

**FINAL
PRELIMINARY ENGINEERING REPORT
US 98 (SR 30)
at the Entrance to Hurlburt Field
PD&E Study**



Prepared for the
Okaloosa County Public Works Dept.

In Cooperation with the
Florida Department of Transportation,
District 3, and the US Air Force,
Hurlburt Field Command



April 2004



**US 98 (SR 30) at the
Entrance To Hurlburt Field
PD&E Study**

**Final Preliminary
Engineering Report**

**Prepared for the
Okaloosa County Public Works Dept.
In Cooperation with the
Florida Department of Transportation,
District 3, and the US Air Force,
Hurlburt Field Command**

April 2004

Prepared by:

HDR Engineering, Inc.
Pensacola Florida

Larry Weatherby, P.E.
Senior Transportation Engineer
P.E. No. 0018886

Table of Contents

1.0	Summary.....	1
1.1	Commitments.....	1
1.2	Recommendations.....	1
2.0	Introduction.....	1
2.1	Hurlburt Field.....	1
2.2	Project and Report Purpose.....	2
2.3	Project Description.....	2
2.4	Related Actions.....	3
3.0	Need for Improvement.....	4
3.1	Capacity Deficiencies.....	4
3.2	Safety.....	4
3.3	Consistency with Transportation Plan.....	5
3.4	Social/Economic Demands.....	5
4.0	Existing Conditions.....	6
4.1	Existing Roadway Characteristics.....	6
4.1.1	Functional Classification.....	6
4.1.2	Typical Sections.....	6
4.1.3	Pedestrian and Bicycle Facilities.....	7
4.1.4	Right-of-Way.....	7
4.1.5	Horizontal Alignment.....	7
4.1.6	Vertical Alignment.....	7
4.1.7	Drainage.....	7
4.1.8	Geotechnical Data.....	8
4.1.9	Crash Data.....	11
4.1.10	Intersections and Signalization.....	12
4.1.11	Lighting.....	12
4.1.12	Utilities.....	12
4.1.13	Pavement Condition.....	13
4.1.14	Posted Speed Limits.....	13
4.1.15	Access Management Classification.....	14
4.2	Existing Bridges.....	15
4.3	Environmental Characteristics.....	15
4.3.1	Land Use Data.....	15
4.3.2	Cultural Features and Community Services.....	15
4.3.3	Natural and Biological Features.....	16
4.3.4	Hazardous Materials Sites.....	18
4.3.5	Permits Required.....	18
5.0	Design Controls and Standards.....	19
6.0	Traffic.....	20
6.1	Existing Traffic Volumes & Levels of Service.....	20
6.2	Multimodal Transportation System Considerations.....	21
6.3	Traffic Analysis Assumptions & Methodology.....	21
6.4	Traffic Volume Projections.....	23
6.5	Future Levels of Service.....	23
7.0	Alternative Alignment Analysis.....	26
7.1	No Build Alternative.....	26

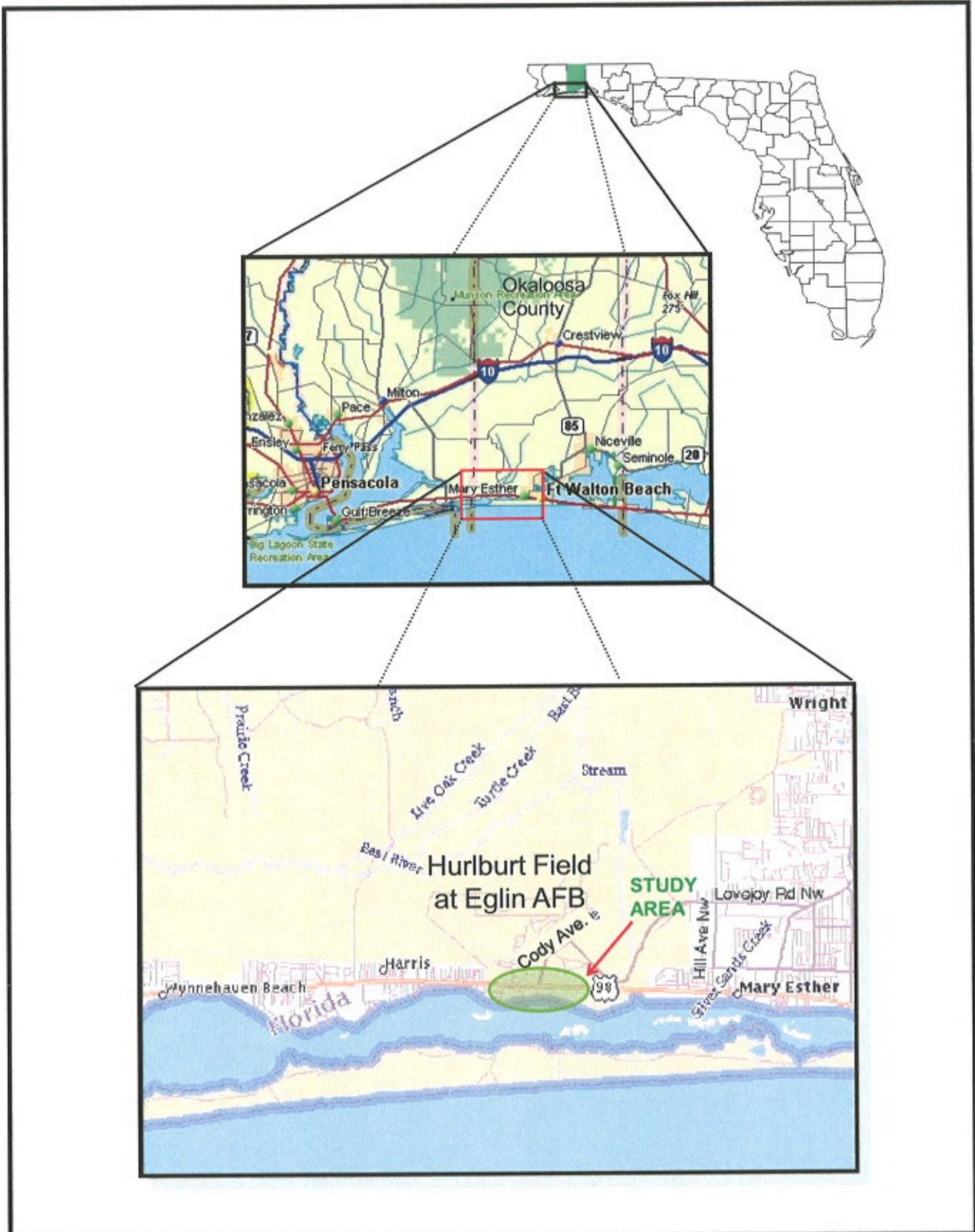
7.2	Transportation System Management.....	26
7.3	Study Build Alternatives.....	26
7.3.1	Typical Section Alternatives.....	26
7.3.2	Interchange Alternatives Considered.....	27
7.3.3	The “Flyover” Ramp Alternative.....	27
7.3.4	The Tight Urban Diamond Interchange Alternatives.....	28
7.3.5	The Single-Point Urban Interchange Alternatives.....	28
7.4	Evaluation Matrix.....	28
7.5	Preferred Alternative.....	29
8.0	Preliminary Design Analysis.....	31
8.1	Design traffic Volumes.....	31
8.2	Typical Sections.....	31
8.3	Intersection Concepts and Signal Analysis.....	31
8.4	Alignment and Right-of-Way Needs.....	32
8.5	Relocation.....	32
8.6	Right-of-Way Costs.....	32
8.7	Construction Costs.....	33
8.8	Preliminary Engineering Costs.....	33
8.9	Production Schedule.....	33
8.10	Recycling of Salvageable Materials.....	33
8.11	User Benefits.....	33
8.12	Pedestrian and Bicycle Facilities.....	33
8.13	Safety.....	34
8.14	Economic and Community Development.....	34
8.15	Environmental Impacts.....	34
8.16	Utility Impacts.....	37
8.17	Traffic Control Plan.....	37
8.18	Results of Public Involvement Program.....	38
8.19	Value Engineering.....	40
8.20	Drainage.....	40
8.21	Bridge Analysis.....	40
8.22	Special Features.....	42
8.23	Access Management.....	42
8.24	Aesthetics and Landscaping.....	42
9.0	References.....	43
10.0	Appendices.....	44
	Appendix A: Public Involvement Documentation.....	44
	Appendix B: Construction Cost Estimates.....	44
	Appendix C: Excerpts from Geotechnical Report.....	44

List of Figures

Figure No.	Description	Following Page No.
2-1	Location Map.....	1
2-2	Study Area Aerial Photo.....	1
4-1	Photos of Existing Conditions.....	6
4-2	Existing Typical Section on US 98.....	On p. 6
4-3	Drainage Features.....	8
4-4	Soils Map.....	On p. 9
4-5	Traffic Crashes by Time of Day & Day of Week.....	11
4-6	Traffic Crashes by Location & Type.....	11
4-7	Crashes at the Hurlburt Entrance & Tabular Summary of all Crashes.....	11
4-8	Existing Intersection Geometry (Aerial Photo).....	12
4-9	Land Use & Land Cover.....	15
4-10	Jurisdictional Wetland Sites.....	16
4-11	100-Year Floodplain.....	18
4-12	Potential Contamination Site.....	18
6-1	Variation in Traffic by Month, Day, & Hour.....	20
6-2	Historical and Projected Traffic on US 98 Near Hurlburt Field.....	23
6-3	Existing and Projected AADTs.....	23
6-4	Directional Design Hour Volumes.....	23
6-5	Urban Interchange Types Considered.....	On p. 24
7-1	Existing & Proposed Typical Sections.....	27
7-2	Initial Design Concepts Considered.....	27
7-3	Flyover Ramp Alternatives.....	27
7-4	“TUDI” With US 98 Over Cody Avenue Conceptual Design Plan.....	28
7-5	“TUDI” With US 98 Over Cody Avenue – Intersection Enlargement.....	28
7-6	“TUDI” With Cody Avenue Over US 98 Conceptual Design Plan.....	28
7-7	“TUDI” With Cody Avenue Over US 98 – Intersection Enlargement.....	28
7-8	Profile for US 98 Over Cody Avenue.....	28
7-9	Profile for Cody Avenue Over US 98.....	28
7-10	“SPUI” With US 98 Over Cody Avenue Conceptual Design Plan.....	28
7-11	“SPUI” With US 98 Over Cody Avenue – Intersection Enlargement.....	28
7-12	“SPUI” With Cody Avenue Over US 98 Conceptual Design Plan.....	28
7-13	“SPUI” With Cody Avenue Over US 98 – Intersection Enlargement.....	28
7-14	“Before-and-After” Images.....	30

List of Tables

Table No.	Description	Page No.
4-1a	Existing Drainage Outfalls.....	7
4-1b	Existing Cross Drains	8
4-2	Soil Descriptions.....	9
4-3	Existing Utilities in the Project Area	13
4-4	FDOT's Access Management Standards	14
4-5	Wetland Sites	17
5-1	Proposed Roadway Design Criteria	19
6-1	AADT Estimates Derived from Machine Counts.....	Follows 20
6-2	Level of Service Summary	Follows 23
7-1	Evaluation Matrix	29
8-1	Recommended Auxiliary Lane Lengths	Follows 31
8-2	Expected Wetland Impacts	35
8-3	Proposed Access Management Standards.....	42



U.S. 98 (SR 30) at
Hurlburt Field PD&E
Study



LOCATION MAP

FIGURE
2-1

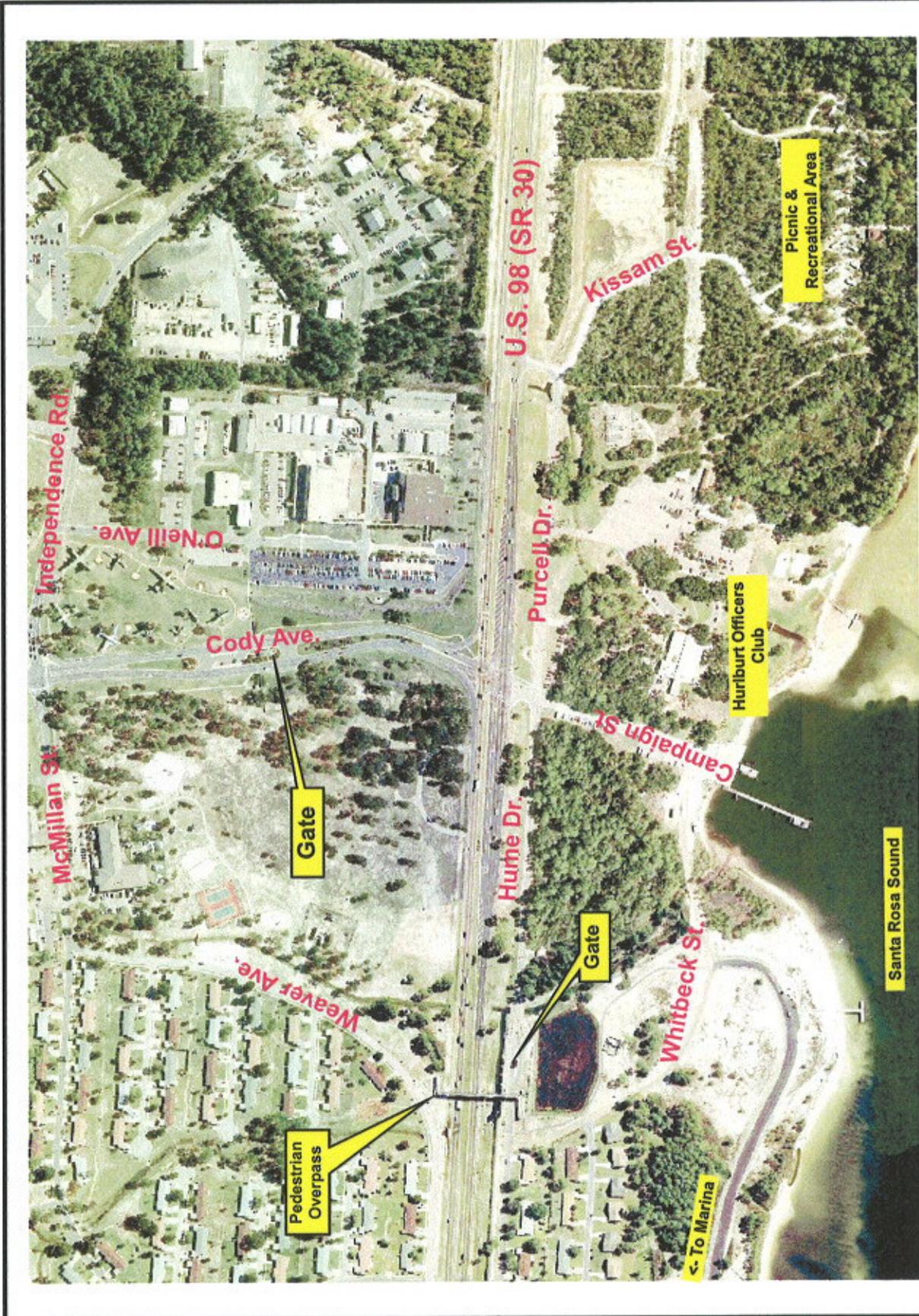


FIGURE 2-2

STUDY AREA AERIAL PHOTO



U.S. 98 (SR 30) at Hurlburt Field PD&E Study



1.0 Summary

1.1 Commitments

Because the roadway is a hurricane evacuation route, two lanes of traffic in each direction of US 98 (SR 30) will be maintained at all times during construction of the proposed project. In addition, a sidewalk will be provided on at least one side of US 98, and paved shoulders will be available for use by bicyclists.

1.2 Recommendations

The “Preferred Alternative” shown in this report is recommended to be advanced to design, right-of-way acquisition, and construction, as soon as funding sources have been arranged.

2.0 Introduction

2.1 Hurlburt Field

This report summarizes the PD&E Study for US 98 at the main entrance to Hurlburt Field at Eglin Air Force Base (AFB), in Okaloosa County Florida. The project location and study limits are shown in **Figures 2-1 and 2-2**. Hurlburt Field is home of the Air Force Special Operations Command and the 16th Special Operations Wing. The Air Force Special Operations Command provides Air Force special operations forces for worldwide deployment and assignment to regional unified commands throughout the spectrum of conflict. The 16th Special Operations Wing’s mission is to organize, train and equip Air Force special operations forces for global deployment. The wing focuses on unconventional warfare, including counterinsurgency and psychological operations during low-intensity conflicts.

In addition to the above two units, there are several other organizations located at the base that are assigned to other Air Force commands and play an important role in national defense. Air Force Command and Control Training and Innovation Group (C2TIG) conducts instruction and war gaming responsibilities for joint air ground operations, including several exercises a year, and develops and evaluates war fighter tactics, techniques and procedures to support joint air operations worldwide. Also noteworthy at Hurlburt Field is the 823rd Red Horse Squadron, a civil engineering construction unit that is self-contained and can rapidly deploy to support US forces around the world. In addition to the above units, Hurlburt is home to the Air Force

Combat Weather Center. Other organizations at Hurlburt Field include Detachment 1, 334th Training Squadron, Detachment 7 of the 373rd Training Squadron, and the Air Force Office of Special Investigations. Hurlburt Field has approximately 680 military family housing units located on the main base, across US 98 and 5 miles northeast of the main base.

2.2 Project and Report Purpose

A Project Development and Environmental (PD&E) Study is being performed for Okaloosa County on behalf of the USAF (Hurlburt Field Command), funded by an Enterprise Florida Inc. (EFI) Florida Infrastructure Grant. The purpose of the study is to examine various interchange alternatives to improve the US 98 Hurlburt Field entrance, to provide an adequate traffic level of service in the future and to reduce response times for personnel living off base. The study is being conducted in cooperation with the Florida Department of Transportation (FDOT) and the Hurlburt Field Command, Eglin AFB, USAF.

The general objective of this *study* is to provide documented information necessary for Okaloosa County, the FDOT, and Air Force to reach a decision on the type, design, and location of the proposed improvements to the US 98/Cody Avenue intersection. This PD&E Study includes the preliminary engineering (conceptual design), and environmental studies necessary for the Federal Highway Administration (FHWA) Location and Conceptual Design Acceptance (LCDA) of the proposed roadway improvements. All factors related to the design and location of the facility are being considered including alternative designs, transportation needs, social impacts, economic factors, environmental impacts and engineering analysis. It is likely that the study will lead to subsequent project design and construction phases. The purpose of this *report* is to document the study methodology and results of the analysis of various improvement alternatives to US 98 at Cody Avenue (Hurlburt Field entrance).

2.3 Project Description

The current project consists of a Project Development and Environmental (PD&E) Study to determine the feasibility of constructing an interchange at the main entrance to Hurlburt Field on US 98 (SR 30). The interchange is currently proposed to be a single-point urban interchange (SPUI), with US 98 going over Cody Avenue. US 98 is proposed to be a six-lane “rural” (drained by ditches or swales) highway with a high degree of access control in the vicinity of the proposed interchange, consistent with the

adopted long range transportation plan of the Okaloosa-Walton Transportation Planning Organization (TPO).

There is currently no funding for design, right-of-way, or construction in the current Transportation Improvement Program (TIP) or the Department's current Work Program

Preliminary cost estimates for the proposed project, in millions of dollars, include:

Preliminary Engineering, Design and CEI	\$ 1.7
Wetlands Mitigation (5:1 ratio, \$8,000/ac.)	\$ 0.08
Right-of-Way Acquisition	\$ --
Construction	<u>\$ 8.6</u>
Total (preliminary estimate)	\$ 10.4

2.4 Related Actions

Construction of a new main gate may occur in this area within the same time frame as construction of the proposed interchange. The base command is concerned about the potential compromise to security at the main gate that may be created with the construction of an interchange, as well as safety and capacity issues. A study is underway to develop conceptual designs to the main gate so that security under increased Force Protection Conditions can be quickly and easily enhanced to meet the criteria of the DoD Antiterrorism/Force Protection Program and the Air Force Installation Entry Control Facilities Design Guide. Subsequent programming, appropriations, and design will be required prior to construction of a new main gate.

3.0 Need for Improvement

An interchange at the main gate to Hurlburt Field on US 98, if constructed, would substantially reduce delays to motorists at the intersection, reduce the likelihood of base-bound motorists blocking the through lanes on U.S 98, and by reducing the travel times to Hurlburt Field, extend the distance that personnel can live from Hurlburt Field. An interchange would also be expected to reduce the frequency and severity of traffic crashes occurring at the intersection. It could also reduce the response times for base personnel during security alerts.

3.1 Capacity Deficiencies

The operational efficiency of an intersection is described by its "level of service" (LOS). LOS ranges go from "A" being the best condition to "F" being system breakdown. Based on current traffic growth trends, the US 98/Cody Avenue intersection is expected to decline to LOS F in the PM peak by year 2004, assuming that no improvements are made to the intersection. The desired LOS for this roadway has been established by the MPO as LOS D or better. If a single point urban interchange or a tight urban diamond interchange were constructed, the signalized intersection portion of the interchange would be expected to operate at LOS A in the design year 2025.

3.2 Safety

Traffic crash data was analyzed for the years 1995 through 1999. A total of 106 crashes were reported on US 98 for the section one mile both east and west of the Hurlburt Field entrance during the 5-year analysis period January 1, 1995 through December 31, 1999. This equates to an annual average of 21.2 crashes per year. A total of 120 injuries and 1 fatality occurred during the analysis period. This is an average of 24 injuries and 0.2 fatalities per year. The economic loss during the study period was approximately \$7.72 million. Of the total 106 crashes that occurred during the study period 59 (56%) of those were related to the entrance of Hurlburt Field along US 98.

Construction of an interchange at this intersection would be expected to significantly reduce the number of congestion-related crashes occurring near this intersection. Additional crash information is available in Section 4.1.9.

3.3 Consistency with Transportation Plan

The Okaloosa-Walton Transportation Planning Organization (TPO; formerly “Metropolitan Planning Organization” or MPO) adopted its 2025 Long Range Transportation Plan on June 21, 2001. On August 22, 2002, the TPO voted to amend the 2025 Cost Feasible Plan to include the US 98/Hurlburt Field Gate Interchange in the Plan.

3.4 Social/Economic Demands

The population of Okaloosa County and the counties to the west and east has been steadily growing and will continue to do so well into the future. According to the Florida Legislature’s Office of Economic and Demographic Research, the predicted population growth between 2002 and 2020 is 26 percent for Okaloosa County, 48 percent for Santa Rosa County, and 52 percent for Walton County. These large expected increases in population are expected to generate similar large increases in traffic demand in the “panhandle” beach communities served by US 98.

4.0 Existing Conditions

4.1 Existing Roadway Characteristics

US 98 (State Road 30) is presently a four-lane divided “rural” (drained by ditches and swales) arterial highway, which connects Pensacola, Fort Walton Beach, and other Florida panhandle beach communities. Cody Avenue (the main entrance road to Hurlburt Field) is a four-lane divided “rural” roadway with a raised curbed median on the north side of US 98, and a two-lane rural roadway on the south side of US 98. Photographs of the existing project area are shown in **Figure 4-1**.

4.1.1 Functional Classification

The existing facility (US 98) is classified as an urban principal arterial. It is *not* on the Florida Intrastate Highway System (FIHS).

4.1.2 Typical Sections

The US 98 typical section consists of a 30-foot depressed, grassed median with 8-ft inside grassed shoulders and ditch bottom inlets. It includes four 12-ft lanes with 10-ft outside shoulders (4-ft paved) (**Figure 4-2**). The eastbound roadway is centered in the 200-ft right-of-way. This information was taken from plans for a resurfacing project that was let in April 2002. Construction began in July and was largely complete by February 2003.

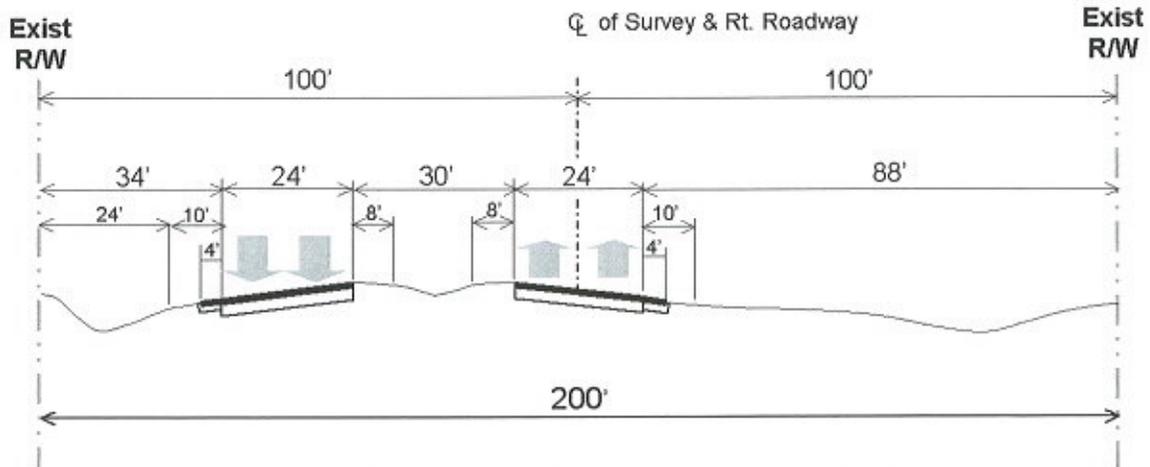
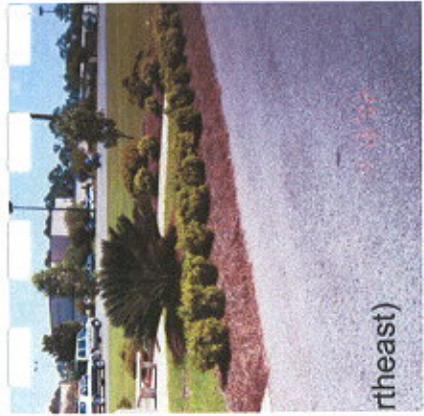
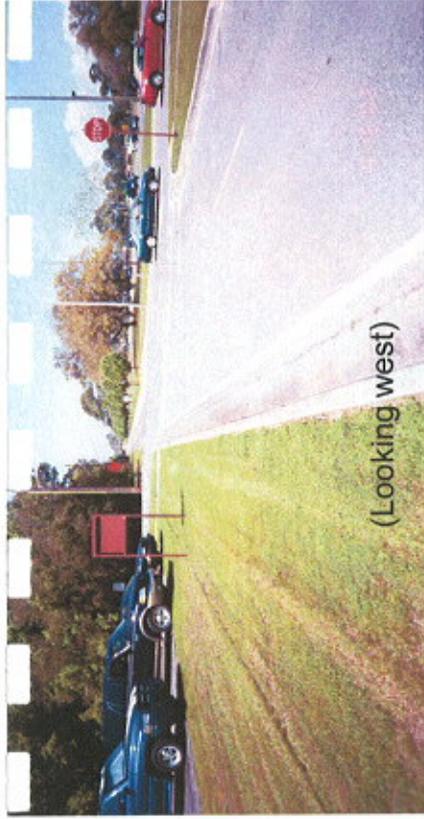


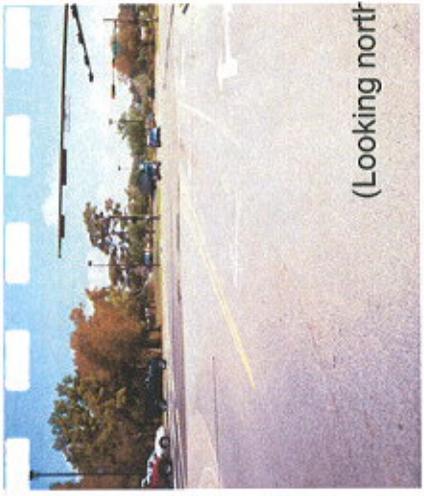
FIGURE 4-2: EXISTING TYPICAL SECTION ON US 98



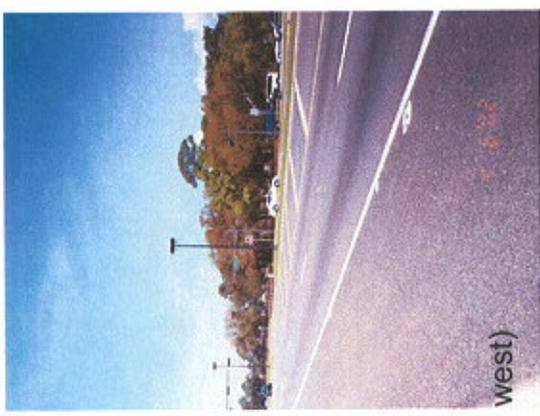
theast)



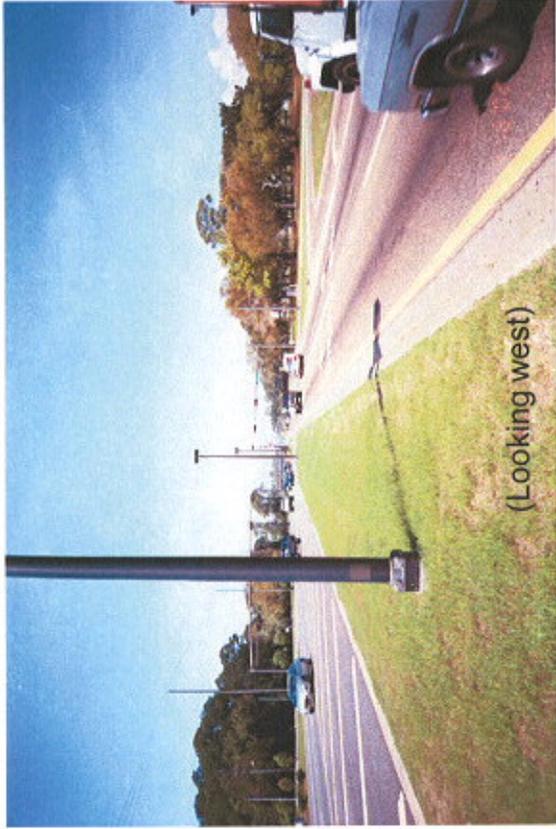
(Looking west)



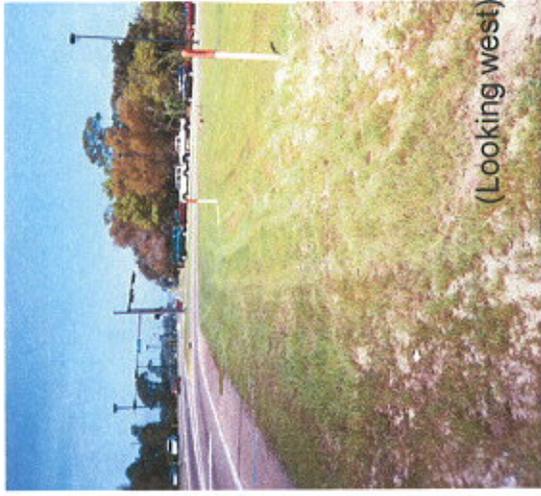
(Looking north)



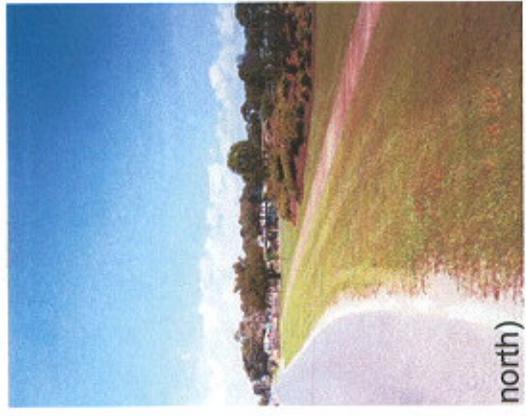
west)



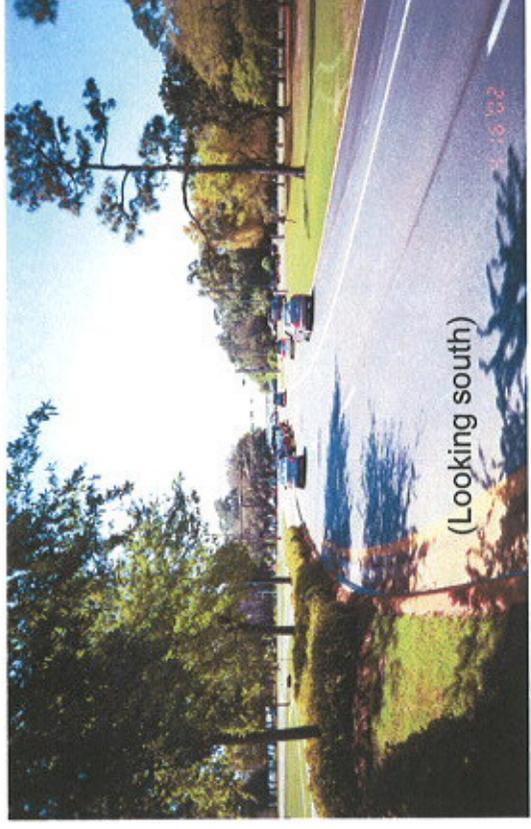
(Looking west)



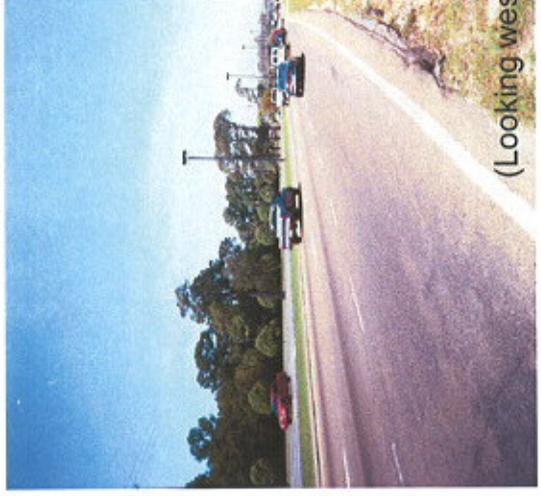
(Looking west)



north)



(Looking south)



(Looking west)

4.1.3 Pedestrian and Bicycle Facilities

Presently there are no sidewalks along the roadway; however, 4-ft outside paved shoulders were recently added as part of the resurfacing project, which are now available for use by bicyclists. A pedestrian overpass is located on US 98 west of the Cody Avenue intersection that serves base residents and users only.

