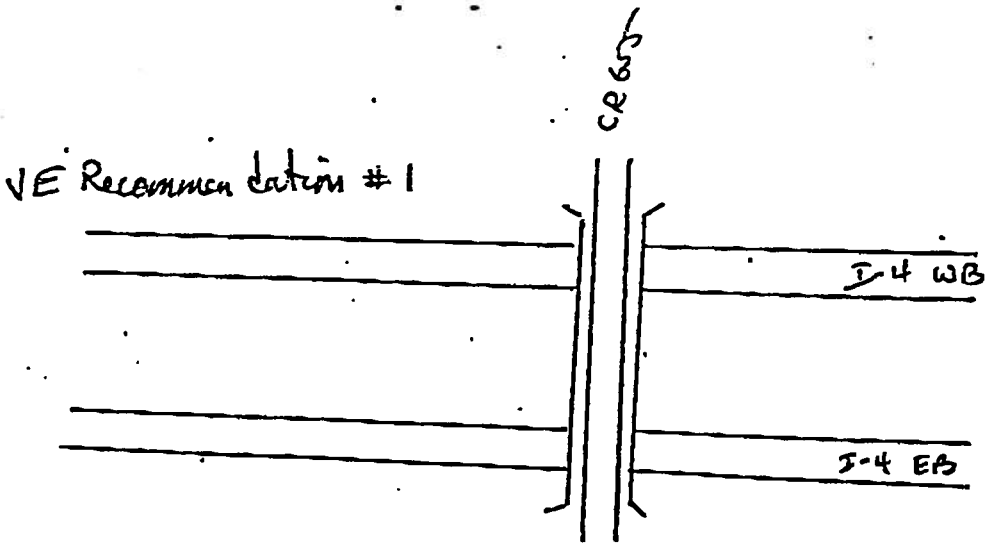
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STUDY SUMMARY

DEVELOPMENT PHASE							SKETCH OF PROPOSAL
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

