US 1 (SR 5) TRANSPORTATION STUDY FINAL REPORT



State Project Number: 79000-1504 Work Program Number: 5119374 Financial Project Number: 2409921 Federal Aid Project Number: XU-485-7(24)

Prepared For:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT V - DELAND
&
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US 1 TRANSPORTATION STUDY EXECUTIVE SUMMARY

Introduction

The US 1 Transportation Study was initiated by the Volusia County Metropolitan Planning Organization (VCMPO) in cooperation with the Florida Department of Transportation, District Five (FDOT). The overall goal of the study was to develop a range of transportation improvement alternatives within the study area that would be economically efficient, environmentally sound, and maximize mobility while minimizing impacts to established neighborhoods and businesses.

Objective

The general objective of the study was to recommend a list of specific projects that could be prioritized by the VCMPO, with input from the local governments in the study area, for future funding and implementation.

Study Area

The study area boundaries were SR 442 on the south, I-95 on the north, SR 5A (Nova Road) one mile to the west of US 1 (south of the southern terminus of Nova Road) on the west and the Halifax River to the east.

Public Involvement

The US 1 Transportation Study was initiated in February 1997. An integral part of the study process included in-depth public involvement activities with the Study Technical Advisory Team (STAT), local business owners, the public, and other interested parties to obtain input on the development and evaluation of alternatives. The main vehicles for interacting with the general public were the use of a series of public open houses, newsletters, surveys, city/county presentations, and city/county manager meetings. In all, approximately 58 public involvement activities and events were completed during this study.

Through these public involvement activities and events, citizens from Edgewater, New Smyrna Beach, Port Orange, South Daytona, Daytona Beach, Holly Hill, Ormond Beach and Volusia County provided a significant amount of feedback on the data collection and alternatives development efforts. This feedback, with a large measure of community consensus, was used to help determine the preferred alternative for each municipality and the resulting selection of Alternative 2 as the overall preferred alternative.

Determination of the Preferred Alternative

The initial step of the alternatives development process and determination of the preferred alternative was to examine the two extremes of traffic volume projections and congestion on the US 1 corridor, from no improvements to various 6-laning options for the year 2024. The traffic projections assisted in the development of alternatives. The next step involved looking at widening logical roadway segments as well as improving individual intersections along the US 1 corridor. Alternatives developed consider various lengths of widening US 1 from as little as three (3) miles to over fifteen (15) miles within the urbanized area. All signalized intersections within the corridor were analyzed and intersection improvements identified ranged from the addition of right- or left-turn lanes on one approach to additional turn lanes on all approaches.

Various multi-modal options (bicycle/pedestrian facilities and public transportation) were also considered in combination with roadway and intersection improvements. Two (2) sets of multi-modal

alternatives were developed; the first placed a lower emphasis on multi-modal enhancements within the US 1 corridor, the second, a high emphasis alternative, was developed with the intent of placing a higher level of multi-modal options. Six (6) separate alternatives were developed. Each alternative had three (3) main components: roadway widening from 4 lanes to 6 lanes, intersection improvements, and multi-modal features.

Alternative 1: NO-BUILD

This alternative assumed that no intersection, capacity, or multi-modal improvements would be made. The existing roadway, intersection, and multi-modal facilities would remain as they are today.

Alternative 2: Intersection Improvements Only

Alternative 2 would maintain the existing roadway configuration of US 1 as a 4-lane facility. This alternative is highlighted by intersection improvements at 15 strategic intersections with a high emphasis on multi-modal features.

Alternative 3: Intersection Improvements and Low Highway Emphasis

Alternative 3 would widen US 1 to six (6) lanes from SR 400 (Bellville Road) to SR 430 (Mason Avenue). In addition, this alternative would include intersection improvements at 12 intersections beyond those contained in the 6-lane segment and incorporate a high emphasis on multi-modal features.

Alternative 4: Intersection Improvements and Low Highway Emphasis

Alternative 4 would widen US 1 to six (6) lanes from SR 421 (Dunlawton Avenue) to SR 430 (Mason Avenue). In addition, this alternative would include intersection improvements at 8 intersections beyond those contained in the 6-lane segment and incorporate a high emphasis on multi-modal features.