4.1.4 Right-of-Way

The existing right-of-way in the study area is generally 200 feet in width.

4.1.5 Horizontal Alignment

There are no horizontal curves in the immediate study area of this project, based on either the straight-line diagram inventory or plans acquired from FDOT for this section of roadway.

4.1.6 Vertical Alignment

All of the study area is fairly flat with no major vertical characteristics.

4.1.7 Drainage

Runoff from the proposed project area is currently collected in roadside ditches and conveyed to one of six outfalls within the project limits. All outfalls eventually drain to the Santa Rosa Sound and are described in Table 4-1a.

TABLE 4-1a: EXISTING DRAINAGE OUTFALLS

No.	Station	Comments
1	5+00	Outfall ditch that conveys runoff from Basin 1 to Santa Rosa Sound.
2	15+22	Outfall ditch that conveys runoff from Basin 2 to Santa Rosa Sound.
5	30+46	Outfall ditch that conveys runoff from Basins 3A and 3B to Santa Rosa Sound.
4	51+41	Outfall ditch that conveys runoff from Basin 4 to Santa Rosa Sound.
5	65+75	Outfall ditch that conveys runoff from Basin 5 to Santa Rosa Sound.
6	94+35	Outfall ditch that conveys runoff from Basin 6 to Santa Rosa Sound.

As illustrated in **Figure 4-3**, the proposed project area contains eight cross drains serving six drainage basins. A description of the eight existing drainage structures is included in Table 4-1b.

TABLE 4-1B: EXISTING CROSS DRAINS

No.	Station	Structure	Comments
1	5+00	36" CMP	No observed structural damage or scour
2	10+52	36" CMP	No observed structural damage or scour
3	15+22	48" RCP	No observed structural damage or scour
4	26+58	2 – 54" RCP	No observed structural damage or scour
5	30+46	48" RCP	No observed structural damage or scour
6	51+41	5' x 3' CBC	No observed structural damage or scour
7	65+75	2 – 36" RCP	No observed structural damage or scour
8	94+35	3-8'x6' CBC	No observed structural damage or scour

Three storm water ponds, all located immediately south of US 98, provide treatment for storm water leaving Hurlburt Field. These ponds are a component of an informal storm water banking arrangement between Hurlburt Field and the FDEP, and are reported to provide treatment for the entire basin served.

4.1.8 Geotechnical Data

The geotechnical work included field reconnaissance, soil borings, and a review of published information. A separate Geotechnical Exploration Report was prepared for the study (Reference 1).

Soils information for this project was found in the Soil Survey of Okaloosa County, Florida (1995) prepared by the USDA Natural Resources Conservation Service (formerly Soil Conservation Service). A listing of the types of soils identified within the project area is presented in Table 4-2, and these are illustrated in **Figure 4-4**. The Soil Map indicates that the soils in the immediate study area are very conducive to roadbed construction.

TABLE 4-2: SOIL DESCRIPTIONS

Symbol	Soil Name	Soil Classification		Permeability (In/ Hour)	Suitability for Road Subgrade
		Unified (1)	AASHTO (2)		
4	Chibley soils, 0 to 5 percent	SP-SM	A-3, A-2-4	6-20	Fair
4	Hurricane soils, 0 to 5	SP, SP-PM	A-3	>6.0	Fair
6	Dorovan muck, frequently flooded	PT	-----	.6 – 2.0	Poor
10	Kureb sand, 0 to 8 percent	SP, SP-SM	A-3	6-20	Good
17	Mandarin sand, 0 to 3	SP, SP-SM	A-3	6-20	Fair
21	Resota sand, 0 to 5 percent	SP, SM, SP-	A-3, A-2-4	>20	Good
22	Rutledge sand, depressional	SP-SM, SM	A-2, A-3	6-20	Poor
27	Urban land	-----	-----	-----	-----
48	Pickney loamy sand,	SM, SP-SM	A-2	6-20	Poor

Source: Soil Survey of Okaloosa County, 1995.

1. Based on the Unified Soil Classification System.
2. Based on the AASHTO Soil Classification System.

FIGURE 4-4: SOILS MAP



Most of the soils in the study area have high rates of permeability, being classified as SP, SM, or SP-SM by the soil classification system or A-2, A-2, or A-2-4 by AASHTO. Based on the Okaloosa County Soil Survey, there are three predominant soil types within the approximate project limits. (This soil description pertains only to the near-surface soils - generally less than 6 feet in depth.) The soil types are indicated by map unit number 6, 21 and 27, which correspond to the **Dorovan** soils, **Resota** Soils and **Urban** Soils. A brief description of each follows:

Dorovan - This soil appears to be located at the western end of the proposed project limits. WES did not encounter this soil type during the investigation; however, the soil consists of black muck to a depth of 60 inches or more overlying very dark grayish brown

sand that extends to a depth of 80 inches or more. Dorovon soils are moderate in permeability and have very high water capacity.

Resota - This moderately well drained, nearly level to gently sloping, deep sandy soil occurs on small to broad, slightly ridged areas near the Gulf of Mexico in the southern part of the county. This soil has very low available water capacity. Permeability is very rapid and the organic content is very low.

Urban - Urban land consists of areas that are 75 percent or more covered with streets, houses, commercial buildings, parking lots, shopping centers, industrial parks, airports and related facilities. Urban soil consists of several types of soils, all too small in area to map separately.

During the roadway soil investigation, nine hand auger borings were performed to a depth of 6 feet along the northern and southern sides of US 98. Two Standard Penetration Test (SPT) borings were performed within the approximate locations of the proposed construction to depths of 130 feet below ground level. The two SPT borings were placed such that they would be applicable to any alignment selected as a result of the PD&E Study. The Field Exploration Plan and the Report of Core Borings Sheet for the performed Hand Auger and SPT borings are included in Appendix C. The soils encountered in the hand auger and SPT borings on the roadway portion of this project consist predominantly of fine sands and slightly silty to silty fine sands. Neither organic (muck) material nor material unsuitable for use in roadway construction were encountered in the findings during the subsurface investigation. The borings performed for this phase were performed within the existing right-of-way. No significantly thick unsuitable stratum was encountered; however, this does not imply that unsuitable soils will not be encountered elsewhere when a more extensive design evaluation is performed.

The laboratory tests for the geotechnical report consisted of grain size analysis and natural moisture contents and Atterberg limits, which provide indication of the soils' plasticity. Summaries of the laboratory testing for the SPT boring results are included in Appendix C.

The groundwater table was measured at each boring performed within the project limits; groundwater was encountered at 3 feet below the existing ground surface along US 98. According to the County Soil Survey, the seasonal high water table (SHWT) levels may be encountered at depths ranging from 3.5 ft to 5.0 ft below the existing ground surface. Groundwater elevations are highly dependent on environmental and seasonal conditions such as frequency and magnitude of rainfall patterns, tidal influences, and man-made influences such as existing drainage ditches and ponds, underdrains, and areas of covered soils (parking lots, side walks, etc.).

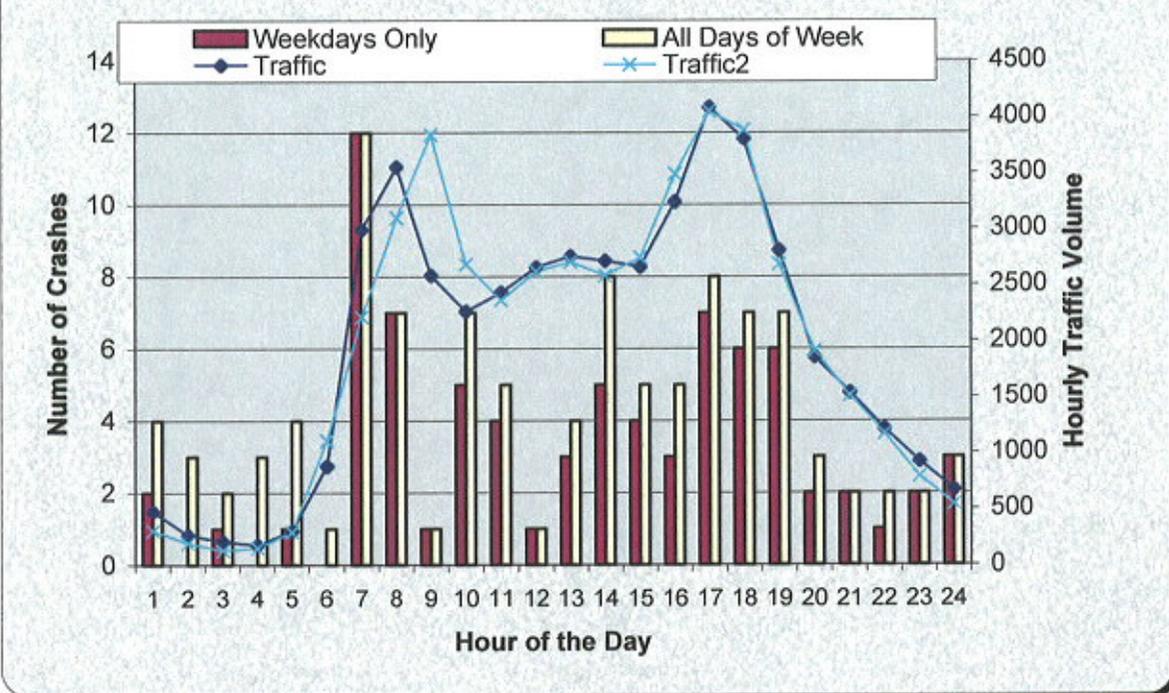
4.1.9 Crash Data

US 98 traffic crash data for the years 1995 through 1999 was obtained from the FDOT Crash Detail and Summary of Crashes information compiled by the FDOT Safety Office. The Safety Office makes this information available for PD&E Studies in order to help identify existing problem areas. The characteristics of each crash are broken down for direct comparison with all of the other crashes that occurred during the same period. Some of the more important information included in the Summary Report is the type of crash, the number of injuries, and the number of fatalities. Only crashes that resulted in injuries and/or the issuance of a criminal charge are included in the FDOT summaries. An estimate of the economic loss, property damage, and a safety ratio are determined for each state road section based on the data assimilated from the individual crashes occurring in each year.

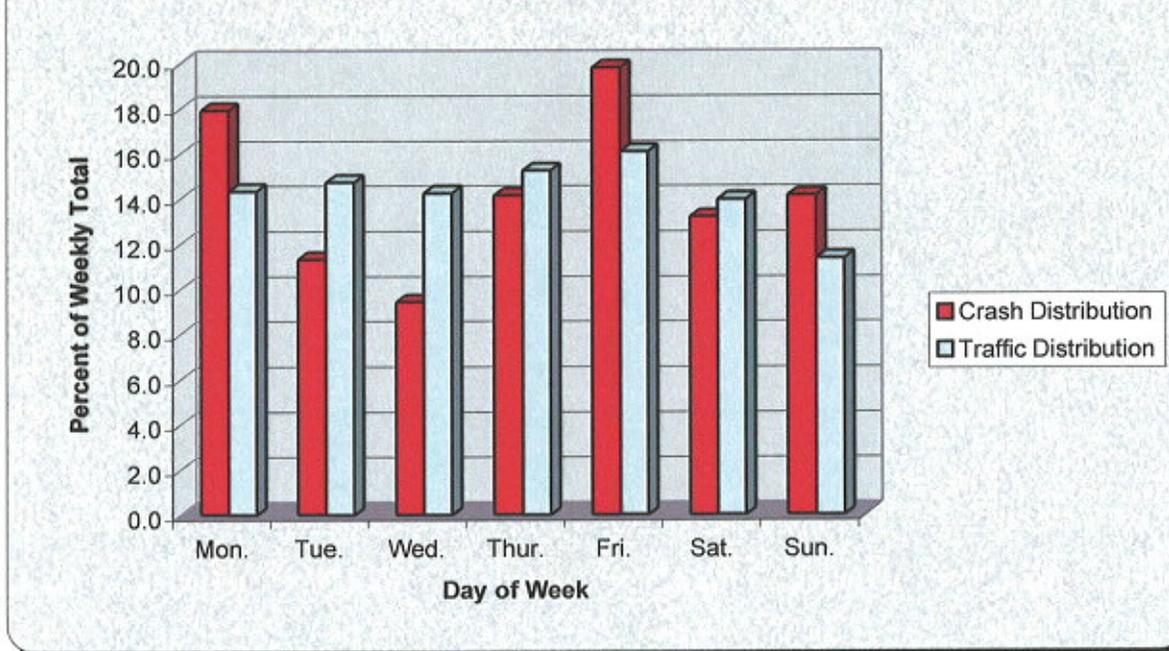
The results of the crash analysis are presented in **Figures 4-5, 4-6, and 4-7** and summarized below:

- A total of 106 crashes were reported on US 98 for the section one mile both east and west of the Hurlburt Field entrance during the 5-year analysis period January 1, 1995 through December 31, 1999. This equates to an annual average of 21.2 crashes per year.
- A total of 120 injuries and 1 fatality occurred during the analysis period. This is an average of 24 injuries and 0.2 fatalities each year.
- The economic loss during the study period was approximately \$7.72 million.
- The ratio of the actual crash rate to the critical crash rate averaged approximately 0.245 for 1995 through 1999. The actual crash rate never rose above 1, which indicates that the crash rate for US 98 does not exceed the crash rate expected for this type of roadway in Florida.
- The most prominent crash type was rear-end collisions, accounting for 54% of the total crashes.
- 1997 had the highest number of crashes for the 5 years studied with 26 crashes, while 1995 was the lowest with 15.
- The number of crashes dramatically increased between 1995 and 1996, rising from 15 to 25 crashes.

Crashes by Time of Day*



Distribution of Crashes & Traffic by Day of Week



*Crashes on US 98 from 1 mile west of to 1 mile east of the Hurlburt Field Entrance for 1995 through 1999, inclusive.



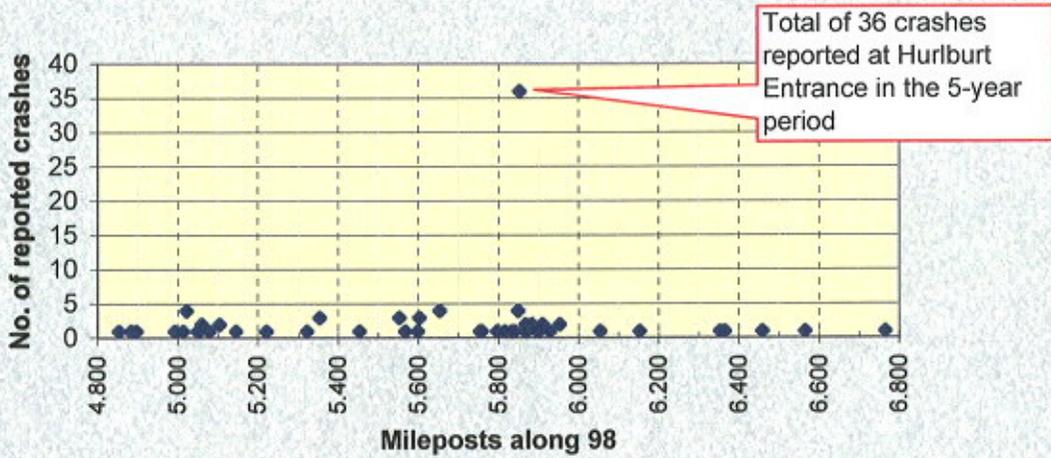
US 98 (SR 30) at the
Hurlburt Field Main
Entrance
PD&E Study



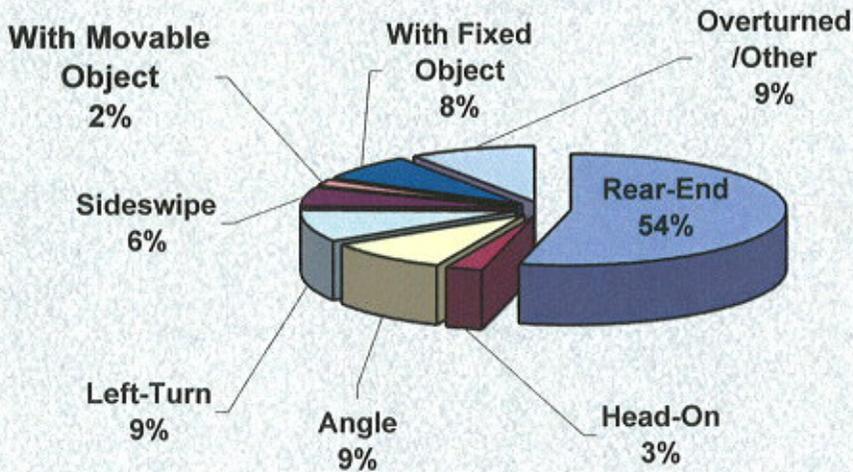
TRAFFIC CRASHES BY TIME-OF-
DAY AND DAY-OF-WEEK

FIGURE
4-5

US 98 Crashes by Milepost '95-'99



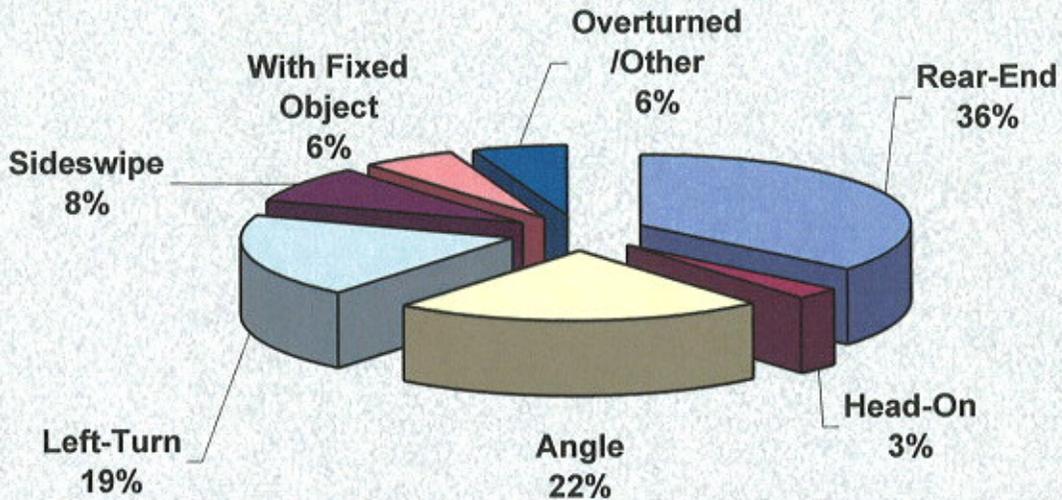
Crashes along US 98 by Type '95-'99*



*From 1 mile west of to 1 mile east of the Hurlburt Field Entrance on US 98



Crashes at Hurlburt Field Entrance by Type



Tabular Summary of All Crashes on US 98, from 1 Mile West to 1 Mile East of Hurlburt Field Entrance

	1995	1996	1997	1998	1999	Total	Avg./Yr.
Total Annual Crashes	15	25	26	16	24	106	21.2
Number of Fatalities	0	1	0	0	0	1	0.2
Number of Injuries	28	27	24	19	22	120	24
Total Economic Loss	\$1,117,500	\$1,682,500	\$1,937,000	\$1,192,000	\$1,788,000	\$7,717,000	\$1,543,400
Actual Rate (crashes/MVM)	0.575	0.852	0.922	0.549	0.884	3.782	0.7564
Critical Rate (crashes/ MVM)	3.178	2.994	3.108	3.152	2.979	15.411	3.0822
Safety Ratio	0.18	0.284	0.296	0.174	0.296	N/A	0.245

Source: Florida Dept. of Transportation Crash Records Printouts AAR0012 & AARPJ13, April 18, 2002.



US 98 (SR 30) at the
Hurlburt Field Main
Entrance
PD&E Study



CRASHES AT THE HURLBURT ENTRANCE &
TABULAR SUMMARY OF ALL CRASHES

FIGURE
4-7

- Of the total 106 crashes that occurred during the study period 59 (56%) of those were related to the entrance of Hurlburt Field along US 98. The second highest crash location was the Solar Street intersection with 13 crashes. Of the total 120 injuries that occurred 64 (53%) were directly related to the Hurlburt Field entrance along US 98.

4.1.10 Intersections and Signalization

The intersection of Cody Avenue at US 98 (the main entrance to Hurlburt Field) is signalized with poles and mast arms. Westbound to southbound left turns are currently prohibited at the intersection; they must be made in advance of the intersection, by turning left onto a parallel “service road” (Purcell Drive) running along the south side of US 98. The west approach includes protected-only dual left turn phasing; the north and south approaches have split phases. The existing intersection geometry can be seen in **Figure 4-8**. A resurfacing project along US 98 was begun in July 2002 that included lengthening the eastbound to northbound dual left turn lanes. It was substantially complete by February 2003.

4.1.11 Lighting

The existing intersection has street lighting utilizing aesthetic poles and luminaires, including the intersection approaches. However, beyond the immediate intersection approaches, US 98 does not have street lighting.

4.1.12 Utilities

Numerous utilities (sanitary sewer, buried and overhead power, gas, water, telephone, and cable television) are present throughout the length of the project. The utility companies potentially impacted by the proposed project, including names of contact persons and phone numbers, are included in Table 4-3.

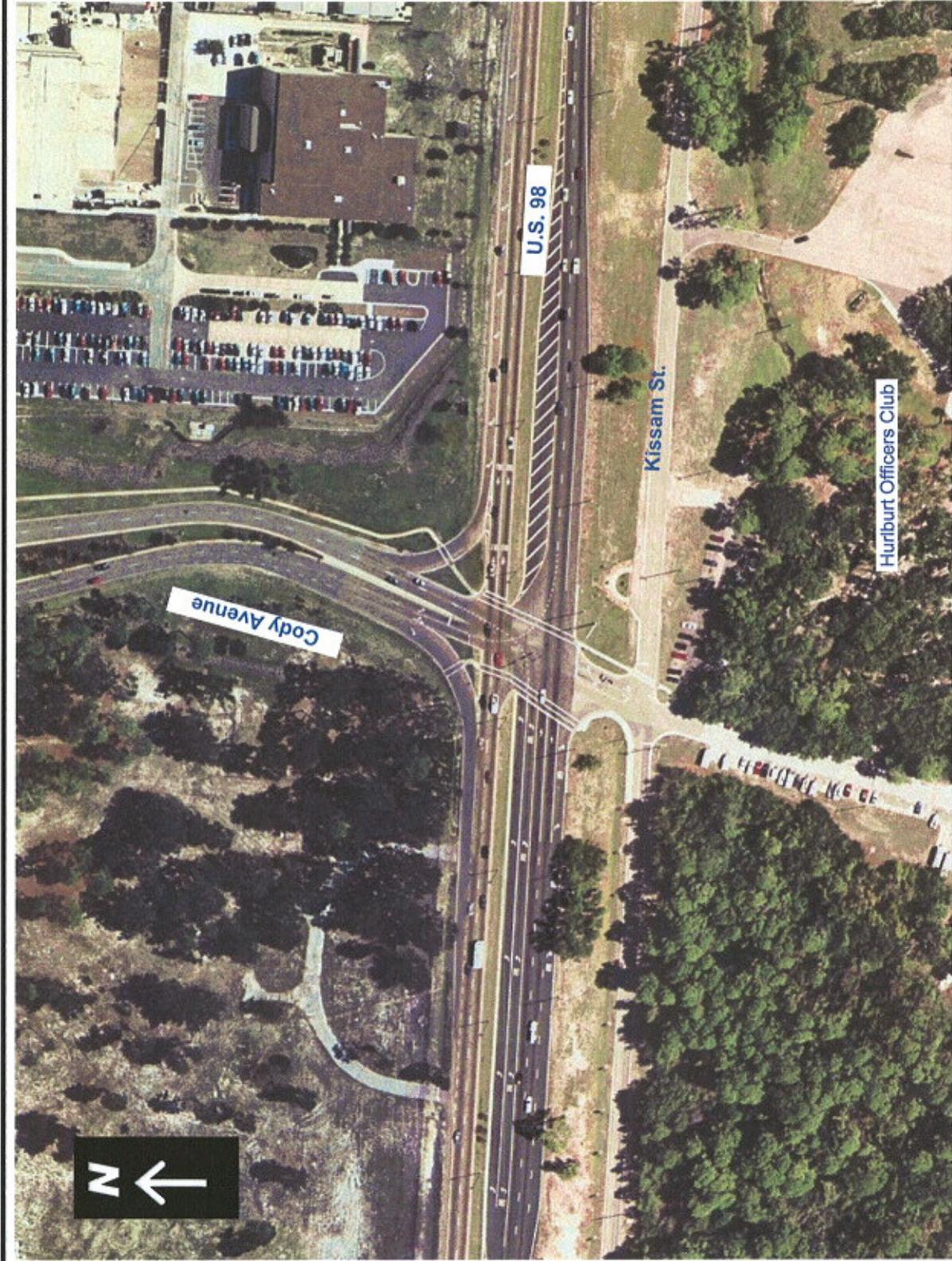


FIGURE
4-8

EXISTING INTERSECTION GEOMETRY (AERIAL PHOTO)



U.S. 98 (SR 30) at the Huriburt
Field Main Entrance ♦ PD&E Study



TABLE 4-3: EXISTING UTILITIES IN THE PROJECT AREA

Utility	Owner	Address	Contact
Water/Sewer:	Okaloosa Co. Water/Sewer	1804 Lewis Turner Blvd. Suite 300 Ft. Walton Beach, FL 32547	Mr. Joey Crews (850) 651-7171
Telephone:	AT&T Tele- communications BellSouth Telecommunica- tions Sprint/ Florida, Inc.	212 N. Marion St., Suite 217 Lake City, FL 32055 605 W. Garden Street Pensacola, FL 32501 P.O. Box 1778 650 Denton Blvd. Fort Walton Beach, FL 32547	Mr. Bob Wadley Mr. Al Rudolph (850) 436-1488 Mr. Bill Bellamy (850) 664-3763
Cable Television:	Cox Communications	P.O. Box 2827 320 Racetrack Rd. Ft. Walton Beach, FL 32549	Mr. Mike Blankenship (850) 314-8152
Electric Power:	Gulf Power Company	1655 South Ferndon Blvd. Crestview, FL 32536	Mr. Mark Reeves (850) 689-4618
Natural Gas:	Okaloosa Co. Gas District	P.O. Box 548 364 Hwy. 190 Valparaiso, FL 32580	Mr. Essa Rhebi (850) 729-4870
Miscellaneous:	Hurlburt Field	415 Independence Rd. Hurlburt Field, FL 32544-5244	Mr. Lloyd Bowman (850) 844-7747

Source: HDR Engineering, 2002

4.1.13 Pavement Condition

A field review of the area in early 2002 showed good pavement condition with some rutting near the intersection along US 98. A resurfacing project along US 98 was begun in July 2002 that was substantially complete by February 2003.

4.1.14 Posted Speed Limits

The posted speed limit in the project vicinity is 45 mph on US 98, and the design speed is also 45 mph, due to the “substandard” border width on the north side.

4.1.15 Access Management Classification

Access management is the term that FDOT uses to describe the management of the location, number and spacing of connections, median openings, and traffic signals on the highway system. Research has shown that access management can lead to a significant increase in the safety and capacity of a roadway. FDOT Rule Chapter 14-97 establishes the classifications and standards for access management in the state of Florida. The implementation of the classification system and standards is intended to protect public safety and general welfare, provide for the mobility of people and goods, and preserve the functional integrity of the State Highway System. The classification system and standards are summarized in Table 4-4. Class 1 (not shown) consists of freeways.

**TABLE 4-4
FDOT'S ACCESS MANAGEMENT STANDARDS**

Access Class	Facility Design Features	Minimum Median Opening Spacing		Minimum Signal Spacing	Minimum Connection Spacing
	Median Treatment & Service Roads	Directional (Prohibits left turns from side streets)	Full		>45mph / ≤ 45 mph (posted speed)
2	Restrictive with Service Roads	1,320 ft	0.500 mi.	0.500 mi.	1,320/660 ft
3	Restrictive *	1320 ft	0.500 mi.	0.500 mi.	660/440 ft
4	Non-Restrictive	N/A	N/A	0.500 mi.	660/440 ft
5	Restrictive	660 ft	Over 45 mph / ≤ 45 mph 0.5/0.25 mi.	0.5/0.25 mi.	440/245 ft
6	Non-Restrictive	N/A	N/A	0.250 mi.	440/245 ft
7	Both Median Types	330 ft	0.125 mi.	0.250 mi.	125 ft

* Restrictive means medians which prevent vehicles from crossing due to curbs, grass, or other barriers.
Source: FDOT Access Management Classification System and Standards, Systems Planning office, December 1990

Access Management Classifications for controlled access highways (Classes 2 through 7) are arranged from the most restrictive (Class 2) to the least restrictive (Class 7). Generally the highways serving areas without existing extensive development or

properties without subdivided frontages are classified at the top of the range (Classes 2, 3, and 4). Those roadways serving areas with existing moderate to extensive development or subdivided properties are generally classified in the lower classes of the range (Classes 5, 6 and 7). The standards for each class are further defined where the posted speed limit is greater than 45 MPH or where the posted speed limit is 45 MPH or less.

The access management classification for US 98 is “5”. The characteristics of this classification are as follows: “Access Classes 5 is used where existing land use and roadway sections have been built out to a greater extent than those roadway segments classified as Classes 3 and 4 and where the probability of major land use change is not as high as those roadway segments classified as Classes 3 and 4. These highways are distinguished by existing or planned restrictive medians.”

4.2 Existing Bridges

There are no existing bridge structures within the limits of this proposed project.

4.3 Environmental Characteristics

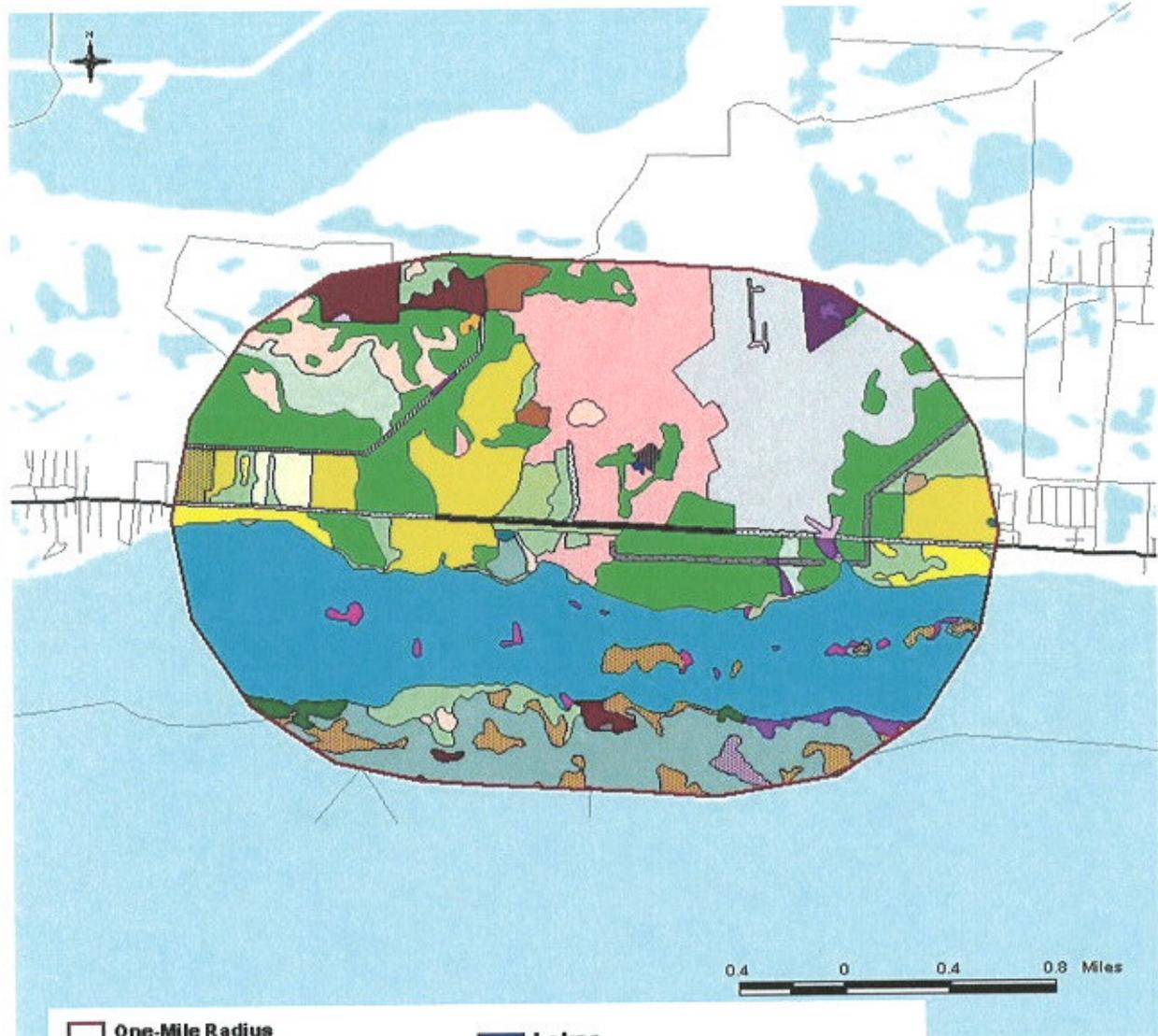
4.3.1 Land Use Data

The land use surrounding and adjacent to the project study area consists primarily of military property (Hurlburt Field at Eglin Air Force Base). The land use changes to mixed single-family/multi-family residential and low intensity commercial near the project limits along US 98. The Town of Mary Esther is located approximately 500 feet east of the eastern project limits. Generalized existing land use is shown in **Figure 4-9**.

4.3.2 Cultural Features and Community Services

There are no known historical or archaeological sites located within the project study area. A Cultural Resource Survey was completed during the PD&E study; no resources on or potentially eligible for listing on the *National Register of Historic Places* (NRHP) were found.