Not to Scale



WHAT IS THE NEW IDEA

32/86

FORM 625-030-020-a
09/87

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STUDY SUMMARY

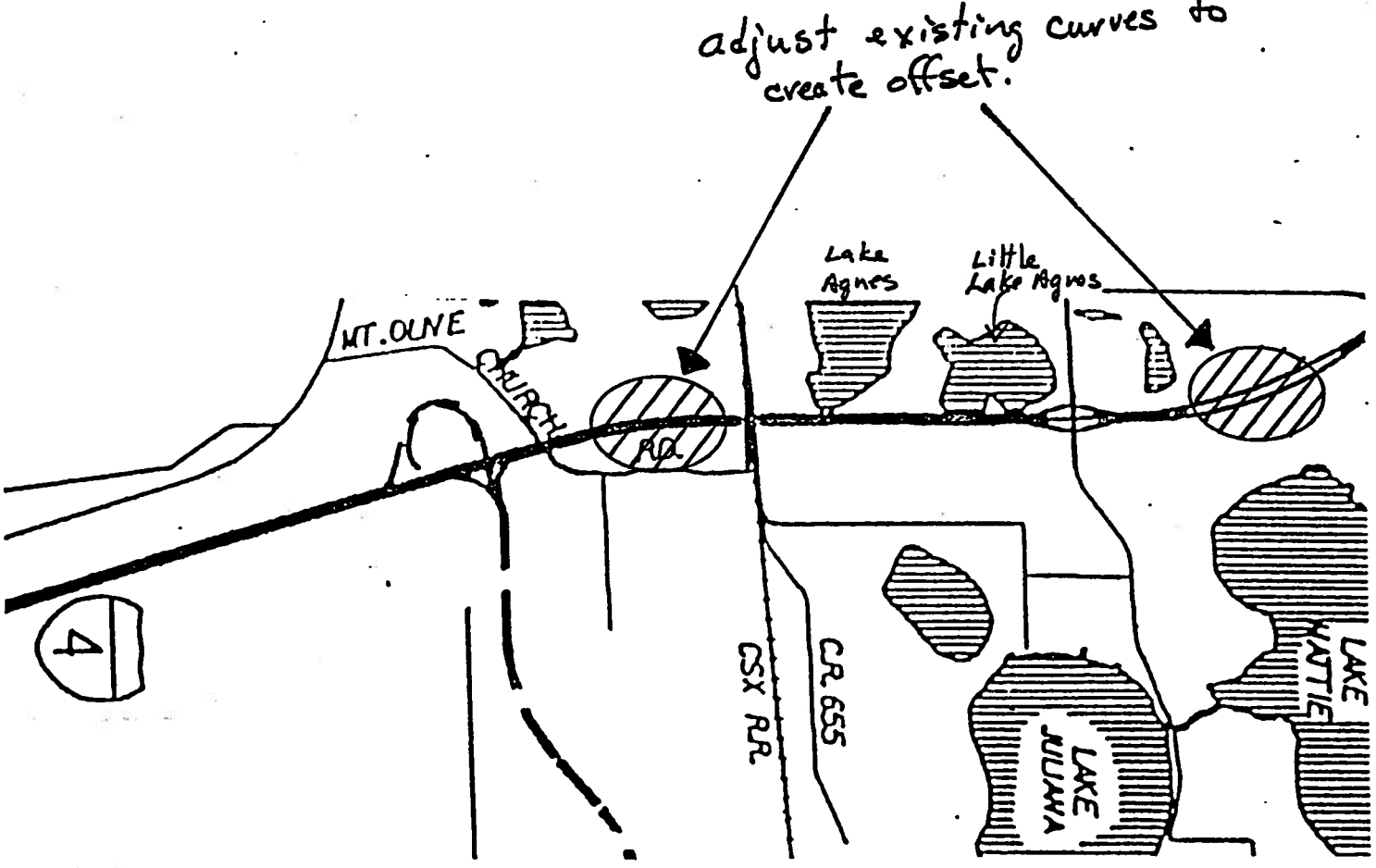
DEVELOPMENT PHASE						
	YEAR		DISTRICT		NUMBER	
J.E. ITEM NO.	9	6	0	1	0	5

SKETCH OF PROPOSAL

STUDY I-4 Segment 4

Value Engineering Recommendation #2

Investigate alternative alignments to off-set mainline away from Lake Agnes and Little Lake Agnes while introducing no additional curves.



WHAT IS THE NEW IDEA

FORM 625-030-022-e
08/87

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STUDY SUMMARY

DEVELOPMENT PHASE							SUMMARY REPORT VE RECOMMENDATIONS
V.E. ITEM NO.	YEAR		DISTRICT		NUMBER		
	9	6	0	1	0	5	

STUDY I-4 Segment 4

SUM UP THE VALUE ENGINEERING PROPOSAL (VEP). DISCUSS TECHNICAL & ECONOMIC FEASIBILITY, LIFE CYCLE COST, IMPACT OF PROPOSAL, SAVINGS, HOW TO IMPLEMENT, CHANGES, DEADLINES, VALUE IMPROVEMENT

Value Engineering Recommendation #1

Change the grade separation with CR 655 to result in the interstate at grade and CR 655 on structure over the interstate.

Estimated savings - initial $4 200 000

Estimated savings with special use lanes $7 690 000

Estimated Life Cycle Savings $4 936 200

Value Engineering Recommendation #2

Between Mt Olive Church Rd and east of SR 559 interchange, investigate alternative alignments to offset the mainline away from Lake Agnes and Little Agnes while introducing no additional curves (or fewest number possible).

Estimated savings $269 211.

Value Engineering Recommendation #3

In northwest quadrant of SR 559 interchange, stub access road at last property line instead of cul-de-sac.

Estimated savings $9446.