Alternative 5: Intersection Improvements and Medium Highway Emphasis

Alternative 5 would widen US 1 to six (6) lanes from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard). In addition, this alternative would include intersection improvements at 7 intersections beyond those contained in the 6-lane segment and incorporate a low emphasis on multi-modal features.

Alternative 6: FULL-BUILD and Highway Emphasis

Alternative 6 would widen US 1 to six (6) lanes from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard) and from SR 442 to Turnbull Bay Road. In addition, this alternative would include intersection improvements at 2 intersections beyond those contained in the 6-lane segment and incorporate a low emphasis on multi-modal features.

A set of 37 performance measures was developed to evaluate each alternative. The performance measures were then grouped into six (6) distinct categories.

- 1. Traffic Capacity/Auto Performance
- 2. Growth Management and Social/Economic Impacts
- 3. Improvement Costs
- 4. Environmental Impacts
- 5. Multi-Modal Features
- 6. Public Acceptance

These measures were used to analyze and evaluate each alternative, resulting in the recommendation of a solution through the year 2024 that will sustain acceptable operations. From the analysis using the above performance measures, Alternative 2 ranked the highest and emerged as the recommended alternative.

Alternative 2 maintains the existing roadway configuration as a 4-lane facility. This alternative is highlighted by Transportation System Management (TSM) improvements and a high emphasis on multimodal features. TSM maximizes the capacity of the existing roadway with intersection improvements such as new or additional left- and right-turn lanes, increased lane widths, improved signal timings and phasing, and improved signal progression along the US 1 corridor. Fifteen (15) intersections were recommended for improvement. This alternative also includes opportunities for a high emphasis on multi-modal features.

Selection of a Locally Preferred Alternative

Presentations were made to each of the local municipal governments along the corridor within the study area. Each of these governments was asked to select a locally preferred alternative. A Resolution selecting Alternative 2 as the preferred alternative with the inclusion of specific municipal issues from each area was approved by the cities of Edgewater, New Smyrna Beach, Port Orange, South Daytona, Daytona Beach, Holly Hill, Ormond Beach, and Volusia County.

Presentation to VCMPO

The final meeting on the US Transportation Study with the VCMPO was held on April 27, 1999. The VCMPO Board voted to approve a Resolution accepting the recommendation of Alternative 2, which includes leaving US 1 as a four (4) lane highway with improvements to 15 key intersections plus the option to implement various bicycle, pedestrian, and public transportation improvements.

Implementation of the US 1 Transportation Study

The improvements identified in Alternative 2 will be implemented through the VCMPO's normal annual project prioritization process, to which the local governments provide input. The identified improvements are to be staged into the Transportation Improvement Program (TIP) over time and will be funded by state, federal, and local government resources depending on project type and scope.

The fifteen intersection improvements identified in the study recommendations are a high priority of the VCMPO, which means that funding for additional work phase(s) for all or part of these intersections is likely to be identified in the FDOT's upcoming Fiscal Year 2004/2005 Five-Year Work Program.

With the acceptance of the study's recommendation, the MPO Board has urged FDOT to work closely with the affected local governments to ensure that local issues are addressed during the implementation of this project.

Summary of Recommendations and Implementation Plan

Alternative 2 had the highest overall ranking, based on the performance measures, among the six alternatives developed and evaluated, and was the preferred alternative of all seven municipalities, Volusia County, and the MPO. Therefore, Alternative 2 is the recommended alternative. Alternative 2 maintains the existing US 1 corridor roadway configuration as a 4-lane facility. This alternative is highlighted by Transportation System Management (TSM) improvements with a high emphasis on multimodal features. TSM maximizes the capacity of the existing roadway with intersection improvements such as new or additional left and right turn lanes, lane widening, improved signal timings and phasing, and improved signal progression along the US 1 corridor. Fifteen (15) intersections are recommended for improvements. This alternative would also include a higher level of emphasis on multi-modal enhancement opportunities. A summary of Alternative 2 improvements is listed below and on Table 1 on the following page. The details of this Alternative are displayed on aerial mapping in a document entitled, *Build Geometry for Design Build*, dated June 1999.