Community services located along the proposed project include the Soundside Officers Club located on the south side of US 98 east of Cody Avenue. This facility is used for various military and civilian functions. There is no known involvement with any Section 4(f) properties within the proposed areas of construction. The proposed project could



□ One-Mile Radius

⚡ Project Location

Land Use/Land Cover

- Low Density Residential
- Medium Density Residential
- ▨ Medium Density Mobile Homes
- ▨ High Density Residential
- ▨ High Density Mobile Homes
- Commercial and Services
- Extractive
- Military
- Recreational
- Parks and Zoos
- Shrub and Brushland
- Coastal Scrub
- Upland Coniferous Forests
- Sand Pine
- Hardwood-Conifer Mixed
- Forest Regeneration Areas

- Lakes
- Reservoirs
- Embayments to Gulf
- Wetland Forested Mixed
- Freshwater Marshes
- ▨ Saltwater Marshes
- Tidal Flats
- Wetland Scrub Shrub
- Beaches
- Sand (Other than Beaches)
- Disturbed Lands
- Airports
- ▨ Roads
- ▨ Oil, Water or Gas Transmissions
- ▨ Electrical Power Facilities
- ▨ Electrical Transmission Lines
- ▨ Sewage Treatment

Source: North West Florida Water Management District, 1995, Florida Land Use, Cover and Forms Classification System



U.S. 98 (SR 30) at the
Hurlburt Field Main
Entrance ♦ PD&E Study



LAND USE & LAND COVER

**FIGURE
4-9**

potentially affect a pedestrian overpass on US 98 west of Cody Avenue, although at the present time, it appears that the structure can remain functional in its current location.

4.3.3 Natural and Biological Features

Habitat - The proposed project area has the potential to contain suitable habitat for many animal species. However, existing development and surrounding land use have severed the natural wildlife corridors and the associated wildlife movement potential.

Protected Species - According to the Florida Natural Areas Inventory (FNAI), several threatened, endangered, and other species of concern have been recorded within the proposed project corridor and are listed in the Environmental Assessment (Reference 7) prepared for this project. No listed species were observed along the proposed project corridor during field investigations conducted in April and May 2003. Also, at the request of Hurlburt Field, the Florida Natural Areas Inventory searched the area specifically for the six listed species as part of the current Threatened and Endangered species survey they were conducting. None of the six listed species were located during the search (Pruitt, 2003).

Wetlands - Wetland identification was accomplished through the use of aerial photography, GIS interpretation, USGS topography maps, National Wetland Inventory maps, the Okaloosa County soil survey, and on-site investigations. Additionally, wetland functional assessments were conducted utilizing the Wetland Rapid Assessment Procedure (WRAP). Wetlands in the study area are illustrated in **Figure 4-10** and described in Table 4-5. They are contiguous with fresh and saltwater marshes and drainage flow ways connected by culverts under US 98 to the Santa Rosa Sound, Choctawhatchee Bay, and ultimately the Gulf of Mexico. The USACE and the FDEP have claimed jurisdiction over all of the identified wetlands, as evident by a binding jurisdictional determination (JD) conducted by the agencies for Hurlburt Field.

As illustrated in the figure, the largest wetland system is located in the southwest quadrant at the corner of US 98 and Cody Avenue (Wetland #3). This wetland is seasonally flooded, and contains emergent vegetation to the south. The emergent vegetation is associated with a maintained ditch, which borders the western limits of the wetland. The ditch is connected to Wetland #16 and the Santa Rosa Sound via a culvert located along the southwestern boundary. This culvert serves as a jurisdictional connection for the FDEP and USACE.

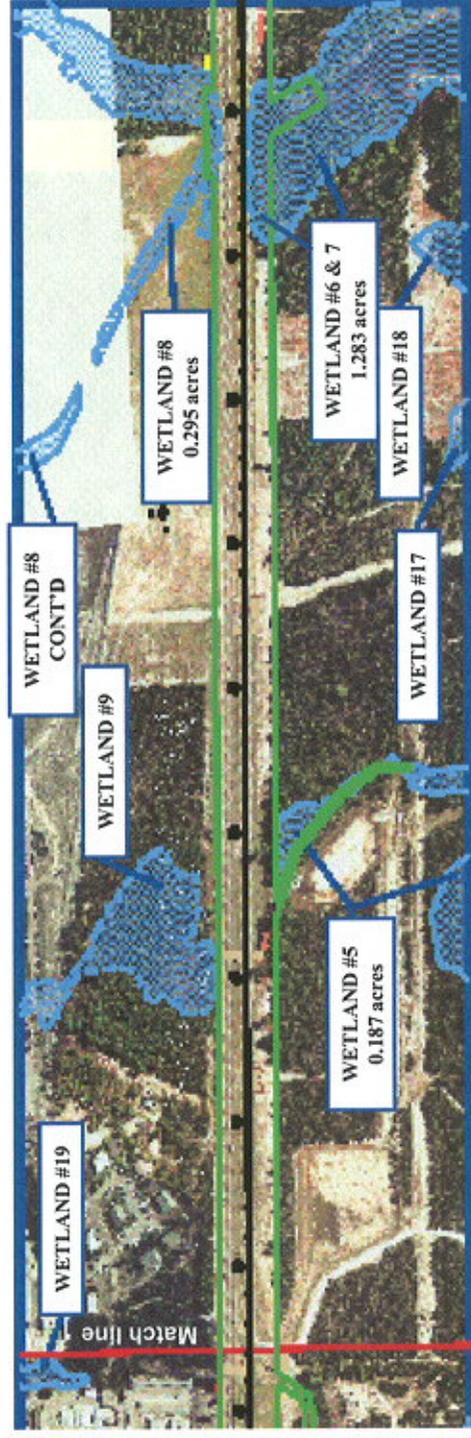


FIGURE 4-10

JURISDICTIONAL WETLAND SITES



U.S. 98 (SR 30) at the Huriburt Field
Main Entrance ♦ PD&E Study



TABLE 4-5: WETLAND SITES

Wetland Number	Classification	Description	Contiguity	WRAP Score
1	PFO3/4Y	Palustrine, Forested, Broad-leaved Evergreen, Needle-leaved Evergreen, Saturated/Semipermanent/Seasonal	Connected	N/A
2	Not Jurisdictional Wetland	Roadside ditch used for Storm water conveyance to Wetland #3	Connected	N/A
3	PFO3/4C	Palustrine, Forested, Broad-leaved Evergreen, Needle-leaved Evergreen, Seasonally Flooded	Connected	0.60
4	Not Jurisdictional Wetland	Ditch used for Storm water conveyance	Connected	N/A
5	PFO4B	Palustrine, Forested, Needle-leaved Evergreen, Saturated	Connected	N/A
6 & 7	E2/EM1/SS3/N	Estuarine, Intertidal, Emergent, Persistent, Regularly Flooded/ Scrub-Shrub, Broad-leaved Evergreen	Connected	0.60
8	PEM1C&G	Palustrine, Emergent, Persistent, Seasonally Flooded and Intermittently Exposed	Connected	N/A
9	PFO4C	Palustrine, Forested, Needle-leaved Evergreen, Seasonally Flooded	Connected	N/A
10	Not Jurisdictional Wetland	Ditch used for Storm water conveyance from Wetland #19	Connected	N/A
11	Not Jurisdictional Wetland	Ditch used for Storm water conveyance	Connected	N/A
12	Not Jurisdictional Wetland	Ditch used for Storm water conveyance	Connected	N/A
13	PFO4C	Palustrine, Forested, Needle-leaved Evergreen, Seasonally Flooded	Connected	N/A
14	PFO4C	Palustrine, Forested, Needle-leaved Evergreen, Seasonally Flooded	Connected	N/A
15	E2EM1P	Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded	Connected	N/A
16	E2EM1P	Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded	Connected	0.60
17	PFO3/4C	Palustrine, Forested, Broad-leaved Evergreen, Needle-leaved Evergreen, Seasonally Flooded	Connected	N/A
18	PFO3/4C	Palustrine, Forested, Broad-leaved Evergreen, Needle-leaved Evergreen, Seasonally Flooded	Connected	N/A
19	PSS3C	Palustrine, Scrub Shrub, Broad-leaved Evergreen, Seasonally Flooded	Connected	N/A
20	PFO4C	Palustrine, Forested, Needle-leaved Evergreen, Seasonally Flooded	Connected	N/A

Source: HDR Engineering, Inc. 2003

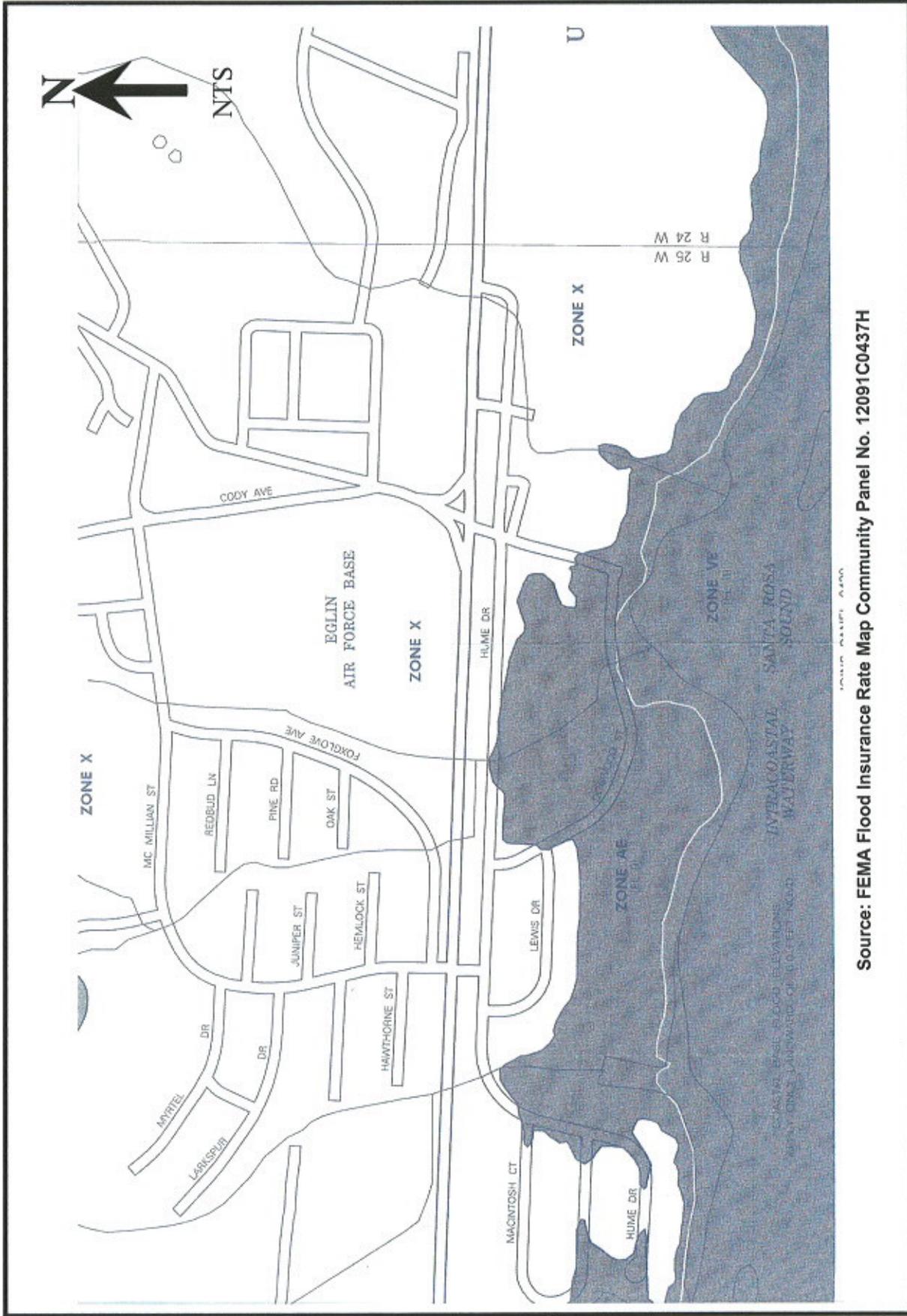
Floodplains - Flood Insurance Rate Maps (FIRM), prepared by the Federal Emergency Management Agency (FEMA), were reviewed to determine the location of floodplains. The project falls within Community Panel Number 12091C0437H (revised December 6, 2002). A partial reproduction of the FIRM is included in **Figure 4-11**. The project is primarily located in FEMA Flood Zone X (unshaded). Zone X denotes areas determined to be outside of the 500-year floodplain.

4.3.4 Hazardous Materials Sites

A preliminary hazardous materials evaluation was conducted to determine the potential for contamination from properties or business operations located within the proposed project area. Through historical and regulatory searches and inspections within the proposed project area, one site was identified for further evaluation for potential contamination. This site is located adjacent to the Santa Rosa Sound south of the proposed construction (**Figure 4-12**) and is associated with an aviation fuel refueling pier. This pier is connected via an underground pipeline to aboveground storage tanks on Hurlburt Field. The pipeline runs northward under US 98 and may be relocated during construction based on its close proximity to the proposed interchange. This site (POL Valve Pit-Site 214) was identified in November 1999 when Hurlburt Field personnel performing maintenance work reported odors similar to jet fuel in the soils surrounding a valve pit adjacent to the refueling pier. Investigations determined that soil contamination extended north and west of the valve pit. The contaminated soil was removed and replaced, and the site was re-sodded.

4.3.5 Permits Required

If one or more acres are disturbed by the construction, the construction contractor must submit a National Pollutant Discharge Elimination System (NPDES) Notice of Intent (NOI) and a Notice of Termination (NOT) for storm water. The contractor must also obtain a Tree Removal Permit prior to removal of any trees. There are two permits required prior to filling federal jurisdictional wetlands: a Dredge and Fill Permit from Florida Department of Environmental Protection (FDEP) and a Section 404 Permit under the Clean Water Act (CWA) from the United States Army Corps of Engineers (USACE). A joint permit application form would be completed and submitted to both regulatory agencies. The Dredge and Fill Permit would cover such actions as placing drainage culverts in Florida jurisdictional wetland ditches, and would preclude the need for a FDEP Storm Water General Permit.



Source: FEMA Flood Insurance Rate Map Community Panel No. 12091C0437H

FIGURE 4-11

100-YEAR FLOODPLAIN



US 98 (SR 30) at the Hurlbert Field Main Entrance - PD&E Study



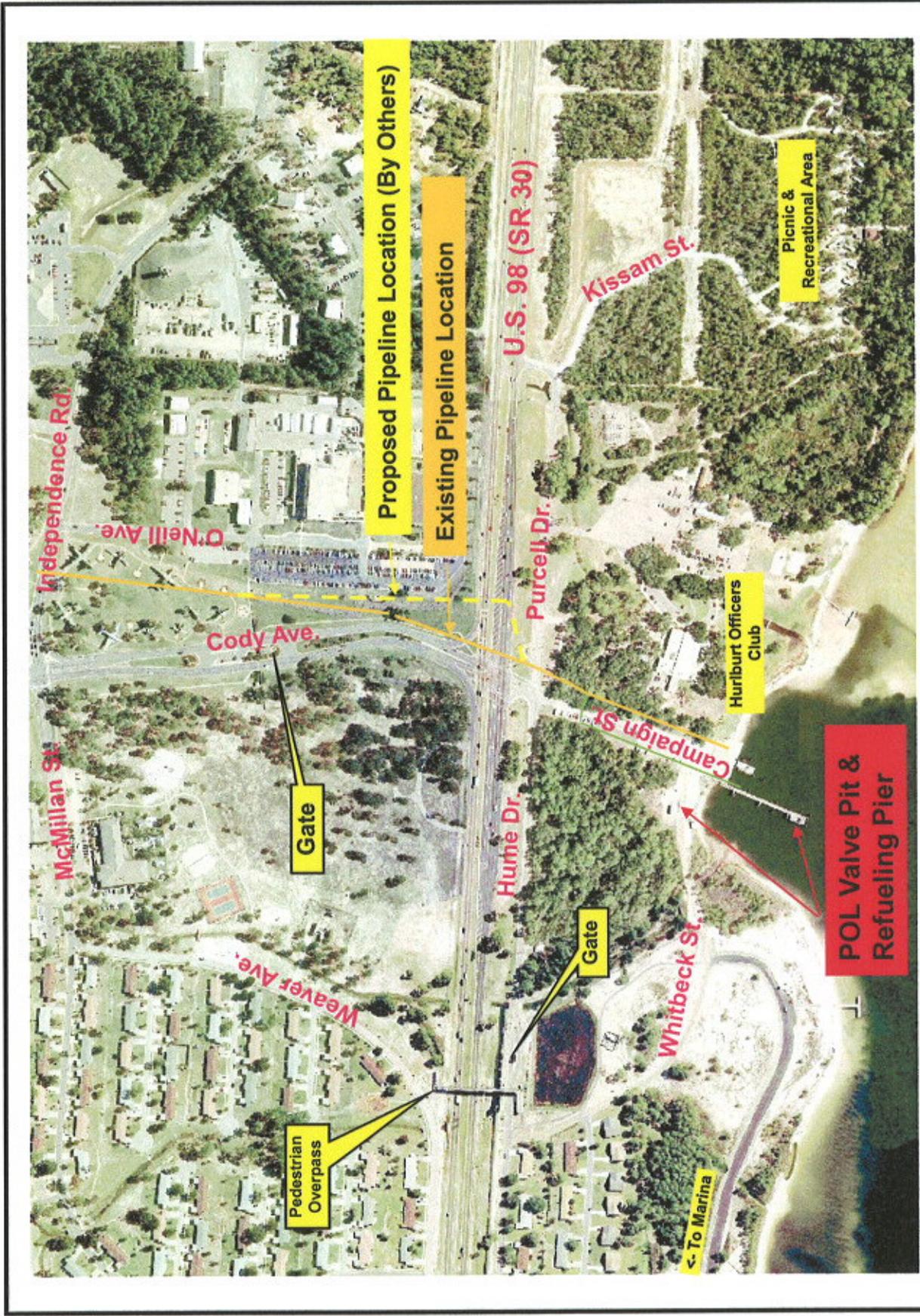


FIGURE 4-12

POTENTIAL CONTAMINATION SITE



US 98 (SR 30) at the Huriburt Field Main Entrance - PD&E Study



5.0 Design Controls and Standards

Proposed design criteria are given in Table 5-1, along with the applicable standards.

TABLE 5-1 - PROPOSED ROADWAY DESIGN CRITERIA

DESIGN ELEMENT	DESIGN VALUE			SOURCE
	US 98 Curb and Gutter	US 98 "Rural" Highway	Cross Street	
Facility Type (Non-FIHS)	Urban Arterial - 6 Lane	Rural Arterial - 6 Lane	Collector - 4 Lane	FDOT
Design Speed	50 mph	60 mph	35 mph	AASHTO
Design Vehicle	WB-50	WB-50	WB-50	AASHTO
Cross Section Elements				
Minimum Lane Widths	12' travel lane 12' turn lane 4' bike lane	12' travel lane 12' turn lane	12' travel lane	PPM, Table 2.1.1 PPM, Table 2.1.1 PPM, Table 2.1.2
Shoulders - Outside		12' (full)/ 5' (paved) at .06	12' (full)/ 5' (paved) at .06	PPM, Table 2.3.2, 2.3.4
Shoulders - Inside		12' (full)/ 5' (paved) at .05		PPM, Table 2.3.2
Median Width	22'	40'		PPM, Table 2.2.1
Border Width	14'	40'	33'	PPM, Table 2.5.1 & 2.5.2
Max. Pavement Cross Slope in Tangent Sections	0.03	0.03	0.02	AASHTO
Roadside Front Slopes (max)	1 to 6	1 to 2	1 to 6	PPM, Table 2.4.1
Min Hor. Clearance to Poles	2.5'	20' from travel/ 14' from auxiliary lane	20'	PPM, Table 2.11.2
Base Clearance above DHW	3'	1'	1'	PPM, Table 2.6.3
Vertical Alignment				
Maximum Grade	6%	rural areas: 3%; urban: 5%	7% to 9%	PPM, Table 2.6.1
Min. Length of Grade (c&g)	250'			PPM, Table 2.6.4
Minimum Grade (c&g)	0.30%			PPM, Table 2.6.4
Max. Change in Grade w/o VC (%)	0.6	4	0.9	PPM, Table 2.6.2
Min. Stopping S/D (grades <2%)	400'	550'	225'	PPM, Table 2.7.1
K Values for Crest Vertical Curves	130	230	40	PPM, Table 2.8.5
Minimum Length of Crest VCs	300'	400'	120'	PPM, Table 2.8.5
K Values for Sag Vertical Curves	90	130	50	PPM, Table 2.8.6
Minimum Length of Sag VCs	200'	300'	105'	PPM, Table 2.8.6
Horizontal Alignment				
Max. Deflection w/o Horizontal Curve	1° 00' 00"	0° 45' 00"	2° 00' 00"	PPM, Table 2.8.1a
Min. Length Hor. Curves	400'	400'	400'	PPM, Table 2.8.2a
Minimum Radius Hor. Curves				
Max. Degree of Curve (emax= .05)	6° 30' 00"	5° 15' 00"	14° 15' 00"	PPM, Table 2.8.3
Max. Hor. Curve w/ 0.02 Cross Slope	0° 30' 00"	0° 15' 00"	1° 15' 00"	PPM, Table 2.8.4
Maximum Superelevation (e)	0.05	0.10	0.05	PPM, Table 2.9.1 & 2.9.2
Slope Rates for Straight Line Superelevation Transitions	1 to 150	1 to 180	1 to 125	PPM, Table 2.9.3 & 2.9.4
Min. Length of Super. Transition	75'	75'	50'	PPM, Table 2.9.4
Min. Length for Superelevation Runoff	120'	400'	96.5'	AASHTO Exhibit 3-29 (Interpolated)

Notes: PPM -- Plans Preparation Manual (Volume 1 - English) (January 2000), Florida Department of Transportation
AASHTO -- A Policy on Geometric Design of Streets and Highways (2001), AASHTO

6.0 Traffic

6.1 Existing Traffic Volumes & Levels of Service

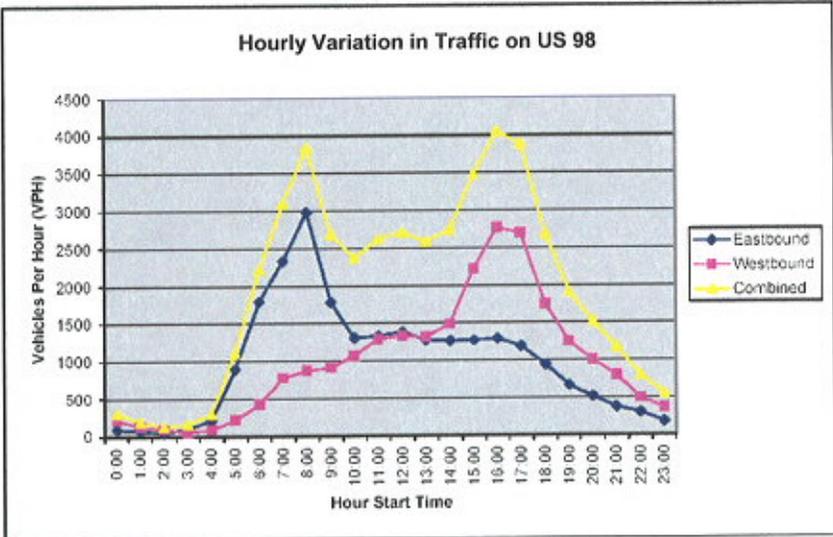
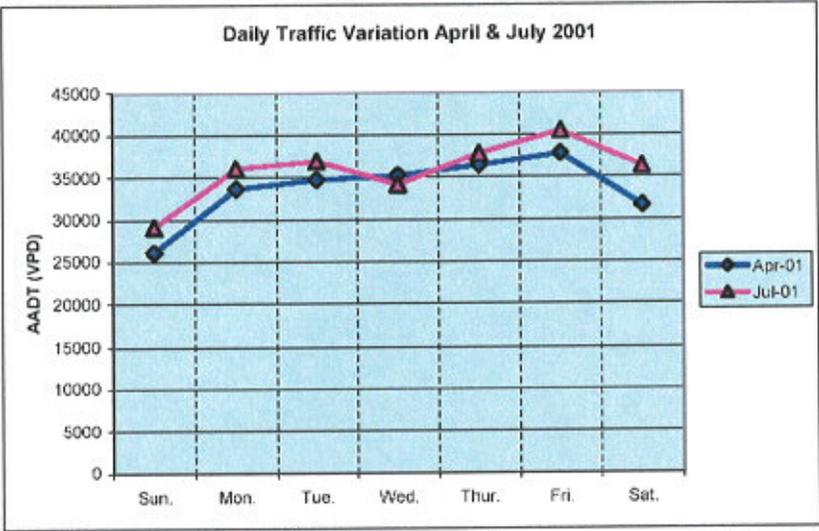
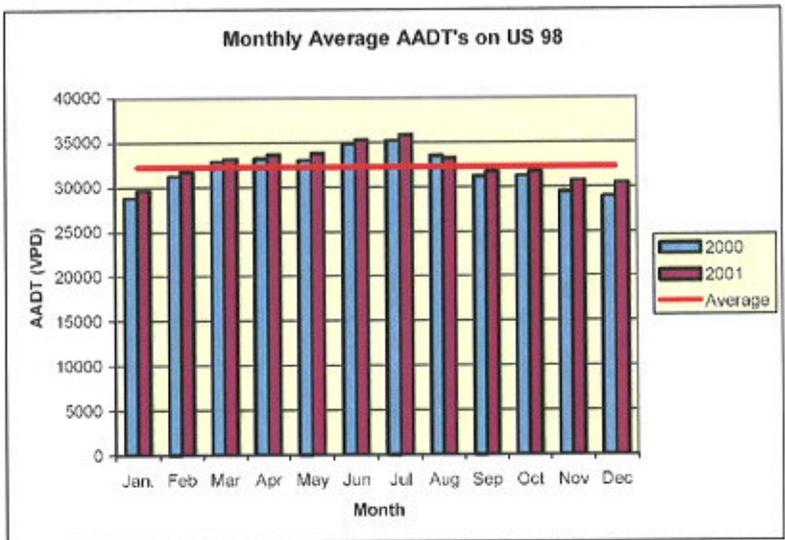
Machine traffic counts were made in April 2002 for the traffic study portion of this PD&E study. These counts were “converted” to annual average daily traffic (AADT) using FDOT’s seasonal and axle-adjustment factors for US 98 in Okaloosa County, as documented in the Traffic & Capacity Analysis Report (Reference 2). The raw counts and adjustments are shown in Table 6-1. Existing estimated AADT’s along US 98 vary from approximately 39,200 vehicles per day (VPD) east of Cody Avenue to approximately 43,400 VPD west of Cody Avenue. Estimated AADT’s on Cody Avenue range from approximately 1,600 VPD south of US 98 to approximately 14,000 VPD north of US 98. The estimated year 2002 AADT’s are *graphically* illustrated in the traffic “stick diagram” which is referenced later in this section.

Figure 6-1 shows the seasonal trend in traffic on US 98 near Hurlburt Field, based on data from FDOT’s continuous count station located near the Santa Rosa/Okaloosa County line. July reflects the peak of the beach tourist season. The same figure also illustrates *daily* variation in traffic. In general, traffic is heaviest on Fridays and lightest on Sundays. The same figure also shows the variation in traffic volumes by hour of the day on US 98 west of Hurlburt Field. The traffic pattern is very directional, with the eastbound traffic heaviest in the a.m. peak period, and the westbound traffic heaviest in the p.m. peak period. As one would expect, traffic is heavy *entering* the base in the morning, and heavy *leaving* the base in the afternoon.

“Level of Service”(LOS) can be used to describe the ability of a roadway or intersection to meet traffic demands. Similar to a grade in school, Level of Service “A” is the best and suggests the free flow of traffic, while Level of Service “F” is the worst and indicates inadequate service. The acceptable minimum for urban facilities is level of Service “D.” The existing “levels of service” (LOS) for the intersection of US 98 at Cody Avenue is estimated to be LOS “D” in the a.m. peak period and LOS “E” in the p.m. peak period, based on the existing “directional design hour volumes”. The intersection of Cody/Hume/Purcell/Campaign operates as a two-way STOP, with Cody Avenue as the through street. The estimated existing LOS for the side street approaches is LOS “A/B” in the a.m. peak and LOS “A” in the p.m. peak. LOS “F” is expected at the US 98/Cody Avenue intersection in the p.m. peak by 2004 if no improvements are made. Future expected levels of service are discussed in greater detail in the last section of this chapter.

TABLE 6-1: AADT ESTIMATES DERIVED FROM MACHINE COUNTS

US 98 at HurlburtField PD&E Study										Rev. 5/17/02
Temp. Count Sta. No.	Location	Count Start Date	Weekday	Raw 24-Hour Count			Axle Adjust. Factor	SF for Week in the Year	Adjusted ADT (rounded)	*2002 "AADT" (Avg. of 2 Days)
				EB	WB	Total				
US 98 (From West to East)										
1	West of Cody Ave.	4/16/02	Tue.	23513	23561	47074	0.97	0.94	42,922	43,400
		4/17/02	Wed.	24197	24031	48228	0.97	0.94	43,974	
12	EB Left Turn Lanes	4/16/02	Tue.	4528	0	4528	0.97	1.0	4,392	4,400
		4/17/02	Wed.	4564	0	4564	0.97	1.0	4,427	
4	EB Right Turn Lane	4/16/02	Tue.	288	0	288	0.97	1.0	279	300
		4/17/02	Wed.	279	0	279	0.97	1.0	271	
8	East of Cody Ave.	4/16/02	Tue.	21101	21345	42446	0.97	0.94	38,702	39,200
		4/17/02	Wed.	21804	21761	43565	0.97	0.94	39,723	
9	WB Right Turn Lane	4/16/02	Tue.	0	1856	1856	0.97	1.0	1,800	1,800
		4/17/02	Wed.	0	1765	1765	0.97	1.0	1,712	
Cody Avenue										
				NB	SB	Total				
10	North of US 98									
		4/16/02 & 4/23/02	Tue.	6787	7470	14257	0.98	1.0	13,972	14,100
		4/17/02 & 4/24/02	Wed.	7115	7403	14518	0.98	1.0	14,228	
11	SB Right Turn Lane	4/16/02	Tue.	4729	0	4729	0.98	1.0	4,634	4,600
		4/17/02	Wed.	4701	0	4701	0.98	1.0	4,607	
5	South of US 99	4/16/02	Tue.	789	860	1649	0.98	1.0	1,616	1,600
		4/17/02	Wed.	747	788	1535	0.98	1.0	1,504	
3	South of Kissam St.	4/16/02	Tue.	318	306	624	0.98	1.0	612	600
		4/17/02	Wed.	314	305	619	0.98	1.0	607	
Service Roads South of Cody & US 98										
				EB	WB	Total				
2	Kissam St. west of Cody	4/16/02	Tue.	431	425	856	0.98	1.0	839	900
		4/17/02	Wed.	448	438	886	0.98	1.0	868	
6	Kissam St. east of Cody	4/16/02	Tue.	370	486	856	0.98	1.0	839	800
		4/17/02	Wed.	302	406	708	0.98	1.0	694	
7	Kissam St. east of Officers Club									
		4/16/02	Tue.	287	349	636	0.98	1.0	623	600
		4/17/02	Wed.	302	365	667	0.98	1.0	654	
U.S. 98 FDOT Year 2001 "AADTs" from the FDOT Transportation Statistics Office										
				EB	WB	Total			Year 2001	Year 2002
57-0306	500' West of Hurlburt Entrance						(Count looks low)	41,500	available	2003
57-1705	West of Mary Esther limits						(*Count looks suspect)	*32,000		
Source of counts: HSA Consulting Group, Inc.										
The Seasonal and Axle Adjustment Factors are based on FDOT's year 2001 factors for U.S. 98										
*Note: some of these "AADTs" were later revised slightly, as shown on the "stick diagram" figure, in order to achieve balanced volumes on all the legs at the intersections.										



U.S. 98 (SR 30) at the Hurlburt Field Main Entrance ♦ PD&E Study



VARIATION IN TRAFFIC BY MONTH, DAY, & HOUR

FIGURE 6-1

The existing *segment* LOS on US 98 is estimated to be LOS “F”, based on FDOT’s generalized level of service tables for a Class I State two-way arterial, for “urbanized areas” (Reference 3).

6.2 Multimodal Transportation System Considerations

The study area currently has no local bus service. Okaloosa County operates fixed route bus service in Fort Walton Beach and Crestview, to the east of the study area.

The nearest public airport is located approximately 10 miles to the east, in Fort Walton Beach. The nearest international airport is Pensacola International Airport, located approximately 40 miles to the west in Pensacola.

6.3 Traffic Analysis Assumptions & Methodology

The methodology used to develop future traffic projections is consistent with the FDOT’s published procedures for developing project “design traffic” (Reference 4). For traffic analysis purposes, the following years were used:

Existing Year:	2002
Opening Year:	2005
Mid Year	2015
Design Year:	2025

The following methodology was utilized for producing design traffic for this proposed project:

1. A previous manually-counted 8-hour intersection turning movement count (TMC) at US 98/Cody Avenue was utilized to estimate the 24-hour and AADT turning volumes by “expanding” the 8-hour volumes.
2. The year 2025 AADT on the west leg of US 98 was estimated at 70,000 VPD from a trendline projection discussed below. The future AADT on the east leg of US 98 was calculated by “system balance” once the future turning volumes were estimated.
3. Future AADTs for the north and south legs of Cody Avenue at US 98 were estimated based on population and development projections provided by the Hurlburt Field Base

Development Section. An overall traffic increase of 14 percent was estimated between 2002 and 2025 for the north leg of Cody Avenue at US 98. For the south leg of Cody at US 98, an increase from 1600 VPD to 3200 VPD (or 100 percent) was estimated due to development that is projected to occur on the south side of US 98.

4. Traffic projections for intermediate years were estimated based on linear interpolation between 2002 volumes and 2025 projections. Directional Design Hour Volumes (DDHV) were calculated in a spreadsheet by applying K and D Factors (discussed below) to the AADTs. The D Factor was applied to the two-way movement totals (sums of complimentary intersection directional movements) to generate the DDHV. These volumes were calculated for both the a.m. and p.m. peak periods.

5. All levels of service were calculated using the Highway Capacity Software (HCS) Release 4.1b, using the directional design hour volumes (DDHV) discussed elsewhere in this section. The HCS is based on the methodology of the 2000 edition of the Highway Capacity Manual (Reference 5). All assumptions and default values used in the capacity analysis are documented in the Traffic & Capacity Analysis Report.