GOOD VALUE SELLS ITSELF

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STUDY SUMMARY

V.E. ITEM NO.	YEAR		DISTRICT		NUMBER	
	9	6	0	1	0	5

IMPLEMENTATION

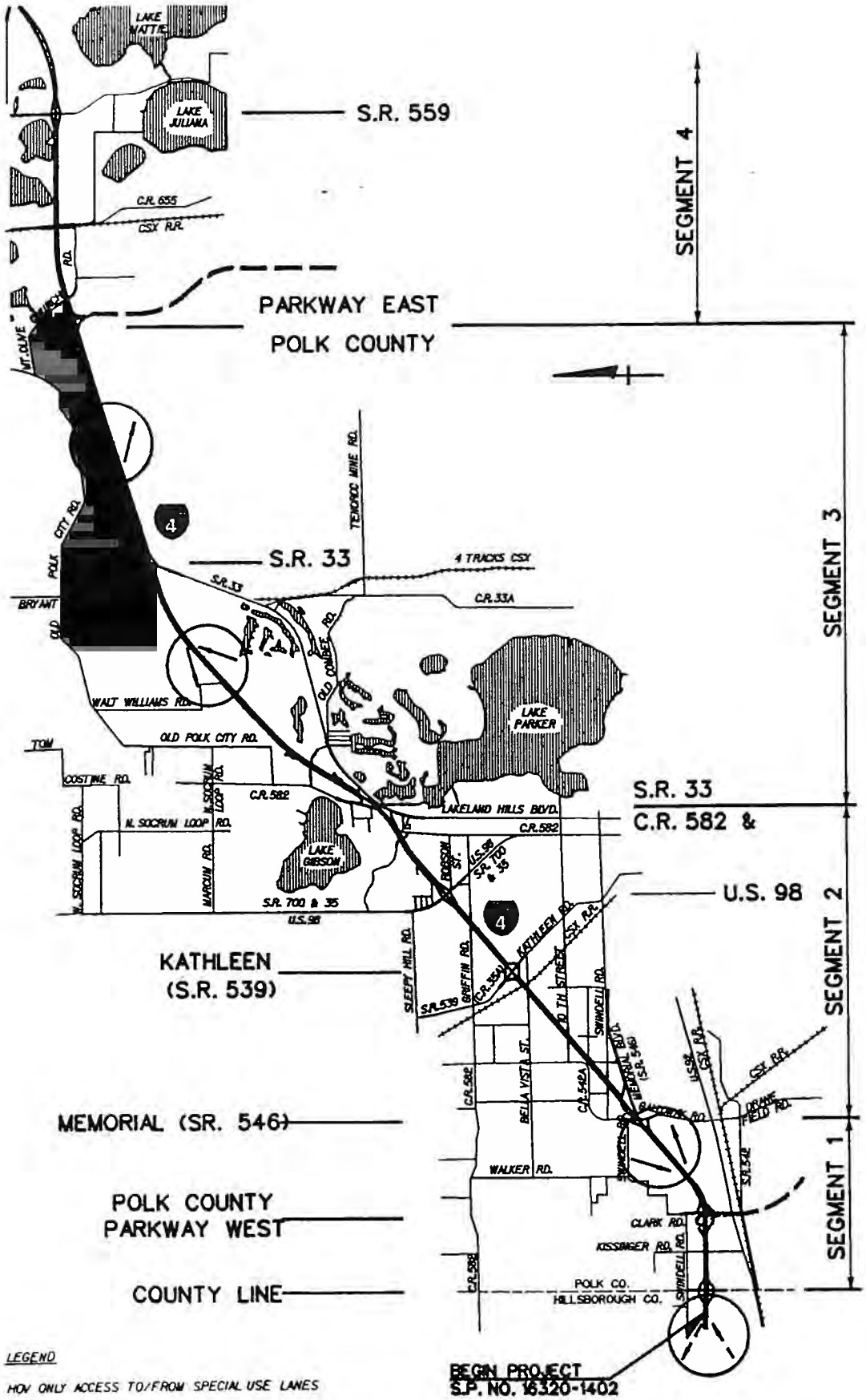
STUDY I-4 Segment 4

Implementation of the value engineering recommendations involve the following steps:

1) Decide to implement recommendations and notify District Value Engineer in writing.
2) Make the necessary changes to the Project Development and Environment Study and proceed with that process.
3) Coordinate with Polk County regarding access and proposed changes to Barkley Rd.
4) Coordinate with Segment 5 project team regarding alignment potentials.
5) Make changes in plans.
6) Proceed with the production process.

