ADMINISTRATIVE ACTION
FINDING OF NO SIGNIFICANT IMPACT

LPGA BOULEVARD EXTENSION PD&E STUDY

Prepared for

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

and

FLORIDA DEPARTMENT OF TRANSPORTATION – DISTRICT 5

FINANCIAL IDENTIFICATION NUMBER: 410252-1-22-01

FEDERAL AID PROJECT NUMBER: 7777 100 A

VOLUSIA COUNTY, FLORIDA

The Federal Highway Administration (FHWA), in consultation with the Florida Department of Transportation (FDOT), has performed an assessment of the LPGA Boulevard Extension Project Development and Environment (PD&E) Study, in Volusia County. This study involves the construction and new alignment of a new two-lane (one lane in each direction) facility. The project study limits extend from CR 415 (Tomoka Farms Road) near the entrance to the Tomoka Farms Landfill to the current southern terminus of LPGA Boulevard at SR 600 (US 92) in Volusia County. The total project length is approximately 3.2 miles. The proposed improvements include the construction of a new bridge structure (crossing over I-4), access management, and drainage and stormwater management facility improvements. In addition, the evaluation of a multi-use trail is also included as part of this project. The project is commonly referred to as the LPGA Boulevard Extension PD&E Study.

Submitted pursuant to 42 U.S.C. 4332(2)(c)

7-10-2006
Date

FOR Division Administrator
Federal Highway Administration

FHWA has determined that this project will not have any significant impact on the human environment. The Finding of No Significant Impact is based on the attached Environmental Assessment which has been independently evaluated by FHWA and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. The FHWA takes full responsibility for the accuracy, scope, and contents of the attached Environmental Assessment.

FEDERAL HIGHWAY ADMINISTRATION
FLORIDA DIVISION

ADMINISTRATIVE ACTION
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Prepared for

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

and

FLORIDA DEPARTMENT OF TRANSPORTATION – DISTRICT 5

DELAND, FLORIDA

FINANCIAL IDENTIFICATION NUMBER: 410252-1-22-01
FEDERAL AID PROJECT NUMBER: 7777 100 A
VOLUSIA COUNTY, FLORIDA

Prepared by

CH2MHILL

In Association with

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

June 2006

ADMINISTRATIVE ACTION
FINDING OF NO SIGNIFICANT IMPACT

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Prepared for

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The Florida Department of Transportation (FDOT), in consultation with FHWA, has performed an Environmental Assessment of the LPGA Boulevard Extension Project Development & Environment (PD&E) Study from CR 415 (Tomoka Farms Road) to US 92 (SR 600) in Volusia County. The project is commonly referred to as the LPGA Boulevard Extension PD&E Study.

The proposed LPGA Boulevard Extension was conceived as a critical link in establishing a regional north-south corridor as an alternative to Interstate 95 (I-95). Coupled with the existing LPGA Boulevard and CR 415 (Tomoka Farms Road) to the south, the new proposed facility would serve commuter traffic as well as local traffic generated by existing developments to the north and south. This proposed extension would connect two existing high speed regional facilities, existing LPGA Boulevard and CR 415 (Tomoka Farms Road). The need for this project is recognized by the Volusia County Metropolitan Planning Organization (MPO) in their Long Range Transportation Plan (LRTP), Volusia County Thoroughfare Plan, and the City of Daytona Beach Comprehensive Plan. In the Volusia County MPO list of prioritized *Regionally Significant Non-SIS Roadway Projects* adopted on August 23, 2005, the LPGA Boulevard Extension project was shown as the #3 priority. On January 24, 2006 the Volusia County MPO amended their 2025 LRTP, and reduced the proposed extension of LPGA Boulevard to a Phase 2 (2011-2025) Local Roads Project. This project is currently shown to be funded entirely with local funds. If federal or state funds are allocated for this project at a later date then wetland mitigation will be provided through the Senate Bill 1986 Program. If this project remains a local road project as currently programmed, then the wetland mitigation will be provided with local funds.

The proposed project limits extend from CR 415 (Tomoka Farms Road) near the entrance to the Tomoka Farms Landfill on the south, to the current southern terminus of LPGA Boulevard at SR 600 (US 92) on the north. The total project length is approximately 3.2 miles. The project study area includes the jurisdictions of the City of Port Orange, City of Daytona Beach, and unincorporated areas of Volusia County.

The specific purpose of the project is to improve mobility within Volusia County and to enhance connectivity between Daytona Beach, the Volusia County seat, and I-95, the primary north-south corridor. The project limits also include a crossing over I-4, which serves access to the Daytona International Speedway and Daytona Beach to the east. The project limits were established based on connectivity and logical termini and are of adequate length to address environmental matters on a broad scope.

The results of the traffic capacity analyses indicate that US 92 is currently (2004) operating at LOS B from the I-4 ramps to LPGA Boulevard and from LPGA Boulevard to CR 415 (Tomoka Farms Road) is operating at LOS C. The existing section of LPGA Boulevard north of US 92 is currently operating at LOS C. The existing intersection of US 92/LPGA Boulevard is operating at LOS E.

Level of service (LOS) analyses was performed for the No Build and Build scenarios for the design year (2030). The two scenarios were analyzed using the most currently adopted procedures as outlined in the *Transportation Research Board's Special Report 209 - Highway Capacity Manual* (HCM). The results of the analyses for the No Build scenario indicate that CR 415 (Tomoka Farms Road) between Shunz Road and US 92 will operate at LOS F. The analysis also shows that the portion of US 92 from west of LPGA Boulevard to CR 415 (Tomoka Farms Road) will operate at LOS F by 2020 and in the design year 2030. In addition, the two intersections (US 92/LPGA Boulevard and US 92/CR 415 (Tomoka Farms Road) located within the project study limits, will also operate over capacity.

The results of the traffic analyses indicate that implementing the proposed improvements (proposed extension of LPGA Boulevard) will provide improved operations within the study limits. The LPGA Boulevard Extension would operate at LOS B from CR 415 (Tomoka Farms Road) to Shunz Road, and LOS C from Shunz Road to Landfill Road in 2030. North of Landfill Road, the LPGA Boulevard Extension would operate at LOS B to US 92.

As indicated by the traffic analyses, the proposed improvements enhance the mobility and operations within the project study area by offering an alternative route to CR 415 (Tomoka Farms Road). It also improves regional connectivity by providing a direct connection to the proposed Madeline Avenue Extension to the south and creating a "local roads" bypass once the Tymber Creek Road Extension is completed between LPGA Boulevard and SR 40. The improved conditions would alleviate traffic congestion along CR 415 (Tomoka Farm Road) thereby, reducing the potential for accidents and traffic delays. The improvements would provide substantial benefits to the users and the surrounding region.

The LPGA Boulevard Extension project is within the local government jurisdictions of the City of Daytona Beach, and Volusia County, and within the transportation planning jurisdictions of FDOT - District 5 and the Volusia County MPO. The FDOT transportation plan has been drawn upon to develop the alternatives contained in this environmental document. In addition, the plan provides the basis for the development of a statewide transportation system by prioritizing state projects listed in the LRTP of regional and local jurisdictions. The Volusia County MPO is responsible for developing and updating the LRTP and for addressing all the transportation needs of the region. All local government comprehensive plans must be consistent with the LRTP of the Volusia County MPO.

The current adopted comprehensive planning documents of the regional and local government jurisdictions within the project study area were reviewed to determine their transportation policies, goals, and objectives. The proposed improvements to LPGA Boulevard reflect improvements on a regional scale and coordination with existing plans and policies was performed to develop the alternatives. The following plans and policies were reviewed for consistency:

- MPO Long Range Transportation Plan (LRTP)
- MPO Transportation Improvement Program (TIP)
- Volusia County Comprehensive Plan
- City of Daytona Beach Comprehensive Plan

It should be noted that the local government comprehensive plans, have not been approved by the FHWA; therefore, do not constitute a Federal action or endorsement.

Growth in population and employment, combined with the choice of where to live and where to work, are the primary factors contributing to increases in travel demand in Volusia County. Projections of future population and employment in the region indicate that travel demand will continue to increase. Given the planned developments within the project study area, the proposed improvements need to be implemented soon to alleviate increasing traffic demands in the project vicinity.

A number of alternatives were developed and analyzed for the proposed extension of LPGA Boulevard. The proposed action involves:

- Providing a rural typical section consisting of a two-lane roadway with 12-foot travel lanes (one in each direction) and 8-foot outside shoulders (5-foot paved)
- Providing a 12-foot multi-use trail on the north/east side of the roadway
- Construction of a new bridge structure crossing over I-4
- Drainage and stormwater management facility improvements

There are no relocations associated with this project. All land acquisitions required for the proposed roadway involve only the purchase of vacant lands and/or public lands currently owned by Volusia County and private property owners.

A total of 36 parcel acquisitions, or approximately 185 acres, are required for the proposed improvements. This equates to approximately 73 acres for roadway construction, 44 acres for stormwater ponds, and 68 acres for floodplain compensation storage ponds.

The proposed project, as presently conceived, will not displace any residences or businesses within the community. Should this change over the course of the project, the FDOT will carry out a Right-of-Way and Relocation Program in accordance with Florida Statute 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Public Law 91-646 as amended by Public Law 100-17). The brochures which describe in detail the Department's The brochures which describe in detail the Department's Relocation Assistance Program and Right-of-Way Acquisition Program are: "*Your Relocation: Residential*", "*Your Relocation: Businesses, Farms and Nonprofit Organizations,*" "*Your Relocation:*

Signs," and "The Real Estate Acquisition Process." All of these brochures are distributed at the public hearing and made available upon request to any interested persons.

FHWA, in compliance with Section 106 of the National Historical Preservation Act and in consultation with the State Historic Preservation Officer, has determined the proposed action will have no effect upon any properties protected under Section 106.

The proposed action will not use any properties as defined by Section 4(f) of the Department of Transportation Act. FHWA has determined that Section 4(f) does not apply.

The air quality analysis revealed that since there are no air receptors within the proposed project corridor, the project automatically passes the screening test. Therefore, this project will not have a significant impact on air quality for the No Build or the Preferred Alternative. Thus, the project passes the Air Quality Screening Test.

This project is in an area which has been designated as attainment for all the air quality standards under the criteria provided in the Clean Air Act Amendments of 1990, therefore conformity does not apply.

Since no noise sensitive sites exist along the Preferred Alternative, and because none of the developments planned in proximity to the project corridor will have receptors close enough to the project study area, the proposed improvements are not anticipated to result in any noise impacts. The 66 dBA noise contour is approximately 165 feet from the proposed centerline of the roadway and all proposed developments are likely to fall outside this distance. Therefore, no further analysis is required.

Temporary noise impacts will occur from construction activities; however, will be attenuated by the mitigation measures described in Section 4.3.15.

Protection, analysis, mitigation, and documentation of floodplains has been provided in accordance with the requirements set forth in Executive Order 11988, "*Floodplain Management*," U.S. Department of Transportation (DOT) Order 5650.2, "*Floodplain Management and Protection*," and Federal-Aid Policy Guide 23 CFR 650A. The intent of these regulations is to avoid or minimize highway encroachments within the 100-year (base) floodplain, where practicable, and to avoid supporting land use development that is incompatible with floodplain values. The encroachment will traverse the Tomoka River floodplain and requires approximately 27 acre-feet of the floodplain to be filled.

Full compensation for loss of floodplain storage will be provided within the dedicated floodplain compensation ponds. The compensation ponds are areas re-graded to provide the required storage volume and to meet SJRWMD no rise criteria for the Tomoka River Basin.

The construction of the drainage structure(s) for this project will cause changes in flood stage and flood limits. These changes will not result in any significant adverse impacts on the natural and beneficial floodplain values or any significant changes in flood risk or damage. These changes have been reviewed by the appropriate regulatory authorities who have concurred with the determination that there will be no significant impacts. There will not be 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. However, this project is located within the Tomoka River Basin which has special basin designation and as such it is required to meet 1:1 compensation to comply with no net reduction in flood storage within the 100-year floodplain.

The project does not involve any regulatory floodways.

In compliance with Executive Order 11990, "*Protection of Wetlands*," a wetland evaluation was conducted to determine the impacts of the proposed improvements. Wetlands defined within a 500-foot wide corridor were mapped. Much of the project study area is wetland. The field reviews and mapping of wetland habitat types and surface water features (combined) resulted in the identification of over 30 wetland areas.

Preliminary estimates indicate that approximately 108 acres of wetlands and surface waters (combined) will be directly impacted by the Preferred Alternative. All practicable measures will be taken to minimize harm to wetland areas. A more detailed analysis of wetland impacts is presented in Section 4.3.4.

If this project is funded by federal or state funds at a later date then the wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137 F.S., to satisfy all mitigation requirements of Part VI, Chapter 373, F.S. and 33 U.S.C. Section 1344. Under Section 373.4137, F.S., mitigation of FDOT wetland impacts will be implemented by SJRWMD and USACE where the impacts occur. The Water Management District will develop a regional wetland mitigation plan on an annual basis to be approved by the Florida State Legislature which addresses the estimated mitigation needs of FDOT. SJRWMD will then provide wetland mitigation for specific FDOT project impacts through a corresponding mitigation project within the overall approved regional mitigation plan in consultation with USACE. FDOT will provide funding to SJRWMD for implementation of such mitigation projects. However, this project is currently being funded by local funds and therefore the wetland mitigation plan will be provided by Volusia County when this project is permitted during final design.

In addition, further coordination and review with the permit agencies will occur during the design phase of this project. Application for the permits will occur during the design phase of the project. Impacts to wetlands will be minimized and avoided to the maximum extent possible based on safe and sound engineering and construction constraints. Typically mitigation requirements are based on an analysis of the wetland functional values. Wetland mitigation concepts will be determined through pre-application meetings with USFWS, FFWCC, Nature Conservancy, USACE, and SJRWMD.

Avoidance and minimization of wetland impacts has been, and continues to be, an important objective during the project planning process. However, avoiding wetlands entirely is not possible. Reducing wetland impacts has been a focus of the preliminary roadway and pond siting process. Alignment alternatives, shifts, and modifications have been considered and made to avoid the higher quality wetlands, and to reduce impacts to forested wetlands. Design changes during the study phase that have been made to minimize impacts to wetlands includes shortening the road extension to avoid a large hydric flatwoods system along CR 415 (Tomoka Farms Road), shifting the alignment east to avoid higher quality wetlands, and winding the alignment to minimize forested wetlands to the greatest extent possible.

Impacts were minimized to the extent possible based on safe and sound engineering and construction constraints. Further impact minimization efforts such as the use of steeper front slopes with or without guard rails through wetland area, will be considered during the detail design phase. In discussion with the environmental agencies during the course of the study, the consideration of reducing the typical section width with a 4:1 or even a 2:1 front slope in the clear recovery area was brought forth to reduce the impacts to wetland areas. It is noted that the reduction in the front slope from the standard 6:1 to 4:1 coupled with a change in back slope from 4:1 to 3:1 would result in a total right-of-way reduction of approximately 21 feet from that proposed. The average right-of-way for the typical section with trail is approximately 190 feet. This could result in an approximate 11 to 12 percent reduction in right-of-way requirements for this project. While not a direct correlation, a reduction in wetland and floodplain impacts could be expected as well as lowering of right-of-way and overall construction costs.

However, this is not consistent with the roadside slopes criteria shown in Table 2.4.1 in the FDOT *Plans Preparation Manual* and would require a design variance when the project proceeds to design. In that these variances are not granted until the project proceeds into final design, and a goal of the PD&E process is to disclose the maximum anticipated impacts, this PD&E study has been conducted using front and back slopes that are consistent with FDOT guidelines. Subsequently, during final design when specific topography surveys are available, further refinement of impacts through typical section reductions with a possible design variance may be evaluated.