Recommended Traffic Characteristics

Data from FDOT's continuous (permanent) count station located approximately 5 miles west of the Cody/US 98 intersection was utilized in the traffic analysis due to its close proximity to the project. According to the Traffic Technical Memorandum, the following factors are recommended for existing conditions and future years:

K_{30} Factor = .097 [the ratio of the Design Hour Volume (DHV) to the annual average daily traffic (AADT)]

Peak Hour Directional Factor D_{30} = 0.67 for US 98 and 0.83 for traffic entering/leaving Hurlburt

The Truck (**T factors**) are:

24 Hr T&B (trucks and buses)= 2.21 percent

Design Hour Trucks (DHT) = 1.11 percent

Heavy Trucks (DH3) = 0.76 percent

Medium Trucks (DH2) = 0.35 percent

Truck factors are used for selecting appropriate geometric design criteria, pavement design, and noise impact studies.

Peak Hour Factor (**PHF**) = 0.92 for east-west approaches
and 0.86 for north-south approaches

6.4 Traffic Volume Projections

Future traffic projections were developed from historical traffic counts for three count stations on US 98 near the proposed project, using linear regression as shown in **Figure 6-2**. The map inset in the figure shows the locations of the three stations. All three stations show a similar growth pattern. The trendline for station number 306, located immediately west of the Hurlburt entrance, shows a projected traffic volume of approximately 70,000 VPD in 2025, the design year. Based on this linear trendline, traffic is expected to increase approximately 63 percent between 2002 and 2025, for an annual average increase of about 2.7 percent for this 23-year period.

Traffic projections from the Okaloosa-Walton TPO's (formerly MPO's) FSUTMS traffic model for both the 1995 Base Year and the 2025 Cost Feasible Plan were also examined as part of the traffic analysis (Reference 2). It was found that the "smoothed" model projections were extremely close to the trendline projections which suggests that either approach can be used to reliably forecast future traffic projections for this location on US 98. Existing and projected future AADT's are shown on the traffic "stick diagram" in **Figure 6-3**. Traffic on Cody Ave. north of US 98 is expected to increase from 14,000 to 16,000 VPD by 2025. Projected directional design hour volumes (DDHV) are shown in **Figure 6-4**.

6.5 Future Levels of Service

For the US 98 "No-Build" Alternative, the US 98/Cody Avenue intersection is expected to decline to LOS F in the PM peak by year 2004 assuming that no improvements are made to the intersection, based on current traffic growth trends, as shown in Table 6-2.

For "Build" Alternatives involving the six-laning of US 98, the Cody Avenue intersection is expected to decline to LOS F in the PM peak by year 2013 with dual lefts on the eastbound approach and a free flow right on the southbound approach; this also assumes

TABLE 6-2: LEVEL OF SERVICE SUMMARY

Scenario	Levels of Service for the Signalized Intersection Portion of US 98 at Cody Avenue ¹										
	2002		2004		2013		2021		Design Year 2025		
	Peak am pm	Overall Avg.	Peak am pm	Overall Avg.	Peak am pm	Overall Avg.	Peak am pm	Overall Avg.	Peak am pm	Overall Avg.	
<u>Existing ("No-Build") (4 lanes on US 98)</u> Average seconds of delay	D 47	E 72	F 60						F 168	F 285	F 227
<u>6-Lane US 98 with At-Grade Intersection</u>											
<u>With EB Dual Lefts* & SB Free-Flow Rights**</u> Average seconds of delay	C 26	D 43	C 34.3			F			D 47	F 127	F 87
<u>With EB Triple Lefts* & SB Free-Flow Rights**</u> Average seconds of delay						F			D 44	F 124	F 84
<u>Interchange Alternatives with 6 Lanes on US 98</u>											
<u>Flyover Ramp (EB to NB)</u> Average seconds of delay									F 43	F 108	E 76
<u>Single Point Urban Interchange (SPUI)</u> Average seconds of delay									A 5.6	A 4.6	A 5.1
<u>Tight Diamond Interchange</u> Average seconds of delay									A 10	A 4.4	A 7.2

Legend LOS Control Delay per Vehicle

A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

*with westbound left turns prohibited, as they are now.
 ** will require the construction of a longer westbound accel. lane.

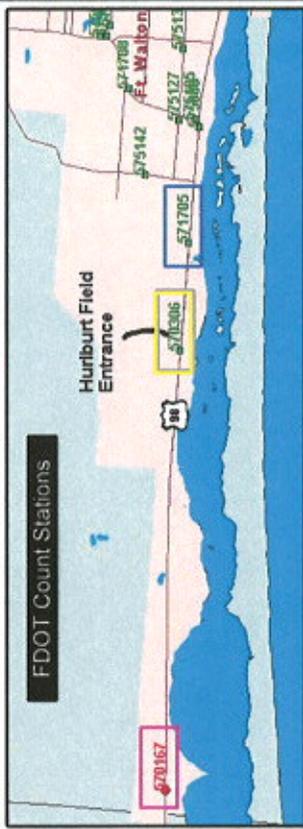
The MPO's adopted plan calls for 6 lanes with service roads west of the Hurlburt Field gate.

¹ LOS estimates based on Highway Capacity Software (HCS) version 4.1b; SYNCHRO 5 used for the two interchange options



(Count stations from west to east) = suspect count (22,895) was deleted by HDR

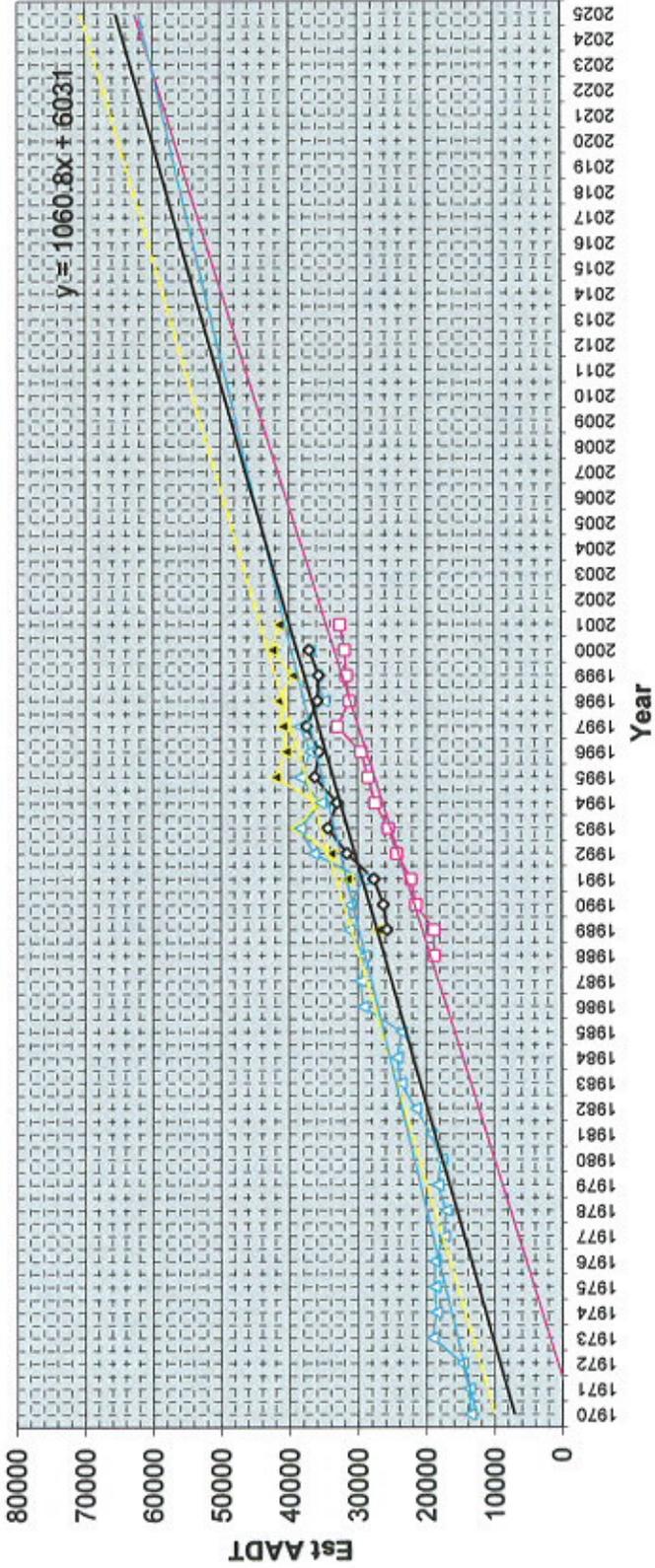
Year	1705	0306	0167	Average
1970	13714			13890
1971	14921			14921
1972	19168			19168
1973	18615			18615
1974	18847			18847
1975	18843			18843
1976	17499			17499
1977	17215			17215
1978	18428			18428
1979	17894			17894
1980	19381			19381
1981	21604			21604
1982	23796			23796
1983	24348			24348
1984	23648			23648
1985	29281			29281
1986	29625			29625
1987	18839			18839
1988	29153			29153
1989	27163			27163
1990	21473			21473
1991	31684			29226
1992	27694			34000
1993	31599			38500
1994	34360			35500
1995	33005			36000
1996	36333			42000
1997	35667			37000
1998	37488			38500
1999	35888			41500
2000	35712			36000
2001	37000			39500
2002	42500			31877
2003	32571			41500
2004				31635
2005				3165
2006				41000
2007				29500
2008				40500
2009				28500
2010				42000
2011				28500
2012				36000
2013				27516
2014				39000
2015				25581
2016				34000
2017				24298
2018				31636
2019				22221
2020				29226
2021				31684
2022				27694
2023				31599
2024				34360
2025				33005



45865	41037
46726	42098
47787	43159
48848	44220
49909	45281
50969	46341
52030	47402
53091	48463
54152	49524
55213	50585
56273	51645
57334	52706
58395	53767
59456	54828
60517	55889
61577	56949
62638	58010
63699	59071
64760	60132
65821	61193
66881	62253
67942	63314
69003	64375
70064	65436

Future Predictions Based on the Linear Trendline Average of the Three Stations

Future Predictions for Sta. 306 based on the Trendline for the average of the Three Stations



Station 167 is a continuous count station located 5.5 miles west of the Hurlburt Field entrance.
 Station 306 is located 500 feet west of the entrance to Hurlburt Field.
 Station 1705 is located at the west urban limits of Mary Esther (approx. 1.2 miles east of the Hurlburt Field entrance).

- Sta. 0167
- Sta. 0306
- Sta. 1705
- Average
- Linear (Sta. 0306)
- Linear (Sta. 0167)
- Linear (Sta. 1705)
- Linear (Average)

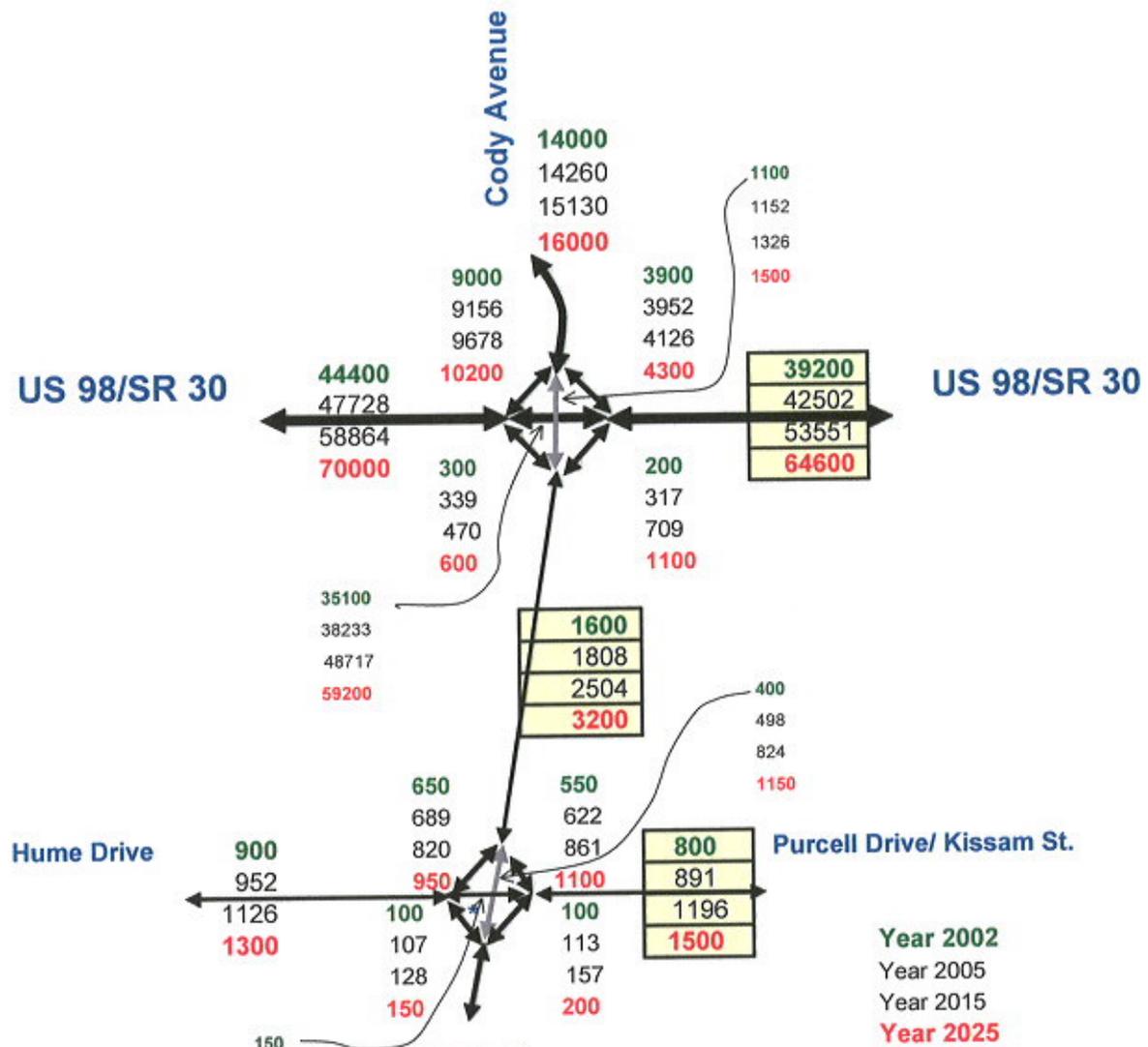


U.S. 98 (SR 30) at Hurlburt Field PD&E Study

HISTORICAL AND PROJECTED TRAFFIC ON US 98 NEAR HURLBURT FIELD

FIGURE 6-2

Computed "Stick Diagram" for all Years:

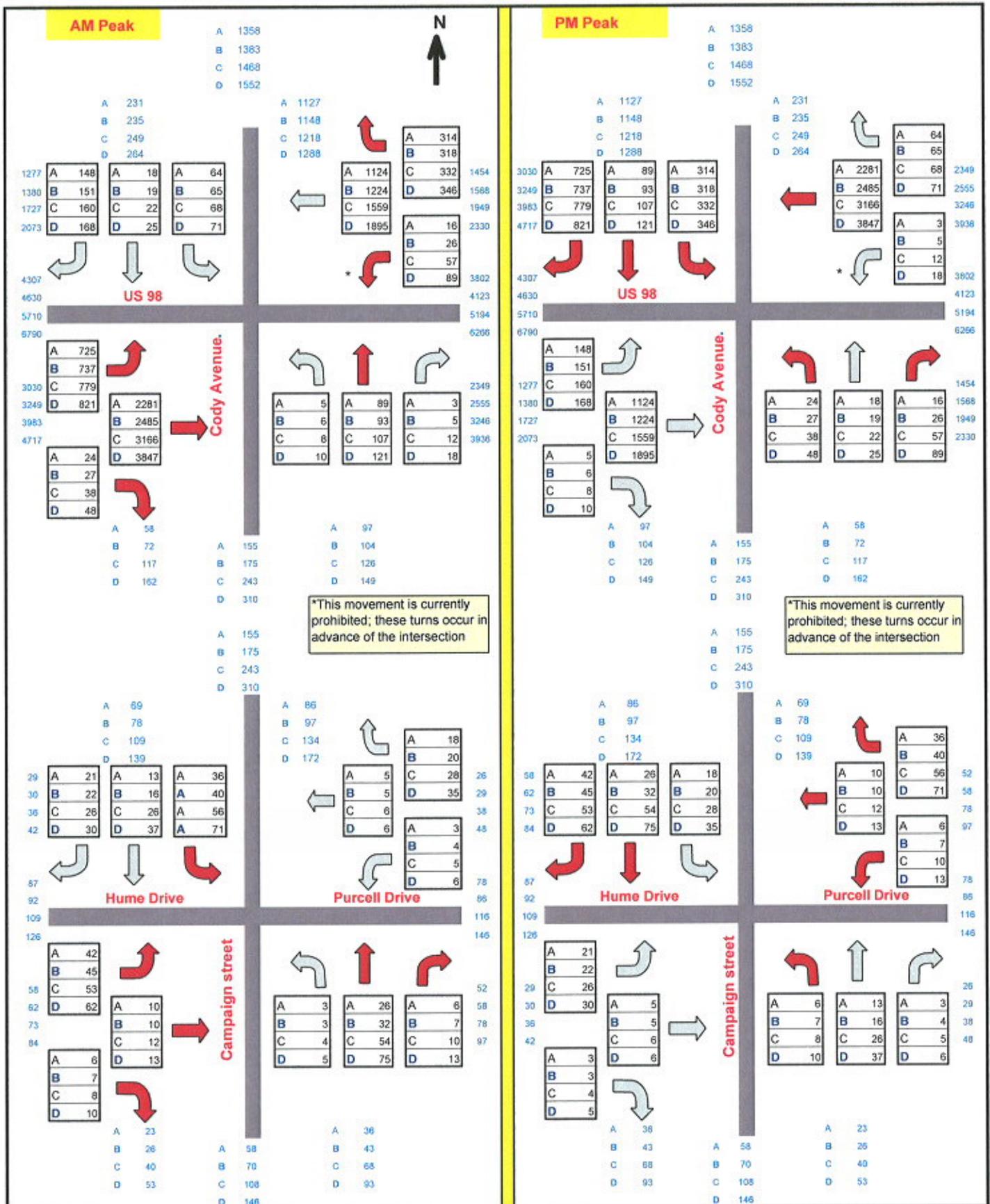


Year 2002
 Year 2005
 Year 2015
 Year 2025

* The turning movements at this intersection are an estimate; no TMC was done due to the low traffic volumes

LEGEND	
	=calculated field to yield balanced movements
NNN	Estimated Yr. 2002 AADTs (from adjusted machine counts & expanded turning movement counts)
NNN	Year 2005 by interpolation
NNN	Year 2015 by interpolation
NNN	Projected Yr. 2025 AADTs





A 1358
B 1383
C 1468
D 1552

A 1358
B 1383
C 1468
D 1552

*This movement is currently prohibited; these turns occur in advance of the intersection

*This movement is currently prohibited; these turns occur in advance of the intersection

Year Legend

A= 2002
B= 2005
C= 2015
D= 2025

$K_{98} = 9.7$ Percent
US 98: $D_{98} = 67$ Percent
Huriburt $D_{98} = 83$ Percent
24 T&B = 2.2%

Des. Hr. Trucks
DHT=1.1%
DH3= 0.76% (Heavy)
DH2=0.35% (Medium)

PHF = 0.92 for US 98
PHF = 0.86 for Cody Ave



U.S. 98 (SR 30) at Huriburt Field PD&E Study



DIRECTIONAL DESIGN HOUR VOLUMES (DDHV)

FIGURE 6-4

Rev. 7/29/2002

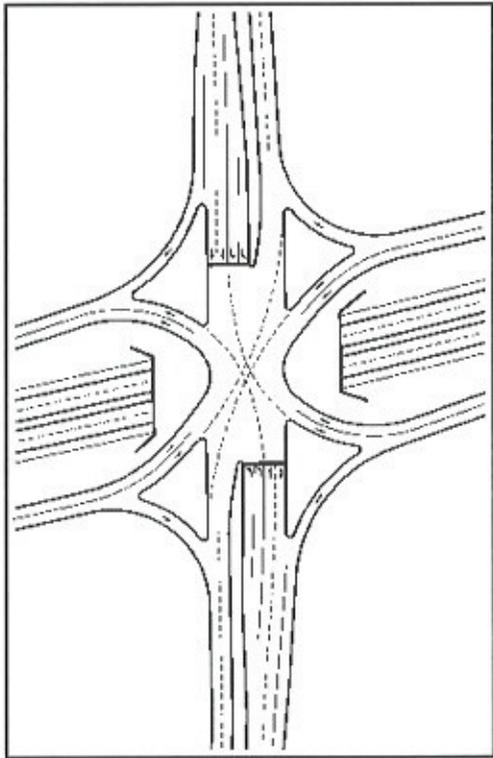
that the westbound acceleration lane would be lengthened. If triple lefts were added on the eastbound approach, the intersection would decline to LOS F in the PM peak by the same year.

If a “flyover” ramp were constructed to accommodate eastbound to northbound left turns, the intersection would likely decline to LOS F in the PM peak by year 2021.

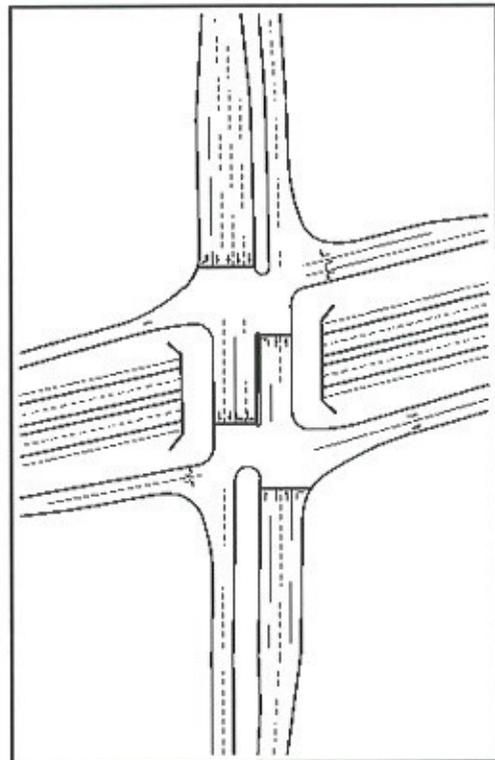
If a single point urban interchange (SPUI) (**Figure 6-5 Part A**) or a tight diamond interchange (**Figure 6-5 Part B**) were constructed, the signalized intersection portion of the interchange would operate at LOS A or “A” in both the AM and PM peaks in the design year 2025.

FIGURE 6-5 - URBAN INTERCHANGE TYPES CONSIDERED

Part A: SINGLE-POINT URBAN INTERCHANGE (SPUI)



Part B: TIGHT URBAN DIAMOND INTERCHANGE (TUDI)



The intersection of Cody/Hume/Purcell/Campaign operates as a two-way STOP, with Cody Avenue as the through street. The projected LOS for the side street approaches in 2025 is LOS A/B in both the AM and PM peaks.

Based on the traffic analysis, a grade-separated interchange is recommended for construction prior to the design year 2025. Either a diamond type interchange or a single-point urban interchange (SPUI) would provide a good level of service for motorists on US 98 as well as motorists accessing Hurlburt Field.

In addition to construction of an interchange, improvements should be made to the security gate (and its operations) to increase the service rate during peak hours for checking incoming vehicles, to minimize the chances of motorists backing up into the through lanes on US 98. A separate study conducted by Genesis Group in early 2002 (Reference 6) recommended adding a third receiving lane going into the Hurlburt gate. Other improvements for year 2010 recommended by that study included:

- Installation of triple eastbound left-turn lanes
- Extension of the westbound right-turn lane
- Additional eastbound and westbound through lanes
- Additional southbound right turn lane

The Genesis study also recommended lengthening the dual left turn lanes on the eastbound approach to the intersection; this has already been completed in conjunction with a resurfacing project completed on US 98 by the Florida Department of Transportation.

7.0 Alternative Alignment Analysis

7.1 No Build Alternative

The No-Build Alternative provides a baseline from which to measure the performance, costs and impacts of all alternatives. It assumes no capacity improvements will be made to the facility. The crash rate may be expected to increase if capacity and other improvements are not made. The No-Build Alternative would result in increased congestion producing higher vehicle operating costs, increased cost of driver time, and increased fuel consumption and air emissions. It would also result in increasingly longer response times for base personnel. This alternative does not preclude routine maintenance work however.

7.2 Transportation System Management

The Transportation System Management (TSM) alternative includes activities designed to maximize the utilization and efficiency of the present system. These activities typically include minor improvements like signal re-timing and adding auxiliary turn lanes, ridesharing, traffic signal timing optimization and designating high occupancy vehicle lanes on existing roadways. Ridesharing is already heavily promoted at Hurlburt Field as a way to reduce peak hour traffic demand at the Cody Avenue/US 98 intersection. In this case, minor TSM improvements would not fully satisfy the project need, which is to improve the capacity of the intersection in order to improve level of service and reduce delays to motorists.

7.3 Study Build Alternatives

7.3.1 Typical Section Alternatives

Roadway

A “*rural*” typical section alternative (same as the existing roadway) would include a roadside ditch system to handle storm water runoff from both the on-site and off-site drainage basins. The existing 200-foot right-of-way within these segments would be sufficient for this design alternative; however, it would require the storm water treatment facility (ponds) to accommodate the *off-site* impervious areas as well as the *on-site*, creating the need for a larger storm water facility. The current proposal is to use existing ponds on Air Force property to handle the storm water runoff. A “*rural*” typical section

would allow for higher operating speeds and greater safety as compared to an “urban” (curb-&-gutter with underground drainage pipes) typical section. A preliminary proposed six-lane typical section for US 98 in the vicinity of the proposed interchange is shown in **Figure 7-1**. The typical proposed would require a design variance or exception for the border width, which is shown as 34 feet as compared to the standard minimum of 40 feet. Other alternatives would be to increase the border width by using a narrower median (say 30 feet) with a median barrier/barrier wall; however, this would be more expensive to construct.

An “urban” typical section would include curb and gutter with an underground storm-sewer system, allowing on-site runoff to be routed to a detention pond prior to discharging to an outfall. An urban typical section *could* include shallow swales behind a sidewalk, to intercept off-site storm water runoff and convey it separately to appropriate outfalls. Separating off-site and on-site runoff typically reduces the volume requirements for storm water treatment. “Urban” typical section roadways are more expensive to construct because of the curb, gutter, inlets, and underground drainage pipes required; in addition, they are not intended for use with higher operating speeds, which are typical of rural areas.

Bridges

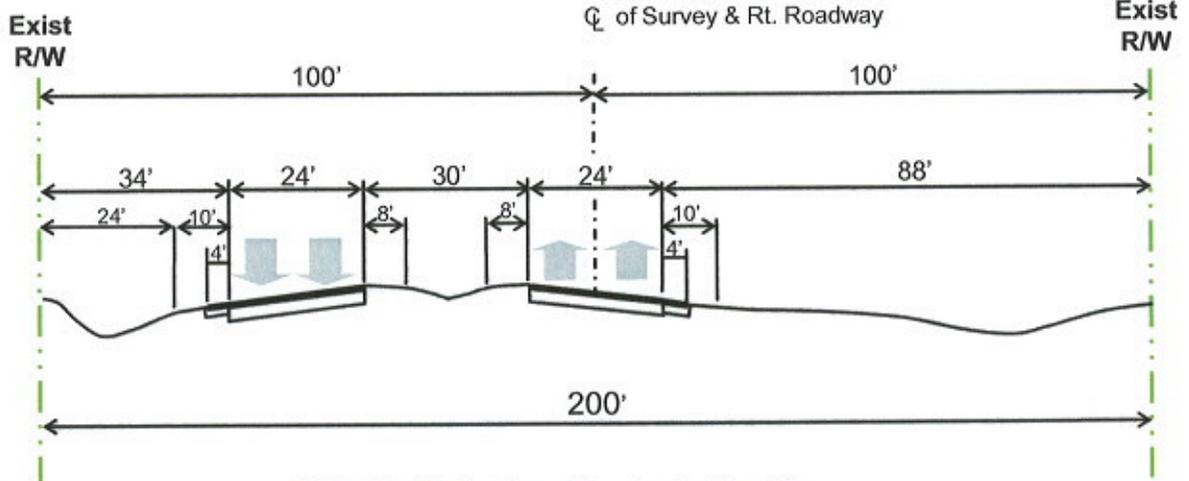
Proposed typical sections for the “Flyover” ramp alternative, the US 98 overpass alternatives, and the Cody Avenue overpass alternatives are also shown in **Figure 7-1**. The design standards for the proposed cross-section elements are included in the Design Criteria Table in Chapter 5.

7.3.2 Interchange Alternatives Considered

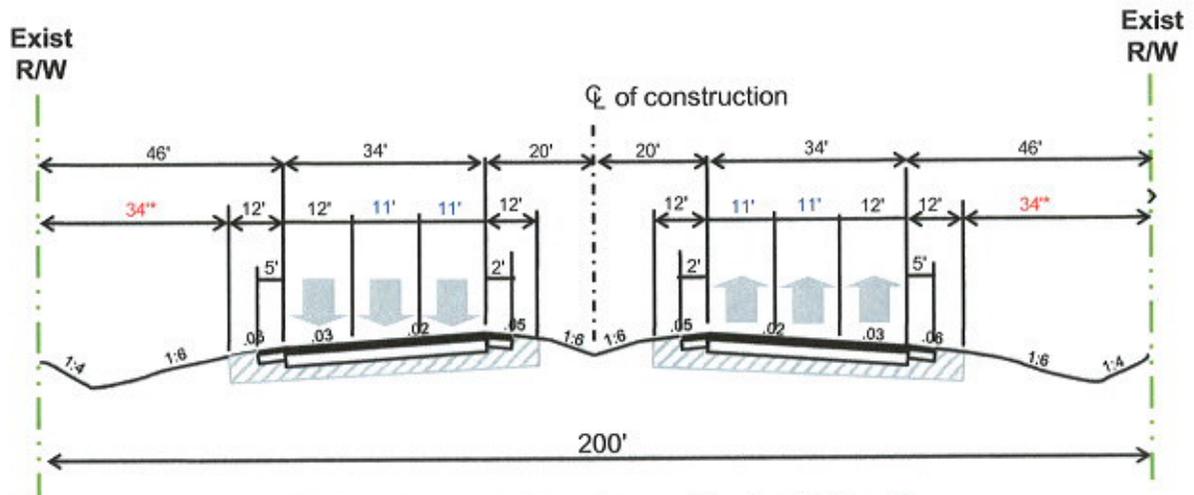
Initially a broad range of alternatives was considered, as shown in **Figure 7-2**. Most of these were eliminated based on the laneage and geometry required to serve the projected traffic volumes.

7.3.3 The “Flyover” Ramp Alternative

This alternative was developed to provide a direct connection for the eastbound to northbound left turns, which is one of the heaviest intersection movements, particularly in the morning peak period. Two different variations of a “flyover” were developed, as shown in **Figure 7-3**. This alternative was eliminated from further consideration after the traffic analysis (summarized in Chapter 6) found that the projected future level of service



US 98 Existing Typical Section



US 98 Proposed Roadway Typical Section

*The PPM requires a minimum border of 40'; this will require a design exception or variance

Rev. 7/10/02

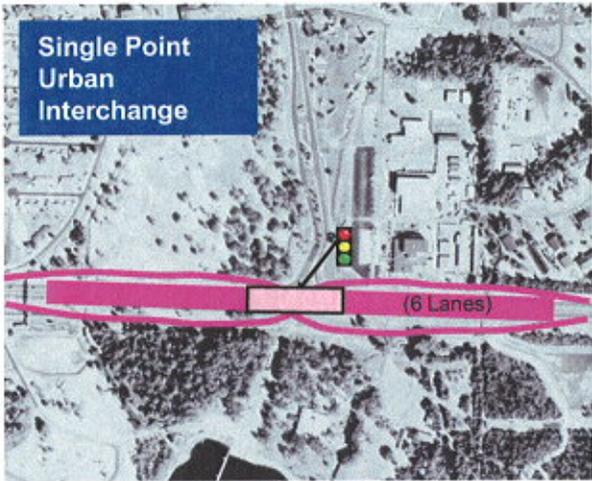


US 98 at
Hurlburt
Field PD&E
Study

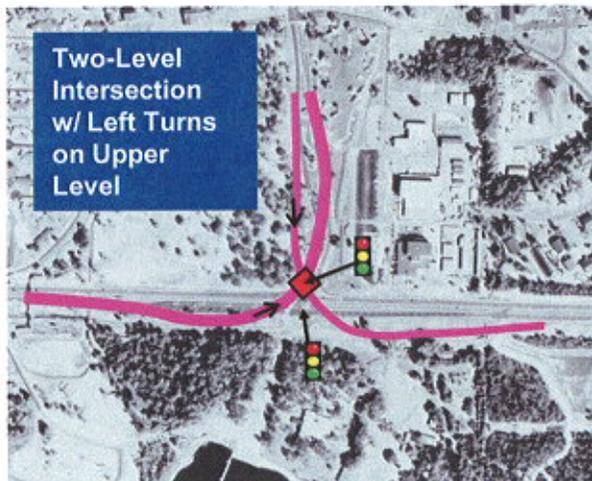
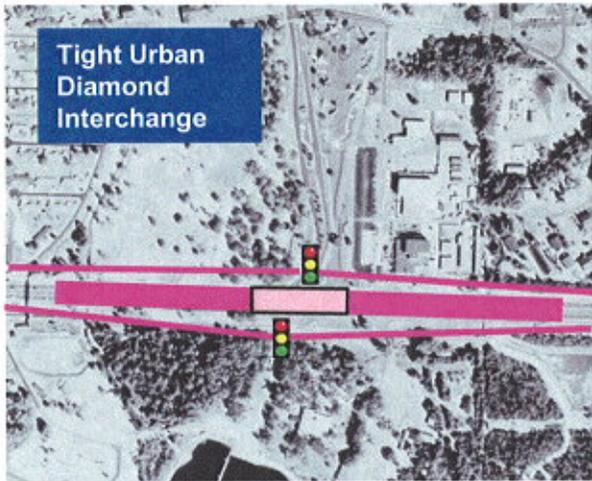
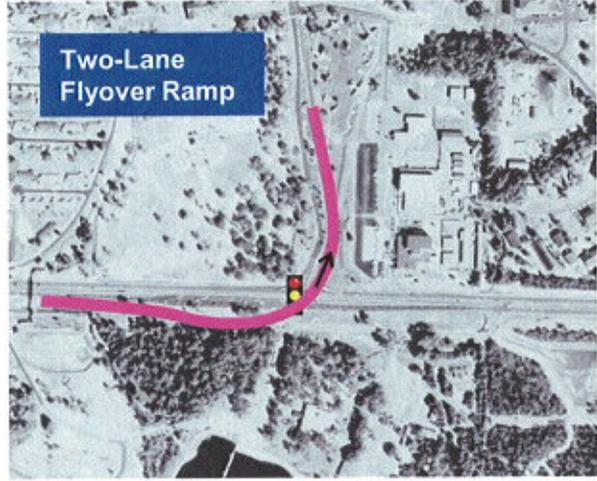
**EXISTING & PROPOSED
TYPICAL SECTIONS**

FIGURE 7-1
Page 1 of 2

HDR



East-West thru movements free-flow



The traffic signal would only be required to accommodate local traffic to/from the south leg





U.S. 98 (SR 30) at the Hurlburt Field Main Entrance ♦ PD&E Study



FLYOVER RAMP ALTERNATIVES

FIGURE 7-3

(LOS) was lower than that of the other Build alternatives. The flyover was projected to “fail” in the PM peak by year 2021. The projected average LOS (AM & PM) in year 2025 is LOS E, which doesn’t meet the design standard of LOS D or better in the design year.