Roadway: Maintain Existing 4 lanes

<u>Intersections</u>: Improvements to 15 Intersections:

US 1 at:

- Park Avenue; southbound right and eastbound left turn lanes
- SR 44 (Canal Street); northbound, southbound, and eastbound left and right turn lanes, and westbound right turn lane
- Washington Street; northbound and southbound right turn lanes, and westbound left turn lane
- Wayne Avenue; southbound and eastbound right turn lanes
- Turnbull Bay Road; southbound and eastbound right turn lanes
- Dunlawton Avenue; northbound left turn lane
- Herbert Street; southbound right and eastbound left turn lanes
- Reed Canal Road; northbound left and eastbound left, and southbound right turn lanes
- Ridge Boulevard; southbound right turn lane
- Big Tree Road; northbound, eastbound and westbound left turn lanes, and southbound and eastbound right turn lanes
- Bellevue Avenue; northbound, southbound, eastbound and westbound right turn lanes
- SR 600 (US 92); northbound, southbound, eastbound, and westbound left turn lanes
- SR 430 (Mason Avenue); northbound, southbound, eastbound, and westbound left turn lanes
- LPGA Boulevard; eastbound left and right turn lanes
- SR 40 (Granada Boulevard); eastbound and westbound right turn lanes

The turn lanes described above are in addition to what exist at each intersection today. For instance, at US 1 and Park Avenue, the eastbound left turn lane would be an additional (second) left turn lane; whereas, at US 1 and Canal Street, the westbound left turn lane would be a new left turn lane (not existing today).

Multi-Modal:

- High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles
- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 6 Enhanced Multi-Modal Transfer Centers

As part of the Public Involvement process, presentations were made to each of the local municipality governments illustrating each of the six alternatives within the study corridor. Each of these governments was asked to select a locally preferred alternative. A resolution selecting Alternative 2 as the Preferred Alternative with the inclusion of specific municipal issues from each area was approved by all of the involved cities and Volusia County. Table 2 on the following page shows a summary of the Resolutions plus the specific inclusions for each municipality.

Tier One: Intersections with Existing Level-of-Service Deficiencies

Sub Total	\$1,226,000
US 1 at SR 40 (Granada Boulevard)	\$126,000
US 1 at SR 430 (Mason Avenue)	\$195,000
US 1 at SR 44 (Canal Street)	\$298,000
US 1 at Big Tree Road	\$229,000
US 1 at Reed Canal Road	\$160,000
US 1 at Herbert Street	\$126,000
US 1 at Dunlawton Avenue	\$92,000

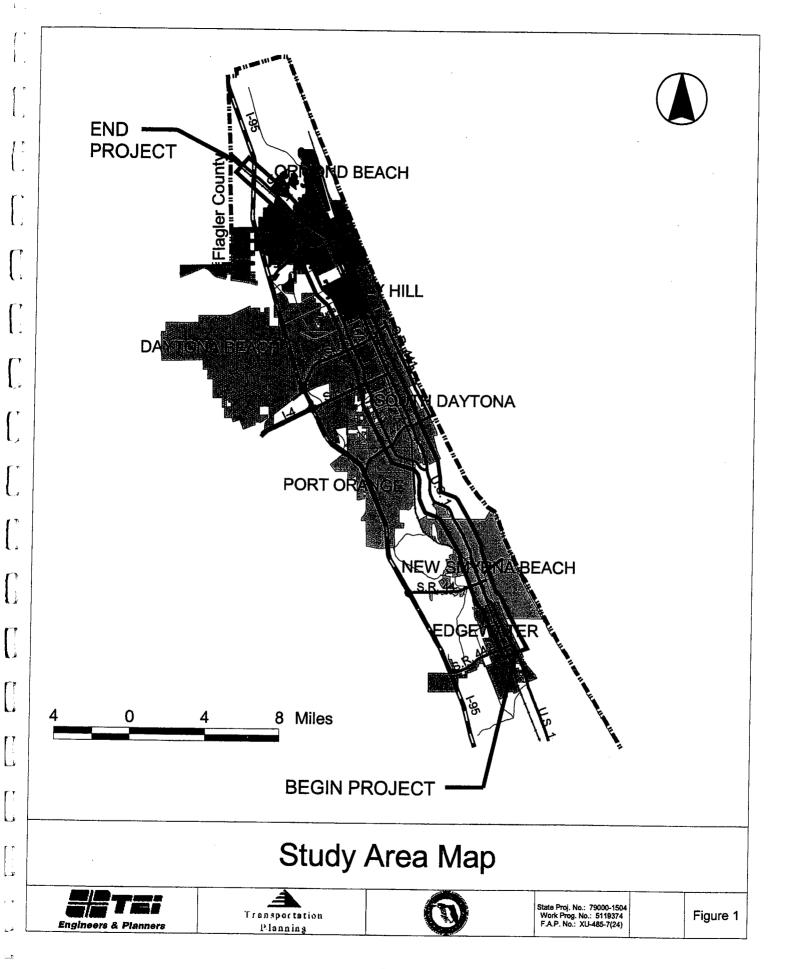
The second tier is the remaining intersections that will need to be improved before the year 2024 because of increased traffic volumes and congestion.