The proper erosion and turbidity control will be identified during final design and required during permitting. The use of silt screens, hay bales, and other discharge prevention measures during construction will minimize impacts to wetlands within the vicinity of the project.

Based upon the above consideration, it is determined that there are no practicable alternatives to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to the wetlands, which may result from such use.

No significant degradation of water quality is anticipated. The proposed stormwater facility design will include, at a minimum, the water quality requirements for water quality impacts as required by SJRWMD in F.A.C., Rules 40C-4, 40C-40, and 40C-42. Therefore, no further mitigation for water quality impacts will be required.

The project is not expected to have any significant direct or indirect negative impacts to Essential Fish Habitat (EFH). This area is not considered to be a breeding or nursery area for marine fish species, nor are the project wetlands and ditches directly connected to tidal-influenced waters. The project will be designed to meet Outstanding Florida Waters (OFW) water quality treatment criteria for the section north of I-4, and will not change floodplain storage or the downstream hydrologic regime. This project is not located within, and will not adversely affect areas identified as EFH; therefore, an EFH consultation is not required.

The project is located within the Volusia-Floridan Sole Source Aquifer. Therefore, the construction contractor will be required to prevent any contamination of this aquifer. All oil, chemicals, and fuel must be disposed of in a manner consistent with local, state, or federal regulations. These pollutants may in no way be dumped on the ground, in sinkholes, canals, borrow lakes, or any other feature that may be considered a recharge area of the groundwater supply. With these protection measures and adherence to FDOT's *Standards Specifications for Road and Bridge Construction*, which requires that Best Management Practices (BMPs) be used during construction for erosion control and water quality considerations, the potential for groundwater contamination is considered minimal.

This project has been evaluated for impacts on threatened and endangered species. A literature review was conducted to determine those possible threatened or endangered species which may inhibit the project area. This search resulted in findings that no listed species would be affected by the proposed action. This determination was made after review of the advance notification responses and field surveys of the project area by a biologist. Furthermore, the potential for impacts to critical habitat was assessed as to the relationship of the project to the Fish and Wildlife's designated "Critical Habitat."

Based on the findings of database searches, field surveys, and regulatory agency coordination, no significant adverse impacts are anticipated to the regional populations of the federally or state-listed species protected by the Endangered Species Act of 1973, amended (16 U.S.C. 1531 et seq.), as a result of the proposed improvements (refer to Appendix A for a copy of the letter of concurrence received by USFWS dated September 20, 2005). This finding fulfills the requirements of the Act.

The proposed project provides 36-inch pipes in addition to the proposed drainage cross drains in upland locations for wildlife crossings. However, during final design the cost and feasibility of installing structures with larger cross sections, such as box culverts or 38"x 60" elliptical pipes will be investigated in lieu of the proposed standard 36-inch concrete pipes. Structures will not be considered that would substantially raise the profile grade and increase wetland and floodplain impacts. Discussions with the state and federal resource agencies has begun and will continue during the design and permitting phases concerning appropriate wildlife mitigation measures, including wildlife crossings.

As part of the permitting phase of the project, field surveys for evidence of protected species, nests, or burrows will be conducted prior to construction. Standard precautions for the protection of listed species will be followed during construction of the proposed roadway.

A fly-over will be required to confirm any eagle activity during final design and prior to issuance of any permits. In the event that a Bald Eagle's nest is found within 1500 feet of the project corridor, coordination will be conducted with USFWS and FFWCC prior to any construction during the nesting season.

The Department is committed to implementing the USFWS-approved *Standard Protection Measures for the Eastern Indigo Snake* (refer to Appendix H) during design and construction, for the protection of the indigo snake. All construction activities will be halted if a protected species is sighted within the construction zone, and will not resume until the species is outside of the construction area. Further information on potential threatened and endangered species is described in greater detail in Section 4.3.13.

Through coordination with the Natural Resources Conservation Service (NRCS), it has been determined that the project study area, which is located within the urbanized area of Daytona Beach, does not meet the definition of farmland as defined in 7 CFR 658. Therefore, the provisions of the Farmland Protection Policy Act (FPPA) of 1984 do not apply to this project.

The Florida Department of Environmental Protection, through the Florida State Clearinghouse, has determined that this project is consistent with the Florida Coastal Zone Management Plan (refer to Appendix A for a copy of the advance notification response letter dated October 19, 2004).

A Public Involvement Program was conducted throughout the course of the project, as described in Section 5.1 of the Environmental Assessment. The Environmental Assessment was approved for public availability on March 3, 2006, and the Public Hearing was held on May 11, 2006. A total of 10 residents, property owners, and/or other interested parties attended the Public Hearing. Overall, the comments received from the Public Hearing process recognized the need for the proposed improvements. Three written comment forms were filled-out and submitted at the hearing, and no additional comments were received during the 10-day period following the hearing. One comment documented concerns of potential environmental impacts on air quality and contamination. Another requested a copy of the proposed alignment near the Kirton Property. The third comment stated that they recognize this route is needed to relieve congestion and provide an additional hurricane evacuation route.

In addition to the Public Hearing, the community participation effort included public information workshops, environmental advisory group meetings with residents and local agencies, design team meetings with local governments, local government briefings, as well as meetings with adjacent property owners and special interest groups (refer to Section 5.1.2). This extensive community participation effort enabled the project team to understand a broad range of concerns and address them in the planning process.

The approved Environmental Assessment addresses all of the viable alternatives that were studied during project development. The environmental effects of all alternatives under consideration were evaluated when preparing the assessment. Although the document was made available to the public before the Public Hearing, the Finding of No Significant Impact was made after consideration of all comments received as a result of public availability and the Public Hearing.

FEDERAL HIGHWAY ADMINISTRATION
FLORIDA DIVISION

ADMINISTRATIVE ACTION
ENVIRONMENTAL ASSESSMENT

LPGA BOULEVARD EXTENSION PD&E STUDY

Prepared for

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

and

FLORIDA DEPARTMENT OF TRANSPORTATION – DISTRICT 5

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Submitted pursuant to 42 U.S.C. 4332(2)(c)

Approved for Public Availability

3/03/2006
Date

FOR Division Administrator
Federal Highway Administration

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Chapter 1

Description of the Proposed Action

Environmental Assessment

LPGA BLVD EXTENSION PD&E STUDY

1. Description of the Proposed Action

1.1 Existing Roadway

The proposed project is a new alignment in Volusia County that extends the existing LPGA Boulevard south to CR 415 (Tomoka Farms Road). LPGA Boulevard is a north-south, full access minor arterial that extends from SR 600 (US 92) in Daytona Beach approximately nine miles to US 1. It is a two-lane rural facility with limited roadside ditches for conveyance of stormwater runoff. The existing typical is presented in Figure 1-1. A regional location map, which identifies the project study area, is presented in Figure 1-2.

1.2 Proposed Project

The proposed project limits extend from CR 415 (Tomoka Farms Road) near the entrance to the Tomoka Farms Landfill on the south, to the current southern terminus of LPGA Boulevard at SR 600 (US 92) on the north. The total project length is approximately 3.2 miles. The study area includes the jurisdictions of the City of Daytona Beach, and unincorporated areas of Volusia County (refer to Figure 1-3).

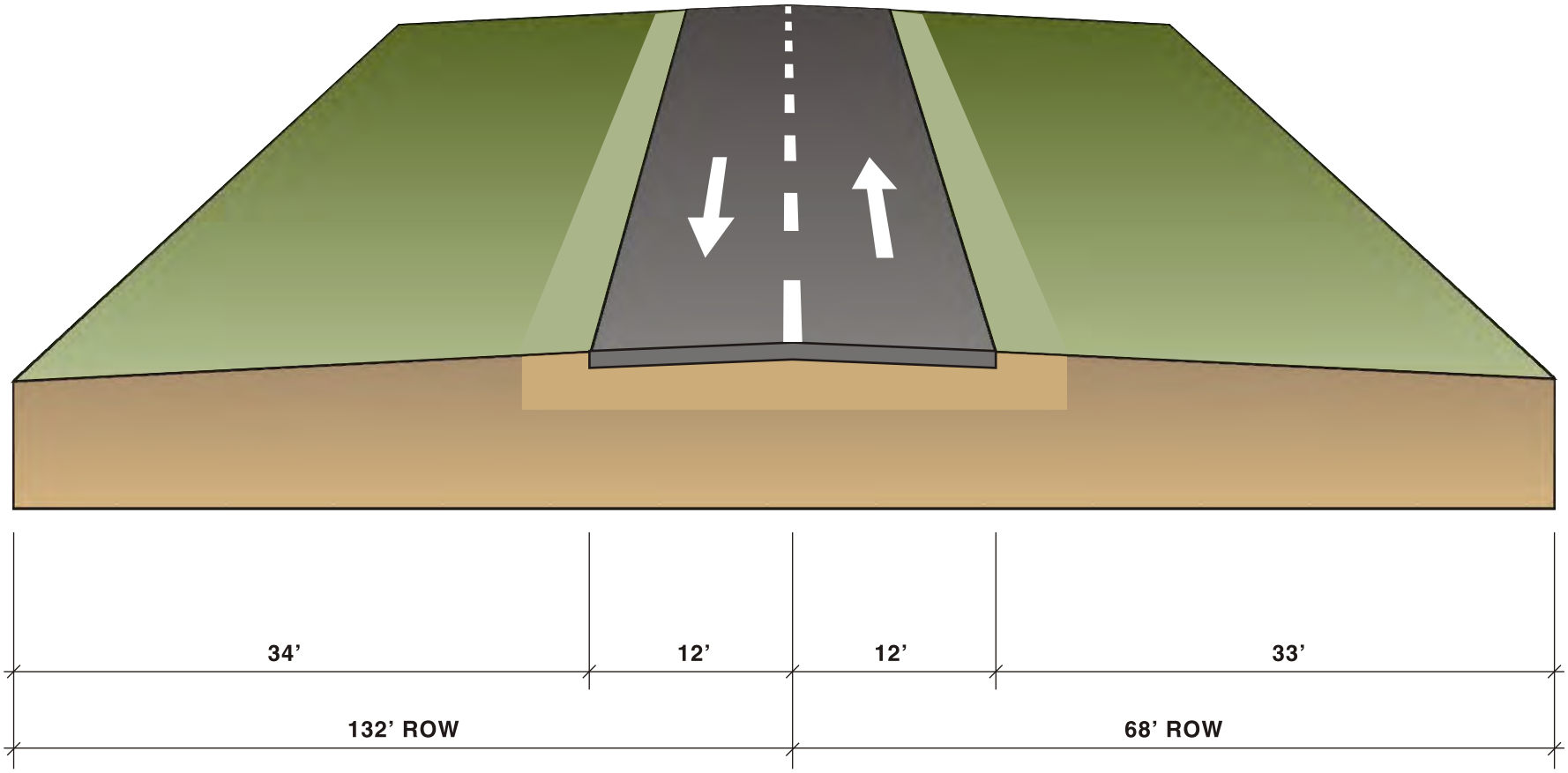
The roadway would be a two-lane (one lane in each direction) facility. The proposed improvements would include the construction of a new bridge structure (crossing over I-4), access management, and drainage and stormwater management facilities. The evaluation of a multi-use trail is also included as part of this project.

The proposed project limits were established to connect two existing high speed regional facilities, existing LPGA Boulevard and CR 415 (Tomoka Farms Road), in order to create a regional corridor and an alternative route to I-95. The southern terminus at CR 415 (Tomoka Farms Road) near the entrance to the Tomoka Farms Landfill would also connect to the future extension of Madeline Avenue currently being proposed by Volusia County. Refer to Section 2.1 for a description of the Madeline Avenue Extension project and other existing and proposed regional links.

1.3 Project Background

In September 2003, FDOT – District 5 in conjunction with local governments (Volusia County Department of Public Works (DPW) and Volusia County MPO, City of Port Orange, and City of Daytona Beach) initiated a Phase I - Feasibility Study to evaluate the need for the project. An extensive traffic modeling study was performed with input from Volusia County, the City of Port Orange, and the City of Daytona Beach to demonstrate the need for the roadway. A public meeting was conducted in January 2004 to obtain input from the general public and the Feasibility Study was completed in April 2004.