7.3.4 The Tight Urban Diamond Interchange Alternatives

Two different versions of the tight urban diamond interchange (TUDI) were developed: one with US 98 going over Cody Avenue (**Figures 7-4 and 7-5**) and the other with Cody Avenue going over US 98 (**Figures 7-6 and 7-7**). Either alternative is projected to provide LOS “A” in the peak hours in year 2025 for the signalized intersection portions of the interchanges. A roadway profile for the US 98 over Cody Avenue interchange alternatives is shown in **Figure 7-8** (it applies to both the TUDI and SPUI alternatives). A roadway profile for the Cody Avenue over US 98 alternatives is shown in **Figure 7-9**.

7.3.5 The Single-Point Urban Interchange Alternatives

Two different versions of the single-point urban interchange (SPUI) were developed: one with US 98 going over Cody Avenue (**Figures 7-10 and 7-11**) and the other with Cody Avenue going over US 98 (**Figures 7-12 and 7-13**). Either alternative is projected to provide LOS “A” in the peak hours in year 2025 for the signalized intersection portion of the interchanges. The SPUI would require more use of proprietary earth walls and is therefore more expensive to construct; however, it would impact a smaller land area of Hurlburt Field. The Cody over US 98 alternatives all require a loop ramp on the south side due to the close proximity of the Santa Rosa Sound and the need to keep the ramp out of the water.

7.4 Evaluation Matrix

An evaluation matrix was developed to summarize and compare the costs and impacts of the viable build alternatives (Table 7-1). Construction cost estimates were based on FDOT unit prices and estimated construction quantities. Additional data related to construction costs is included in Appendix B.

PRELIMINARY Subject
To Revision 12/03

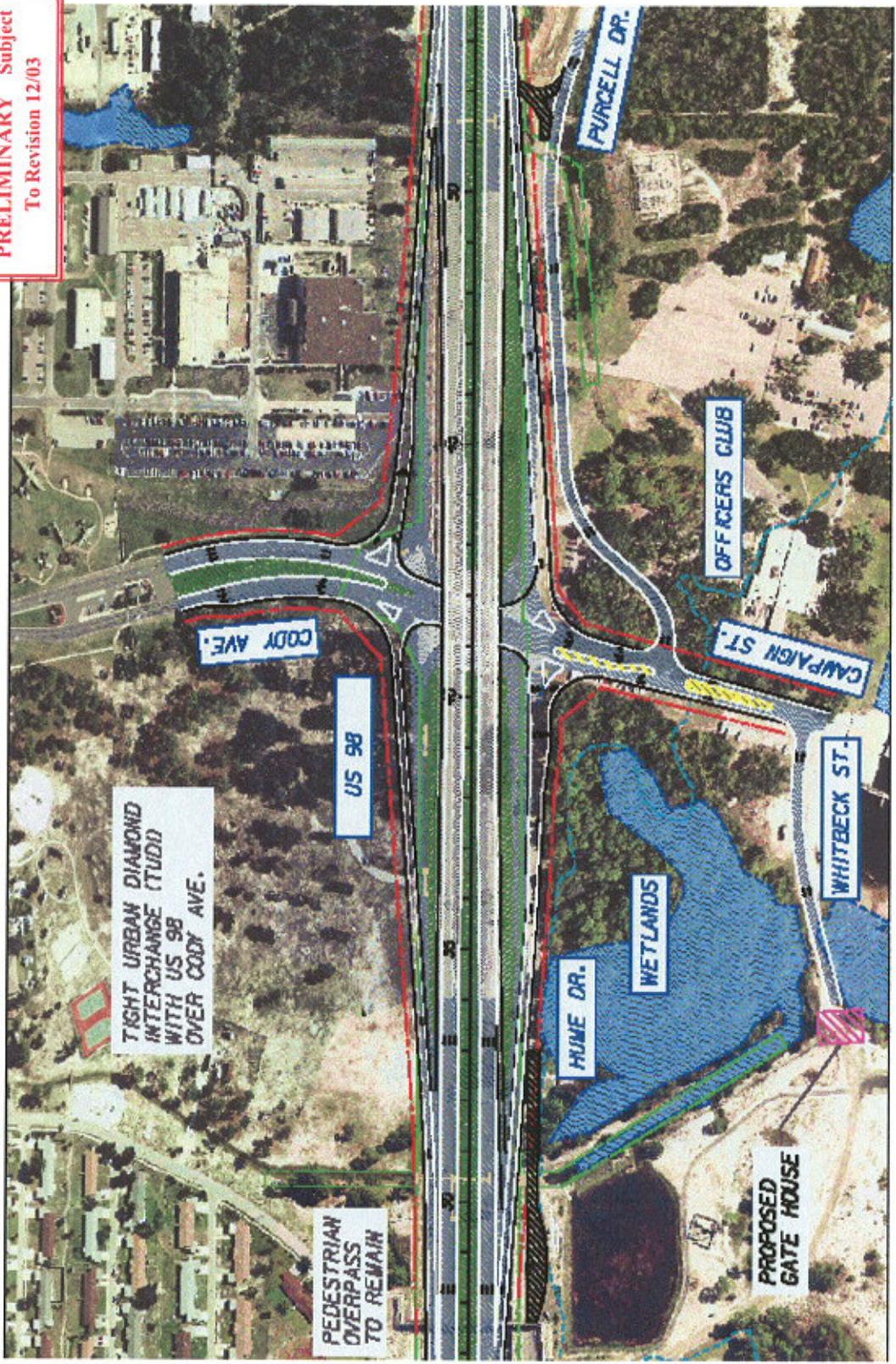


FIGURE
7-5

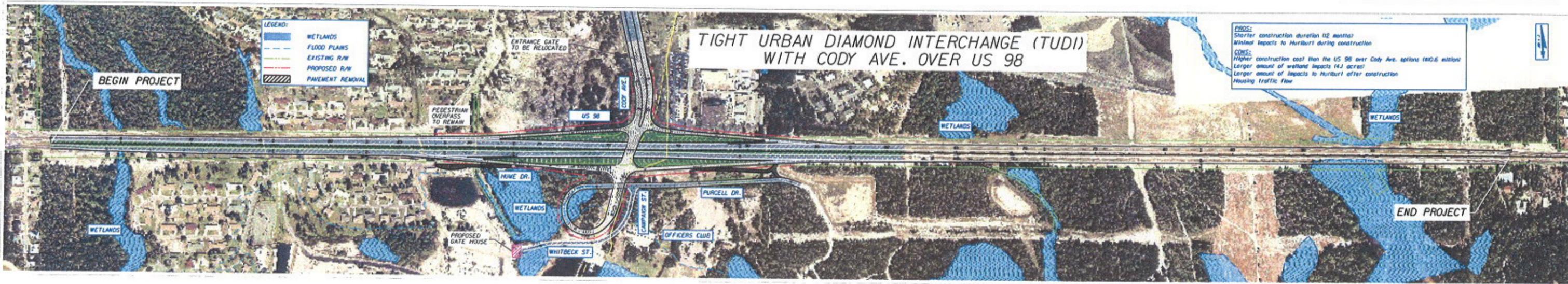
“TUDI” WITH US 98 OVER CODY AVENUE – INTERSECTION
ENLARGEMENT



U.S. 98 (SR 30) at the Hurburt
Field Main Entrance ♦ PD&E Study



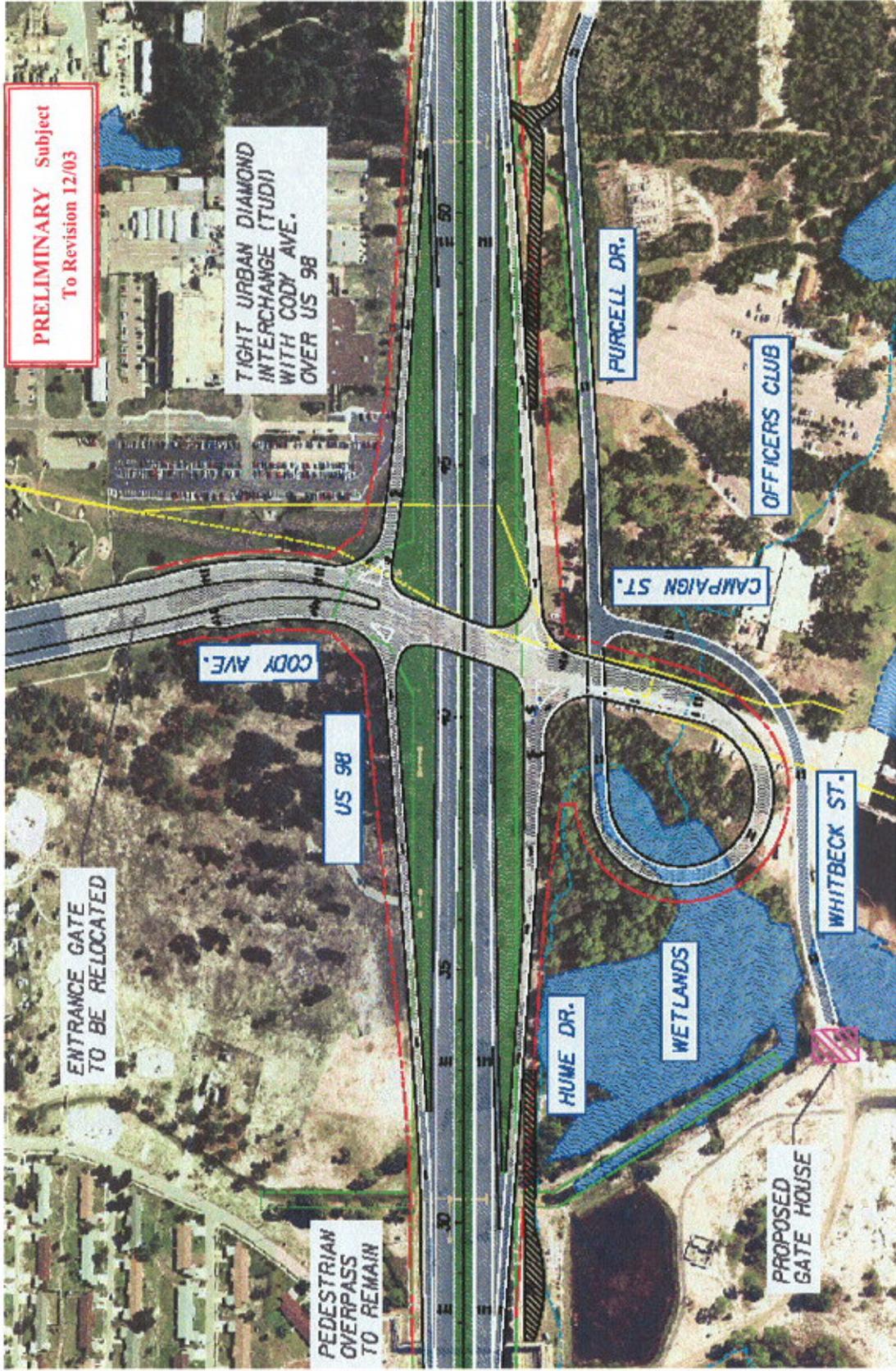
PRELIMINARY
Subject To Revision 12/03



U.S. 98 at the Hurlburt Field Main Entrance PD&E Study

"TUDI" WITH CODY AVENUE OVER US 98 CONCEPTUAL DESIGN PLAN

FIGURE 7-6



U.S. 98 (SR 30) at the Hurlburt Field Main Entrance ♦ PD&E Study



"TUDI" WITH CODY AVENUE OVER US 98 – INTERSECTION ENLARGEMENT

FIGURE 7-7

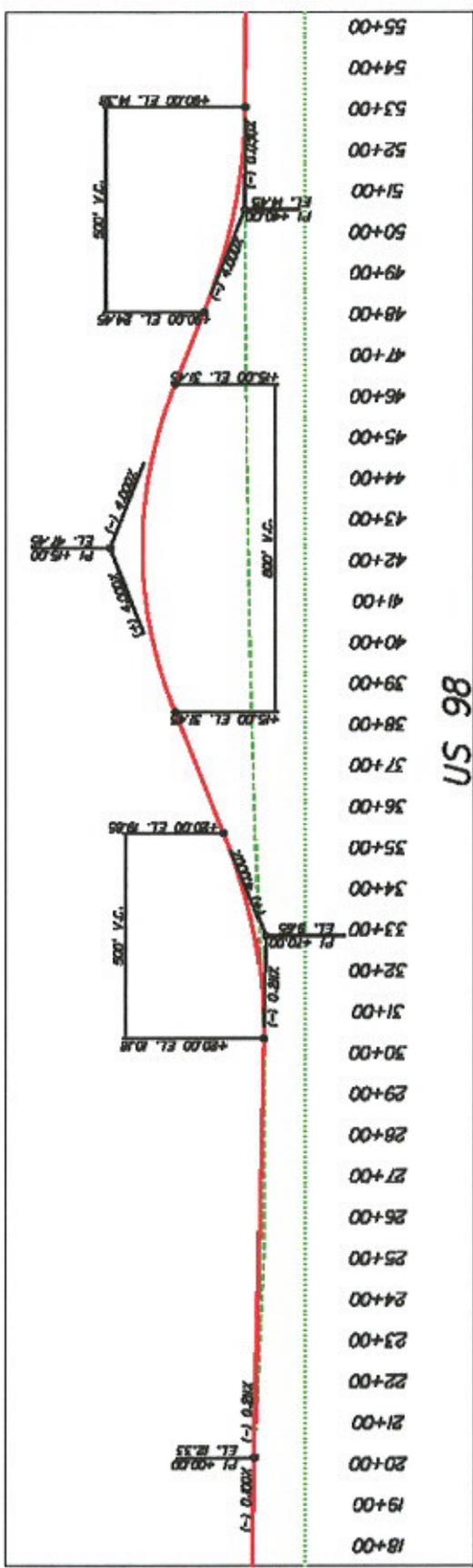


FIGURE 7-8

PROFILE FOR US 98 OVER CODY AVENUE



U.S. 98 (SR 30) at the Huriburt Field Main Entrance ♦ PD&E Study



US 98

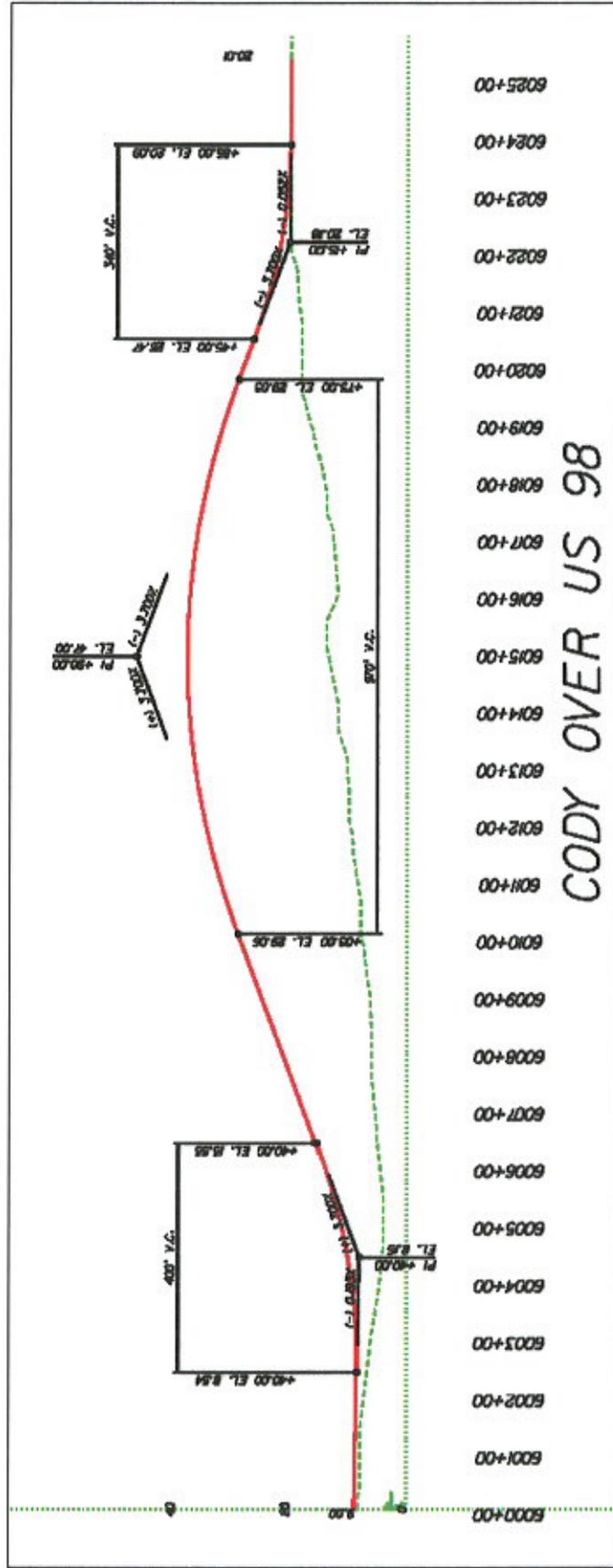


FIGURE 7-9

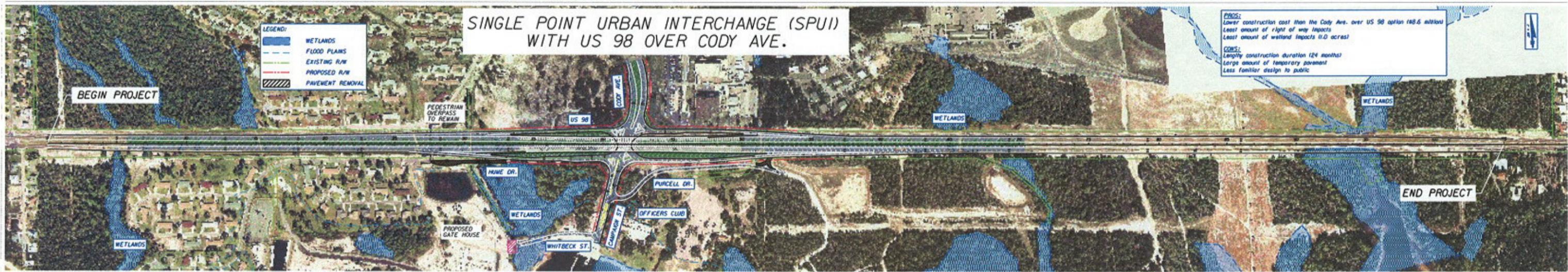
PROFILE FOR CODY AVENUE OVER US 98



U.S. 98 (SR 30) at the Hurlburt Field Main Entrance ♦ PD&E Study



PRELIMINARY
Subject To Revision 12/03



PRELIMINARY Subject
To Revision 12/03



U.S. 98 (SR 30) at the Hurlburt
Field Main Entrance ♦ PD&E Study

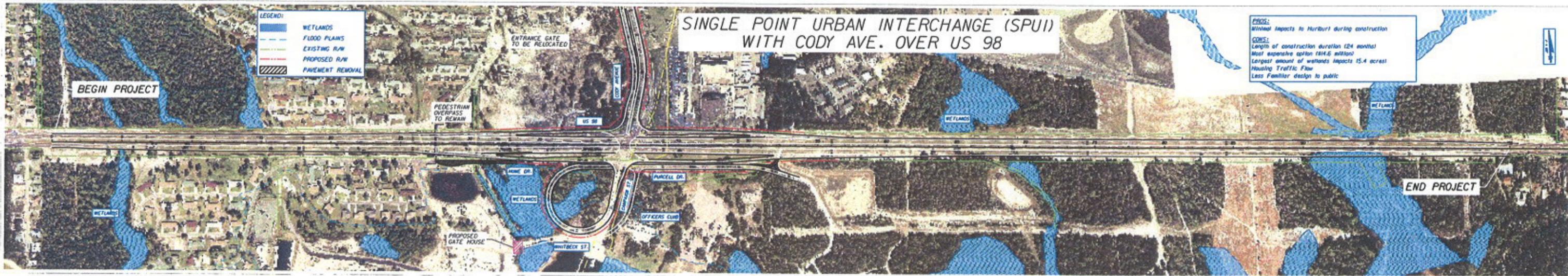


"SPUI" WITH US 98 OVER CODY AVENUE – INTERSECTION
ENLARGEMENT

FIGURE
7-11



PRELIMINARY
Subject To Revision 12/03



PRELIMINARY Subject
To Revision 12/03

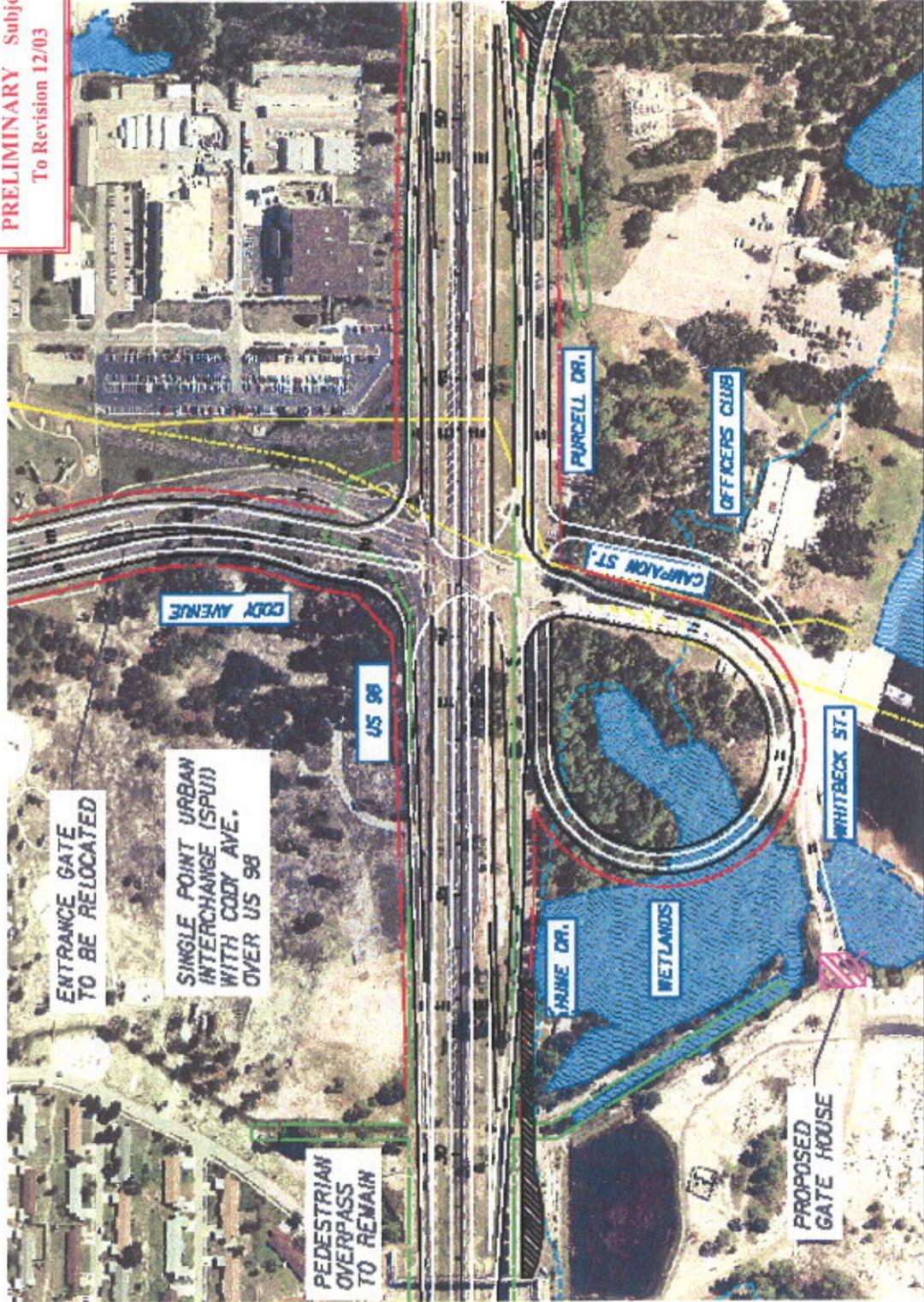


FIGURE
7-13

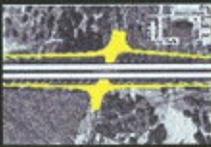
“SPUI” WITH CODY AVENUE OVER US 98 – INTERSECTION
ENLARGEMENT



U.S. 98 (SR 30) at the Hurlburt
Field Main Entrance ♦ PD&E Study



**TABLE 7-1
ALTERNATIVES EVALUATION MATRIX**

EVALUATION FACTOR				
	US 98 Over Cody Avenue		Cody Avenue Over US 98	
Estimated Costs (\$ Millions) (2002 Dollars)	TUDI*	SPUI**	TUDI*	SPUI**
Construction Costs	\$7.4	\$8.6	\$10.6	\$14.6
Design & Construction Supervision ²	\$1.5	\$1.7	\$2.1	\$2.9
Right-of-Way	--	--	--	--
Utility Relocation Costs	TBD	TBD	TBD	TBD
Wetlands Mitigation (\$8,000/ac. ; 5:1 ratio)	0.084	0.084	0.12	0.13
Total Capital Costs	\$9.0	\$10.4	\$12.8	\$17.7
Right-of-Way (R/W) Acreages & Relocations				
Hurlburt Field Land Required (acres)				
Relocations of Businesses or Residences	0	0	0	0
Environmental Impacts				
Contaminated Sites Involved, Number of	0	0	0	0
Wetland Impacts (acres)	2.1	2.1	2.89	3.33
Expected Noise Impacts (# sites)	0	0	0	0
Potential Cultural Resource Impacts or Involvement				
Number of Archaeological or Historical Sites Affected	0	0	0	0
Traffic Operations/Level of Service				
Level of Service in Design Year 2025 ¹	A-	A	A-	A
Temporary Impacts During Construction				
Maint. of Traffic (MOT) During Construction	Large amount of temporary pavement required	Large amount of temporary pavement required		
Construction Duration (Calendar Days)	24 mos.	24 mos.	12 mos.	24 mos.
Impacts to Hurlburt Field Property	Greater than the SPUI	Lots of Temporary Pavement Required	Minimal	Minimal
Permanent Impacts to Hurlburt Land Uses				
(Following Construction Completion)	Minimal	Minimal	Greater than with US 98 over Cody Ave.	Greater than with US 98 over Cody Ave.

"Preferred Alternative"

*Tight Urban Diamond Interchange **Single-Point Urban Interchange or signalized portion of the interchange.
Source: HDR Engineering, Inc. November 15, 2002 Rev. 4-04

¹ This is the level of service for the US 98 at Cody signalized intersection
² Based on 20 percent of the estimated construction costs

7.5 Preferred Alternative

The recommended "Preferred Alternative" is the Single Point Urban Interchange (SPUI) with US 98 over Cody Avenue, based on the preferences of Hurlburt Field officials and comments received at the public meeting held in January 2003.

The Preferred Alternative would address the purpose and need of the project in the following areas:

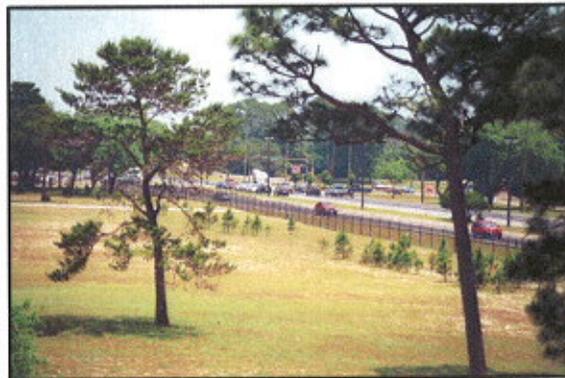
- It would be consistent with the local transportation plan by accommodating traffic circulation and access needs for Hurlburt Field
- It would reduce congestion for both base users and through motorists on US 98
- It would accommodate the resultant increases in traffic volumes forecasted for the design year 2025, and
- It would provide improved access to the base so that mission readiness will not be compromised

It would meet these objectives while also avoiding or minimizing impacts to all environmental resources, including floodplains and wetlands, to the fullest extent practicable.

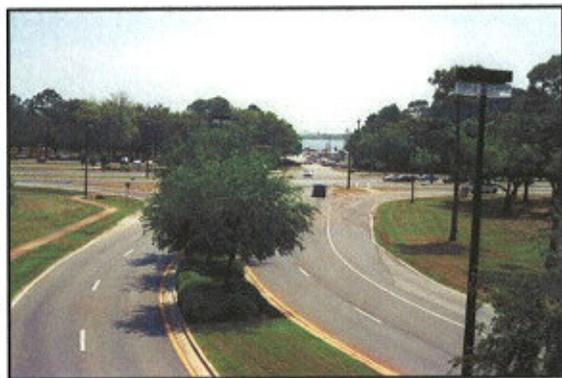
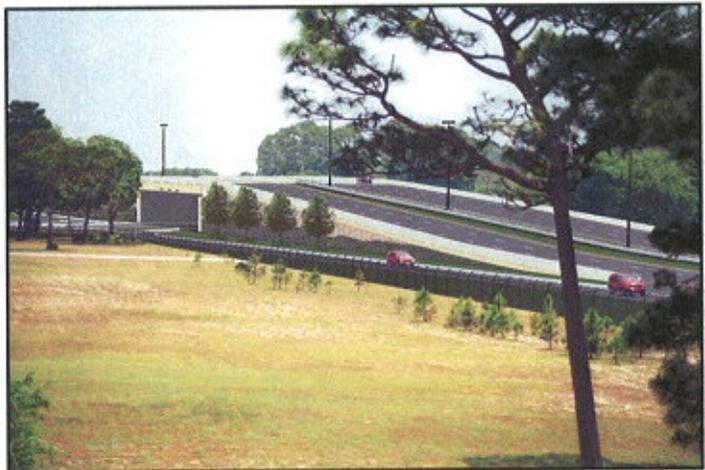
“Computer-generated” before-and-after views of the Preferred Alternative are included in **Figure 7-14**.



Looking southwesterly toward the Cody Avenue/US 98 intersection



Looking southeasterly toward the Cody Avenue/US 98 intersection



Looking southerly toward the Cody Avenue/US 98 intersection



U.S. 98 (SR 30) at the
Hurlburt Field Main
Entrance ♦ PD&E Study



**BEFORE-AND-AFTER
IMAGES**

**FIGURE
7-14**

8.0 Preliminary Design Analysis

8.1 Design traffic Volumes

Design annual average daily traffic (AADT) volumes were previously shown in **Figure 6-3**. The design year is 2025. In addition, *directional design hour volumes* (DDHV) were previously shown in **Figure 6-4**.

8.2 Typical Sections

The proposed typical section for the Preferred Alternative was previously shown in **Figure 7-1** (bottom of page 1 of 2 and top of page 2 of 2). The proposed design speed is 60 miles per hour for the US 98 segment. An “urban” typical section is proposed for Cody Avenue underneath the overpass to minimize the length of the proposed overpass bridge structure.

8.3 Intersection Concepts and Signal Analysis

The recommended intersection geometry for the signalized intersection portion of the proposed single-point urban interchange (SPUI) is shown in the “conceptual design plan”, **Figures 7-10 and 7-11** (above). These same figures also show the proposed geometry at other minor intersections in this same area. All alternatives would require the realignment of the “service roads” on the south side of US 98 in this area.

Recommended intersection turn-lane lengths for the proposed SPUI alternative based on the design year 2025 DDHV are shown in Table 8-1. These are based on FDOT’s Index No. 301 for turn lanes in addition to the following formula, which is based on AASHTO procedures:

$L = K \times (\text{lane vehicles per hour} / \# \text{ cycles per hour}) \times \text{Avg. vehicle length} \times \text{percent red}$

K = a “factor of safety” constant (1.5 used in this case)

Average vehicle length = 25 feet

The above formula gives an “adjusted” average queue length. FDOT’s Standard Index No. 301 additionally gives deceleration distances that should be included, based on the expected approach speeds. The preliminary lane lengths given in the table are

TABLE 8-1: RECOMMENDED AUXILIARY LANE LENGTHS

For an Urban Interchange at US 98/Hurlburt Field Entrance -- Signalized Intersection Beneath the Overpass
(Based on Year 2025 Directional Design Hour Volumes³)

Intersection Approach & Lane Group	(1) Heavier of AM or PM (VPH)	(2) Est. Cycle Length (Sec.)	(3) Average # Arrivals per Cycle	(4) Average No.x 1.5	(5) % Red	(6) Req. Storage @ 25 ft/veh. (feet)	(7) No. of Prop. Lanes	(8) Req. Storage Per Lane (feet)	(9) "L" Distance From Index No. 301 (ft.)	(10) Sum of Col. 8+9 feet	Minimum Recommended Lengths (ft.)	Notes
EB Left	821 am	61	13.9	20.9	0.61	318	2	159	185	344	350	
EB Right	48 am	61	0.8	1.2	0.61	19	1	19	185	204	200	
WB Left	89 am	61	1.5	2.3	0.61	34	1	34	185	219	225	
WB Right	346 am	61	5.9	8.8	0.70	154	1	154	185	339	350	
NB Left	48 pm	84	1.1	1.7	0.85	36	1	36	75	111	125	
NB Thru	121 am	61	2.1	3.1	0.84	65	1	65		65	75	
NB Right	89 pm	84	2.1	3.1	0.43	33	1	33	75	108	100	
SB Left	346 pm	84	8.1	12.1	0.68	206	1	206	75	281	300	
SB Thru	121 pm	84	2.8	4.2	0.68	72	1	72		72	75	
SB Right	821 pm	84	19.2	28.7	0.25	180	1	180	100	280	300	

Notes: (The distance "L" in column 9 is the total deceleration distance, which would be 185 ft from Index 301, based on design speed of 45 mph)

¹ All recommendations rounded to nearest 25 ft.