SECTION 6
EXHIBIT NO. 9-4 OF THE 1994 I-4 MASTER PLAN

FPN PROJ. NO.	SHEET NO.
16320-1402	



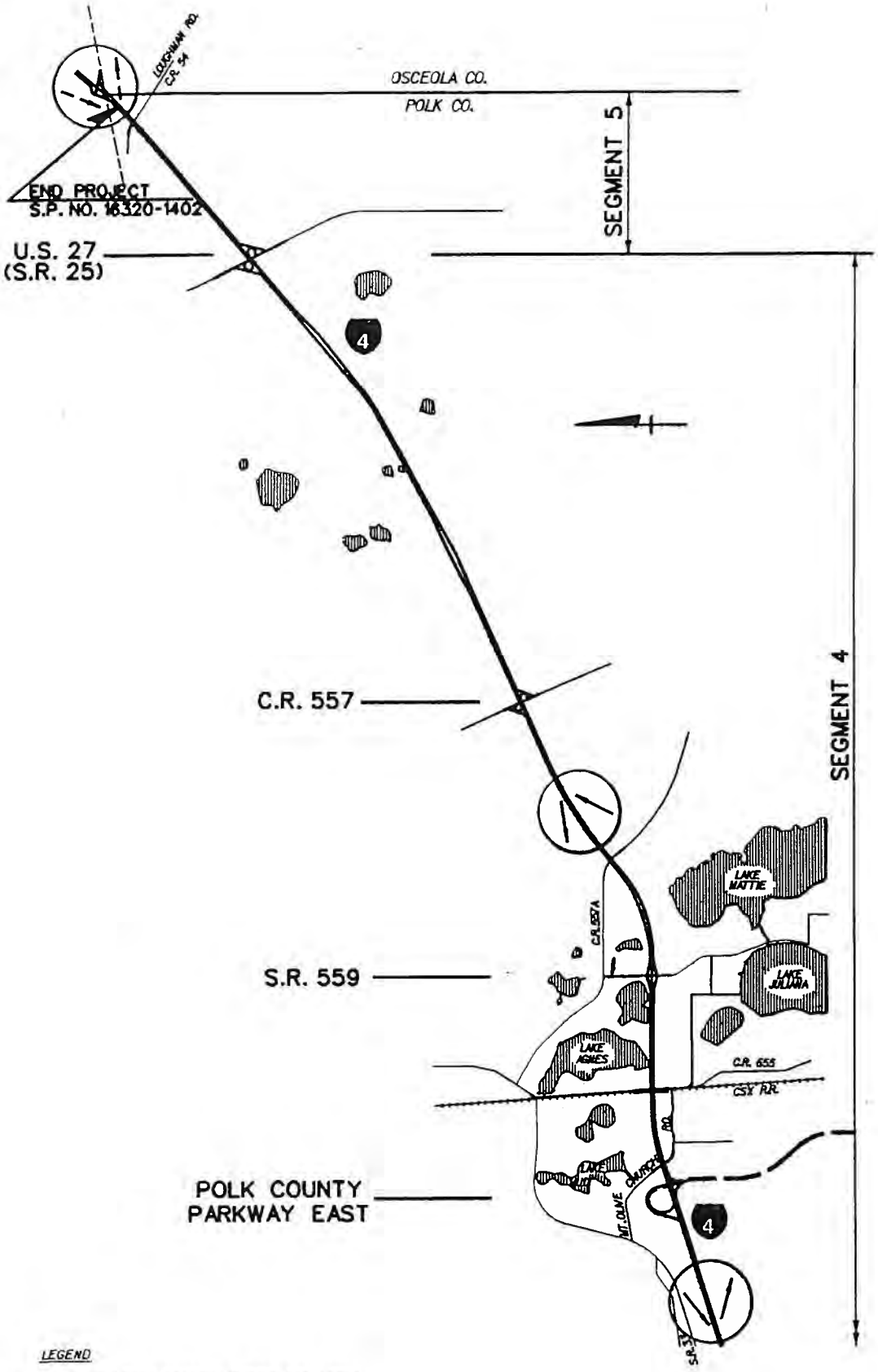
I-4 Multimodal Interstate Master Plan

POTENTIAL HOV ACESS POINTS

EXHIBIT NO. 9-4

SHT. 1 of 2

STATE PROJ. NO. 16320-1402



LEGEND

——— HOV ONLY ACCESS TO/FROM SPECIAL USE LANES

— — SOV & HOV ACCESS TO/FROM SPECIAL USE LANES

I-4 Multimodal Interstate Master Plan

POTENTIAL HOV ACESS POINTS

EXHIBIT NO. 9-4

SHT. 2 of 2

4 Polk County

STATE OF FLORIDA · DEPARTMENT OF TRANSPORTATION