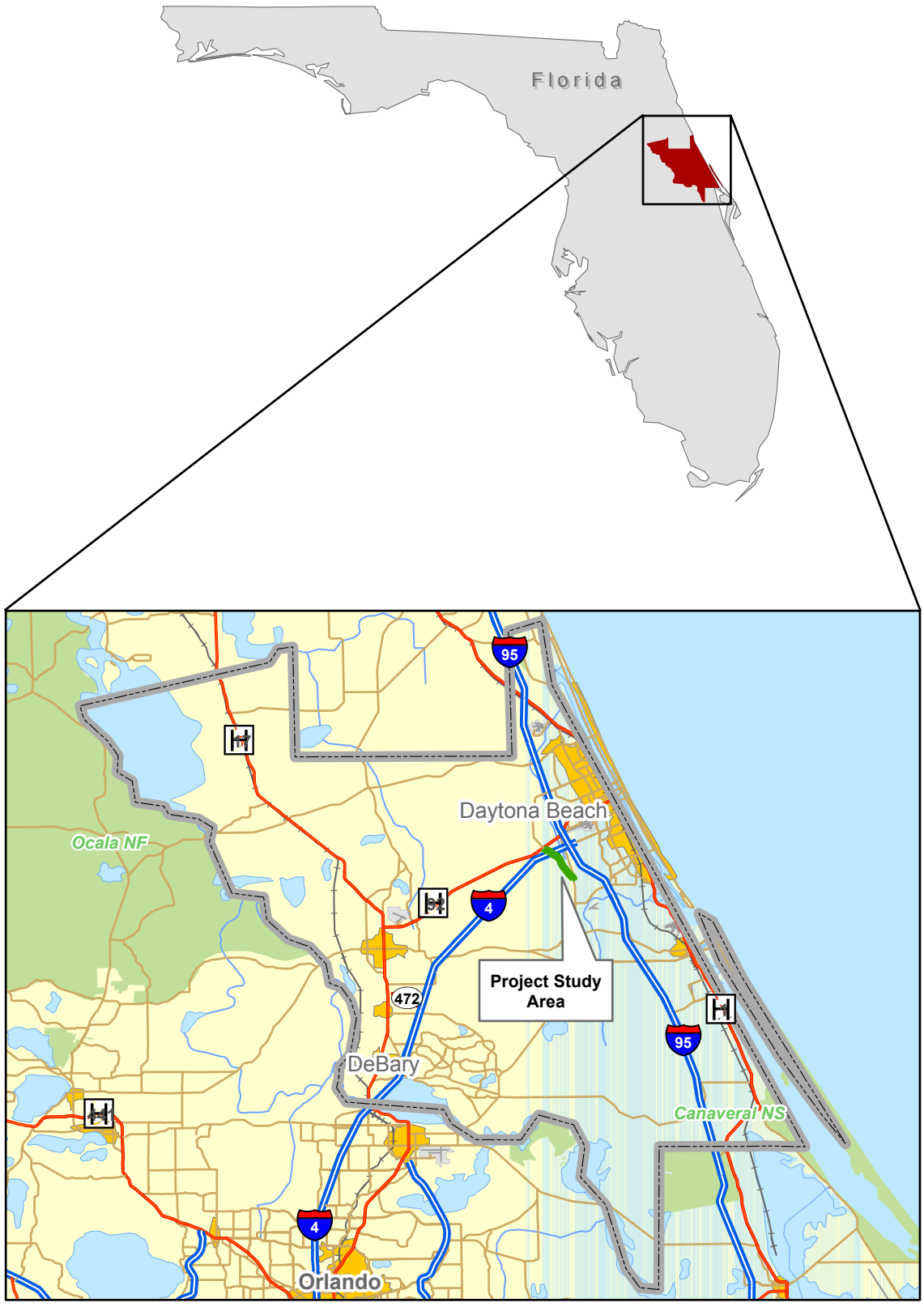
LPGA Looking North
North of US 92



EXISTING LPGA BOULEVARD TYPICAL SECTION

FIGURE
1-1

h:\projfile\6639\dwgs\figs\6639figs.cdr

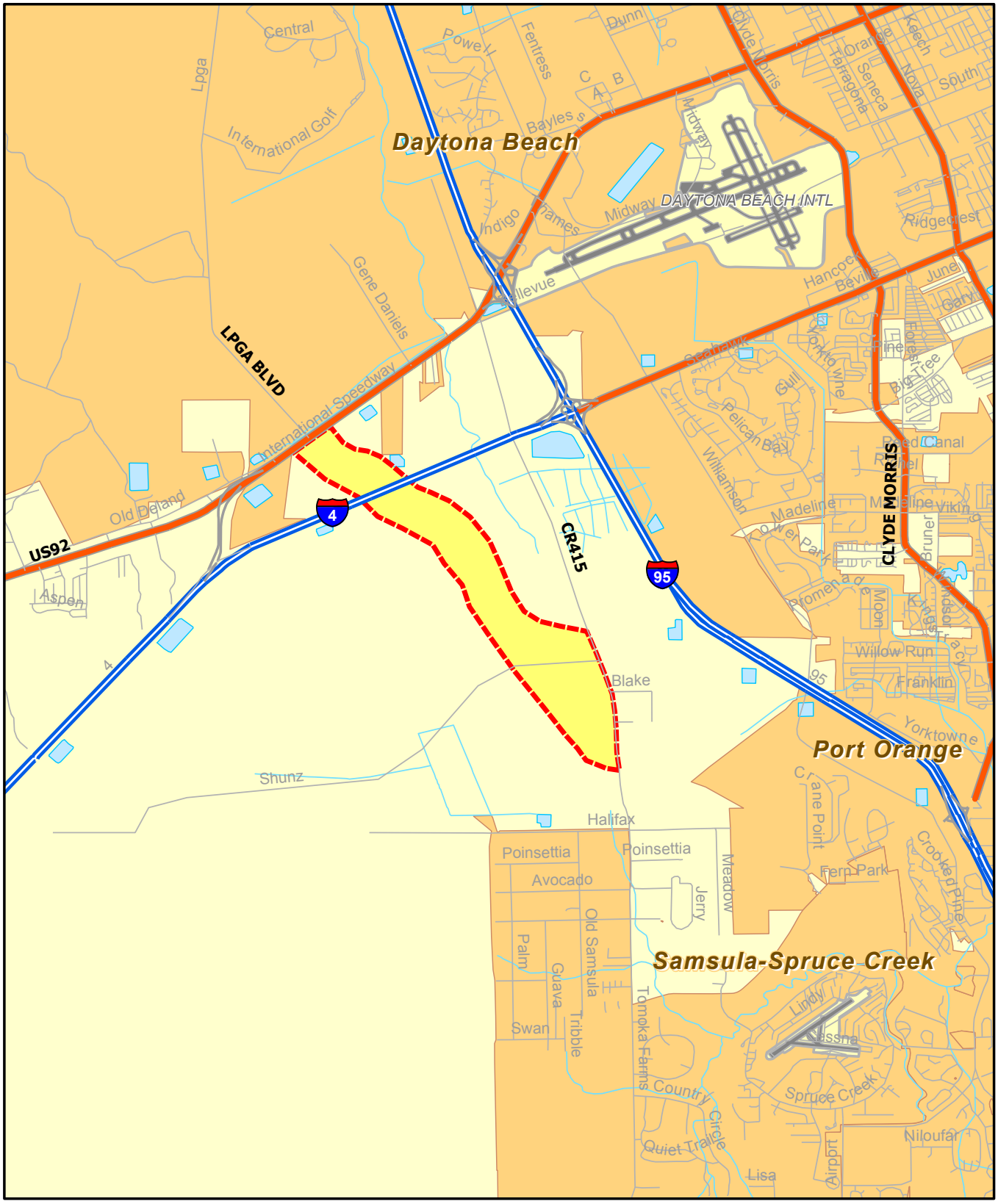


N

REGIONAL LOCATION MAP
VOLUSIA COUNTY, FLORIDA

FIGURE 1-2

H:\profiles\6052\GIS\Study\AreaMap.mdx



LEGEND

LPGA BLVD Extension Study Area

N
W E
S

0 0.5 1 2 Miles

PROJECT STUDY LIMITS

FIGURE 1-3

H:\projfiles\6052\GIS\Study\LocationMap.mdx

The projected traffic volumes on the LPGA Boulevard Extension demonstrated the need for a two-lane facility. Environmental impacts and costs were determined for a representative preliminary alignment; however, detailed alignment alternatives were not developed or investigated in Phase I – Feasibility Study.

Based on the outcome and recommendations of the Phase I – Feasibility Study, The Volusia County MPO requested a Phase II – PD&E Study be conducted to afford the opportunity to use federal funds for the design and construction of this facility. Initiating in June 2004, this PD&E Study began to assess various alternatives for the proposed corridor extension.

This Environmental Assessment (EA) documents activity performed during the Phase I – Feasibility Study and Phase II – PD&E Study. A separate *Preliminary Engineering Report* (PER) (Kittelson & Associates, 2006) has been prepared that documents the engineering analysis that supports the need for the project, existing conditions, and alternatives analysis.

Chapter 2

Need

Environmental Assessment

LPGA BLVD EXTENSION PD&E STUDY

2. Need

2.1 Background

In September 2003, FDOT – District 5 in conjunction with local governments (Volusia County Department of Public Works (DPW) and Volusia County MPO, City of Port Orange, and City of Daytona Beach) initiated a Phase I - Feasibility Study to evaluate the need for the project. Concern had been raised by government officials and local citizens that the projected traffic might not support the need for the roadway. Therefore, an extensive traffic modeling and analysis effort was undertaken with input from Volusia County, the City of Port Orange and the City of Daytona Beach. A public meeting was conducted in January 2004 to obtain input from the general public and the study was completed in April 2004. The projected traffic volumes on the LPGA Boulevard Extension demonstrated the need for a two-lane facility.

The proposed LPGA Boulevard Extension now being proposed was conceived as a critical link in establishing a regional north-south corridor as an alternative to I-95. Coupled with the existing LPGA Boulevard to the north and CR 415 to the south, the proposed facility would serve commuter traffic as well as local traffic generated by existing developments to the north and south. The study area has seen increasing crash rates in recent years with I-4 having a critical ratio above 2.0 for the five year period of 1998 to 2002; US 92 has had a critical ratio above 1.0 in 2001 and a five year average above 0.9; and CR 415 having over 40 crashes per year between 2000 and 2003 with 5 fatalities. Further, as explained in Section 2.6.2, several developments west of I-95 are currently being planned and/or developed while other developments are already under construction. This will increase traffic loadings on the local traffic network. Please refer to Section 2.3 and Section 2.8 for a summary of the improvements regarding capacity and safety with respect to this project. The need for this project is recognized by the Volusia County Metropolitan Planning Organization (MPO) as a priority roadway and is ranked third on the MPO's *Fiscal Year 2004/2005 List of Prioritized Roadway Projects* (adopted September 2004).

2.2 System Linkage

System linkage refers to the way a project fits into the area's existing and future transportation system. Figure 2-1 presents the existing and future regional network of which this project is proposed to be a part, and each facility is described below.

The existing roadways that the project is proposed to connect to (from south to north) are as follows:

- **CR 415 (Tomoka Farms Road)**: CR 415 is classified by Volusia County as a two-lane undivided arterial.
- **Shunz Road**: Shunz Road is a two-lane local road maintained by the City of Port Orange. The roadway is gated and controlled by City officials for utility access.

(#) Improvement Projects

1. Tymber Creek Rd Extension (new 4-lane)
2. Madeline Ave/Shunz Rd Extension (new 2-lane)
3. Dunn Ave Extension (new 2-lane)
4. CR 415 Alignment Study (Widen to 4 lanes)
5. Stagecoach Rd (new 2-lane)

- 2-lane facility
- 4-lane facility
- 6-lane facility
- Currently a 2-lane facility proposed conversion to a 4-lane facility

EXISTING AND FUTURE REGIONAL NETWORK
VOLUSIA COUNTY, FLORIDA

FIGURE 2-1

H:\projfile\6639orl\CDR\6639_2-1.cdr

- **I-4**: I-4 is classified by FDOT as a primary arterial freeway serving the project study area. The roadway is a four lane (with plans for a six-lane widening which is currently under design), limited access, divided highway that runs in an east-west direction over the length of the project area. I-4 is a designated multi-modal corridor with a rail envelope in the median that must be maintained.
- **SR 600 (US 92)**: SR 600 is classified by FDOT as a four-lane, divided principal arterial.
- **LPGA Boulevard (CR 4019)**: LPGA Boulevard is classified by Volusia County as a two-lane, undivided minor arterial.

The future projects discussed below are taken from the adopted Volusia County Five-Year Work Program (FY 2004/05 – FY 2008/09):

- **Tymber Creek Road Extension** – An alignment study and an engineering study for a new four-lane roadway from LPGA Boulevard to SR 40 was completed and adopted.
- **Madeline Avenue/Shunz Road Extension: West** – This project is a new two-lane facility with accommodations for widening to four lanes. The project limits extend from the existing eastern terminus at Williamson Boulevard, cross over I-95 and connect to CR 415 via Shunz Road. Right-of-way (FY 2007/2008) and construction (FY 2008/2009) are programmed for the extension of Madeline Avenue from Williamson Boulevard to Tomoka Farms Road and are identified as being funded by road impact fees. However, under the Proposed Five-Year Road Program (FY 2005/2006 – 2009/2010) currently being considered, the extension is shown as a roadway to be built by developers and has no public funding programmed for design or construction.
- **Dunn Avenue Extension** – Right-of-way (FY 2004/2005) and construction (FY 2005 - FY 2008) were programmed for the new two-lane extension of Dunn Avenue from Williamson Boulevard to CR 415. However, under the Proposed Five-Year Work Program (FY 2005/2006 – 2009/2010) currently being considered, construction is programmed for FY 2009/2010.
- **CR 415 (Tomoka Farms Road) Alignment Study** – Volusia County has recently completed a Land Use Study of the CR 415 (Tomoka Farms Road) corridor from SR 44 to US 92. One aspect of the study was to recommend the preservation of a 200-foot right-of-way corridor. The County initiated an alignment study of this corridor in July 2005. Engineering (FY 2004/2005) and right-of-way (FY 2006/2007) are already programmed for the widening of CR 415 to four-lanes from SR 44 to US 92. However, under the Proposed Five-Year Road Program (FY 2005/2006 – FY 2009/2010) currently being considered, right-of-way is not funded. A northern extension of CR 415 in the vicinity of Dunn Avenue is also being evaluated as part of development in the area.
- **Stagecoach Road construction (new road**) – As part of the Consolidated Tomoka Development, Stage Coach Road will be constructed as a new two-lane roadway connecting LPGA Boulevard north to SR 40.

These projects have their own independent utility, but they also serve to complete a regional network along with this proposed project. They will be monitored as this project progresses to ensure this project remains a useful component of the network.

2.3 Capacity Deficiencies

The concept of levels of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, and the perception by motorists and/or passengers. Six LOS are defined for each type of facility for which analysis procedures are available. The six LOS are given letter designations, A through F, with LOS A representing the best operating conditions and LOS F the worst.

The projected 2030 No Build and Build annual average daily traffic (AADT) volumes and the corresponding LOS designations are presented in Table 2-1 and Table 2-2. As summarized in the tables, the proposed LPGA Boulevard Extension is forecast to operate at LOS C or better, but nearly all of the key facilities in the surrounding network are forecast to operate at LOS F under both the No Build and the Build scenarios. However, the proposed LPGA Boulevard Extension does result in a redistribution of traffic and reduction of volumes on several facilities. The most notable are US 92 between CR 415 and LPGA Boulevard and Williamson Boulevard north of I-4. The reduction of traffic volumes on US 92 also improves the operation of the US 92 and CR 415 intersection. While the LOS in 2030 will be "F" for both the No Build and Build scenarios, the total intersection delay is reduced from 196 sec in the No Build to 99 sec for the Build scenario.

With some consideration for turn lane improvements, the projected 2030 LOS can be improved to "E". Improvement in the operations of this intersection is one of the goals of this project. The need for the facility is based on this reduction in traffic in current high-accident segments and intersections and also on providing a daily alternative and an emergency evacuation alternative to the surrounding congested facilities. Please refer to Section 2.8, Safety, for additional discussions that document the existing safety conditions for adjacent roadway segments and intersections.

A more detailed discussion of existing and future traffic conditions for the No Build and Build conditions is provided in the *Project Traffic: Existing and Future Conditions for LPGA Boulevard Extension from CR 415 to US 92 in Volusia County* (January 2006) and can be found in the project files. Additional detail is also found in Chapter 6 of the *Preliminary Engineering Report* (PER) dated January 2006 prepared by Kittelson and Associates.

TABLE 2-1
2030 No Build and Build Roadway Operational Characteristics

Facility	Roadway Segment	No Build		Build Alternative B-3	
		Projected 2030 AADT	LOS	Projected 2030 AADT	LOS
I-95	South of LPGA Blvd	140,500	**F**	139,500	**F**
	South of US 92	154,000	**F**	149,000	**F**
	South of I-4	104,000	**F**	104,500	**F**
Williamson Blvd	South of LPGA Blvd	80,000	**F**	80,200	**F**
	North of I-4	51,300	**F**	43,500	**F**
	South of Madeline Ave	32,000	**F**	33,500	**F**
CR 415	South of LPGA Blvd Extension	13,600	C	14,300	D
	South of US 92	24,000	**F**	18,600	**F**
	North of US 92	24,400	**F**	23,100	**F**
	South of LPGA Blvd	17,300	**F**	16,000	D
LPGA Blvd	West of I-95	59,000	**F**	58,400	**F**
	North of US 92	42,000	**F**	44,600	**F**
US 92	Between CR 415 and LPGA Blvd	65,700	**F**	55,300	**F**
	West of LPGA Blvd	65,700	**F**	68,400	**F**

Source: Ghyabi & Associates, Inc.

TABLE 2-2
2030 Build Roadway Operational Characteristics for the Proposed Extension (PER Build Alignment B-3)

Facility	Roadway Segment	Projected 2030 AADT	LOS
LPGA Blvd Ext	South of US 92	13,000	B
	North of Landfill Road	12,300	B
	Shunz Rd to Landfill Rd	12,400	C
	CR 415 to Shunz Rd	14,400	B
	East of CR 415 (Madeline Extension)	10.200	C

Source: Ghyabi & Associates, Inc.

2.4 Transportation Demand

The LPGA Boulevard Extension project is within the local government jurisdictions of the City of Daytona Beach, and Volusia County, and within the transportation planning jurisdictions of FDOT - District 5 and the Volusia County MPO. The FDOT transportation plan has been drawn upon to develop the alternatives contained in this environmental document. In addition, the plan provides the basis for the development of a statewide transportation system by prioritizing state projects listed in the Long Range Transportation Plan (LRTP) of regional and local jurisdictions. The Volusia County MPO is responsible for developing and updating the LRTP and for addressing all the transportation needs of the region. All local government comprehensive plans must be consistent with the LRTP of the Volusia County MPO.