N/App= Not Applicable

recommended only as a starting point; the final turn-lane lengths will be determined in the design phase, where field condition constraints may affect these preliminary lengths.

8.4 Alignment and Right-of-Way Needs

The proposed alignment along US 98 is essentially tangent, except for very flat curves which will be required in the transitions at either end of the project, assuming that the proposed interchange gets constructed prior to the future six-laning of US 98.

A relatively small amount of property from Hurlburt Field will be needed to construct the proposed interchange. Construction of the Preferred Alternative would require approximately 4.9 acres (2.2 acres on the north side of US 98 and 2.7 acres on the south side of US 98) of federally owned property at Hurlburt Field. Additionally, a temporary construction easement would be required on 2.4 acres (1.2 acres on the north side of US 98 and 1.2 acres on the south side of US 98) of federally owned property at Hurlburt Field.

8.5 Relocation

No relocations of either residences or businesses are required as part of the proposed project. It is expected that the existing security gate house on Hume Drive west of Cody Avenue will have to be relocated to Whitbeck Street, as shown on the conceptual design plans. Further coordination with Hurlburt Field officials regarding this relocation will occur during the design stage.

8.6 Right-of-Way Costs

No agreements have been worked out as yet between the Florida Department of Transportation and the Air Force concerning right-of-way or other project issues; however, it is expected that the Air Force will donate the land required to construct the interchange since it's construction will primarily benefit Hurlburt Field's residents, employees, and other base users. An agreement among the affected parties will be developed during or subsequent to the final design phase of the proposed project.

8.7 Construction Costs

The total estimated cost of construction is approximately \$8.6 million, based on preliminary estimates of construction quantities combined with current FDOT construction unit costs.

8.8 Preliminary Engineering Costs

The cost of preliminary engineering, design, and construction engineering inspection (CEI) is estimated to be approximately \$1.7 million, based on 20 percent of the construction costs.

8.9 Production Schedule

There are no monies in FDOT's current 5-year work program for design, right-of-way acquisition, or construction.

8.10 Recycling of Salvageable Materials

The feasibility of salvaging existing pavement and base material will be determined during the design phase, when the new roadway profile is set. Since the new overpass will be constructed over much of what is now the existing roadway, it should be possible to remove and reuse much of the existing pavement and base materials.

8.11 User Benefits

A new interchange is expected to reduce delays to both motorists on US 98 as well as personnel and visitors bound for Hurlburt Field. The safety at the existing intersection is expected to be improved compared to the existing facility. Overall, this is expected to result in lower road-user costs for motorists, including the costs of traffic delays and crashes.

8.12 Pedestrian and Bicycle Facilities

The proposed typical section on US 98 includes 5-foot outside paved shoulders that could be used by bicyclists. Sidewalks are proposed to be constructed along US 98 on one or

both sides, although they are not currently shown on the conceptual design plans. In addition, sidewalks and bike lanes are recommended to be included for the re-constructed portion of Cody Avenue near the proposed US 98 overpass over Cody Avenue.

8.13 Safety

As mentioned above under “User Benefits”, the proposed interchange is expected to improve the safety for motorists, bicyclists, and pedestrians.

8.14 Economic and Community Development

Improved access to Hurlburt Field is expected to facilitate any future expansion plans that may be developed for Hurlburt Field.

8.15 Environmental Impacts

Impacts to biological resources from construction of the Preferred Alternative would result primarily from tree clearing and grading activities associated with the construction of the interchange. Any impacts to the local wildlife species and habitats would be minimal as existing development and surrounding land use in the proposed project area has fragmented the natural corridors and the associated wildlife movement potential. No impacts are anticipated to threatened or endangered species, species proposed to be eligible for such classifications, or critical habitats.

A Wetland Evaluation Report and Wetland Rapid Assessment Procedure (WRAP) were prepared for this proposed project. With the proposed construction, approximately 2.1 acres of wetlands in the project area would be lost, as shown in Table 8-2. Since the proposed alignment is located along the existing corridor, the stability and quality of these wetland systems would not be significantly impacted and, based on current best management practices and the requirement of storm water management structures, the potential contribution of secondary and/or cumulative impacts to the wetland systems should have no short- or long-term adverse effects.

TABLE 8-2: EXPECTED WETLAND IMPACTS

Wetland Number	Estimated Impacts By Wetland (acres)
1	0.036
3	0.278
5	0.187
6 & 7	1.283
8	0.295
16	0.017
Total Wetland Impacts (Acres)	2.096

In compliance with Executive Order 11990, there is no practicable alternative to the proposed construction in wetlands and the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. Mitigation for wetland impacts may be required pursuant to Chapter 373, Florida Statutes. Further determination will be necessary to establish the extent of mitigation and coordination with the USACE, FDEP, and the Department of Defense will be necessary during the design phase before final permits are issued.

This project will increase impermeable surface area and involves replacement of existing drainage structures. Regulatory requirements will apply to water quality issues. Water quality issues will be mitigated through compliance with the quantity design requirements of the Florida Department of Environmental Protection. Water quality impacts will be minimized by following agency guidelines and Best Management Practices for erosion and sediment control.

The closest floodplain to the proposed interchange improvements occurs along Hume Drive, approximately 1,000 feet west of the intersection of Cody Avenue and Hume Drive. At this location, FEMA Flood Zone AE (EL 9) encroaches on the Hume Drive right-of-way for a distance of approximately 500 feet. This floodplain crosses the downstream extension of Outfall 3, and reaches the approximate edge of the proposed construction area along US 98. The Preferred Alternative will extend parallel and adjacent to the floodplain boundary that occurs along Hume Drive; however, minimal or no encroachment is expected at this time. With regard to storm water management, one of the existing storm water ponds identified for potential improvement, Pond 3, is located within FEMA Flood Zone AE (EL 9). However, no berms or access road improvements are anticipated at this time. Accordingly, any encroachments related to this storm water facility will be minimal.

Based on preliminary analysis, the level of base floodplain involvement for the project is classified as *minimal*. It is therefore determined that the anticipated flood risk will be minimal, and the project can be classified as a “Category 4” project (projects on existing alignment involving replacement of existing drainage structures with no record of drainage problems). The following statement can be generally applied to the project:

“The proposed structures will perform hydraulically in a manner equal to or greater than the existing structure, and backwater surface elevations are not expected to increase. As a result, there will be no significant adverse impacts on natural and beneficial floodplain values. There will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore it has been determined that this encroachment is not significant.”

A noise study was conducted for this project in accordance with 23 CFR, Part 772, and Florida Statutes Chapter 335.17. The Federal Highway Administration's (FHWA) Traffic Noise Model (TNM) version 2.1 was used to predict noise levels, perform noise barrier analysis, and develop noise isopleth locations. Of the 24 individual noise-sensitive receptors found to exist along the existing corridor, none were found to currently (or in the future) approach or exceed the FHWA Noise Abatement Criteria (NAC) of 67 dBA. The change in relative noise levels for the design year (2025), defined as any noise level increase or decrease directly attributable to the Preferred Alternative, varies from 2.4 to 6.4 dBA greater than the noise levels predicted for 2002. Thus, the Preferred Alternative will not cause *substantial* noise level increases at any of the identified noise-sensitive sites, and consideration of noise abatement measures is not required.

Based on the carbon monoxide air quality screening test results, construction of the Preferred Alternative would not cause, or contribute, to carbon monoxide concentrations above the 1-hour or 8-hour National Ambient Air Quality Standards (NAAQS). The results of the air quality analysis, run through the year 2020, indicated that the carbon monoxide concentrations of the Preferred Alternative would be in compliance with NAAQS; the Preferred Alternative will actually have a positive impact on air quality relative to the No Build Alternative, as it will contribute to the general improvement of air quality in the proposed project area since US 98 through traffic would not have to stop at the Cody Avenue intersection. The Preferred Alternative is also in conformance with the State Implementation Plan.

No archeological sites or historic structures potentially eligible for inclusion in the *National Register of Historic Places* were found during a Phase I Cultural Resources survey. Because of the proposed project location and nature, it is unlikely that any such

sites would be present. Because it is unlikely that cultural resources are present in the vicinity of the Preferred Alternative, impacts to cultural resources would be considered insignificant. In the unlikely event that unexpected finds (artifact concentrations, refuse pits, posthole patterns, human burials, etc.) are encountered during construction stages of the project, they would be reported to the Florida Division of Historical resources. Should these unexpected finds occur, construction activities would cease in the immediate area of the finds until a professional archeologist could evaluate these areas.

A preliminary hazardous materials evaluation was conducted to determine the potential for contamination from properties or business operations located within the proposed project area, as described in Section 4.3.4. The construction contractor would be responsible for ensuring avoidance or protection of the underground fuel pipeline during construction of the Preferred Alternative.

There would not be a significant impact to land use as a result of construction of the Preferred Alternative. The majority (95 percent) of the proposed project area lies within the existing right-of-way for US 98, and a majority of the surrounding area is federally owned property at Hurlburt Field.

8.16 Utility Impacts

Some utility relocations will be required prior to construction; existing utilities are listed in section 4.1.12. A utility relocation plan, including cost estimates, will be developed during the final design phase.

8.17 Traffic Control Plan

The following MOT concepts are recommended for consideration in the design phase:

1. Relocate existing utilities within the existing right-of-way for the mainline and in the newly expanded right-of-way for Cody Avenue.
2. Construct any new ponds required and the new underground storm water collection system for Cody Avenue.
3. Construct future ramps and temporary pavement along US 98 along the outer edges, then shift traffic to the outside to provide work area in the median for construction of the overpass.

4. The overpass embankment and structure on US 98 could be stage constructed if necessary, to reduce the area of construction impact.
5. Divert traffic to the newly completed overpass and remove temporary pavement.

8.18 Results of Public Involvement Program

Presentations were made regarding the proposed project to the following entities:

- Okaloosa Board of County Commissioners on 11/19/02; several questions were asked concerning the preferred alignments
- Okaloosa-Walton Transportation Planning Organization (TPO) Citizens Advisory Committee on 11/21/02; several questions were asked concerning the alignment preferred by the Air Force (answer was that they preferred either of the US 98 over Cody Avenue options)
- TPO Technical Coordinating Committee on 11/21/02; no questions were asked
- TPO Board on 11/21/02; no questions were asked, but a request was made to give a presentation to the City of Mary Esther.

Representatives of HDR Engineering gave an informational presentation to the Mary Esther Mayor and Town Council on December 30, 2002. Their main questions related to funding for the proposed project. The only technical question concerned the traffic entering Mary Esther at an increased rate of speed since traffic on US 98 will not have to slow down or stop with the proposed grade-separated interchange.

A **public information meeting** (“workshop”) was held on January 23, 2003 at the Soundside Officers Club at Hurlburt Field, from 5:30 to 7:00 p.m. It was advertised in advance in both the Northwest Florida Daily News and the Destin Log. In addition, all property owners located within or near the proposed area of construction were notified by mail in advance of the meeting.

Approximately 21 people attended the meeting. The meeting displays consisted of two duplicate sets of color plots of the four conceptual design alternatives, plotted at a scale of 1-inch equals 100 feet. A color handout was also provided which summarized basic project information. A total of four written comments were received; copies of the sign-in sheets, comment forms, and handout are included in Appendix A. The written comments received included the following points:

- “Elevating US 98 is the best option”
- “A SPUI with US 98 over Cody Avenue works best”
- “Cody Avenue should have bicycle lanes and sidewalks”
- “The existing pedestrian overpass on US 98 needs to remain”
- “The project needs to be completed as soon as possible”
- “Either option with US 98 over Cody Avenue looks good”
- “A concern is the increase in traffic speed into Mary Esther because of not having a traffic light to stop or slow motorists on US 98”

A presentation was also given to the Eglin Encroachment Committee on February 13, 2003. They will need to provide a “letter of approval” for encroachment or use of base property following publication of the Final PE Report.

On December 18, 2003, a **Public Hearing** was held from 6:00 to 7:00 p.m. at the Florosa Elementary School. The hearing was advertised in advance in the Northwest Florida Daily News. In addition, all property owners located within or near the proposed project area were notified by mail in advance of the hearing.

Approximately 27 people attended the hearing. The meeting displays consisted of two duplicate sets of 1-inch equals 400 feet scale color plots of the entire corridor depicting the Preferred Alternative. A handout describing the Preferred Alternative was also distributed. A formal presentation was given to explain the process and project.

Attendees at the hearing seemed concerned mostly with whether the Preferred Alternative will truly provide traffic relief or just relocate the problem into the adjacent towns. Overall, verbal comments made around the display boards suggested the attendees like the Preferred Plan and wanted to see something done in this area but were still hesitant whether this was the answer.

Written comments received included the following items:

- “Hollywood Boulevard should be extended to the west and then south to US 98 to alleviate the congestion through Mary Ester”
- “Sidewalks/bike paths should be constructed along the north side of US 98 connecting Hurlburt to Mary Esther.”
- “Two new bridges should be constructed to the island and a new pass accessing the Gulf of Mexico south of the proposed interchange.”

In addition to the “standard FDOT PD&E study” public involvement process, in compliance with Air Force environmental study process requirements, an advertisement

was published in the Northwest Florida Daily News on October 15, 2003, announcing the availability of the Draft Environmental Assessment (EA) for review and comment. A copy of the Draft EA was placed at the Mary Ester Library from October 15, 2003 through November 15, 2003. No written comments were received by mail or e-mail. Copies of the Draft EA were also provided to the following agencies: Florida State Clearinghouse; U.S. Army Corps of Engineers, Jacksonville District; U.S. Department of the Interior, Fish and Wildlife Service, Panama City, Florida; and the U.S EPA, Region 4, Water Management Division. Copies of correspondence received from the Florida State Clearinghouse and the Fish and Wildlife Service are included in the Final EA (Reference 7).

8.19 Value Engineering

(Not applicable to this study)

8.20 Drainage

The existing drainage system is described in Section 4.1.7 of this report. The proposed drainage system will maintain the existing drainage patterns. Runoff will be collected in roadside ditches and conveyed to their respective outfalls. Additional treatment volumes required by the project will be provided for by modifying the three existing ponds within the corridor. These ponds will require improvements; however, no additional ponds are anticipated. The treatment volumes required for the project area between Basin 1, 2 and 6 will be compensated for in Ponds 3, 4 and 5. Pond 3 will continue to service Basin 3A and 3B, and Ponds 4 and 5 will continue servicing Basin 4 and 5 respectively. Finally, existing outfall ditches may require modification to handle the increase in runoff.

All eight existing cross drains will be extended or replaced, based on the results of hydraulic analyses that will be performed during the design. The design of extended or replaced structures will be in agreement with the requirements set forth in 23 CFR 650A, Part 2, and Chapter 4 of the FDOT Drainage Manual.

8.21 Bridge Analysis

The following recommendations were taken from the Geotechnical Report prepared for this study (Reference 1).

Structure Foundation Alternatives

Based on information provided by the designer, the foundation analysis included axial capacity computation for square prestressed concrete piles. However, all foundation types are addressed in the following sections.

Spread Footings - Shallow foundations were not considered a viable foundation alternative due to the relatively low bearing capacity and high load requirements which result in very large footings, the bottom of which would be near or below the water table. Dewatering requirements and maintaining traffic during construction around the large excavations are also limiting factors for the use of shallow footings.

Drilled Shafts - Drilled Shafts Foundations would be an acceptable foundation choice. However, the constructability and feasibility of these type of foundations make them less attractive and potentially more costly than driven piles. The site would require drilling the shafts with the use of slurry, thus, desanding equipment and slurry tanks would be required. Also, the spoils would have to be contained and disposed of. Staging of all the necessary equipment would be limited because of the requirement to maintain traffic through the area at all times. The drilled shafts would, however, prevent potential noise and vibration problems.

Driven Piles - Driven piles are considered the most feasible foundation alternative for this project based on axial capacity, constructability and feasibility. The square prestressed concrete piles were the most viable foundation alternative. The design loads should not exceed the allowable bearing capacity as provided in the Structural Design Guidelines.

Vibrations - Based on the recommendations, adjacent areas and structures will be subjected to the potential for noise and vibrations. If the designer has concerns about any structures along the project, we recommend a visual crack survey be performed with video recording equipment of the subject structures and vibration monitoring be conducted in accordance with Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

Retaining Walls - Two existing projects in areas similar to the proposed project at the Hurlburt Field entrance were researched. The first project, US 98 at Thomas Drive Intersection, has walls designed with maximum heights of approximately 30 ft. The second project, Hathaway Bridge, appears to be utilizing T-Walls in which the heights appeared to range from 5.0 to 15.0 feet. These wall heights should be considered feasible

for the proposed project, however, if any unsuitable materials are encountered during the geotechnical phase, potential use of walls will need to be re-evaluated.

8.22 Special Features

Special security features should be considered to protect the overpass structure against potential sabotage, since this interchange will be the main entrance to a major military installation. Such features could include CCTV and other surveillance measures. Additional security enhancements at the main entrance security gate just north of the proposed interchange are being pursued under separate funding options.

8.23 Access Management

The proposed project will be designed to comply with the minimum criteria shown in Table 8-3.

**TABLE 8-3
PROPOSED ACCESS MANAGEMENT STANDARDS**

Access Class	Facility Design Features (median treatment & access roads)	Minimum Median Opening Spacing (Directional)	Minimum Median Opening Spacing* (Full Openings)	Minimum Signal Spacing*
5	Restrictive Median (e.g., raised, etc.)	660 ft	1,320 ft	1,320 ft

* Based on posted speed of 45 mph or less Source: Florida Administrative Rule 14-97.003 (1)

8.24 Aesthetics and Landscaping

Landscaping plans will be developed during the design phase of the project, in cooperation with Hurlburt Field and county officials

9.0 References

1. Report of Geotechnical Exploration for SR 30 (US 98) Hurlburt Field Entrance, by Williams Earth Sciences, September 2002.
2. Draft Traffic and Capacity Analysis Report, August 2002. Prepared by HDR Engineering, Inc. for Okaloosa County.
3. Florida Department of Transportation's Quality & Level of Service Handbook. February 2002.
4. Project Traffic Forecasting Handbook. Draft, April 2001. Florida Department of Transportation.
5. Highway Capacity Manual (HCM2000). Transportation Research Board, National Research Council, 2000.
6. Operational Study & Alternatives Analysis Final Report – US 98 at Hurlburt Field. Prepared by Genesis Group, March 1, 2002.
7. Final Environmental Assessment for SR 30 (US 98) Hurlburt Field Entrance, February 2004. Prepared by HDR Engineering, Inc. for Okaloosa County and the Department of the Air Force.

10.0 Appendices

Appendix A: Public Involvement Documentation

Appendix B: Construction Cost Estimates

Appendix C: Excerpts from Geotechnical Report

Appendix A
Public
Involvement
Documentation



Public Information Meeting PD&E - US 98 at Hurlburt Field

Soundside, 107 Kissam St., Hurlburt, FL 32544

January 23, 2003 5:30 pm - 7:00 pm

Sign in Sheet



Name	Address	Phone	Representing
DANIELLE SPATER-PRICE Sue Weeks	1759 So Fernon Blvd, Crestview Nixon Op Center	689-5772	Okaloosa County PA
JOHN LUCIE	2805 HWY 98N, MARYESTHER	981-2752 581-0098	FDOT, SELEFCITP
DAN WALSH	220 N. WARDLINE DR MARY ESTHER	243-0973	SELEFC
LARRY WILLIGER		837-2616	CITY OF DESTIN
C. R. PHILLIPS	1250. Wagon Key Spalman	651-7400	OKALOOSA S.C
Bill Smith	2020 HWY 85 Nicewille FL. 32578	833-3143	OCS D
KAY KILGORE	1650W / Hurlburt Fld, FL 32544	884-7172	Hurlburt Field
Onpa Kindig	PO Box 607 Chipley, FL 32428	638-0250	FDOT-PIO
MIKE MCKENNA	6711 Tom King Bayou Rd Navarre FL 32544	884-4469	10MSG
Ronald E STEARNS	8 Caswell Cir Mary Esther FL	844-5703	CITY OF MARY ESTHER
JENNIFER L. PITCHFORD	73 CONNIS DE HURLBURT FIELD FL 32544	884-7701	HURLBURT BASE CIVIL ENGINEER
CARL T. HOFFMAN	415 INDEPENDENCE RD HURLBURT FIELD 32544	884-6439	HURLBURT FIELD BASE DEVELOPMENT
MIKE ANDERSON	8 CARLYLE CT FUB 32547	862-5530	OWTPO
Carol Bulley	WFRPC 3435N 12 th Ave Panama FL 32549	8910x224	WFRPC



U.S. 98 at Hurlburt Field

Public Information Meeting

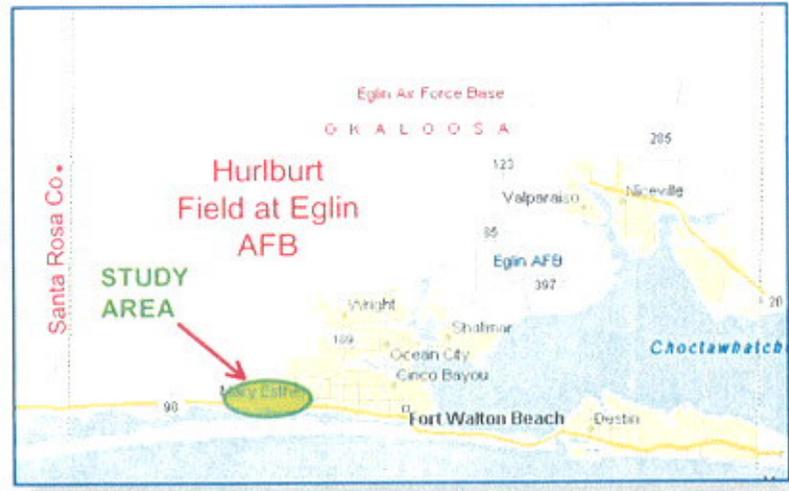


January 23, 2003 at Soundside, Hurlburt Field, 5:30 PM - 7:00 PM

HDR Engineering, Inc.

Welcome To Our Meeting!

Welcome to this Public Information Meeting! This Project Development and Environmental (PD&E) Study is being conducted to determine the feasibility of constructing an interchange on U.S. 98 at the main gate to Hurlburt Field (Cody Avenue). The purpose of this workshop is to give the public an opportunity to review concepts currently under development and provide input in the early stages of the project. Displays are available for public inspection, and project team members are present to answer questions. Comment forms are available that can be placed in the provided comment box or mailed within ten days of this Meeting.



Work Program & Funding

A Florida Infrastructure Grant from Enterprise Florida, Inc. (EFI) is funding the current PD&E study. It is expected that *this* study will lead to subsequent design and construction phases; however, there is presently no funding in the current work program for design or construction. The study is being conducted for Okaloosa County by HDR Engineering, Inc., in cooperation with the Florida Department of Transportation and Hurlburt Field.

Project Need

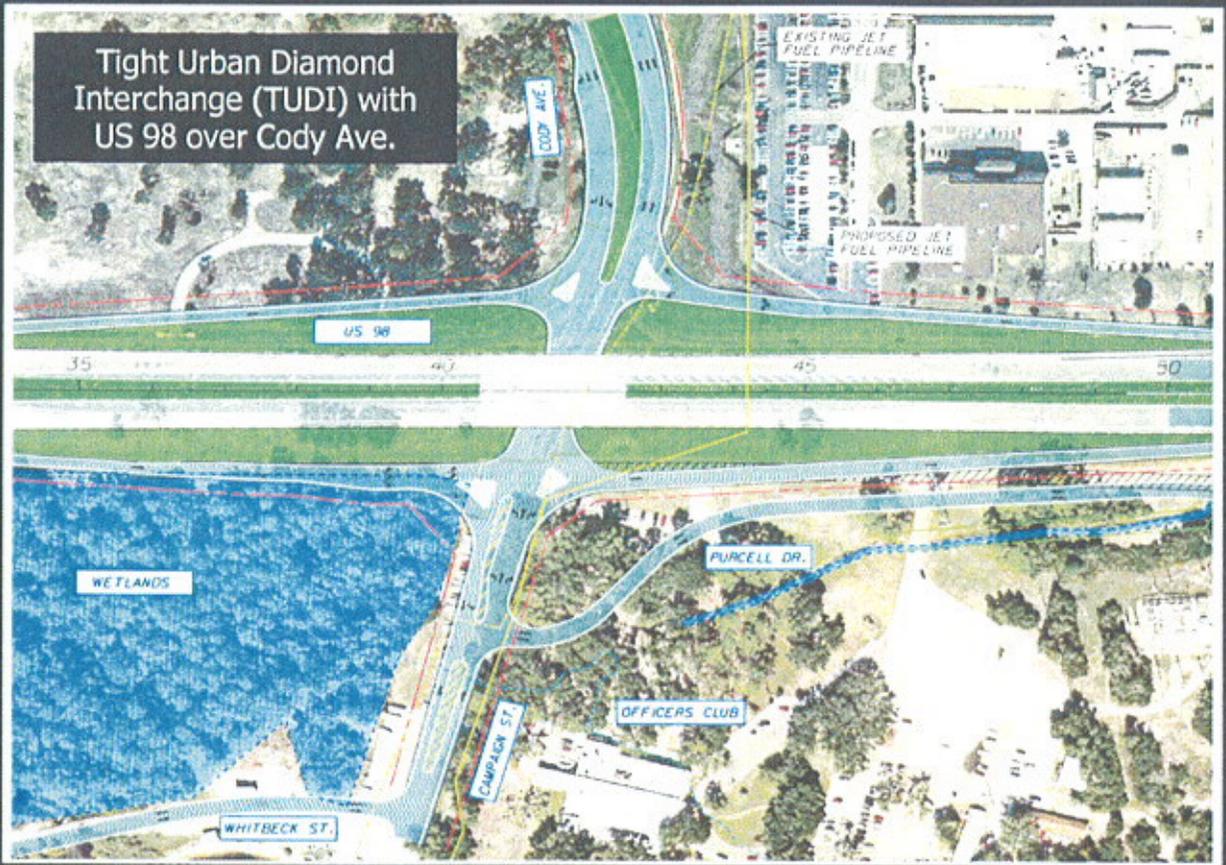
An interchange, if constructed, would substantially reduce delays to motorists at the intersection, reduce the likelihood of base-bound motorists blocking the through lanes on U.S. 98, and expand housing opportunities for base personnel by extending the distance from the base that personnel can live. It could also reduce the response times during security alerts. An interchange would also be expected to reduce the frequency of congestion-related traffic crashes occurring on U.S. 98 near the intersection. Traffic and level of service data are included below.

Traffic & Level of Service

Existing traffic on US 98 is approximately 44,400 vehicles per day (VPD) west of Cody Ave. Traffic in the Design Year 2025 is expected to increase to approximately 70,000 VPD. Traffic on Cody Ave. north of US 98 is expected to increase from 14,000 to 16,000 VPD by 2025.

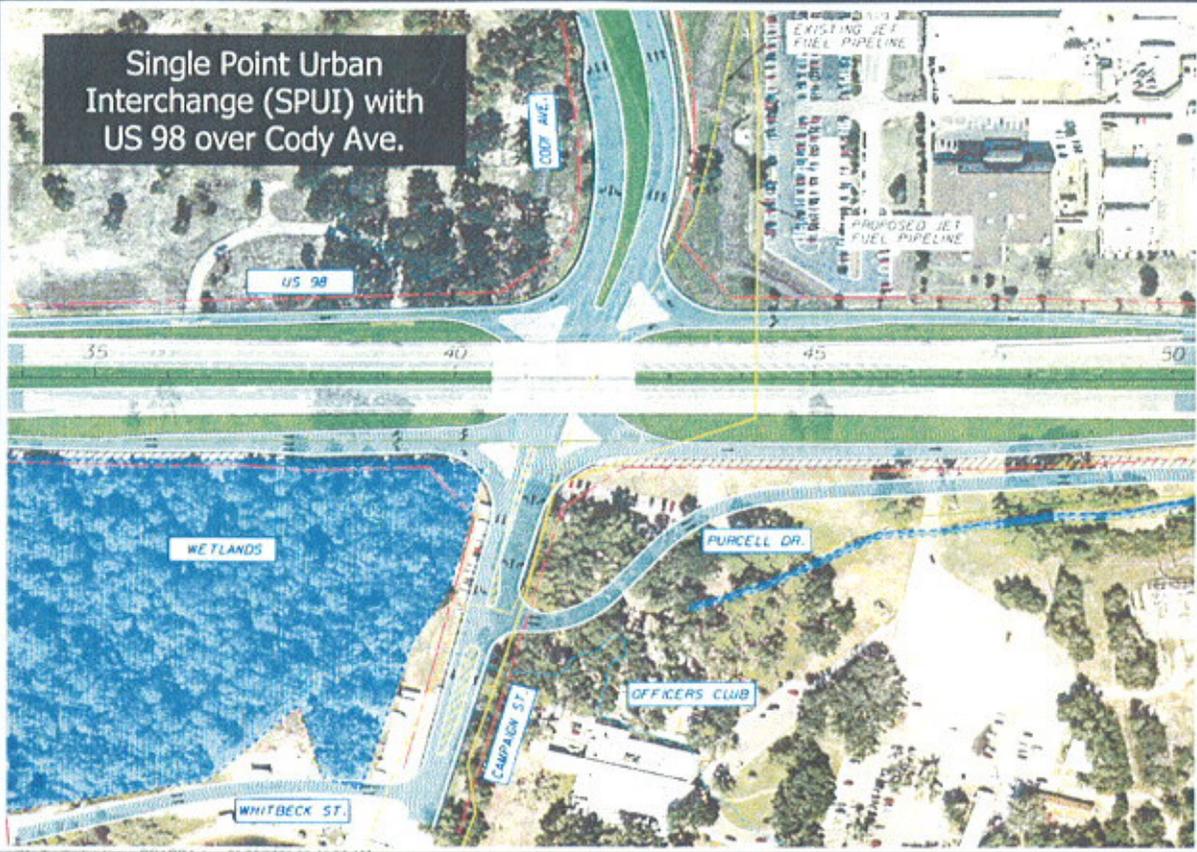
The ability of a roadway or intersection to meet traffic demands can be described in terms of "Level of Service"(LOS). Similar to a grade in school, Level of Service "A" is the best and suggests the free flow of traffic, while Level of Service "F" is the worst and indicates inadequate service. The acceptable minimum for urban facilities is level of Service "D." The existing a.m./p.m. average LOS at US 98/Cody Avenue is "E". LOS "F" is expected in the p.m. peak by 2004 if no improvements are made. A six-lane US 98 at Cody is expected to operate at LOS F by year 2013. The expected LOS for interchange alternatives is shown in the Evaluation Matrix on the last page.

Alternative Design Concepts (Preliminary)

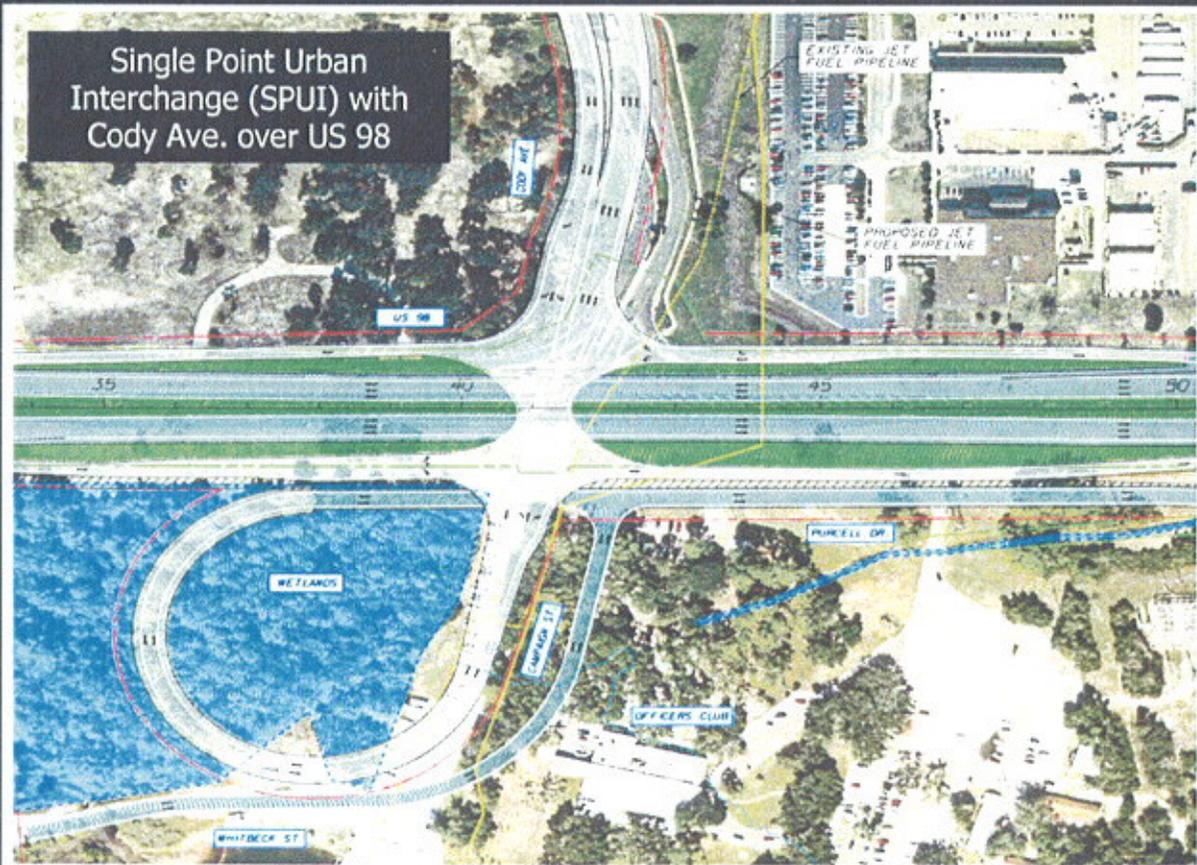




Single Point Urban Interchange (SPUI) with US 98 over Cody Ave.