The current adopted comprehensive planning documents of the regional and local government jurisdictions within the project study area were reviewed to determine their transportation policies, goals, and objectives. The proposed improvements to LPGA Boulevard reflect improvements on a regional scale and coordination with existing plans and policies.

The results of the review of the applicable regional plans and policies are briefly described below.

- **Volusia County MPO 2020 Long Range Transportation Plan (LRTP) – Refinement** (adopted November 2000) – The proposed transportation improvements for LPGA Boulevard within the project study area are consistent with the 2020 Long Range Transportation Plan Refinement.
- **Volusia County MPO Transportation Improvement Program (TIP) FY 2005/06 – 2009/10** (adopted June 28, 2005) – Volusia County MPO develops and approves the five-year TIP for the entire County. The proposed improvements as described in this report are included within the Volusia County MPO TIP.
- **Volusia County Comprehensive Plan** (adopted April 1990, amended through January 2002) – The proposed improvements are identified in the comprehensive plan.
- **The City of Daytona Beach Comprehensive Plan** (adopted 1990, amended through August 2003) – The proposed improvements are consistent with the goals and objectives contained within the comprehensive plan.

2.5 Governmental Authority

The project has been incorporated into the planning activities for the area. As discussed, the proposed improvements have been included in the long range transportation plan for the Volusia County MPO and local government comprehensive plans. The project is also being coordinated with federal, state, and local agencies, an environmental advisory group convened for the project, representatives of impacted jurisdictions, and the public.

Regional and local government planning documents, reviewed for consistency with the project are described in Section 2.4. As indicated, overall, the regional and local government comprehensive plans were found to be consistent with the project goals and objectives.

Governmental entities including federal, state, and local agencies and jurisdictions; environmental advisory group; and the public have been involved throughout the project development process. A project Public Involvement Program (PIP) was developed at the beginning of the study to help ensure that the appropriate input from all concerned citizens, agencies, private groups, and governmental entities was obtained and incorporated into the project development process. The following list includes the various public involvement techniques and methodologies employed throughout the project:

- Community Involvement
- Environmental Advisory Group
- Project Coordination Meetings
- Project Alternatives Public Workshops
- Special Interest Group Meetings
- Federal, State, and Local Government and Agency Briefings

Detailed information on the project public involvement program is presented in Chapter 5, Comments and Coordination, of this report. Appendix A contains copies of federal, state, and local agency correspondence and Appendix D contains the Advance Notification comments and responses.

Public meetings and agency briefings were held as part of the development of the proposed project. Topics discussed at these meetings included alignment configuration, right-of-way, wetland and floodplain impacts, and mitigation and overall construction costs. A summary of the meetings held is discussed further in Chapter 5, Comments and Coordination.

2.6 Social and Economic Demands

This section provides an overview of population, economics, and land use characteristics for the project study area.

2.6.1 Population and Employment

The population and employment data that has been approved by the Volusia County MPO as part of the ongoing development of the *2025 Long Range Transportation Plan* has been used for this analysis. The data shows that for all of Volusia County, the population in the Year 2000 was 443,575 and is projected to grow to 657,216 by the Year 2025. This represents a 48-percent increase over the 25-year period. For employment data, countywide the Year 2000 data shows 176,065 increasing to 267,381 in the Year 2025. This represents an approximate 52 percent increase over the 25-year period.

The LPGA Boulevard Extension has a smaller influence area that is generally bounded by I-95 to the east, Taylor Road and its westward extension to the south, the Rima Ridge Unit of the Tiger Bay Wildlife Management Area to the west and the LPGA Boulevard and I-95 interchange to the north. The data presented in Table 2-3 was obtained from the Traffic Analysis Zones (TAZ) for this area and is summarized herein.

TABLE 2-3
Population and Employment Statistics within Project Study Area

TAZ	2000		2025	
	Population	Employment	Population	Employment
2285	0	44	0	44
2332	10	608	45	608
2336	0	5	784	10
2337	44	547	51	847
2339	0	0	115	0
2340	0	42	1,154	451
2341	0	291	2,338	5,854
2388	0	0	0	0
2395	608	388	2,743	923
2397	40	256	45	385
2398	722	25	724	25
2401	1,217	379	5,884	1,489
2424	720	69	723	69
2425	8	79	8	79
Total	**3,369**	**2,733**	**14,614**	**10,784**

Source: Volusia County MPO

Since the Year 2000 data is low reflecting the undeveloped nature of the area, it is not reasonable to compare the growth percentages for this area versus the countywide numbers; however, the approximate 400-percent growth that is shown in both population and employment is significant enough and reflects the approved development that is forthcoming and discussed further throughout this document.

2.6.2 Land Use

The future extension of LPGA Boulevard is proposed to occur through large undeveloped, tracts of land, the majority of which is publicly held. Land uses adjacent to the project study area are primarily classified as industrial, commercial, low-density residential, agricultural, and conservation/wetland areas. Existing and future land use maps are presented in Section 4.1.4 of this document.

Figure 2-2 identifies the key developments that would directly impact a new LPGA Boulevard Extension. The primary residential/commercial developments are as follows:

- **Tomoka Farms Landfill** (existing) - Based on the *Tomoka Farms Industrial Park Traffic Impact Analysis Report*, the Landfill and Industrial Park sites combined are forecast to generate approximately 8,200 daily trips by 2008.
- **Landfill Industrial Park** (being developed) - Based on the *Tomoka Farms Industrial Park Traffic Impact Analysis Report*, the Landfill and Industrial Park sites combined are forecast to generate approximately 8,200 daily trips by 2008.

- **Coraci Planned Unit Development (PUD)** (being developed) – For the currently approved phases, the estimated trip generation will add approximately 3,500 to 4,000 daily trips to the network.
- **First Baptist Church of Daytona Beach** (planned) - Based on the *First Baptist Church of Daytona Beach Traffic Impact Analysis Report*, approximately 4,190 daily trips are projected to utilize the proposed church site.
- **Consolidated Tomoka Development** (being developed) – Since the Phase 2 Monitoring and Modeling Report is currently being prepared, there is no estimate available for number of additional trips on the roadway network.
- **Daytona West** (planned) – The City of Daytona Beach has made application for a Comprehensive Plan Amendment to increase density for property within the city. This includes increasing the density of development for approximately 2,000 acres of this property to be increased from one dwelling unit per acre to two dwelling units per acre. This process has been under review by DCA since March 2005. This change in density would generate an additional 19,750 daily trips to the network.

The characteristics of these developments are discussed further in Chapter 4.

2.7 Modal Relationships

The project study area is served by various multi-modal systems, including public transit service and bicycle and pedestrian facilities.

2.7.1 Mass Transit

VoTran provides public transportation service within the Volusia County area. It is a county-wide tax supported public transit system that began operations in 1975. The existing VoTran transit system consists of a fleet of over 50 fixed route buses, trolleys, and para-transit units. The nearest transit transfer stations within the study area include the United Way and Flea Market located near the intersection of CR 415 (Tomoka Farms Road) and US 92.

Low Density Residental
1du/ac

Daytona Beach

Consolidated
Tomoka
Development

Tiger Bay Wildlife
Management Area

LPGA Blvd.

First Baptist
Church of
Daytona Beach

B-3 & B-4

B-3

B-4

Tomoka
Farms
Landfill

Coraci PUD

Port Orange

B-3 & B-4

Shultz Rd.

Port Orange / Daytona Beach
Ownership

Port Orange Ownership

Port Orange / Volusia County
Ownership

Landfill
Industrial
Park

95
400
92
4
5
1
415

N
W E
S

2,000 0 2,000
Feet

FUTURE LAND USE AND DEVELOPMENT

FIGURE
2-2

2.7.2 Bicycle and Pedestrian Facilities

No sidewalks or multi-use trails currently exist on LPGA Boulevard, CR 415 (Tomoka Farms Road), or Shunz Road. The four-foot paved shoulders on CR 415 do not satisfy the FDOT criteria for undesignated bicycle lanes. Minimal pedestrian and bicycle activity was observed in the study area during several field visits. Although the LPGA Boulevard Extension project is currently not included in the *Volusia County Trails Plan* (adopted December 16, 2004), the County has stated that it will be incorporated into the trail network during the next plan update. This plan does show the existing section of LPGA Boulevard north of US 92 to be designated as an "Enhanced Bicycle/Pedestrian Corridor."

A 12-foot wide multi-use path offset from the roadway is proposed as part of the Madeline Avenue/Shunz Road Extension project being completed by Volusia County. The inclusion of a multi-use path is consistent with Chapter 2, Section G of the *Volusia County Comprehensive Plan*.

2.8 Safety

Accident data for the existing roadway facilities within the study area is briefly discussed below. Accident data was provided by FDOT for a five-year period from 1998 to 2002. The accident data provided by Volusia County was for a four-year period from 1999 to 2003.

Table 2-4 presents a summary of the roadway segments analyzed within the project study area. In completing the analysis, State and County results were compared separately due to the variation in years and type of data available. The collective study area data was evaluated to determine high crash segments and the associated economic loss per year. Fatalities, high injury locations, and crash type were also evaluated.

TABLE 2-4
Summary of Crash Analysis Study Segments

Roadway	Section	County	From	To	BMP	EMP
SR 600 (US 92)	79060000	Volusia	I-4	I-95	13.091	15.890
SR 400 (I-4)	79110000	Volusia	US 92	I-95	24.692	27.928
LPGA Blvd	--	Volusia	US 92	Memorial Stadium	--	--
CR 415 (Tomoka Farms Rd)	--	Volusia	Taylor Rd	US 92	--	--

BMP – Begin Mile Post
EMP – End Mile Post

The crash rate (actual and critical) and safety ratio were obtained from FDOT long form traffic crash reports. The actual crash rate is a function of the number of crashes taking place per million vehicle miles on the roadway being studied; whereas, the critical crash rate is based on the number of crashes taking place per million vehicle miles on similar type roadways in the state. The safety ratio is a dimensionless relationship between the actual crash rate and the critical crash rate. This measure is used to identify high accident locations. A safety ratio greater than 1.000 indicates that the facility is experiencing more accidents that would be typically anticipated on this type of facility.

SR 600 (US 92) – MP 13.091 to 15.890

As presented in Table 2-5, from 1998 to 2002 four out of five of the safety ratios have a value less than 1.0. This represents that a lower than average crash rate for this segment of roadway occurred four of the five years as compared to the statewide average crash rate on suburban, four-lane, divided and raised roadways. Analysis indicates a steady growth in ADT annually and a slight increase in fatal crashes for this section of roadway. On average, 40 crashes occurred annually, with 25 injuries as a result of these crashes and approximately $6.55 million dollars in economic loss. Three fatal crashes have occurred over the five-year analysis period, two of which were near the I-4 ramps. Table 2-6 presents a summary of the high crash locations for this roadway segment.

TABLE 2-5
Crash Summary for SR 600 (US 92)

Year	Length (mi)	ADT	No. Crashes	Crash Rate		Safety Ratio	No. Fatalities	No. Injuries	PDO	Economic Loss ($)
				Actual	Critical*					
1998	2.799	26,619	32	1.177	1.509	0.780	0	20	12	5,297,408
1999	2.799	27,252	41	1.473	1.509	0.976	0	27	14	6,787,304
2000	2.799	28,399	39	1.341	1.509	0.889	0	25	14	6,456,216
2001	2.799	28,888	47	1.593	1.509	1.056	1	28	18	7,780,568
2002	2.799	31,369	39	1.217	1.509	0.806	2	25	12	6,456,216
Average		**28,505**	**40**	**1.360**	**1.509**	**0.901**	**<1**	**25**	**14**	**6,555,542**

* Critical crash rate is based on this segment being a suburban, four-lane, divided, and raised roadway.

TABLE 2-6
High Crash Location Summary for SR 600 (MP 13.091-15.890)

SR 600 Milepost	No. Crashes	No. Injuries	No. Fatalities
13.993 – LPGA Blvd	41	37	0
15.548 – Bellevue Ext.	7	12	0
15.609 – CR 415	38	47	0

As presented in Table 2-7, rear-end type crashes accounted for 47 percent of the crashes from 1998-2002 in this segment of SR 600 (US 92). Angle, sideswipes, left turn, and overturned type crashes were also significant in this segment's crash history. The rear-end type of crashes may be the result of vehicles following too closely, a large speed differential between traveling vehicles, a lack of exclusive turn lanes in some locations or even inadequate clearance intervals and/or poorly placed advanced signal detection.

TABLE 2-7
Crash Type Summary for SR 600 (MP 13.091-15.890)

Type of Crash	Number of Crashes					Total
	1998	1999	2000	2001	2002	
Rear-End	16	21	25	21	11	94
Head-On					1	1
Angle	4	8	4	8	3	27
Sideswipe	3	3	2	3	2	13
Left Turn	3			3	4	10
Right Turn	1					1
Hit Sign/Sign Post					1	1
Hit Bridge					1	1
Collision w/Pedestrian		1			1	2
Hit Guardrail			1	1	1	3
Hit Tree/Shrubbery			1	2		3
Collision w/Movable Object on Road				1	1	1
Ran Into Ditch/Culvert	1	2	3			6
Ran Off Road/Into Water					1	1
Overturned	2	4	1	2		9
Tractor/Trailer Jackknifed					1	1
Collision w/Animal				1	1	1
Occupant fell from vehicle				1		1
Tractor/Trailer Jackknifed					1	1
Other	2	2	2	4	9	19
Subtotal	32	41	39	47	39	198

Source: FDOT Crash Data Report

Approximately 13 percent of the crashes occurred at night with no street lighting. In addition, the data indicates that 28 percent of all crashes occurred under wet, slippery roadway conditions. Rutting and poor pavement conditions under wet, slippery conditions can lead to vehicular "hydroplaning", causing drivers to lose control of their vehicle.

SR 400 (I-4) – MP 24.692 to 27.928

As presented in Table 2-8, this segment of SR 400 in Volusia County has an FDOT safety ratio in excess of 1.0 for all five years of crash data. This indicates that the crash rate was higher along this stretch of SR 400 than the statewide average crash rate on other rural interstate highways. Analysis indicates a steady increase in ADT values since 2000, and an increase in the safety ratio since 1999. On average, 26 crashes occur annually, with 17 injuries, and over $6.1 million dollars in annual economic loss. One fatality occurred along this stretch of SR 400 over the study period. Table 2-9 presents a summary of the high crash locations for this roadway segment.

TABLE 2-8
Crash Summary for SR 400 (I-4)

Year	Length (mi)	ADT	No. Crashes	Crash Rate		Safety Ratio	No. Fatalities	No. Injuries	PDO	Economic Loss ($)
				Actual	Critical*					
1998	3.236	27,727	24	0.733	0.314	2.334	0	14	10	5,570,400
1999	3.236	29,473	19	0.546	0.314	1.739	1	12	6	4,409,900
2000	3.236	25,920	18	0.586	0.314	1.866	0	13	5	4,177,800
2001	3.236	30,459	33	0.917	0.314	2.921	0	19	14	7,659,300
2002	3.236	31,581	37	0.992	0.314	3.159	0	27	10	8,587,700
Average		**29,032**	**26**	**0.755**	**0.314**	**2.404**	**<1**	**17**	**9**	**6,081,020**

* Critical crash rate is based on this segment being a rural interstate facility.

TABLE 2-9
High Crash Location Summary for SR 400 (MP 24.692-27.928)

SR 400 Milepost	No. Crashes	No. Injuries	No. Fatalities
25.702 – 1 mi east of SR 600 off-ramp	11	12	0
26.702 – near Tomoka River	6	9	0
27.500 – I-95 on-ramp	10	11	0

A review of Table 2-10 shows that a majority of the crashes are rear-end type, sideswipes, and roadway departure type (guardrails, trees, ran into ditch/culvert or overturned vehicle). Analysis of the five-year crash period also indicates that 72 of the 131 crashes were roadway departure crashes and 31 percent of all crashes occurred at night with no roadway lighting. In addition, the data indicated that 40 percent of all crashes occurred under wet, slippery roadway conditions. There were no reported head-on crashes on I-4 during the study period.

TABLE 2-10
Crash Type Summary for SR 400 (MP 24.692-27.928)

Type of Crash	Number of Crashes					Total
	1998	1999	2000	2001	2002	
Rear-End	6	3	5	7	8	29
Angle	1		1	3	2	7
Sideswipe	4	4		3	3	14
Collision w/ Parked Car		1				1
Hit Sign/Sign Post					1	1
Hit Guardrail		2	1	2	2	7
Hit Concrete Barrier Wall/Bridge/Rail		1	1	1		3
Hit Tree/Shrubbery	4	3	4	5	6	22
Ran Into Ditch/Culvert	2	2	1	4	3	12
Ran Off Road/Into Water		2		2	2	6
Overturned	5	1	3	3	8	20
Occupant fell from vehicle	1					1
Collision w/Moveable object on road			2		1	3
Tractor/Trailer Jackknifed	1			1		2
Other				2	1	3
Subtotal	24	19	18	33	37	131

Source: FDOT Crash Data Report

LPGA Boulevard

Table 2-11 presents a summary of the crash analysis for LPGA Boulevard within the study area. A review of the data indicates a steady decrease in the number of crashes since 2000, and no fatalities in the five-year crash period. On average, 7 crashes occur annually, with less than 3 injuries as a result of those crashes. Rear-end, angle, and collision with animal crashes are the most frequent crash type along this segment of LPGA Boulevard. Nearly 40 percent of the crashes occurred at night with no roadway lighting.

TABLE 2-11
Crash Summary for LPGA Boulevard

Year	No. Crashes	Crash Type					Dark w/out Streetlight	DUI	No. Injuries	No. Fatalities
		Rear End	Animal	Overturn	Angle	Other				
1999	8	4	2		1	1	2		3	0
2000	11		3		1	7	4	1	2	0
2001	7			3	1	3	3		4	0
2002	6		3		1	2	3		2	0
2003	3		1			2	2		1	0
Total	35	4	9	3	4	15	14	1	12	0

CR 415 (Tomoka Farms Road)

Table 2-12 presents a summary of the crash analysis for CR 415 (Tomoka Farms Road) in the study area and Table 2-13 shows a summary of the high crash locations for this roadway segment. As presented in Table 2-12, turning/angle type crashes are the most frequent along this segment of CR 415 (Tomoka Farms Road). These types of crashes typically occur at or near intersections. Crash records indicate that careless driving or failure to yield right-of-way caused most of these accidents. Approximately half of all crashes resulted in injury, including five that resulted in fatalities.

TABLE 2-12
Crash Summary for CR 415 (Tomoka Farms Road)

Year	No. Crashes	Crash Type					No. Injuries	No. Fatalities
		Rear-End	Turn/Angle	Sideswipe	Ditch	Other		
1999	23	4	11	2	2	4	6	0
2000	48	4	22	3	3	16	35	2
2001	42	11	18	0	2	11	28	1
2002	44	5	21	4	4	10	23	0
2003	43	4	24	1	2	12	25	2
Total	200	28	96	10	13	53	117	5

TABLE 2-13
High Crash Location Summary for CR 415 (Tomoka Farms Road)

CR 415 Cross Street	No. Crashes	No. Injuries	No. Fatalities
Taylor Rd	25	26	0
Bellevue Ave	80	37	2
Halifax Dr	15	6	1

By providing an alternative connection for local and commuter traffic within the project study area, it is reasonable to assume that the proposed LPGA Boulevard Extension could potentially reduce conflicts at the following key roadways:

- I-95: Short trips among the interchanges between SR 421 and LPGA Boulevard will likely be reduced on I-95. This will reduce the intensity of vehicles at merging and diverging areas.
- CR 415 (Tomoka Farms Road): Traffic volume on CR 415 (Tomoka Farms Road) between SR 600 (US 92) and Shunz Road will be reduced. By reducing traffic on CR 415, conflicts at key intersections will also be reduced. Specifically, the reduction of vehicles, especially turning vehicles, at the CR 415/SR 600 (US 92) intersection may lead to a decrease in accidents.
- SR 600 (US 92): By providing a more direct connection to CR 415 (Tomoka Farms Road) to the south, the LPGA Boulevard Extension project could significantly reduce the number of vehicles that use SR 600 (US 92) to access CR 415 (Tomoka Farms Road).

2.9 Navigation

There are no navigable waterway crossings within the project study area; therefore, U.S. Coast Guard navigational criteria are not applicable to this project.

Chapter 3

Alternatives Considered

Environmental Assessment

LPGA BLVD EXTENSION PD&E STUDY

3. Alternatives Considered

This chapter discusses the alternative development and assessment process for the LPGA Boulevard Extension project. The conditions described herein include those related to:

- No Project (No Build) Alternative
- Transportation System Management (TSM) Alternative
- Study Alternatives
- Preferred Alternative

3.1 No Project (No Build) Alternative

The No Project Alternative (often referred to as the No Build Alternative) assumes that no improvements will be made in the study area and that existing conditions will remain. This alternative is often used to compare the costs and benefits of implementing proposed improvements versus the alternative of continuing to use the existing facility. For this study, the No Project Alternative would mean that the extension of LPGA Boulevard is not constructed, and therefore, none of the proposed land needed for the project is impacted. The No Project Alternative will be considered a viable option throughout the PD&E Study. Distinct advantages and disadvantages associated with this alternative are described below.

Advantages

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

Disadvantages

- The purpose and need of the project are not satisfied because:
  - An alternative parallel route connecting to I-95 and CR 415 (Tomoka Farms Road) is not provided. Therefore, traffic is not relieved on either facility.
  - A key link in the future transportation system to provide better system connectivity and a continuous parallel route west of I-95 is not constructed.
- The No Project Alternative is not consistent with area-wide transportation plans or local government desires.

3.2 Transportation System Management (TSM) Alternative

Transportation System Management (TSM) Alternatives typically consist of lower cost, comparatively minor improvements that address a specific operational or safety problem, allowing the existing facility to be utilized more efficiently. Typical TSM Alternatives consist of intersection widening and turn lane storage enhancements, the provision of access management controls, improved signing and marking, and improved transit service.

Typical TSM Alternatives will likely improve the operation and/or safety of 'spot' locations in the study area. However, such improvements would not address the critical issue of providing an alternative connection to I-95 and CR 415 (Tomoka Farms Road) and relieving traffic on those facilities.

The project corridor has not been identified as a transit-supported corridor and no funding has been designated for a transit system in the vicinity. Given that the proposed LPGA Boulevard Extension has impacts to several existing facilities (I-95, CR 415, US 92), isolated improvements do not achieve the objectives set forth by this study. Therefore, TSM Alternatives are not included in the alternative selection process.

3.3 Study Alternatives

The process for the development and evaluation of the study alternatives followed a three-tier process.

- Tier 1 – Corridor Analysis
- Tier 2 – Alignments Evaluated
- Tier 3 – Alignment Refinements

3.3.1 Tier 1 – Corridor Analysis

Existing Corridors

Alternate existing routes near the proposed LPGA Boulevard Extension that serve north-south traffic, include I-95 and CR 415 (Tomoka Farms Road). However, since I-95 is a Florida Intrastate Highway System (FIHS)/Strategic Intermodal System (SIS) facility, it shall not be considered as an alternative corridor for local and commuter traffic within the immediate region.

CR 415 (Tomoka Farms Road) currently extends north of US 92 and is shown in the currently proposed Volusia County *Five-Year Road Program* to be extended northward as a developer financed roadway to intersect with the Dunn Avenue Extension between CR 415 (Tomoka Farms Road) and Williamson Boulevard. Furthermore, this roadway experiences greater congestion to the north of I-4 and at the intersections with SR 600 (US 92) and Bellevue Avenue due to the closely spaced intersections and influence of the I-95/SR 600 (US 92) interchange. Widening CR 415 (Tomoka Farms Road) would not be consistent with two project goals already established:

1. To provide a continuous north-south roadway west of I-95 connecting CR 415 (Tomoka Farms Road) to SR 40; and

2. To reduce traffic from the intersections of CR 415 (Tomoka Farms Road) with SR 600 (US 92) and Bellevue Road.

Therefore, this alignment should not be considered as an alternative corridor.

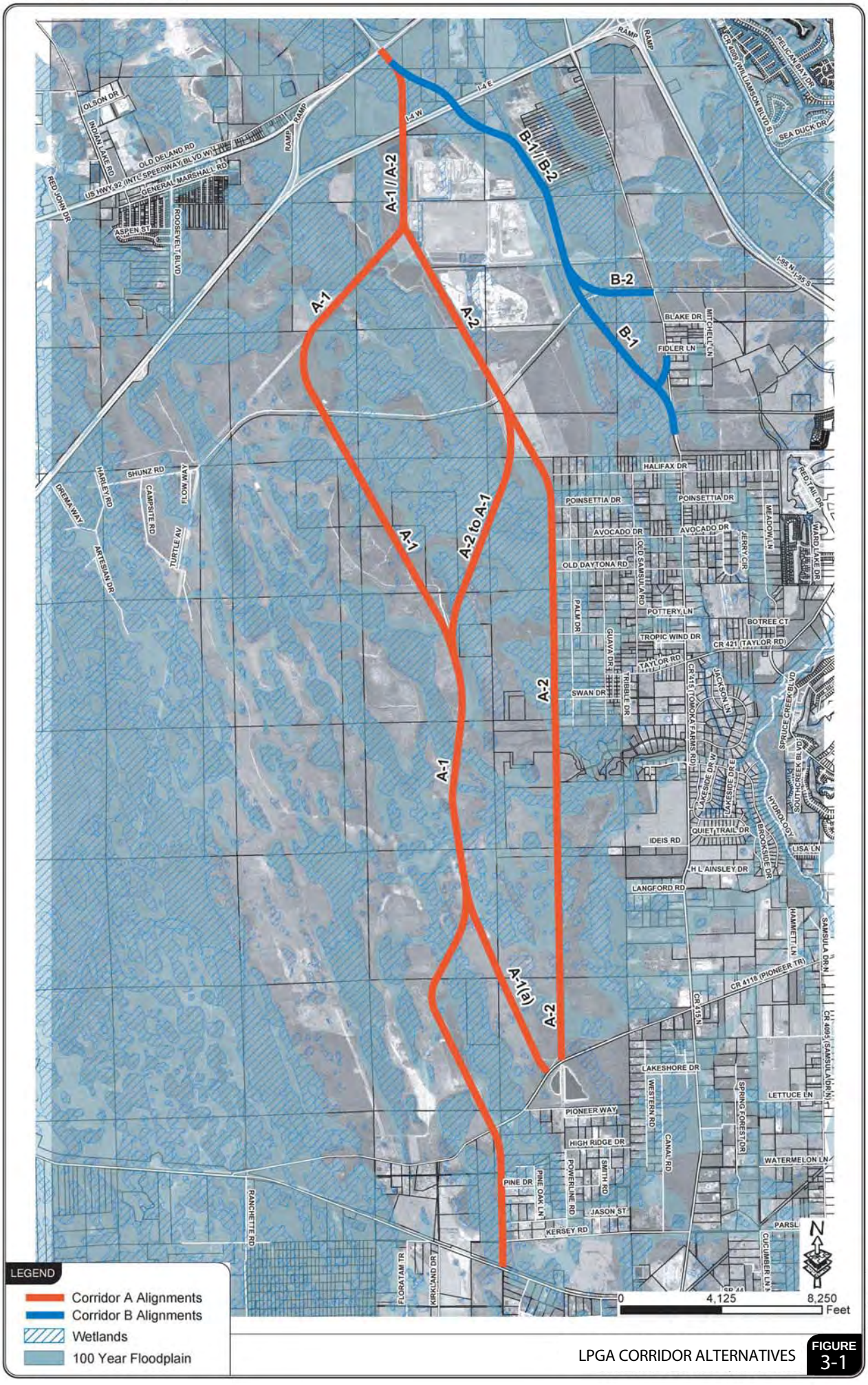
Potential Corridors

Two overall corridors (with alternative alignments/connections) were evaluated on a planning level basis for this study. Figure 3-1 presents the general corridors evaluated for the study. Both corridors intersect with the existing LPGA Boulevard to the north. The two potential corridors have the following characteristics:

Corridor A – Corridor A was considered as a new roadway that would either originate at SR 44 or CR 4118 (Pioneer Trail) and would parallel CR 415 (Tomoka Farms Road) to the west. Corridor A follows a westerly path around the existing Volusia County Landfill and the proposed Landfill Industrial Park then crosses over I-4 and terminates at the existing SR 600 (US 92) and existing LPGA Boulevard intersection. Corridor A was developed in response to suggestions raised by Volusia County citizens at the CR 415 (Tomoka Farms Road) land use study public meetings. The path for Corridor A-1 was chosen to minimize impacts to wetlands while the path for Corridor A-2 was chosen to minimize the length of the roadway. Alternatives were considered where the corridors would terminate at either CR 4118 (Pioneer Trail) or at SR 44.

Corridor B – Corridor B follows an easterly path around the existing Volusia County Landfill and the proposed Landfill Industrial Park then crosses over I-4 and terminates at the existing SR 600 (US 92) and existing LPGA Boulevard intersection. A preliminary alternatives screening of Corridor B was completed by Volusia County during the *LPGA Boulevard – Madeline Avenue Alignment Study* (June 2003) and by FDOT during the *LPGA Boulevard Feasibility Study* (April 2004). The two primary alternatives for Corridor B are as follows:

- B-1: This study alignment option was advanced in the *LPGA Boulevard Feasibility Study* as it resembled the alignment concept shown in the currently adopted *Volusia County MPO 2020 Long Range Transportation Plan*. It originates on the south with an intersection with CR 415 (Tomoka Farms Road) that would provide primary connectivity between the LPGA Boulevard Extension and CR 415 (Tomoka Farms Road). This concept was also shown in the Transportation Element of the *City of Daytona Beach Comprehensive Plan*. This alignment would allow an LPGA Extension to function as more of a regional roadway, serving north/south traffic that is presently utilizing CR 415. This alignment would allow an LPGA Extension to function as more of a regional roadway, serving north/south traffic that is presently utilizing CR 415.
- B-2: As part of the *LPGA Boulevard – Madeline Avenue Alignment Study* (June 2003), Volusia County developed a preliminary alignment for the LPGA Boulevard Extension, now identified as Alignment B-2. This identified the LPGA Boulevard Extension tying into the Madeline Avenue intersection with CR 415 (Tomoka Farms Road). Thus, it created a four-legged intersection in which the LPGA Boulevard Extension was essentially a continuation of Madeline Avenue beyond CR 415 (Tomoka Farms Road) up to US 92 and the existing LPGA Boulevard.