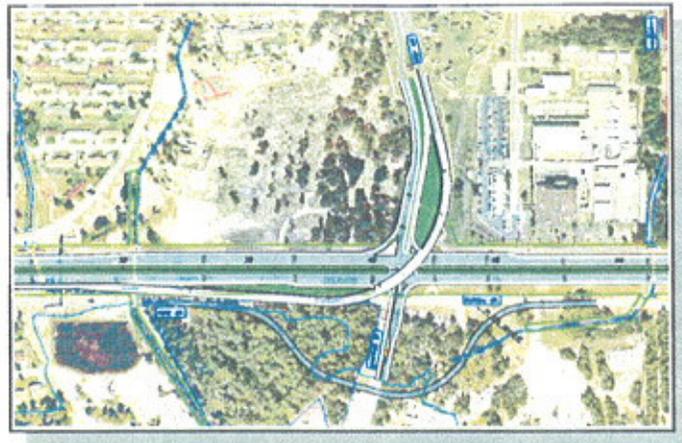


Single Point Urban Interchange (SPUI) with Cody Ave. over US 98



Other Build Alternatives Considered

The figure to the right shows one of two “flyover” ramp designs considered. The flyover alternative is not recommended for further study because it is projected to “fail” in the p.m. peak by year 2021. The projected average LOS (a.m. & p.m.) in year 2025 is LOS E, which doesn’t meet the design standard of LOS D or better in the design year.



Project Status & Future

Preliminary alternative design concepts for interchanges are shown on the inside pages. Preparation of the First Draft Preliminary Engineering Report is complete. Following this Public Meeting, the project team will consider public input and modify the proposed concepts as appropriate; then a Preliminary Preferred Alternative will be selected. Subsequent activities will include preparation of environmental documents. The county will then make the conceptual plans and environmental documents available for public review and hold a public hearing later this year.

Preliminary Alternatives Evaluation Matrix

EVALUATION FACTOR	US 98 Over Cody Avenue		Cody Avenue Over US 98	
	TUDI*	SPUI**	TUDI*	SPUI**
Estimated Costs (\$ Millions)				
Construction Costs	\$7.4	\$8.6	\$10.6	\$14.6
Design & Construction Supervision ²	\$1.5	\$1.7	\$2.1	\$2.9
Right-of-Way	--	--	--	--
Utility Relocation Costs	TBD	TBD	TBD	TBD
Wetlands Mitigation (\$,000/ac. ; :1 ratio)				
Total Capital Costs (to nearest mill.)	\$8.9	\$10.3	\$12.7	\$17.5
Right-of-Way (R/W) Acreages & Relocations				
Hurlburt Field Land Required (acres)				
Relocations of Businesses or Residences	0	0	0	0
Environmental Impacts				
Contaminated Sites Involved, Number of	0	0	0	0
Wetland Impacts (acres)	1.2	1.0	4.1	5.4
Probable Noise Level Changes	TBD	TBD	TBD	TBD
Potential Cultural Resource Impacts or Involvement	Archaeological investigation to be conducted in Phase II of the PD&E Study			
Archaeological Site Impacts	Archaeological investigation to be conducted in Phase II of the PD&E Study			
Traffic Operations/Level of Service				
Level of Service in Design Year 2025 ¹	A-	A	A-	A
Temporary Impacts During Construction				
Maint. of Traffic (MOT) During Construction	Large amount of temporary pavement required	Large amount of temporary pavement required		
Construction Duration (Calendar Days)	24 mos.	24 mos.	12 mos.	24 mos.
Impacts to Hurlburt Field Property	Greater than the SPUI	Large amount of temporary pavement required	Minimal	Minimal
Permanent Impacts to Hurlburt Land Uses (Following Construction Completion)	Minimal	Minimal	Greater than with US 98 over Cody Ave	Greater than with US 98 over Cody Ave

*Tight Urban Diamond Interchange **Single-Point Urban Interchange or signalized portion of the interchange

¹ This is the level of service for the US 98 at Cody signalized intersection or

² Based on 20 percent of the estimated construction costs

For Further Information Contact:

Mr. Bob Kellner, HDR Engineering Inc. Pensacola Florida Phone: 850-432-6800 E-mail: rkellner@hdrinc.com



COMMENT FORM
US 98 AT HURLBURT FIELD PD&E STUDY

PUBLIC INFORMATION MEETING

January 23, 2003 5:30 pm – 7:00 pm

LOCATION: Soundside, 107 Kissam Street, Hurlburt, Florida 32544

Name: Frederick O Taylor
Street Address: 56 Brenda Ln
City, State & Zip: Mary Esther FL 32569-1403
Telephone & E-Mail: 850-240-1893

Interest in Project:

Area Resident Property Owner Live or Work at Hurlburt Field
Local Business Other _____

Comments:

Elevate 98 to me is best option
ensuring that on & off ramps I can handle
high traffic peaks

COMMENT FORM
US 98 AT HURLBURT FIELD PD&E STUDY

PUBLIC INFORMATION MEETING
January 23, 2003 5:30 pm – 7:00 pm

LOCATION: Soundside, 107 Kissam Street, Hurlburt, Florida 32544

Name: Carol Polley
Street Address: 3435 N 12th Ave
City, State & Zip: Pensacola FL 32503
Telephone & E-Mail: (850) 595 8910 x 224

Interest in Project:

Area Resident Property Owner Live or Work at Hurlburt Field
Local Business Other bike/ped coord W&RPC

Comments:

Single Point Urban Interchange (SPUI)
with US 98 over Cody Ave. work best
Cody Ave. should have bicycle lanes (4 foot - both
+ sidewalk for base bike/ped mobility side
5 ft shoulders on US 98 should continue
in elevated section
Pedestrian overpass needs to remain - good

COMMENT FORM
US 98 AT HURLBURT FIELD PD&E STUDY

PUBLIC INFORMATION MEETING

January 23, 2003 5:30 pm – 7:00 pm

LOCATION: Soundside, 107 Kissam Street, Hurlburt, Florida 32544

Name: JOHN LULUE
Street Address: 2805 HWY 98 W
City, State & Zip: MARY ESTHER, FL 32569
Telephone & E-Mail: 850-243-3566 EXT 14 CMGRE@CITYOFMARYESTHER.COM

Interest in Project:

Area Resident

Property Owner

Live or Work at Hurlburt Field

Local Business

Other WORK IN MARY ESTHER

Comments:

THE PROJECT NEEDS TO BE COMPLETED AS SOON AS IT CAN BE DONE.

Anyone needing project or public hearing information or special accommodations under the Americans With Disabilities Act of 1990 should write to the address given below or call (850)891-8234. Special accommodation requests under the Americans With Disabilities Act should be made at least seven (7) days prior to the public hearing.

A copy of the agenda may be obtained by writing: Bill Woolery, PE, Project Manager, City of Tallahassee, 300 South Adams Street, A-18, Tallahassee, Florida 32301.

OKALOOSA COUNTY

The Okaloosa County, Department of Public Works announces a public hearing to which all persons are invited.

DATE AND TIME: December 18, 2003, 6:00 p.m. – 7:00 p.m.

PLACE: Florosa Elementary School Cafeteria, 1700 U.S. 98 West, Mary Esther, Florida 32569

GENERAL SUBJECT MATTER TO BE CONSIDERED:

This hearing is being held to afford interested persons the opportunity to express their views concerning the proposed project, which consists of constructing an interchange at the main gate to Hurlburt Field (Cody Avenue) on U.S. 98.

The hearing is being conducted pursuant to the provisions of Rule Chapter 14-97, Florida Administrative Code, and Section 335.18, Florida Statutes. This hearing is being held in accordance with the Section 339.155, Florida Statutes and is also consistent with the Americans with Disabilities Act of 1990. This hearing is also in compliance with Title VI of the Civil Rights Act of 1964 and Title VIII of the Civil Rights Act of 1968, as amended.

Anyone needing project or public hearing information, including a copy of the hearing agenda, may contact: Bob Kellner, P.E., (850)432-6800, e-mail: bob.kellner@hdrinc.com or Danielle Slaterpryce, Okaloosa County, (850)689-5772, email: dslaterpryce@co.okaloosa.fl.us.

Anyone requiring special accommodations under the Americans With Disabilities Act of 1990 should contact: Bob Kellner, P.E., (850)432-6800, e-mail: bob.kellner@hdrinc.com or Danielle Slaterpryce, Okaloosa County, (850)689-5772, email: dslaterpryce@co.okaloosa.fl.us.

Special accommodation requests under the Americans With Disabilities Act should be received at least seven (7) days prior to the hearing.

FLORIDA SURPLUS LINES SERVICE OFFICE

The Florida Surplus Lines Service Office, Board of Governors' announces a public meeting to which all interested parties are invited:

BOARD OF GOVERNORS' QUARTERLY MEETING

DATE AND TIME: Wednesday, January 21, 2004, 9:00 a.m.

PLACE: Florida Surplus Lines Service Office, 1441 Maclay Commerce Drive, Suite 200, Tallahassee, FL 32312

GENERAL SUBJECT MATTER TO BE CONSIDERED: General Business Matters.

A copy of the agenda may be obtained by sending a faxed request to Georgie Barrett, (850)513-9624.

In accordance with the Americans with Disabilities Act, persons needing a special accommodation to participate in this meeting should contact Georgie a week prior to the meeting at (850)224-7676, Ext. 301.

**Section VII
Notices of Petitions and Dispositions
Regarding Declaratory Statements**

DEPARTMENT OF COMMUNITY AFFAIRS

NOTICE IS HEREBY GIVEN that the Petition for Declaratory Statement received from Kinco, Ltd. has been withdrawn.

Notice of receipt of this petition, which was assigned the number DCA03-DEC-300, appeared in the November 14, 2003, edition of the Florida Administrative Weekly.

Information regarding this petition may be obtained by writing: Paula P. Ford, Agency Clerk, Department of Community Affairs, 2555 Shumard Oak Boulevard, Tallahassee, Florida 32399-2100.

**BOARD OF TRUSTEES OF THE INTERNAL
IMPROVEMENT TRUST FUND**

Pursuant to Chapter 2003-145, Laws of Florida, all notices for the Board of Trustees of the Internal Improvement Trust Fund are published on the Internet at the Department of Environmental Protection's home page at <http://www.dep.state.fl.us/> under the link or button titled "Official Notices."



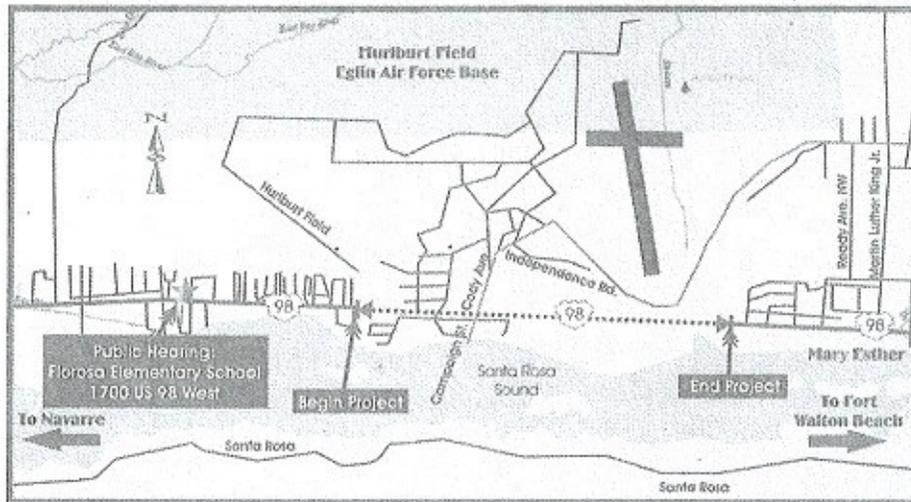
PUBLIC HEARING

Okaloosa County

U.S. 98 at Hurlburt Field PD&E

Okaloosa County, in cooperation with the Florida Department of Transportation (FDOT), and the US Air Force (Hurlburt Command at Eglin AFB) invites you to attend a Public Hearing concerning the feasibility of constructing an interchange at the main gate to Hurlburt Field (Cody Avenue) on US 98. The Hearing will be held on Thursday, December 18, 2003 from 6:00 PM to 7:00 PM at Florosa Elementary School, 1700 US Highway 98, Mary Esther, Florida 32569 (2.5 miles west of Hurlburt's main gate).

The purpose of this Hearing is to acquaint property owners and motorists with the proposed project. It is expected that this study will lead to subsequent design and construction phases.



The Hearing is being conducted pursuant to 23 CFR 771 and the provisions of Rule Chapter 14-97, Florida Administrative Code, and Section 335.18, Florida Statutes. This Hearing is being held in accordance with the Section 339.155, Florida Statutes and is also consistent with the Americans with Disabilities Act of 1990. This Hearing is also in compliance with Title VI of the Civil Rights Act of 1964 and Title VIII of the Civil Rights Act of 1968, as amended. A copy of the Environmental Assessment is available for public inspection through December 18, 2003 at the Mary Esther Library, 100 West Hollywood Blvd.: Mon. 12:00pm - 6:00pm, Tues. & Thurs. 9:00am - 8:00pm, Wed. & Fri. 9:00am - 6:00pm, and Sat. 9:00am - 5:00pm.

Potential encroachment on wetlands and floodplains will be given special consideration under Executive Orders 11990 and 11988.

All interested persons are encouraged to attend and participate in this Hearing. If you have any questions about the Hearing or the project, please contact Bob Kellner, P.E., at (850) 432-6800 or Danielle Slaterpryce, Okaloosa County, at (850) 689-5772. Persons with disabilities who may require special accommodations at the Hearing, under the Americans with Disabilities Act of 1990 should contact Mr. Kellner.

PUBLIC HEARING, US 98 at Hurlburt Field PD&E Study
DATE: Thursday, December 18, 2003
TIME: 6:00 PM to 7:00 PM
PLACE: Florosa Elementary School Cafeteria
1700 US 98 West
Mary Esther, FL 32569



U.S. 98 at Hurlburt Field

PUBLIC HEARING

December 18, 2003 Florosa Elementary School 6:00 PM to 7:00 PM HDR Engineering, Inc.

Welcome

This Project Development and Environmental (PD&E) Study is being conducted to determine the feasibility of constructing an interchange on U.S. 98 at the main gate to Hurlburt Field (Cody Avenue). The purpose of this Public Hearing is to give the public an opportunity to review the Preferred Alternative and provide input on it. Displays are available for public inspection, and project team members are present to answer questions. Comment forms are available that can be placed in the provided comment box or mailed within ten days of this Hearing.

Work Program & Funding

A Florida Infrastructure Grant from Enterprise Florida, Inc. (EFI) is funding the current PD&E study. It is expected that *this* study will lead to subsequent design and construction phases; however, there is presently no funding in the current work program for design or construction. The study is being conducted for Okaloosa County by HDR Engineering, Inc., in cooperation with the Florida Department of Transportation and Hurlburt Field.

Preferred Alternative Estimated Costs

Estimated Costs (\$Millions)	
Construction Costs	\$8.6
Design & Construction Supervision	\$1.7
Right-of-Way	--
Utility Relocation Costs	TBD
Wetlands Mitigation (\$8,000/ac. 5:1 ratio)	\$0.1
Total Capital Costs (to nearest mill.)	\$10.4

Traffic & Level of Service

The ability of a roadway or intersection to meet traffic demands can be described in terms of "Level of Service"(LOS). Similar to a grade in school, Level of Service "A" is the best and suggests the free flow of traffic, while Level of Service "F" is the worst and indicates inadequate service.

The acceptable minimum for urban facilities is level of Service "D." The existing a.m./p.m. average LOS at US 98/Cody Avenue is "E". LOS "F" is expected in the p.m. peak by 2004 if no improvements are made.



Single Point Urban Interchange (SPUI) with US 98 over Cody Avenue

For Further Information Contact:

Mr. Tom Hemphill
HDR Engineering, Inc.
25 W. Cedar Street / Suite 200
Pensacola, Florida 32502
Phone: (850) 429-8900
E-mail:
Tom.Hemphill@hdrinc.com

Ms. Danielle Slaterpryce,
Director
Okaloosa County Public Works
1759 South Ferdon Boulevard
Crestview, Florida 32536
Phone: (850) 689-5772
E-mail:
dslaterpryce@co.okaloosa.fl.us



-----Original Message-----

From: greg.vickery@dot.state.fl.us [mailto:greg.vickery@dot.state.fl.us]

Sent: Tuesday, January 06, 2004 11:09 AM

To: pulleyc@wfrpc.dst.fl.us

Cc: edward.prescott@dot.state.fl.us; tommy.barfield@dot.state.fl.us; denny.wood@dot.state.fl.us;

larry.kelley@dot.state.fl.us; jim.devries@dot.state.fl.us; jason.peters@dot.state.fl.us;

Blair.Martin@DOT.STATE.FL.US; MaryAnne.Koos@dot.state.fl.us; tommie.speights@dot.state.fl.us;

dslaterpryce@co.okaloosa.fl.us; Kellner, Robert

Subject: U.S. 98/Hurlburt Field Interchange Project

Importance: High

Florida Department of Transportation
District Three Administration Building
Office of the District Secretary
Post Office Box 607
Chipley, Florida 32428-0607

Ms. Carol Pulley, Bicycle Pedestrian Coordinator Pensacola Urbanized Area Metropolitan Planning Organization Post Office Box 9759 Pensacola, Florida 32513-9759

RE: U.S. 98/Hurlburt Field Interchange Project

Dear Ms. Pulley:

I have received your recent letter requesting the Department to consider including bicycle lanes and sidewalks in the design of the referenced improvement project in Okaloosa County. Thank you for the opportunity to provide assistance.

The issues noted in your letter were reviewed, and the following comments are provided for your reference. Okaloosa County is completing the project development and environmental study for the referenced project in cooperation with Hurlburt Field and the Department. Mr. Bob Kellner, HDR Engineering, is the appropriate point of contact for this endeavor, and can be reached at (850) 432-6800. We have made contact with Mr. Kellner regarding your request, and he is agreeable to adding the pedestrian and bicycle features as the project moves forward. In an effort to provide assistance, we are asking Okaloosa County to add these to the final PD&E concept. Ms. Danielle Slaterpryce is the Okaloosa County contact.

We appreciate your interest in this transportation project. If we can assist you further, please do not hesitate to contact our office.

Sincerely,

/s/ H. E. Prescott

H. E. Prescott, P.E.
District Secretary

Handled by:
Greg Vickery
District Sterling and Communication Coordinator Office of the District Secretary
Toll-free: 1-888-638-0250, extension 529
(850) 638-0250, extension 529
Suncom 767-1529
FAX (850) 638-6159 / Suncom 769-6159
mailto:greg.vickery@dot.state.fl.us

-----Original Message-----

From: Larry.Henderson@Hurlburt.af.mil
[mailto:Larry.Henderson@Hurlburt.af.mil]
Sent: Wednesday, January 29, 2003 7:56 PM
To: 16SOW.CCC@Hurlburt.af.mil
Cc: Kellner, Robert; Patrick.Pihana@Hurlburt.af.mil;
Michael.Ramos@Hurlburt.af.mil
Subject: Recommendation for Traffic Study
Importance: Low

Sir,

Recommend the feasibility of constructing a bridge across the sound from Santa Rosa Island to Cody Avenue be studied. Construction of said bridge and connection of existing paved roads on the island (military property) to the public highway on Navarre Beach may provide a cost effective means of alleviating traffic problems on US98 and may increase the safety of military and civilian commuters alike. This construction would connect Hurlburt proper to Santa Rosa Island allowing MILITARY ONLY traffic to commute to/from base on the island anywhere from Okaloosa Island to Pensacola (approx. 50 miles).

Civilian guards are currently posted at the island access gate on Okaloosa Island. I would recommend that the same guards (contractors) be posted on a Navarre Beach gate. These guards could grant island access only to personnel with a valid military ID for the sole purpose of commuting to/from Hurlburt. Even if the speed limits were kept at 40 to 45 MPH, this would provide an attractive alternative route to/from work for the base population and should alleviate a great deal of the traffic problems on US98 from both the easterly and westerly directions. It is my belief that this solution, if feasible, could be implemented at a cost comparable to, if not less than, current solutions being investigated HDR Engineering, Inc. on behalf of Okaloosa County.

Thank you for your consideration.

MSgt Larry Henderson
23STS/LG
1-2772

RESOLUTION 02-14

A RESOLUTION OF THE OKALOOSA-WALTON TRANSPORTATION PLANNING ORGANIZATION AMENDING THE LONG RANGE TRANSPORTATION PLAN TO ADD THREE (3) PROJECTS AND REPLACE TWO (2) SETS OF PROJECTS.

WHEREAS, the Okaloosa-Walton Urbanized Area Transportation Planning Organization (TPO) Long Range Transportation Plan 2025 Update, which was developed pursuant to Part 23 Section 450.322, Code of Federal Regulations and Section 339.175(6), Florida Statutes and adopted on June 21, 2001, is the transportation plan that contains needed and financially feasible projects for at least a 20 year planning horizon; and

WHEREAS, the TPO authorized staff to advertise for a public hearing at its May 16, 2002 meeting for a proposed amendment to the 2025 Long Range Transportation Plan using the language provided by the Emerald Coast Bridge Authority; and

WHEREAS, the TPO amended its Project Priorities on October 18, 2001 to add an I-10 to I-65 Connector to be funded by US Congress to its Project Priorities; and

WHEREAS, Okaloosa County is working with the US Air Force, Hurlburt Field, to obtain defense access funding for US 98 and Hurlburt Field Gate Interchange; and

WHEREAS, the TPO adopted a new Bicycle/Pedestrian Plan on January 17, 2002; and

WHEREAS, the TPO adopted its 2003/04 to 2007/08 Project Priorities on August 22, 2002, which contains Transportation Enhancement Projects that are different than what is contained in the current 2025 Long Range Transportation Plan;

NOW, THEREFORE, BE IT RESOLVED BY THE OKALOOSA-WALTON URBANIZED AREA TRANSPORTATION PLANNING ORGANIZATION THAT:

The Okaloosa-Walton TPO amends its Long Range Transportation Plan to:

- (1) add Emerald Coast Bridge Authority's Mission Statement to the 2025 Needs Plan,
- (2) add I-10 to I-65 Connector Language to both the 2025 Needs and Cost Feasible Plans,
- (3) add the US 98/Hurlburt Field Gate to the 2025 Cost Feasible Plan,
- (4) replace the existing set of 2025 Needs and Cost Feasible Plan Bicycle/Pedestrian Projects with the recently adopted Bicycle/Pedestrian Plan Projects, and
- (5) replace the existing set of 2025 Needs and Cost Feasible Plan Transportation Enhancement Projects with the revised Transportation Enhancement Project List.

Passed and duly adopted by the Okaloosa-Walton TPO on this 22nd day of August 2002.

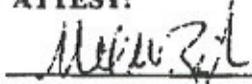
OKALOOSA-WALTON TRANSPORTATION PLANNING ORGANIZATION

(Seal)

BY:


Commissioner Paula L. Riggs, Chairman

ATTEST:


Michael W. Zeigler, Director
Transportation Planning

Local/State

Chamber official tries to get bypass project on the 'fast track'

Phil Babiak says that a transportation authority could get the job done more quickly than the state.

By LEE FORST

Daily News Staff Writer

Motorists could be driving along a bypass stretching from Avalon Boulevard in Santa Rosa

County to Destin in five years if local governments get behind the project, a Navarre man believes.

Phil Babiak, a board member on the Navarre Beach Area Chamber of Commerce, told members of the Emerald Coast Bridge Authority on Thursday that people would gladly pay a toll to avoid congestion on U.S. Highway 98.

In fact, if something isn't done soon, Babiak said tourists

and the money they spend will go elsewhere.

Babiak has touted the bypass for several years, only to have encroachment officials at Eglin Air Force Base reject the plan. However, he said that Encroachment Committee Chairman Bob Arnold has told him to come back when he has support from local governments and if they are willing to make concessions themselves.

Babiak said the state

Department of Transportation would need 20 years to build the road. A transportation authority could sell bonds to finance the project much faster.

"With everyone pulling together on a fast track mode, we can drive on pavement within five years," he said.

There is no cost estimate for the project.

The road would run generally from Avalon Boulevard east

across Blackwater Bay and Escribano Point. It would then follow Eglin's western and southern boundaries to run north of U.S. 98 to east of Hurlburt Field, where it would connect to Hollywood Boulevard into Fort Walton Beach.

A bridge across Choctawhatchee Bay would then hit Okaloosa Island near the conference center now under construction. Another leg

will parallel U.S. 98 on the north side to near the Coast Guard station, where another bridge could be built to connect to Mountain Drive in Destin.

Bridge planners agreed that a solution for U.S. 98 is needed, but took no action on Babiak's idea.

Staff Writer Lee Forst can be reached at 863-1111, Ext. 406, or leef@nwdailynews.com

Northwest Florida Daily News -- July 13, 2000

Officials revive push for U.S. 98 bypass

Area transportation planners want to build a toll road between Mary Esther and I-10.

By DUWAYNE ESCOBEDO, Daily News Staff Writer

NAVARRE - Despite staunch objections in the past from Eglin Air Force Base officials, state and local transportation officials want to take another look at the feasibility of building another major east-west route along the coast.

Transportation planners from Fort Walton Beach, Pensacola and the surrounding areas agreed Wednesday to push for a study of a four-lane toll road that would cut through the base from Mary Esther to the intersection of Avalon Boulevard and Interstate 10 in Santa Rosa County. Some officials expressed optimism about taking another crack at creating a U.S. Highway 98 bypass, saying they have detected a softening in Eglin's hard-line stance since 1997.

Phil Babiak, a Navarre businessman who has championed an alternate to U.S. 98 for years, predicted the limited-access expressway could be open within five years if the region's transportation officials and communities back it.

"I think we have a slight crack in the door, a ray of sunlight," he said.

"We don't have a go. We have a challenge, but it's not insurmountable." Citizen members of both the Pensacola and Fort Walton Beach Urbanized Area Metropolitan Planning Organizations said they planned to recommend that elected officials on both boards study the proposal. The big questions appear to revolve around whether such a toll facility would carry enough traffic and alleviate congestion on U.S. 98, which is nearing its capacity in Okaloosa and Santa Rosa counties. No cost estimates are available for the bypass. Officials could seek Florida toll-authority funds and federal funds for military installations to help pay for the proposed two-phase project. The first phase would connect Hollywood Boulevard at the Hurlburt border, swing it down to run parallel to U.S. 98 until reaching Hurlburt's main gate where an exchange would be built. The bypass would then run northwest along the reservation's southern boundary to the Harper community in Holley on State Road 87.

The second phase would extend the bypass northwest along the reservation's southern boundary near East Bay to Escribano Point, then cross Blackwater Bay and cut northwest across Garcon Point to the Avalon Boulevard-Interstate 10 intersection.

Robert Arnold, chairman of the Eglin Encroachment Committee, advised local transportation leaders to come up with bypass options and reach a community consensus before pursuing base property. "This has just resurfaced again," said Arnold, who did not attend Wednesday's workshop. "It's just too early for us to get involved. Certainly, we want to maintain open communication. But the community must first determine what it wants to do. We want to support the community however we can, but our mission comes first." The Fort Walton Beach MPO abandoned a U.S. 98 bypass proposal three years ago. That route ran parallel to U.S. 98 from Navarre to west of Hurlburt Field, then northeast around the Hurlburt runway to Wright.

The bypass was determined then to interfere with live fire training missions, precision-guided weapons testing, a machine gun range and high-power radar tracking.

Jim DeVries, state Department of Transportation Pensacola area manager, said the corridor could handle an estimated 20,000 vehicles a day by the year 2020 and alleviate about 10,000 daily trips on U.S. 98. DeVries encouraged the MPOs to study the bypass further. "You've got what you've got with existing revenues until 2020," he said, pointing out six-laning U.S. 98 between Fort Walton Beach and Navarre is not funded or scheduled for construction in current long-range plans. "We were unable to convince Eglin that (U.S. 98 bypass) needs surpassed their mission needs five years ago. But we understand that U.S. 98 is the only major east-west corridor and we're willing to work with both MPOs to look at the best ways to handle it."

Yvonne Earle, Fort Walton Beach MPO citizens advisory committee chairwoman, questioned the use by local commuters and the impact to Eglin.

"We cannot afford for Eglin to go away," she said. Ed Case, a Gulf Breeze resident and Pensacola citizens advisory committee member, said the concept is worth examining. "If it has some potential to relieve traffic on 98 between Navarre and Gulf Breeze a lot then we'll want it a lot," he said. "If not, we probably won't."

Bill Koch, a Navarre resident who attended the meeting out of concern for U.S. 98 congestion that has led him to drive his children to school rather than let them take the school bus, urged local leaders to find an alternate to the current highway.

"Our population is only going to go up," said the 45-year-old drywall installer. "I hope this can be worked out. I see such a need for it, from running up and down 98 between Navarre and Fort Walton Beach."

Staff Writer Duwayne Escobedo can be reached at 936-8600 or

duwaynee@nwfdailynews.com

© 1997-2000 NORTHWEST FLORIDA DAILY NEWS

Appendix B

***Construction
Cost Estimates***

US 98 at Hurlburt Field - Preliminary Construction Cost Estimates

Rev. 9/20/02

Structure Unit Cost=

Structures 10 Item No.	Description	Unit	Price/Unit	US 98 Over Cody		Cody over US 98		US 98 Over Cody		Cody over US 98	
				Diamond 170' Str. \$75	SPUI 250' str \$95	Urban 350' Str \$85	Diamond 420' Str \$85	Diamond 170' Str.	SPUI 250' str	Urban 350' Str	Diamond 420' Str
				Quantity	Quantity	Quantity	Quantity	Cost	Cost	Cost	Cost
101-1	MOBILIZATION	LS	\$ 50,000.00	1.00	1.00	1.00	1.00	\$50,000.00	\$50,000.00	\$50,000.00	\$50,000.00
	STRUCTURE	LS/SF	varies-see above	19,300.00	28,500.00	65,450.00	49,100.00	\$1,447,500.00	\$2,707,500.00	\$5,563,250.00	\$4,173,500.00
	APPROACH SLAB	EA	\$ 12,500.00	2.00	2.00	2.00	4.00	\$25,000.00	\$25,000.00	\$25,000.00	\$50,000.00
	BARRIER WALL	LF	\$ 100.00	340.00	500.00	1,000.00	950.00	\$34,000.00	\$50,000.00	\$100,000.00	\$95,000.00
								\$1,556,500	\$2,832,500	\$5,738,250	\$4,368,500

Roadway 20 Item No.	Description	Unit	Price/Unit	Quantity	Quantity	Quantity	Quantity	Cost	Cost	Cost	Cost
101 1	MOBILIZATION	LS	\$350,000.00	1.00	1.00	1.00	1.00	\$350,000.00	\$350,000.00	\$350,000.00	\$350,000.00
102 1	MAINTENANCE OF TRAFFIC	LS	\$300,000.00	1.00	1.00	1.00	1.00	\$300,000.00	\$300,000.00	\$300,000.00	\$300,000.00
102 60	WORK ZONE SIGNS	ED	\$0.35	54,000.00	54,000.00	54,000.00	54,000.00	\$18,900.00	\$18,900.00	\$18,900.00	\$18,900.00
104 10 1	HAY OR STRAW BALE	EA	\$2.75	2,000.00	2,000.00	2,500.00	2,500.00	\$5,500.00	\$5,500.00	\$6,875.00	\$6,875.00
104 11	TURBIDITY BARRIER FLOATING (STANDARD)	LF	\$7.00	500.00	500.00	500.00	500.00	\$3,500.00	\$3,500.00	\$3,500.00	\$3,500.00
104 12	TURBIDITY BARRIER STAKED (STANDARD)	LF	\$3.00	500.00	500.00	500.00	500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00
104 13 1	SILT FENCE STAKED (TYPE III)	LF	\$0.75	25,000.00	25,000.00	25,500.00	25,500.00	\$18,750.00	\$18,750.00	\$19,125.00	\$19,125.00
110 1 1	CLEARING AND GRUBBING	LS/AC	\$7,200.00	63.00	62.00	69.00	68.50	\$453,600.00	\$446,400.00	\$496,800.00	\$493,200.00
120 1	REGULAR EXCAVATION	CY	\$4.40	15,000.00	15,000.00	15,000.00	15,000.00	\$66,000.00	\$66,000.00	\$66,000.00	\$66,000.00
120 6	EMBANKMENT	CY	\$5.90	100,000.00	90,000.00	50,000.00	90,000.00	\$590,000.00	\$531,000.00	\$295,000.00	\$531,000.00
160 4	STABILIZATION TYPE B	SY	\$1.40	188,600.00	142,500.00	180,675.00	195,955.00	\$264,040.00	\$199,500.00	\$252,945.00	\$274,337.00
162 3 101	FINISH SOIL LAYER	SY	\$0.40	153,300.00	150,980.00	130,700.00	319,600.00	\$61,320.00	\$60,392.00	\$52,280.00	\$127,840.00
285 701	BASE OPTIONAL (BASE GROUP 01)	SY	\$7.50	112,300.00	94,100.00	180,675.00	120,800.00	\$842,250.00	\$705,750.00	\$1,355,062.50	\$906,000.00
285 709	BASE OPTIONAL (BASE GROUP 09)	SY	\$6.00	26,100.00	24,200.00	17,100.00	23,900.00	\$156,600.00	\$145,200.00	\$102,600.00	\$143,400.00
334 1 13	SUPERPAVE ASPHALTIC CONC (TRAFFIC C)	TN	\$47.00	16,000.00	14,750.00	18,312.00	18,125.00	\$752,000.00	\$693,250.00	\$860,664.00	\$851,875.00
337 7 5	ASPH CONC FRICTION C. (INC RUBBER) (FC 5)	TN	\$55.00	785.00	750.00	515.00	720.00	\$43,175.00	\$41,250.00	\$28,325.00	\$39,600.00
337-7-6	ASPH CONC FRICTION C. (INC RUBBER) (FC 6)	TN	\$78.00	9,000.00	7,550.00	14,500.00	9,700.00	\$702,000.00	\$588,900.00	\$1,131,000.00	\$756,600.00
534-70	MSE	SF	\$25.00		24,000.00	72,150.00			\$600,000.00	\$1,803,750.00	
570 2	SEEDING AND MULCHING	SY	\$0.15	102,200.00	98,100.00	107,840.00	100,600.00	\$15,330.00	\$14,715.00	\$16,176.00	\$15,090.00
570 3	SEED GRASS (PERMANENT)	LB	\$1.60	1,700.00	1,600.00	1,780.00	1,675.00	\$2,720.00	\$2,560.00	\$2,848.00	\$2,680.00
570 4	MULCH MATERIAL	TN	\$83.00	85.00	80.00	89.00	80.00	\$7,055.00	\$6,640.00	\$7,387.00	\$6,640.00
570 5	FERTILIZER	TN	\$170.00	4.20	6.20	5.40	5.00	\$714.00	\$1,054.00	\$918.00	\$850.00
570 9	WATER FOR GRASSING	MG	\$9.00	100.00	100.00	100.00	100.00	\$900.00	\$900.00	\$900.00	\$900.00
570 10	SEED GRASS (QUICK GROWING)	LB	\$1.00	5,100.00	4,800.00	5,350.00	4,800.00	\$5,100.00	\$4,800.00	\$5,350.00	\$4,800.00
575 1	SODDING	SY	\$1.50	273,300.00	52,880.00	205,700.00	188,600.00	\$409,950.00	\$79,320.00	\$308,550.00	\$282,900.00
710 6	DIRECTIONAL ARROW (PAINTED)	EA	\$15.90	10.00	10.00	10.00	10.00	\$159.00	\$159.00	\$159.00	\$159.00
710 7	PAVEMENT MESSAGE, PAINTED	EA	\$20.00	5.00	5.00	5.00	5.00	\$100.00	\$100.00	\$100.00	\$100.00
710 21	TRAFFIC STRIPE SKIP (WHITE) (6")	GM	\$350.00	5.50	5.50	6.00	6.00	\$1,925.00	\$1,925.00	\$2,100.00	\$2,100.00
710 23 61	TRAFFIC STRIPE SOLID (WHITE) (6")	NM	\$515.00	5.40	5.40	5.90	5.90	\$2,781.00	\$2,781.00	\$3,038.50	\$3,038.50
710 24 61	TRAFFIC STRIPE SOLID (YELLOW) (6")	NM	\$530.00	5.40	5.40	5.90	5.90	\$2,862.00	\$2,862.00	\$3,127.00	\$3,127.00
710 25 241	TRAFFIC STRIPE SOLID (WHITE) (24")	LF	\$1.25	150.00	150.00	150.00	150.00	\$187.50	\$187.50	\$187.50	\$187.50
999 25	INITIAL CONTINGENCY	\$	Not/App.	1.00	1.00	1.00	1.00	\$625,000.00	\$740,000.00	\$1,250,000.00	\$900,000.00
999 102 2	SPEED AND LAW ENFORCEMENT OFFICER	HR	\$27.00	320.00	320.00	320.00	320.00	\$8,640.00	\$8,640.00	\$8,640.00	\$8,640.00
								\$5,712,559	\$5,642,436	\$8,753,808	\$6,120,964

COST ESTIMATE - SIGNALIZATION - 50

Item No.	Description	Unit	Price/Unit	Quantity	Quantity	Quantity	Quantity	Cost	Cost	Cost	Cost
	SIGNAL EQUIPMENT							\$100,000	\$100,000	\$100,000	\$100,000
								\$7,369,059	\$8,574,936	\$14,592,058	\$10,589,464

Appendix C

***Excerpts from
Geotechnical
Report***

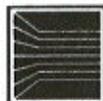
Excerpts From:

**Report of Geotechnical Exploration
PD&E Study**

S.R. 30 (US 98) / Hurlburt Field Entrance

Okaloosa County, Florida

September 4, 2002



W I L L I A M S
EARTH SCIENCES INC.