LPGA CORRIDOR ALTERNATIVES

FIGURE 3-1

6639CorridorMap11x17.mxd

A comparison of alternative corridors is presented in Table 3-1. Combinations of quantitative and qualitative (high, moderate, low) descriptions are used in the comparison. It is noted that the qualitative descriptions only apply to the comparison of these alternatives and do not indicate an overall impact to the project study area. Specific impacts (i.e., wetland and floodplain) were only calculated for the Preferred Alternative. The following planning-level measures were used to evaluate the relative costs, impacts, and issues associated with each study corridor:

- Travel Distance: Total centerline length from the beginning to the end of the representative alignment
- Relative Cost: Costs were compared using planning-level estimates based on FDOT 2002 Transportation Costs (published by Systems Planning) adjusted to 2004. It is noted that the costs provided are meant to provide a magnitude of comparison between alternatives and not to serve as a basis for project programming or administration
- Floodplain Impacts: Floodplains directly encroached upon by excavation or placement of fill material
- Wetland Impacts: Direct encroachment of a wetland by either excavation or placement of fill material
- Compatibility with local planning effort
- Support of local governments

TABLE 3-1
Alternative Corridor Evaluation Matrix

Category	Corridor A		Corridor B		Comment
	A-1	A-2	B-1	B-2	
Travel Distance	10.3 mi	8.2 mi	3.9 mi	3.1 mi	Corridor A length is approx. 2 to 2.5 times Corridor B
Relative Cost	High	High	Moderate	Moderate	Corridor A has a cost approx. 2 to 2.5 times Corridor B
Floodplain Impact	High	High	Moderate	Moderate	Greater length of Corridor A results in greater impact
Wetland Impact	High	High	Moderate	Moderate	Greater length of Corridor A results in greater impact
Compatibility with Planned Projects	Low	Low	High/ Moderate	High	Corridor B included in existing planning efforts.
Support of Local Governments	Low	Low	High/ Moderate	High	Corridor B supported by local government reps at October 14, 2004 meeting

Note: Comparison between Corridors A and B only. Specific impacts will be determined only for the preferred corridor.

Selection of Viable Corridors

Based on the evaluation of proposed alternatives and input received from the local government representatives associated with this project, Corridor A was determined to not be consistent with the established goals of the project. In addition, the project costs were too high as well as the impacts to floodplains and wetlands. Therefore, Corridor A was eliminated from further consideration and Corridor B was retained as a viable corridor alternative. Therefore, alternative roadway alignments were developed for Corridor B and evaluated against the No Build Alternative.

3.3.2 Tier 2 – Alignments Evaluated during Feasibility Study

The second tier analysis involved the evaluation of alignments initiated in the Feasibility Study and developed further in this PD&E Study. The alignments from the Feasibility Study were developed in greater detail in the initial stages of the PD&E Study for comparative evaluation. This initial evaluation was based upon limited field data and was presented at the Alternatives Public Meeting. The second tier alignment development was done in sufficient detail to allow the project surveyor to stake the alignments in the field affording greater evaluation (i.e., geotechnical field work), and environmental and drainage analysis.

As previously mentioned in Section 3.3.1, Corridor B was selected for further analysis. For all alternatives developed for Corridor B, the northern terminus with the existing LPGA Boulevard at US 92 and the alignment over I-4 were common elements set to minimize the skew of the bridge over I-4 and to minimize impacts to wetlands. The alignment development between I-4 and US 92 was also closely coordinated with First Baptist Church of Daytona Beach, who was in the process of expanding their facilities in this area.

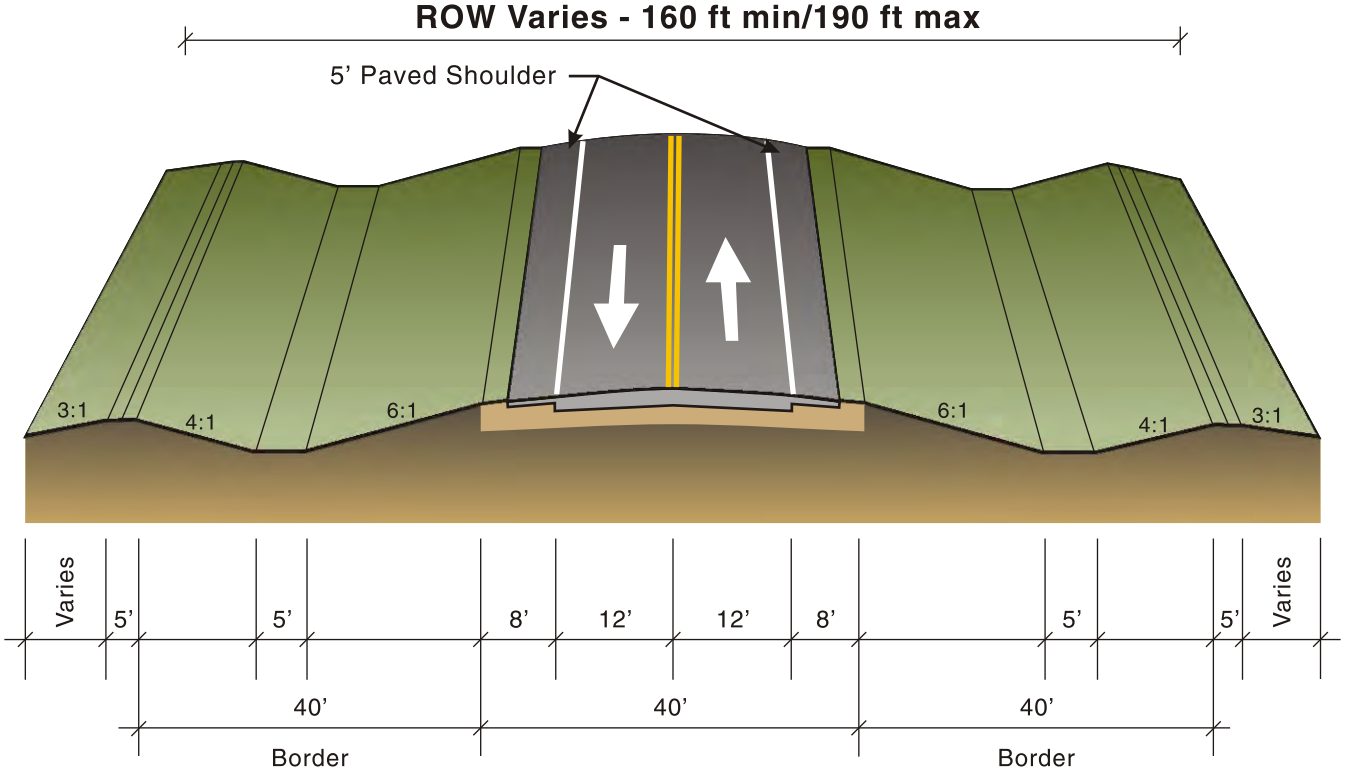
3.3.2.1 Typical Section Development

The design traffic demonstrated that this facility at minimum required a two-lane section. It should also be noted that this facility is listed on the *Volusia County Thoroughfare Plan,* which indicates the County's desire to be able to widen this roadway to four lanes in the future. Therefore, the horizontal geometry has been developed to provide adequate tangent runout between superelevated curves for the future four-lane condition. All other design criteria established is for a two-lane facility.

Two typical sections, one with a 12-foot paved multi-use trail on the north/east side of the alignment and one without the multi-use trail, were considered for each alignment. The typical sections for the proposed LPGA Boulevard Extension are presented in Figure 3-2 and reflect two 12-foot lanes, a 5-foot paved shoulder on each side with a total shoulder of 8 feet on each side. These typical sections provide a rural condition with ditch drainage. From the point of shoulder, a 6:1 front slope is provided to the edge of clear recovery (30 feet) that is generally the bottom of ditch. On the back side of the ditch the back slope is 4:1.

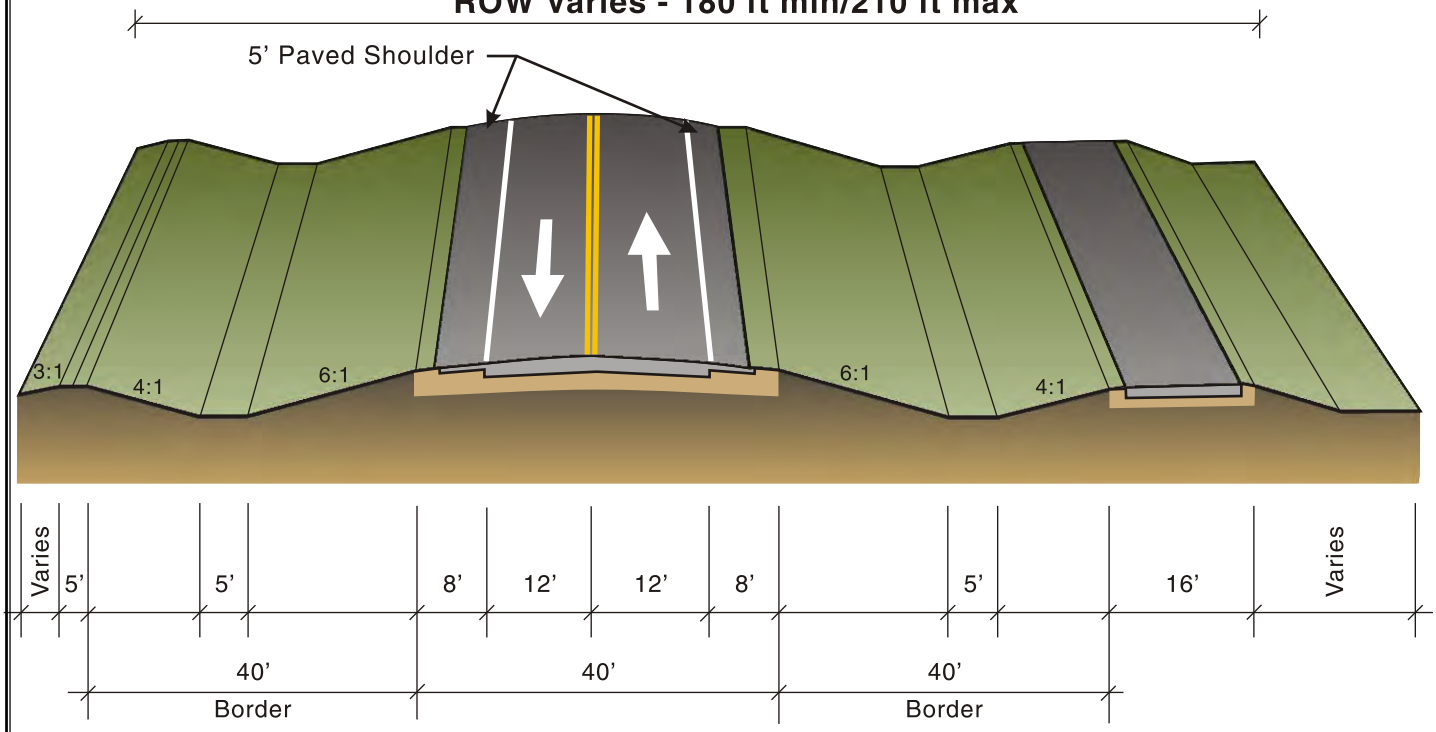
Two-Lane Typical Section

ROW Varies - 160 ft min/190 ft max



Two-Lane Typical Section (with Multi-Use Trail)

ROW Varies - 180 ft min/210 ft max



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PROPOSED LPGA BOULEVARD EXTENSION TYPICAL SECTION

FIGURE 3-2

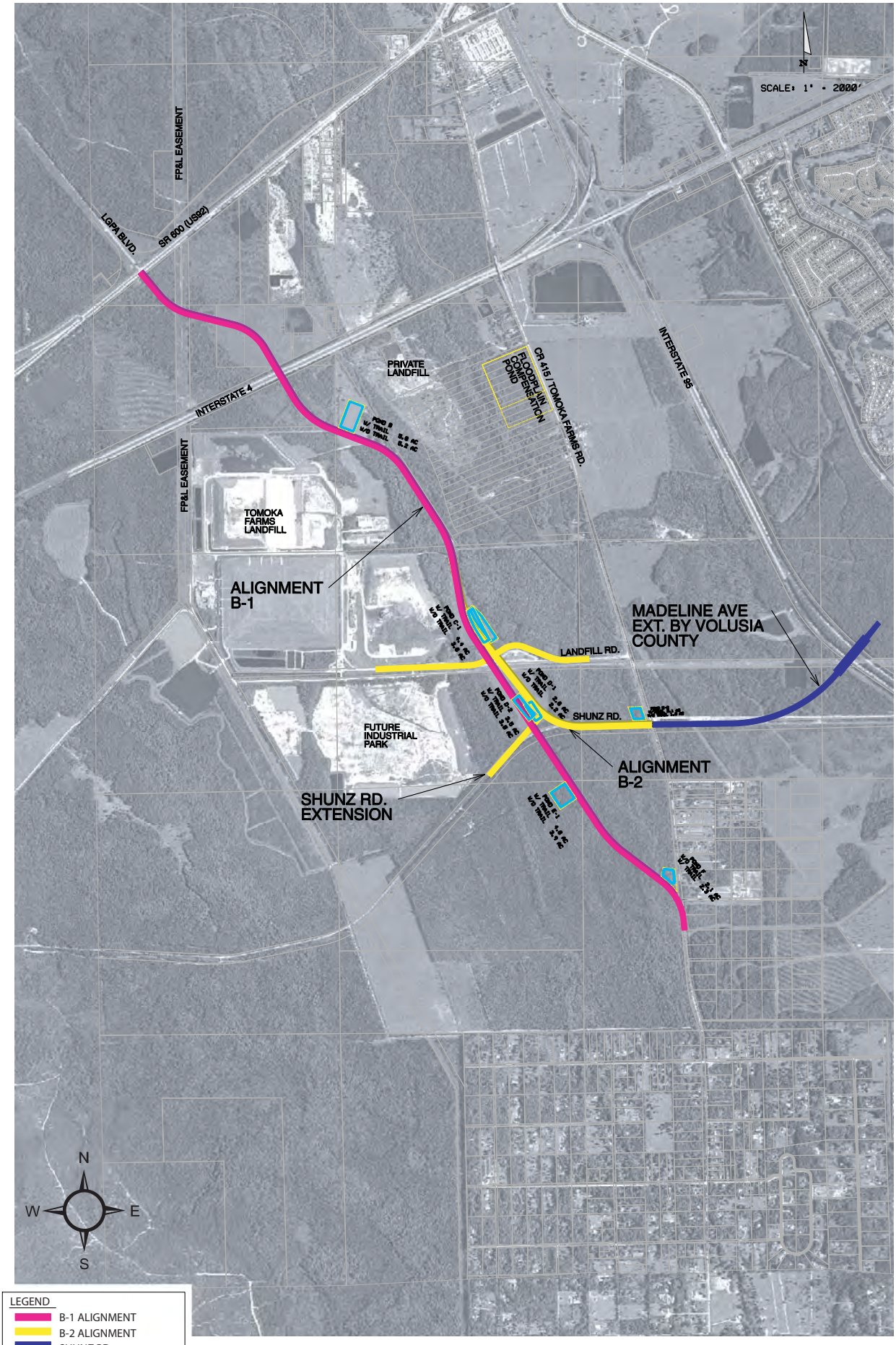
In the typical section without the multi-use trail, a 5 foot top of berm is provided to provide for maintenance and then the slope to natural ground is 3:1. For the typical section with the multi-use trail, the 12 foot paved trail width and 2 feet of sod on both sides is provided and then the slope to natural ground is 4:1 that is consistent with the slope on the ditch side allowing a bicyclist a better opportunity to recover when running off the trail. The right-of-way requirements have been set based upon the proposed profile and developing select cross sections at the locations of high and low profile grade points. For the typical section without trail, the minimum right-of-way required is 160 feet and the maximum is 180 feet. For typical section with trail, the right-of-way requirements varied from a minimum of 180 feet to a maximum of 210 feet. At Shunz Road, with the development of the intersection in a superelevated alignment, the right-of-way requirements increased to 210 feet without trail and 225 feet with trail. This is the location requiring the greatest amount of right-of-way.

In discussion with the environmental agencies during the course of the study, the consideration of having a 4:1 or even a 2:1 front slope in the clear recovery area was brought forth to reduce the impacts to wetland and floodplain areas. This is not consistent with the roadside slopes criteria presented in Table 2.4.1 of the FDOT's *Plans Preparation Manual* and would require a design variance when the project proceeds to design. It is noted that the reduction in the front slope from 6:1 to 4:1 coupled with a change in back slope from 4:1 to 3:1 would result in a total right-of-way reduction of approximately 21 feet from that proposed. With the average right-of-way for the typical section without trail being approximately 170 feet and with trail being approximately 190 feet, this could result in an approximate 11 to 12 percent reduction in right-of-way requirements. While not a direct correlation, a reduction in wetland and floodplain impacts could be expected as well as a reduction in right-of-way and construction costs. Since these variances are not granted until the project proceeds into final design and a goal of the PD&E process is to assess potential impacts based on a worst-case scenario, this PD&E study will be conducted using front and back slopes that are consistent with the current FDOT guidelines.

3.3.2.2 Tier 2 Alignment Alternatives

Based on the results of the initial Feasibility Study (completed April 2004), Alternatives B-1 and B-2, as presented in Figure 3-3, were the initial focus of the analysis during the PD&E Study.

At the initial stages of the PD&E study and as part of the Tier 2 analysis, Alternatives B-1 and B-2 were further refined from the alignments developed in the original Feasibility Study. GeoPak was used to develop horizontal alignments, initial profiles, and stationing for both alignments. For both B-1 and B-2, a short realignment of Shunz Road to form an intersection with the proposed LPGA Boulevard Extension was identified. The horizontal alignment was developed to allow the staking of the proposed centerlines of the B-1 and B-2 alignments affording more detailed environmental and geotechnical work to be conducted late in 2004 and early 2005.



ALIGNMENTS B-1 AND B-2

FIGURE 3-3

Alternative B-1

Alternative Alignment B-1 originated from the currently adopted Volusia County LRTP. The LRTP alignment was altered through the feasibility report and initial stages of the PD&E study to best balance constructability, connectivity, wetland and floodplain impacts, intersection configurations, and overall bridge lengths.

Alternative B-1 is the longer of the initial alternatives, stretching 3.67 miles from CR 415 (Tomoka Farms Road) approximately one-half mile north of Halifax Drive, to the existing LPGA Boulevard terminus at US 92. This alignment resulted in impacting over 100 acres of land on 30 parcels, the majority of which is wetland and/or floodplain. No residences or businesses would be relocated with Alignment B-1. In addition to the proposed bridge crossing over I-4, Alignment B-1 would require a lengthy bridge near the southern terminus to cross over the headwaters of the nearby Tomoka River.

A directional, three-way intersection is proposed at the southern terminus with CR 415 (Tomoka Farms Road) and the proposed LPGA Boulevard Extension, which would allow the major movement to become the LPGA Boulevard Extension, instead of the existing CR 415 (Tomoka Farms Road). Alignment B-1 would also develop a four-way intersection at Shunz Road, Landfill Road, and US 92.

Alternative B-2

Alternative Alignment B-2 originated from the *Madeline Avenue Extension Study* conducted by the Volusia County Planning and Public Works Department. That study identified the extension of Madeline Avenue from the Williamson Boulevard terminus east over I-95, along Shunz Road and heading north to connect with the existing LPGA Boulevard at US 92. The Volusia County alignment was altered through the LPGA feasibility report and initial stages of the PD&E study to best balance constructability, connectivity, wetland and floodplain impacts, intersection configurations, and overall bridge lengths.

Alternative B-2 is the shorter of the alternatives, stretching 3.08 miles from the intersection of CR 415 (Tomoka Farms Road) and Shunz Road, to the existing LPGA Boulevard terminus at US 92. This alignment resulted in impacting over 85 acres of land on 29 parcels, with the majority being wetland and/or floodplain. No residences or businesses would be relocated with Alignment B-2, and the only bridge required with this alignment would be to cross over I-4.

Under existing conditions, Alignment B-2 would form a three-way intersection at CR 415 (Tomoka Farms Road). If the Madeline Avenue Extension is constructed, a four-way intersection would be formed with the LPGA Boulevard Extension and CR 415 (Tomoka Farms Road). Alignment B-2 would develop a three-way intersection with the Shunz Road Extension and a four-way intersection at Landfill Road, and US 92.

3.3.2.3 B-1 and B-2 Alternative Analysis

An evaluation of Alternatives B-1 and B-2 were presented at a Public Meeting held in December 2004. The engineering factors used in the evaluation of the study alternatives included: Drainage, Traffic Operations, Construction Costs, Right-of-Way Impacts, Constructability/Maintenance of Traffic, Utility Impacts, and Access. The environmental evaluation factors used included: Wetland Impacts, Soil Contamination, Water Quality, Endangered Species, Air Quality, Noise, and Cultural and Public Resources. Table 3-2 presents the Alternatives Evaluation Matrix from the Public Meeting that was held in December 2004.

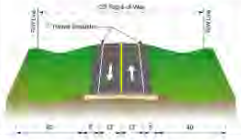
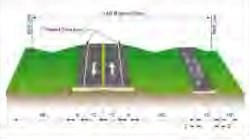
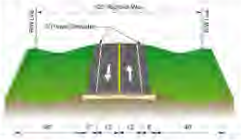
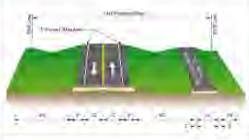
The results presented in Table 3-2 are from the Tier 2 analysis conducted as part of the Feasibility Study and initial stages of the PD&E study, and are considered preliminary estimates of costs and impacts for comparative purposes between alignments. As the alignments were refined in the overall PD&E process, greater detail was incorporated into the impacts and cost estimates.

3.3.2.4 Tier 2 Alternative Adjustments

During and after the Public Meeting that was held in December 2004, the project team received comments and had further discussions with the local governments and stakeholders to identify a Preferred Alternative. To better define and discuss issues raised at the Public Meeting, meetings and presentations were conducted with the project Environmental Advisory Group (EAG), the Volusia County Council, Volusia County MPO, Port Orange City Council, and with the City of Daytona Beach City Manager and Director of Public Works. Based on the feedback received at these meetings and presentations, the following adjustments to the proposed alignments for the LPGA Boulevard Extension were made:

1. Alternative B-1 was eliminated from further consideration for the following reasons:
    - Lower travel volumes projected than originally expected
    - Higher costs for both construction and right of way acquisition
    - Higher wetland and floodplain impacts
    - Does not provide a direct connection to the Madeline Avenue Extension, which is to be done by Volusia County.
2. Alternative B-3 was created. Alternative B-3 has the same termini as Alternative B-2 and incorporated the following modifications (from B-2):
    - Shifted the alignment to the north of existing Shunz Road to better align with the proposed Madeline Avenue Extension alignment and to avoid major utility lines along Shunz Road.
    - Shifted the alignment as it crossed Landfill Road to the west to avoid a proposed retention pond to be placed at the existing location of the landfill scales (to be relocated).
    - Shifted the alignment onto the Kirton Property to minimize the impacts to the outfall ditch serving the landfill and its associated NPDES permit.

TABLE 3-2
Alternatives B-1 and B-2 Evaluation Matrix

		Alt. B-1 without trail	Alt. B-1 with trail	Alt. B-2 without trail	Alt. B-2 with trail
	No Build				
Segment Length		3.67 miles	3.67 miles	3.08 miles	3.08 miles
Right-of-Way (R/W) Impacts					
R/W to be acquired for project (acres)	0	106.3	127.0	85.7	100.9
Number of parcels impacted	0	30	30	29	29
Relocations					
Residences	None	None	None	None	None
Businesses	None	None	None	None	None
Natural, Environmental and Physical Impacts					
Species/Habitat	None	Yes	Yes	Yes	Yes
Total Wetland Impact Area (acres)	None	61.9	77.5	48.6	58.5
Floodplain Encroachment (acre-feet)	None	36.9	44.6	26.1	31.7
Social & Neighborhood Impacts	None	None	None	None	None
Estimated Costs					
Engineering Design Costs	$0	$2,200,000	$2,500,000	$2,200,000	$2,500,000
Right-of-Way Costs	$0	$6,500,000	$7,500,000	$5,700,000	$6,600,000
Wetland Mitigation Costs	$0	$5,500,000	$6,600,000	$4,300,000	$5,200,000
Roadway Construction Costs	$0	$15,600,000	$17,700,000	$13,400,000	$15,200,000
Bridge Construction Costs	$0	$6,800,000	$8,600,000	$1,900,000	$2,500,000
CE&I Costs	$0	$3,400,000	$3,900,000	$2,300,000	$2,700,000
Total Cost	$0	$40,000,000	$46,800,000	$29,800,000	$34,700,000

- Shifted the alignment crossing of I-4 to the east to minimize the impacts to a mitigated wetland area and the landfill sheet flow drainage system.

3. At the request of the EAG meeting held in February 2005, Alignment B-4 was created to consider the crossing of previously disturbed lands to minimize environmental impacts that are currently in the active parts of the landfill. Alternative B-4 has the same termini as Alternative B-2.

This comparative analysis of alternatives completed the Tier 2 analysis, thus creating Alignments B-3 and B-4. Alignments B-3 and B-4, as presented in Figure 3-4, are discussed further as part of a more detailed evaluation that was performed during the Tier 3 analysis.

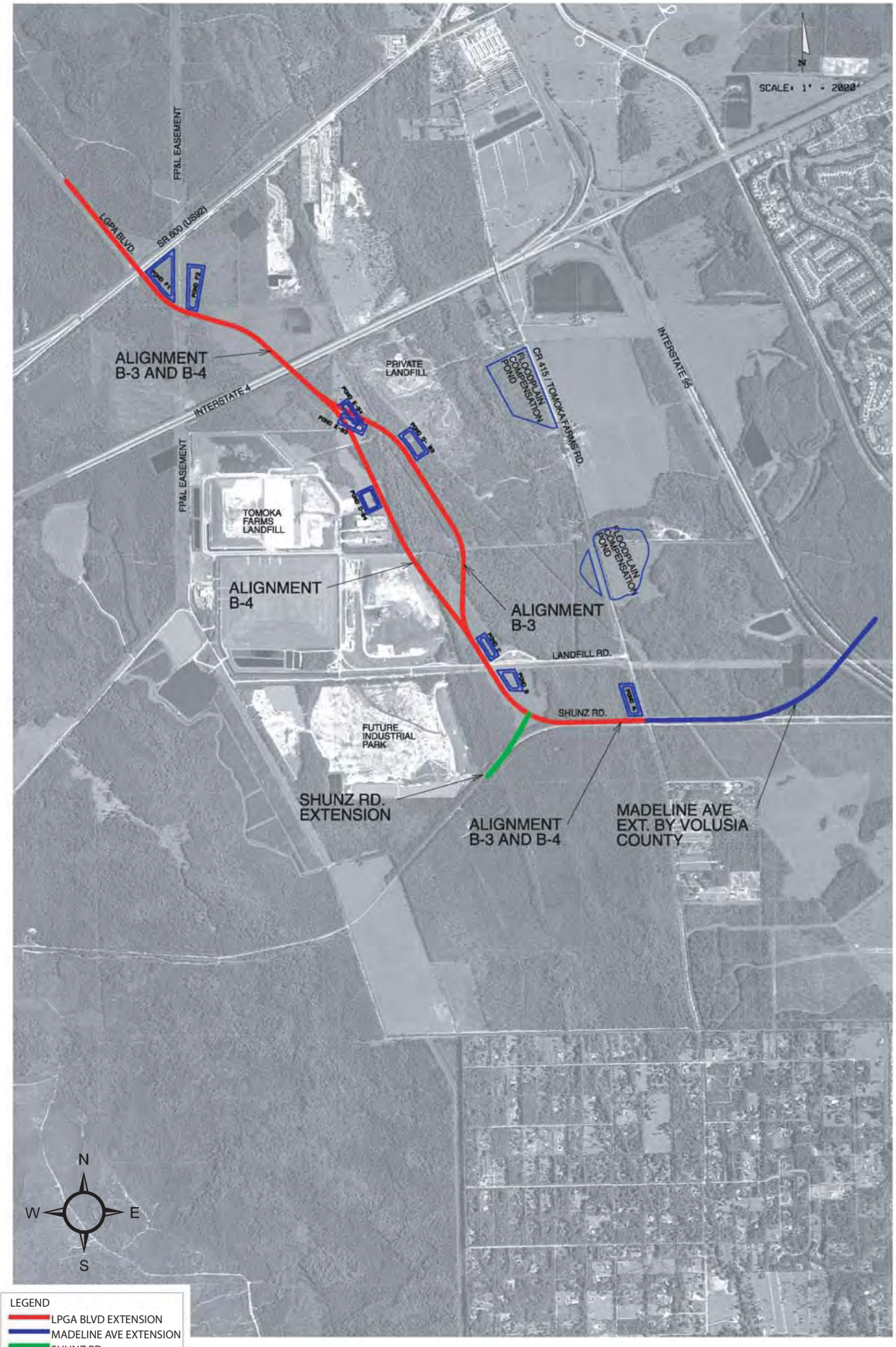
3.3.3 Tier 3 – Alignment Refinements

In the third tier evaluation, the alignments were adjusted based upon public and agency feedback and more detailed information from the aforementioned analysis. It should be noted that the comparative evaluation performed for Tier 3 was based upon a higher profile, development of intersection requirements based upon the Design Traffic Report and the preparation of select cross sections to establish right-of-way requirements. The right-of-way requirements, on average, increased by approximately 40 to 50 feet from Tier 2 to Tier 3. Therefore, Alternatives B-1 and B-2 from the Tier 2 evaluation were not directly compared to Alternatives B-3 and B-4 in the Tier 3 evaluation.

Alternative B-3

Alternative B-3 extends 3.11 miles from the intersection of CR 415 (Tomoka Farms Road) and Shunz Road, to the existing LPGA Boulevard terminus at US 92. This alignment resulted in impacting over 170 acres of land on 36 parcels, with the majority being wetlands and floodplains. As discussed previously, Alternative B-3 replaces the Alternative B-2 alignment using the shifts outlined above. This resulted in a completely new alignment that extended from CR 415 (Tomoka Farms Road) to just north of I-4.

No residences would be relocated with Alternative B-3. Alternative B-3 will not force the relocation of any businesses but it will require the relocation of a storage building on the Tomoka Farms Landfill property. Only a single bridge (to cross I-4) is required with Alternative B-3. The alignment would involve four intersections with signalization required at CR 415 (Tomoka Farms Road), Landfill Road, and US 92. The intersection with Shunz Road will not require future signalization. The intersections have been widened to provide left and right turn lanes as documented in the *Design Traffic Report* and these are presented in detail in the preliminary concept plans.



ALIGNMENTS B-3 AND B-4

FIGURE 3-4

Alternative B-4

Alternative B-4 extends 3.02 miles from the intersection of CR 415 (Tomoka Farms Road) and Shunz Road, to the existing LPGA Boulevard terminus at US 92. The alignment matches that of Alternative B-3 from the intersection of CR 415 (Tomoka Farms Road) to approximately 450 feet north of Landfill Road where the split of Alternatives B-3 and B-4 occurs. Upon crossing landfill property, the alignment of Alternative B-4 rejoins Alternative B-3 approximately 600 feet south of the I-4 overpass bridge. The total length that Alternative B-4 is separate of Alternative B-3 is approximately 6800 feet. Alternative B-4 would impact over 167 acres of land on 36 parcels, with the majority of which are wetlands and floodplains.