W I L L I A M S
E A R T H S C I E N C E S

Report of Geotechnical Exploration PD&E Study

S.R. 30 (US 98) / Hurlburt Field Entrance

Okaloosa County, Florida

WES Project Number: P302277

September 4, 2002

Prepared for:

HDR Engineering, Inc.

PANAMA CITY OFFICE:
2313 Industrial Drive
Panama City, Florida 32405
(850) 747-9419 FAX (850) 763-2454
e-mail: WESPanama@aol.com

CORPORATE OFFICE:
10600 Endeavour Way
Largo, Florida 33777
(727) 541-3444 FAX (727) 541-1510
WESLargo@aol.com



TABLE OF CONTENTS

	<u>Page No.</u>
1.0 <u>INTRODUCTION</u>	1
1.1 Project Description.....	1
1.2 Scope of Services.....	1
1.3 Existing Site Conditions	1
2.0 <u>FIELD EXPLORATION AND LABORATORY TESTING</u>	
2.1 Field Exploration	1
2.1.1 Groundwater	2
2.1.2 Auger Boring Testing.....	2
2.1.3 Standard Penetration Test (SPT) Borings	2
2.2 Laboratory Testing	2
2.3 General Subsurface Conditions.....	3
2.3.1 Soil Conservation Service.....	3
3.0 <u>ANALYSIS</u>	
3.1 Axial Capacity Analysis.....	3
4.0 <u>EVALUATIONS AND RECOMMENDATIONS</u>	
4.1 Foundation Alternatives.....	4
4.1.1 Spread Footings	4
4.1.2 Drilled Shafts	4
4.1.3 Driven Piles.....	4
4.1.4 Vibrations.....	4
4.2 Retaining Walls.....	5
4.3 Unsuitable Soils	5
5.0 <u>LIMITATIONS</u>	5

APPENDICES

Appendix A

 Site Location Map
 Field Exploration Plan

Appendix B

 Standard Penetration Test (SPT) Boring Logs
 Report of Core Boring Sheet
 Summary of Laboratory Test Results
 Axial Capacity – SPT97 Analysis Output (No Scour)

1.0 INTRODUCTION

1.1 Project Description

The purpose of this Geotechnical Report is to provide geotechnical and soils information to the prime consultant for use in the PD & E Study for the S.R. 30 (U.S. 98) at Hurlburt Field Entrance in Okaloosa County, Florida. Please refer to the site location map in the Appendix A. This study will provide information necessary for Okaloosa County and HDR Engineering, Inc. to reach a decision on the constructability, location, and conceptual design of the referenced transportation facility.

1.2 Scope of Services

- Nine Hand Auger Borings @ 6 feet
- Two Standard Penetration Test (SPT) Borings @ 130 feet
- Laboratory Testing for classification of soils
- Report Development

1.3 Existing Site Conditions

This project is located in the south-central portion of Okaloosa County, along S.R. 30 (U.S. 98) just north of the Gulf of Mexico. The existing intersection consists of a four-lane urban section with turn lanes and a traffic signal. The volume of traffic appears to be heavy during the daytime hours and appears to increase at the beginning and end of the workday at the Hurlburt Field entrance.

Properties located within the project limits appear to be wooded Government property and residential property.

During the field reconnaissance, we observed overhead utilities as well as several indicators of underground utilities such as telephone, water, and sewer.

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Field Exploration

During the roadway soil investigation, nine hand auger borings were performed to a depth of six feet along the northern and southern sides of S.R. 30 (U.S. 98). Two Standard Penetration Test (SPT) borings were performed within the approximate locations of the proposed construction to depths of 130 feet below ground level. At the time of this report, only one proposed structure alignment was provided. The two SPT borings were placed such that they would be applicable to any alignment selected as a result of the PD & E Study. The Field Exploration Plan and the Report of Core Borings Sheet presenting the performed Hand Auger and SPT borings are included in Appendix B.

2.1.1 Groundwater

The groundwater, as referenced to existing grade, was encountered at three feet below the existing ground surface along S.R. 30 (U.S. 98). The groundwater table was measured at each boring performed within the project limits. Published in the "Soil Survey of Okaloosa County, Florida (1984)" the seasonal high water table (SHWT) levels may be encountered at depths ranging from 3.5 ft to 5.0 ft below the existing ground surface. Groundwater elevations are highly dependent on environmental and seasonal conditions such as frequency and magnitude of rainfall patterns, tidal influences, and man-made influences such as existing drainage ditches and ponds, underdrains, and areas of covered soils (parking lots, side walks, etc.). The contractor should be prepared to deal with high groundwater conditions at the time of construction.

2.1.2 Auger Boring Testing

A Williams' representative manually drilled the Hand Auger Borings in the field. Sampling was performed in general accordance with ASTM D-1452. Each of the hand auger borings were logged in the field. Disturbed soil samples were placed in glass jars and returned to our laboratory for testing and visual classification by a geotechnical engineer.

2.1.3 Standard Penetration Test (SPT) Borings

The SPT borings provide soil samples and Standard Penetration Resistance "N" values. Engineering properties of the soils can be inferred from SPT values and index property soil classification based on published empirical correlations.

The SPT borings were performed using a CME 45B rotary drilling rig. Each SPT boring hole was filled with Portland cement grout upon completion of the field service. Sampling was performed in general accordance with ASTM-1586 with samples generally obtained at every 2.5 foot intervals. Disturbed soil samples were placed in sealed glass jars and returned to our laboratory for additional visual classification and laboratory testing by a geotechnical engineer.

The SPT boring logs are presented in Appendix B. The boring logs graphically show the penetration resistance and present the soil description for each test boring. The stratification lines and depth designations on the boring records represent the approximate boundaries between soil types.

2.2 Laboratory Testing

All of the disturbed soil samples were sealed in glass jars and returned to our laboratory for visual classification by a geotechnical engineer and potential laboratory testing. The laboratory tests for this report consisted of grain size analysis, and natural moisture contents and Atterberg limits, which provide indication of the soils' plasticity. Summaries of the laboratory testing for the SPT boring results are reported in Appendix B. A laboratory classification sheet representing

the Unified and AASHTO classification systems is also presented in Appendix B.

2.3 General Subsurface Conditions

The soils encountered in the hand auger and SPT borings on the roadway portion of this project consist predominantly of fine sands, slightly silty to silty fine sands. Neither organic (muck) material nor material unsuitable for use in roadway construction were encountered in our findings during the subsurface investigation.

2.3.1 Soil Conservation Service

A brief description of the existing soils is presented, based on the "Soil Survey of Okaloosa County, Florida (1984)". This soil description pertains only to the near-surface soils (generally less than six feet in depth.) The information shown in the SCS survey is based on soil characteristics at the time of the survey. Therefore, any new fill or alterations to the natural drainage systems may have an effect on this information.

Based on the "Soil Survey of Okaloosa County, Florida (1984)," prepared by the Soil Conservation Service, there are three soil types shown within the approximate project limits. The soil types are indicated by map unit number 6, 21 and 27, which correspond to the **Dorovan** soils, **Resota** Soils and **Urban** Soils. A brief description of each is as follows:

Dorovan - This soil appears to be located at the western end of the proposed project limits. WES did not encounter this soil type during our investigation; however, the soil consists of black muck to a depth of 60 inches or more overlying very dark grayish brown sand that extends to a depth of 80 inches or more. **Dorovan** soils are moderate in permeability and have very high water capacity.

Resota - This moderately well drained, nearly level to gently sloping, deep sandy soil occurs on small to broad, slightly ridged areas near the Gulf of Mexico in the southern part of the county. This soil has very low available water capacity. Permeability is very rapid and the organic content is very low.

Urban - **Urban** land consists of areas that are 75 percent or more covered with streets, houses, commercial buildings, parking lots, shopping centers, industrial parks, airports and related facilities. **Urban** soil consists of several types of soils, all too small in area to map separately.

3.0 ANALYSIS

3.1 Axial Capacity Analysis

Axial Capacities were analyzed using the SPT97 computer program. Axial capacities were performed on 24" and 30" square prestressed concrete piles. The axial capacity takes into

account the boring profile and soils information gathered at each boring location. Appendix B contains the graphical output of axial capacity versus depth for each of the analysis. Since this project includes over land structures only, scour consideration is not an issue.

4.0 EVALUATIONS

4.1 Foundation Alternatives

Based on information provided by the designer, our foundation analysis included axial capacity computation for square prestressed concrete piles. However, all foundation types are addressed in the following sections.

4.1.1 Spread Footings

Shallow foundations were not considered a viable foundation alternative due to the relatively low bearing capacity and high load requirements which result in very large footings, the bottom of which would be near or below the water table. Dewatering requirements and maintaining traffic during construction around the large excavations are also limiting factors for the use of shallow footings.

4.1.2 Drilled Shafts

Drilled Shafts Foundations would be an acceptable foundation choice. However, the constructability and feasibility of these type foundations make them less attractive and potentially more costly than driven piles. The site would require drilling the shafts with the use of slurry, thus, desanding equipment and slurry tanks would be required. Also, the spoils would have to be contained and disposed of. Staging of all the necessary equipment would be limited because of the requirement to maintain traffic through the area at all times. The drilled shafts would, however, prevent potential noise and vibration problems.

4.1.3 Driven Piles

Driven piles are considered the most feasible foundation alternative for this project based on axial capacity, constructability and feasibility. The square prestressed concrete piles were the most viable foundation alternative. The design loads should not exceed the allowable bearing capacity as provided in the Structural Design Guidelines.

4.1.4 Vibrations

Based on our recommendations, adjacent areas and structures will be subjected to the potential for noise and vibrations. If the designer has concerns about any structures along the project, we recommend a visual crack survey be performed with video recording equipment of the subject

structures and vibration monitoring be conducted in accordance with Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

4.2 Retaining Walls

We have researched two existing projects in areas similar to the proposed project at Hurlburt Field entrance. The first project, SR 30 (US 98)/Thomas Drive Intersection, has walls designed with maximum heights of approximately 30 ft. The second project, Hathaway Bridge, appears to be utilizing T-Walls in which the heights appeared to range from 5.0 to 15.0 feet. These wall heights should be considered feasible for the proposed project, however, if any unsuitable materials are encountered during the geotechnical phase, potential use of walls will need to be re-evaluated.

4.3 Unsuitable Soils

The borings performed for this phase were performed within the existing right-of-way. No significantly thick unsuitable stratum was encountered. However, this does not imply that unsuitable soils will not be encountered elsewhere when a more extensive design evaluation is performed.

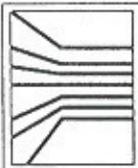
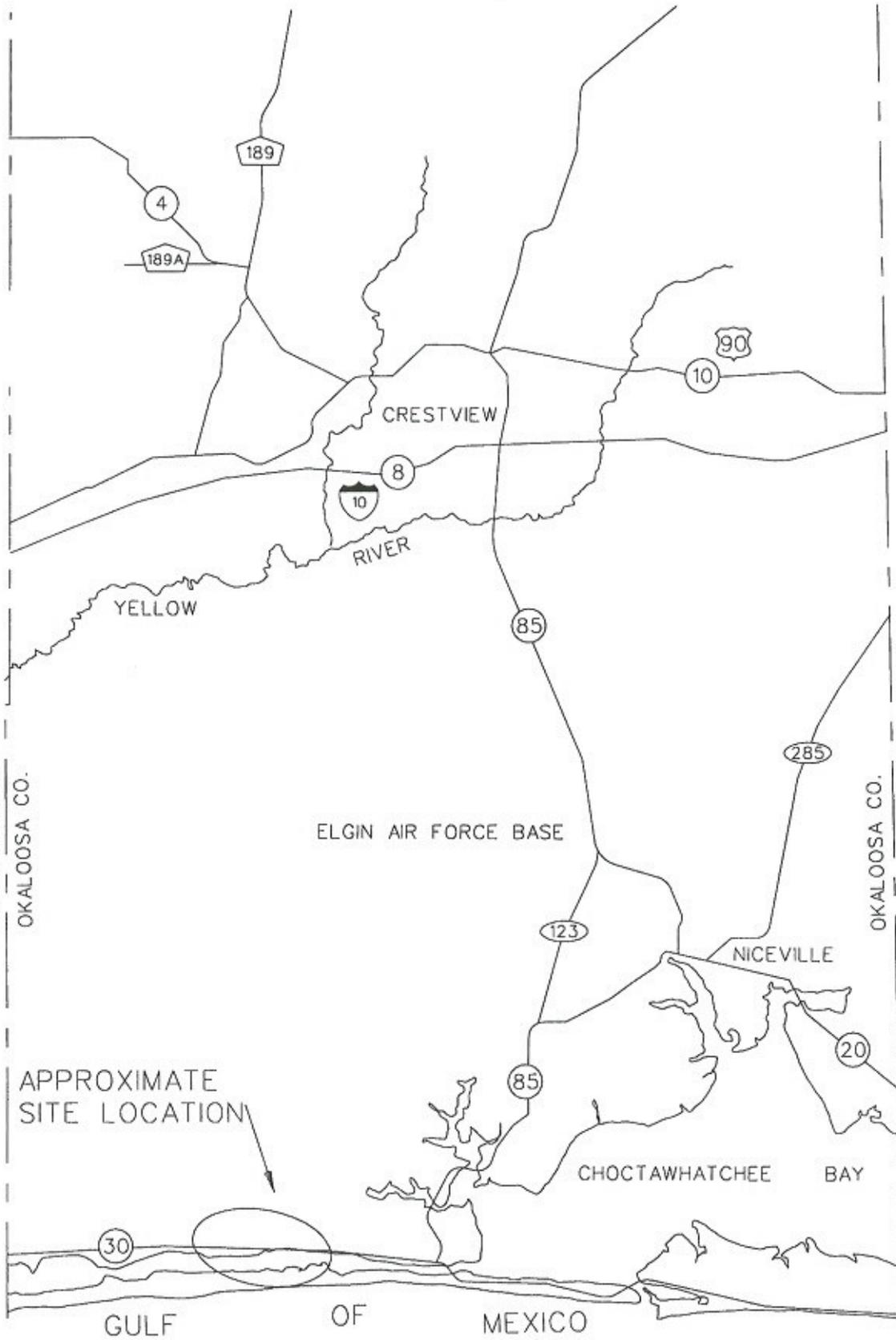
5.0 LIMITATIONS

Evaluations and recommendations in this report were prepared for the exclusive use of **HDR Engineering, Inc. and Okaloosa County for the specific application to the S.R. 30 (U.S. 98) / Hurlburt Field Intersection**. These evaluations and recommendations were prepared using generally accepted standards of geotechnical engineering practices. No other warranty is expressed or implied. Also, these evaluations and recommendations are based on design information furnished by the client. Prior to finalizing plans, the Geotechnical Engineer should be notified for review of the foundation design and recommendations.

Furthermore, upon discovery of any site or subsurface condition during construction, which appears to deviate from the data obtained during this Geotechnical exploration, please contact us immediately. Immediate response will allow us to visit the site, observe the differing conditions, and evaluate the new information with regard to the information in this report. These recommendations represent design and construction techniques, which we feel, are both applicable and feasible for the planned construction.

**A
P
P
E
N
D
I
X

A**



WILLIAMS EARTH SCIENCES, INC.

2313 Industrial Drive
Panama City, FL 32405

Panama City: (805) 747-9419
Clearwater: (727) 541-3444
Jacksonville: (904) 262-8852

SR 30 (US 98) @ HURLBERT FIELD ENTRANCE
OKALOOSA COUNTY

SITE LOCATION MAP

Drawn By: TEJ
Checked By: CBW

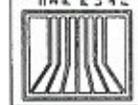
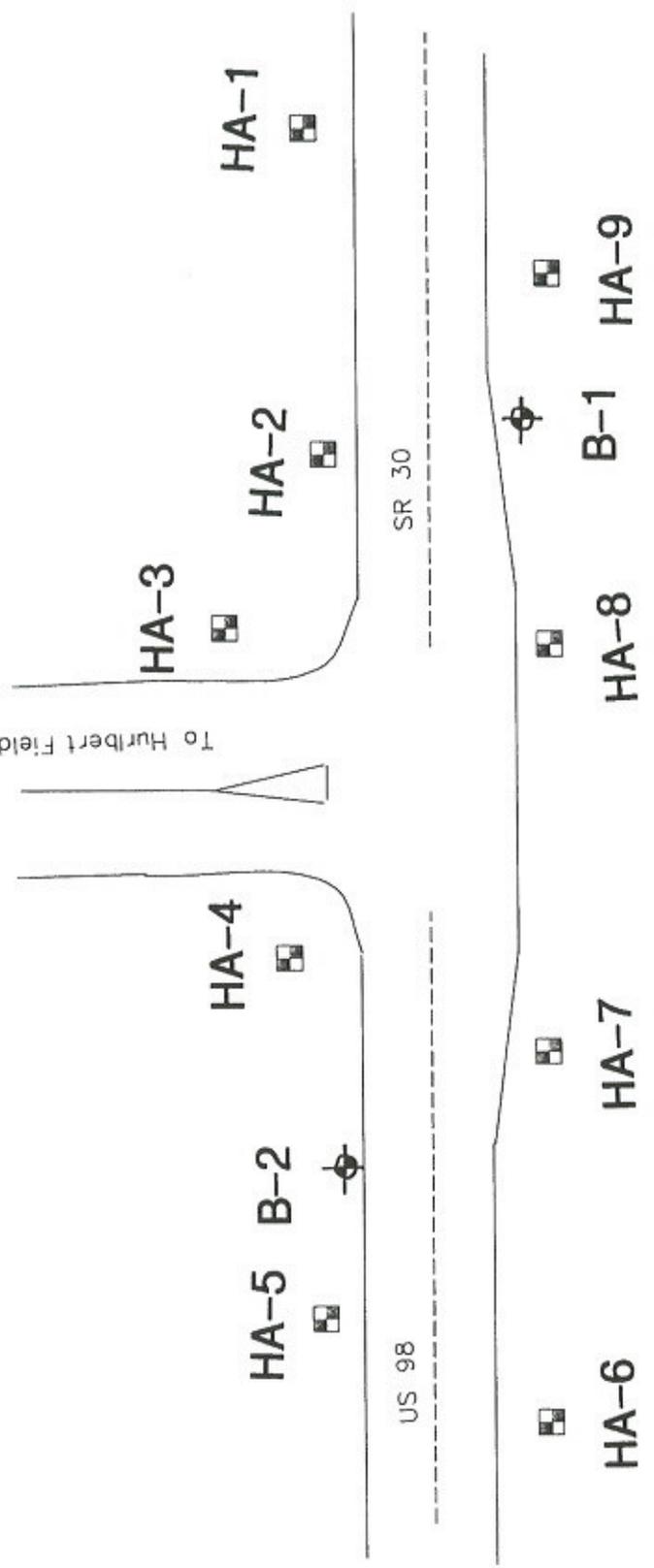
Date: 8/29/02
Report No. P302277

Scale: N.T.S.
Figure No. 1



NOT TO SCALE

▲ To Huribert Field Gate



WILLIAMS EARTH SCIENCES, INC.
 3315 International
 Panama City, FL 32405
 Panama City: (850) 743-8499
 Largo: (727) 541-5100
 Jacksonville: (904) 262-8854
 Ft. Lauderdale: (954) 524-2325

SR 30 (US 98) @ HURBERT FIELD ENTRANCE
 OKALOOSA COUNTY, FLORIDA

FIELD EXPLORATION PLAN

Drawn By: TEJ	Date: 8/29/02	Scale: N.T.S.
Checked By: BW	Report No. P302277	Figure No. 1

field

**A
P
P
E
N
D
I
X

B**

[Tabloid size sheet goes here]

SUMMARY OF LABORATORY RESULTS

Client: HDR, Inc.

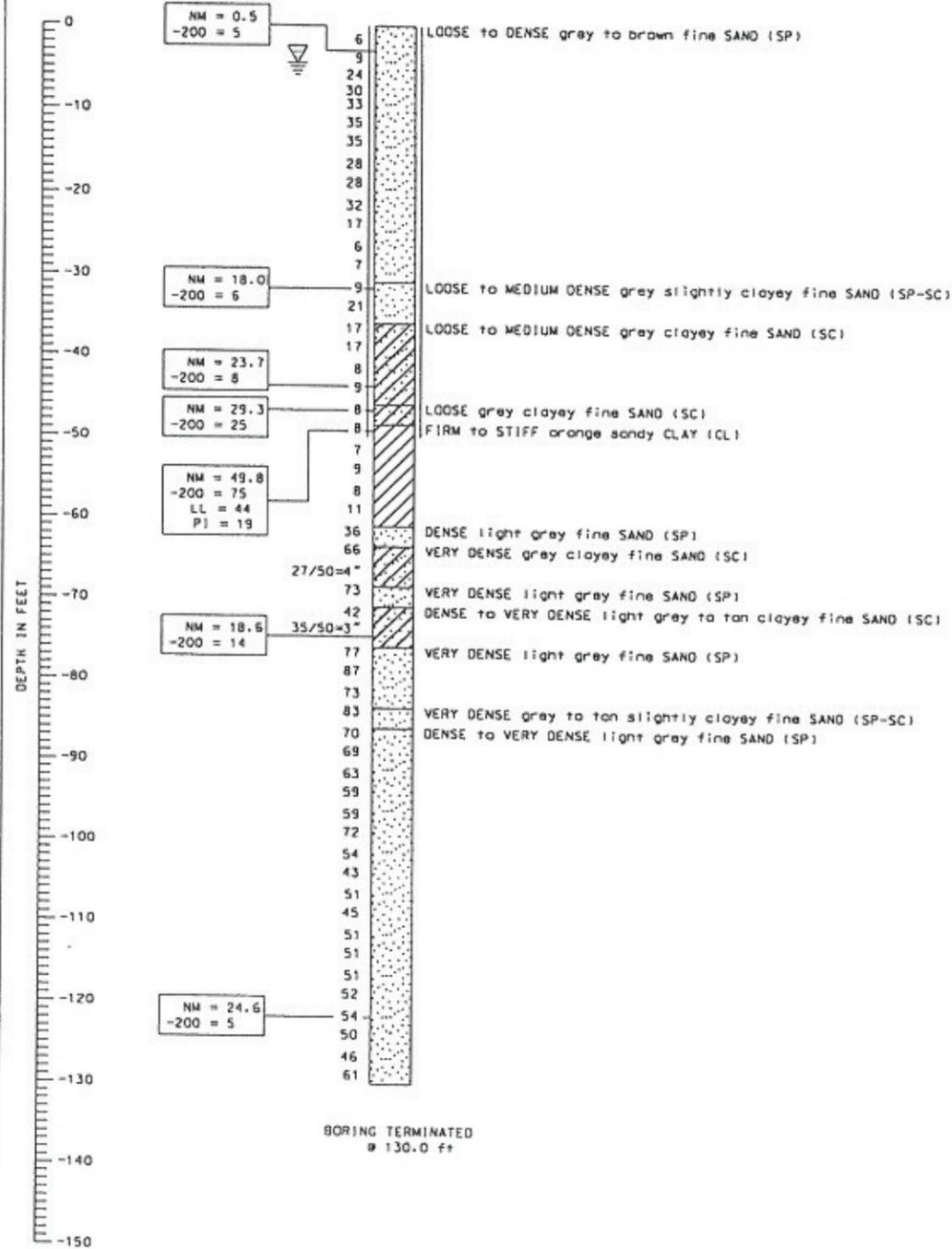
Project Name: US 98 @ Hurlbert Field

WES Project Number: P302277

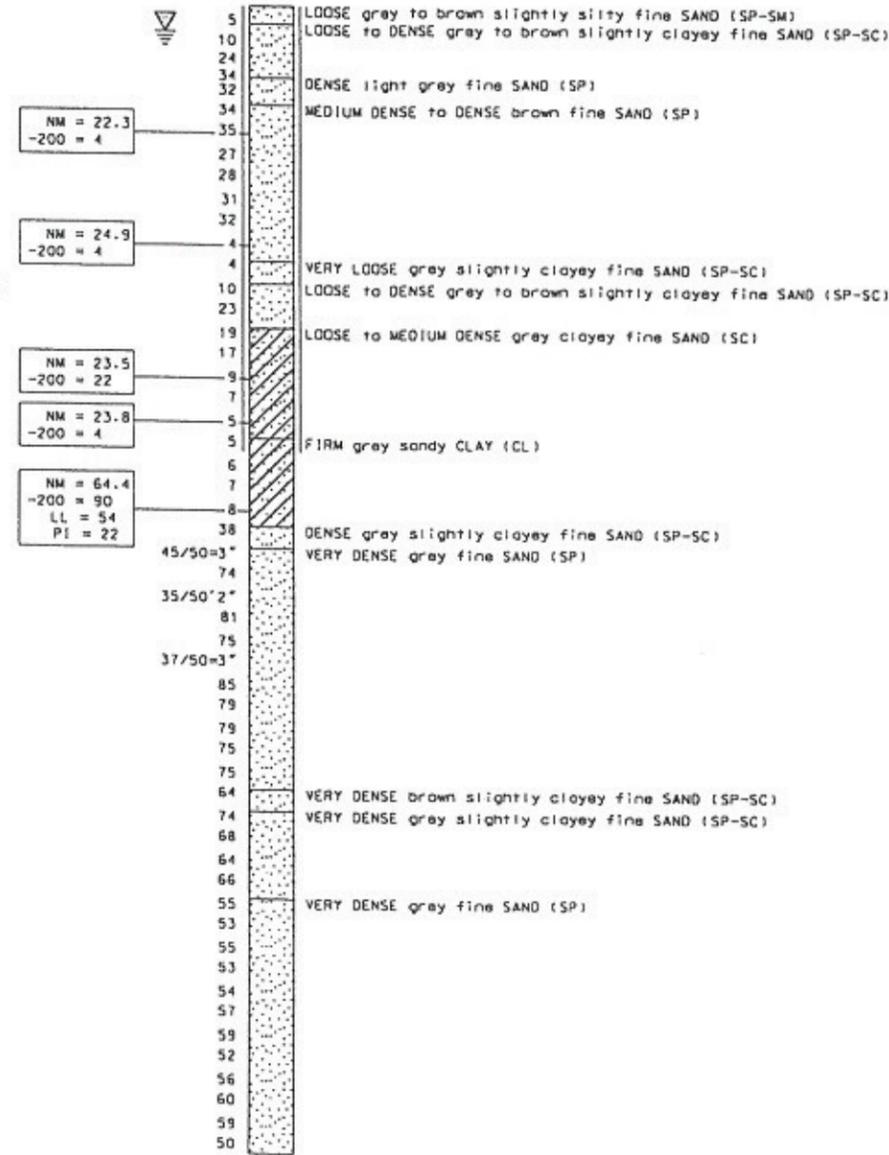
Boring and Sample Number	Depth (feet)		Natural Moisture Content (%)	Percent Passing							Atterberg Limits (LL)	Atterberg Limits (PI)	Unified Classification
	From	To		3/8	4	10	40	60	100	200			
B-1;S2	2.0	4.0	0.5		100	84	29	6	5			SP	
B-1;S14	31.0	32.5	18.0		100	82	38	9	6			SP-SC	
B-1;S19	43.0	44.5	23.7		100	62	23	10	8			SP-SC	
B-1;S20	46.0	47.5	29.3		100	86	62	31	25			SC	
B-1;S21	48.5	50.0	49.8		100	98	89	79	75	44	19	CL	
B-1;S31	73.0	75.0	18.6		100	90	65	31	14			SC	
B-1;S50	121.0	122.5	24.6		100	74	37	13	5			SP-SC	
B-2;S12	26.0	27.5	22.3		100	76	30	11	4			SP	
B-2;S7	13.5	15.0	24.9		100	94	50	8	4			SP	
B-2;S18	41.0	42.5	23.5		100	34	25	23	22			SC	
B-2;S20	46.0	47.5	23.8		100	61	11	7	4			SP	
B-2;S24	56.0	57.5	64.4		100	96	95	92	90	54	22	CL	

BORING NO. B-1
DATE 8/13/2002

BORING NO. B-2
DATE 8/15/2002



BORING TERMINATED
@ 130.0 ft



BORING TERMINATED
@ 130.0 ft

LEGEND

- = SP, SP-SC and SP-SM. Sands, slightly clayey sands and slightly silty sands
- = SC. Clayey sands and very sandy clays
- = CL. Inorganic clays of low plasticity

GENERAL NOTES

DRILL AND PENETRATION TESTING WERE PERFORMED IN ACCORDANCE WITH ASTM D 1586. NUMBER TO LEFT OF BORING INDICATES BLOWS OF 1 3/8" I.O., 2" O.D. SPLIT-SPoon FOR 12" OF PENETRATION (UNLESS OTHERWISE NOTED) WITH A 140 LB. HAMMER DROPPED 30 INCHES. THE BORING LOGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING. NO WARRANTY AS TO THE SUBSURFACE CONDITION, STRATA DEPTH OR SOIL CONSISTENCY BETWEEN OR OUTSIDE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING. REFER TO GEOTECHNICAL REPORT BY WILLIAMS EARTH SCIENCES FOR DETAILED BORING INFORMATION.

CREW CHIEF: McMILLAN
DRILL RIG TYPE: CME45B
HAMMER TYPE: AUTOMATIC

NM = Natural Moisture Content
200 = % Passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index
ORG = Organic Content

NOTES

Numbers to the left of borings indicate SPT values for 12" penetration. (Unless otherwise noted.)

= Water Table

= Casing used

Granular Materials- SPT
Relative Density (Blows/Ft.)

Very Loose	Less than 4
Loose	4 - 10
Medium or Compact	11 - 30
Dense	31 - 50
Very Dense	Greater than 50

Sils and Clays- SPT
Consistency (Blows/Ft.)

Very Soft	Less than 2
Soft	2 - 4
Firm	5 - 8
Stiff	9 - 15
Very Stiff	16 - 30
Hard	Greater than 30

P102277 BR001

REVISIONS				ENGINEER OF RECORD:		LOGO:		SEAL:		SHEET TITLE:		DRAWING NO.	
Date	By	Description	Date	By	Description	WILLIAMS EARTH SCIENCES, INC.				REPORT OF CORE BORINGS			
						2313 Industrial Drive Panama City, FL 32405 EB-0006378				PROJECT NAME: US 98 @ HURLBURT FIELD ENTRANCE		INDEX NO.	
								ROAD NO. COUNTY		US 98 BAY			