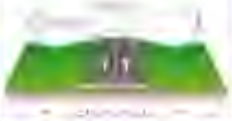
No residences would be relocated with Alignment B-4. Alternative B-4 will not force the relocation of any businesses; however, will require the relocation of a storage building on the Tomoka Farms Landfill property. Alignment B-4 would impact the Tomoka Farms Landfill and cross a corner of one of the refuse cells. In discussions with Volusia County landfill personnel, it was stated that the cell crossed by the alignment was one of the original cells filled. The process years ago of the landfill operations were to dig an approximate 20 to 25 foot deep hole and fill it with the refuse. The cell is unlined and as the refuse was compacted it was also sprayed with diesel fuel and burned. All operations in and surrounding this cell has been complete for a number of years. The landfill does have some groundwater monitoring wells located to the east of the cell and reports that water quality standards have been met. Due to the many complex issues associated with analyzing the existing landfill cells, in-depth field data, such as borings, were not collected for this alternative.

North of the landfill cell; the alignment crosses an existing stormwater retention pond that serves runoff from the landfill's hazardous waste facility and recycling facility. This pond is approximately 2.2 acres and would require filling to accommodate the alignment. The existing pond would require relocation to another site that likely is the vacant property to the north of the two facilities. Only a single bridge (to cross I-4) is required with Alternative B-4. The alignment would involve four intersections with signalization required at CR 415 (Tomoka Farms Road), Landfill Road, and US 92. The intersection with Shunz Road will not require future signalization. The intersections have been widened to provide left and right turn lanes as documented in the *Design Traffic Report* and these are presented in detail in the preliminary concept plans.

3.3.3.1 Tier 3 Alternative Analysis

In order to further screen the Tier 3 alignment alternatives, a more detailed evaluation of impacts associated with each conceptual design was conducted. The results of this evaluation are presented in the Comparative Evaluation Matrix presented in Table 3-3.

TABLE 3-3
Alternatives B-3 and B-4 Evaluation Matrix

	No Build	Alt. B-3 without trail 	Alt. B-3 with trail 	Alt. B-4 without trail 	Alt. B-4 with trail 
Segment Length		3.11 miles	3.11 miles	3.02 miles	3.02 miles
Right-of-Way (R/W) Impacts					
R/W to be acquired for project (acres)	0	179.3	185.3	176.3	182.7
Number of parcels impacted	0	36	36	29	29
Relocations					
Residences	None	None	None	None	None
Businesses	None	None	None	None	None
Natural, Environmental and Physical Impacts					
Species/Habitat	None	Yes	Yes	Yes	Yes
Total Wetland Impact Area (acres)	None	97.22	103.41	86.36	92.31
Floodplain Encroachment (acre-feet)	None	22.34	25.54	23.48	26.05
Social & Neighborhood Impacts	None	None	None	None	None
Estimated Costs					
Engineering Design Costs	$0	$2,200,000	$2,500,000	$2,200,000	$2,500,000
Right-of-Way Costs	$0	$14,200,000	$14,775,000	$23,325,000	$23,525,000
Wetland Mitigation Costs	$0	$8,575,000	$9,125,000	$7,675,000	$8,150,000
Roadway Construction Costs	$0	$26,325,000	$28,675,000	$26,150,000	$28,525,000
Bridge Construction Costs	$0	$1,450,000	$1,650,000	$1,450,000	$1,650,000
Utility Relocation Costs	$0	$160,000	$160,000	$160,000	$160,000
Landfill Debris Cleanup	$0	$0	$0	$3,000,000	$3,000,000
CE&I Costs	$0	$4,256,000	$4,579,000	$4,140,000	$4,556,000
Total Cost	$0	$57,766,000	$61,664,000	$68,100,000	$72,266,000

Some of the evaluation criteria include:

Right-of-Way Cost and Property Impacts: Each of the alignment alternatives for the LPGA Boulevard Extension requires additional right-of-way on multiple parcels, which was estimated based on the projected encroachment of each design alternative. To determine the right-of-way required by the proposed roadway alignment alternatives, the "footprint" of the design was analyzed to determine individual parcel areas required from impacted properties. Additional area required for stormwater retention ponds and floodplain compensation ponds was also estimated to the maximum extent possible. Right-of-way costs were developed through the FDOT District 5 Right-of-Way office based on tax lot information and estimated areas of impact per parcel.

Construction Cost: This analysis combined the use of the Long Range Estimates (LRE) system with independent detailed analysis to determine the costs required to construct each alternative. Various construction quantities such as earthwork and required pavement were estimated based on the typical sections, scaled geometric drawings, and the preliminary vertical profile developed for this study.

Cultural and Historic Resource Impacts: An evaluation of how any public lands or historic properties are impacted by potential alternatives is always completed for a PD&E Study. In the case of the LPGA Boulevard Extension, no sites within the project corridor fell into this category.

Wetland and Floodplain Impacts: Wetland and floodplain impacts were estimated using the right-of-way boundaries of impact. The area of all wetland or floodplain polygons occurring within the right-of-way for each alternative was then estimated. The estimate for floodplain impacts is based upon the acre-feet of volume that the roadway will displace between natural ground elevation and the estimated elevation for the 100-year floodplain.

Based on a comparison of environmental and engineering impacts by alternative and public input, Alternative B-3 was selected as the preferred alignment for the LPGA Boulevard Extension.

3.4 Preferred Alternative

The results of the Tier 3 analysis of the B-3 and B-4 alternatives was presented to the Environmental Advisory Group (EAG) on August 2, 2005 and to representatives of the Volusia County MPO, Volusia County, City of Daytona Beach, and City of Port Orange in a Project Coordination Meeting held on August 24, 2005. During these meetings, the following input was received regarding the two study alternatives and the two typical sections.

- In discussion of Alternative B-4 with the EAG, the history of filling the impacted cell was discussed and it was noted that there is a contamination plume associated with the cell. FDOT confirmed that if the Department or local government did acquire the landfill property that they would be responsible to clean up the site if it is considered contaminated.

- It was suggested during the EAG meeting that during design, it may be advantageous to seek a design variance to reduce the front slope from 6:1 to 4:1 to reduce wetland, floodplain, and right-of-way impacts.
- The mitigation of wetland impacts is important to the EAG and several suggestions were made by them that primarily focused on land purchases in areas near the project study area.
- At the Project Coordination Meeting with local governments, the Volusia County representatives stated that due to the stated impacts that Alignment B-4 would have to the Tomoka Farms Landfill, they support Alternative Alignment B-3. These representatives also made some suggestions on shifting of pond locations associated with Alternative B-3.
- Volusia County representatives further stated that they preferred the typical section with the multi-use trail. The County did request that a modification be made to the typical section that does not have the multi-use trail to add a five-foot sidewalk. In working with County staff, it was determined that during the Volusia County Council meeting on September 19, 2002, the Council approved a package of standard road designs to be used in designing new County roads. This package does contain a two-lane, rural, open swale drainage typical section for a maximum design speed of 55 mph that contains five-foot sidewalks on both sides of the roadway approximately three feet from the right-of-way line.
- The Volusia County MPO representative attending the Project Coordination Meeting indicated that the MPO would support Volusia County's preference. It was stated that the MPO does support the inclusion of the multi-use trail with this project.
- The City of Port Orange representatives indicated that they did not have a preference between Alternatives B-3 or B-4 as the alignment variations between the two alternatives did not impact the City of Port Orange. They did state that they strongly support including the multi-use trail in the project.
- The City of Daytona Beach did not provide any guidance regarding a preference of alignment or typical section.

Based upon the comparative evaluation of the alternatives and the input received from both the EAG meeting and the Project Coordination Meeting, it is recommended that Alternative B-3 be the recommended preferred alignment to be carried forward to the Public Hearing and that the "With Multi-Use Trail" typical section be the recommended preferred typical. These recommendations are made based on the following:

- Alternative B-3 and the "With Multi-Use Trail" typical section received the highest level of local support.
- Alternative B-3 has a lower project cost than Alternative B-4.
- Alternative B-4 has uncertainties associated with the crossing of the landfill cell regarding contamination cleanup and potential liabilities.
- In meeting with the elected officials of Volusia County and the City of Port Orange, each council voted in support of the "With Multi-Use Trail" typical section alternative.

- In meeting with the EAG, the potential of purchasing nearby land to mitigate for the wetland impacts would aid in the permitting of the project regardless of the alternative chosen.

The selection of the "With Multi-Use Trail" typical section as the recommended Preferred Alternative will advance this typical section. In response to Volusia County's request on August 24, 2005 that the "Without Multi-Use Trail" typical section be modified to show sidewalks on both sides of the right-of-way, this was investigated. It was determined that a five-foot sidewalk can be provided on the drainage berm that is outside the border width. This berm would require widening from five feet to nine feet for the five-foot sidewalk in addition to a two-foot shoulder on each side of the sidewalk. The result of making this addition would increase both construction and right-of-way costs. The construction costs would increase to add the sidewalk along both sides of the roadway, increased earthwork, additional guardrail at the bridge overpass and a wider bridge to accommodate the sidewalk. The right-of-way costs would increase to provide the additional 8 to 10 feet of right-of-way needed. The overall project costs would also increase with increased wetland impacts and floodplain compensating storage requirements resulting from the wider right-of-way requirements. The degree of these cost increases were not quantified as the "With Multi-Use Trail" typical section was already more costly and this analysis would not have changed the recommendation of the preferred typical section.

Alternative B-3 with the multi-use trail was chosen as the Preferred Alternative for the LPGA Boulevard Extension. Refer to Figures 3-5 and 3-6 for the Preferred Alternative roadway and bridge typical sections, respectively.

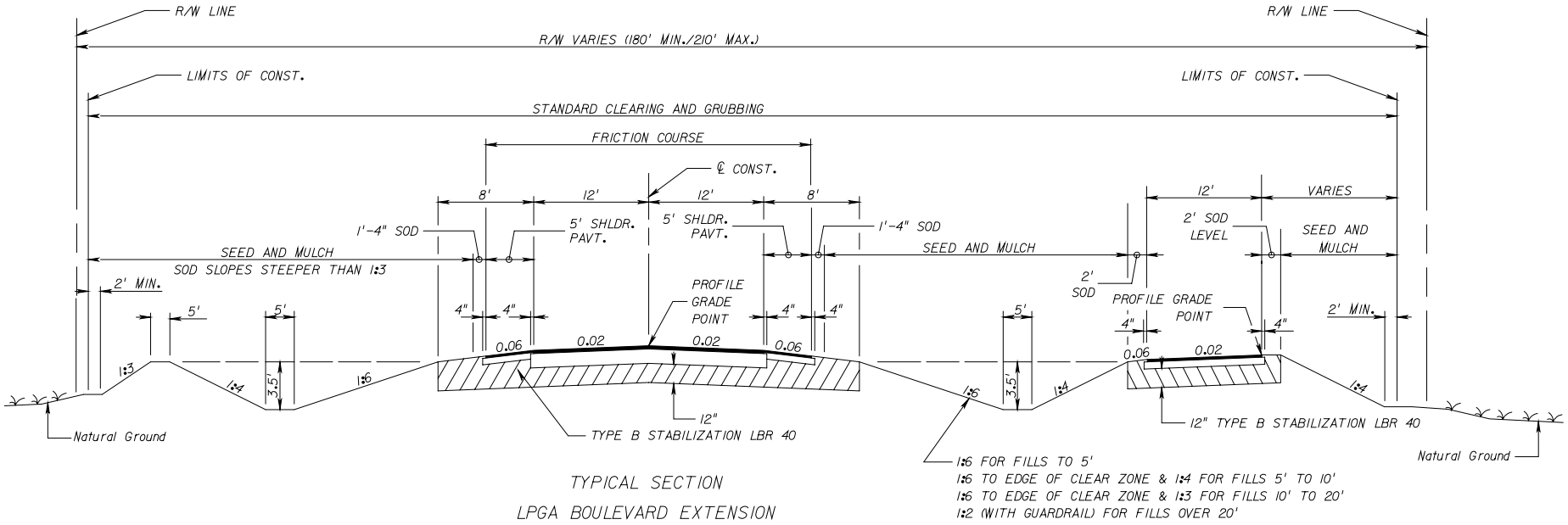
Roadway Typical Section

The Preferred Alternative for the roadway section is a rural typical consisting of two 12-foot travel lanes (one in each direction) with 8-foot outside shoulders (5-foot paved). The proposed pavement has a downward cross slope of 0.02 ft/ft on the travel lanes towards the outside. A 12-foot wide paved multi-use trail is provided on the east side of the roadway on the top of berm in the northbound direction only. The total right-of-way width varies between 180 feet and 210 feet. The design speed is 55 mph.

Bridge Typical Section

The bridge typical section for the Preferred Alternative consists of a single, pre-stressed concrete beam type structure. The proposed crossing over I-4 provides two 12-foot travel lanes (one in each direction), 10-foot outside shoulders, and a 10-foot trail across the bridge on the east side of the roadway. The trail will be separated from the roadway by a concrete traffic barrier. The outside edge of the trail will utilize the cast in place pedestrian parapet, topped with a standard pedestrian railing. The bridge is approximately 60 feet wide and has a constant cross slope of 0.02 ft/ft from the centerline

For more detailed information, refer to the *Preliminary Engineering Report* (Kittelson & Associates, 2006).



TYPICAL SECTION

LPGA BOULEVARD EXTENSION

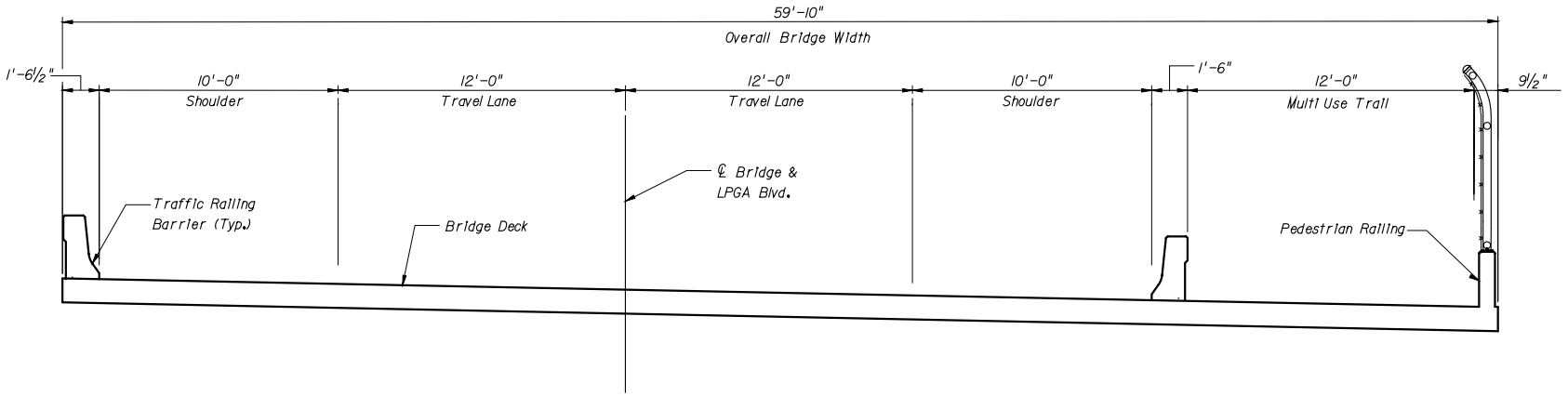
FROM: CR415/TOMOKA FARMS ROAD

TO: US92

DESIGN SPEED = 55 MPH

PREFERRED ALTERNATIVE-ROADWAY TYPICAL SECTION

FIGURE 3-5



BRIDGE TYPICAL SECTION LPGA BLVD. OVER I-4