Tier Two: Intersections with Anticipated Future Level-of-Service Deficiencies

Total for Tier One and Tier Two	\$2,372,000
Sub Total	\$1,146,000
US 1 at LPGA Boulevard	<u>\$126,000</u>
US 1 at SR 600 (US 92)	\$195,000
US 1 at Bellevue Avenue	\$195,000
US 1 at Ridge Boulevard	\$92,000
US 1 at Turnbull Bay Road	\$126,000
US 1 at Wayne Avenue	\$126,000
US 1 at Washington Street	\$160,000
US 1 at Park Avenue	\$126,000

Multi-Modal Enhancements

The implementation plan for the multi-modal enhancements would be divided into two major tiers. The first tier, would implement the low investment/low emphasis strategies. These low investment enhancements are outlined in the document in Appendix F, *Multi-Modal Alternatives Analysis*. These enhancements are lower in cost and easier to implement. The second tier of multi-modal improvements would include the high investment/high emphasis multi-modal strategies. These high investment enhancements are higher in cost and more difficult to implement.



The major applicable strategies included the following: transit, bicycle/pedestrian improvements, intersection improvements, and additional mainline arterial lanes (i.e., six-laning US 1). The next step was to develop a set of performance measures that would evaluate each alternative. The performance measures were grouped into the following six major areas: traffic capacity/auto performance, growth management and social/economic impacts, improvement costs, environmental impacts, multi-modal features, and public acceptance. Within these six (6) broad groupings, there were thirty-seven (37) individual performance measures. Each alternative was evaluated using the performance measures and then ranked. The end result of this process is the recommendations discussed in Section VII of this Report.

II. TRAFFIC FORECASTS

Included below is a brief summary of the methodology employed and the traffic volume projections that were developed. Detailed information about the traffic forecasts used may be found in the *US 1 Design Traffic Report*, dated July 1998.

A. Methodology

In the development of the Design Traffic Report, a sequential methodological process was utilized to produce the Design Traffic forecasts. This basic methodology is listed below.

- Collect all traffic count information, previous studies, traffic characteristics and other available data.
- Based on historic data and information for future development within the project area, estimate
 future travel characteristics for the corridor. This includes Design Hour Demand (K₃₀), Design
 Hour Directional Demand (D), and percentage of trucks for both the design hour and daily demand
 (Tpeak, Tdaily).
- Using historical traffic counts (Trends Analysis), historic growth rates, statistical (population and economic growth projections information), and/or the VCMPO adopted travel demand model (FSUTMS) for the area, develop estimates of future traffic volumes for comparison.
- Evaluate future roadway volumes based on capacity to determine if the future year condition will be operating under a non-constrained or constrained condition.
- Modify travel characteristics based on non-constrained or constrained conditions.
- Develop existing year, opening year, mid-design year, and design year traffic projections for NO-BUILD or BUILD alternatives for the project.
- Provide Level of Service (LOS) analyses for the corridor based on **NO-BUILD** and **BUILD** conditions for each analyses year.
- Based on the LOS analyses, provide recommendations for improvements to accommodate the anticipated travel demand within the corridor.

This basic methodology is based on FDOT's Design Traffic Procedure and has been modified to allow for the development of information throughout this project, which provided a broader data base in the preliminary and final design process for implementing future transportation improvements.

B. Projections: NO-BUILD vs. BUILD

From the methodology described above, the development of traffic projections for the US 1 study area were based on an examination of historical traffic growth, transportation model projections, and an understanding of the traffic circulation patterns and characteristics of the corridor.

1. Design Period

Based on information provided by FDOT and the VCMPO, the following time periods were used to provide design traffic forecasts for the US 1 corridor:

Existing Year - 1997 Mid-Design Year - 2014 Opening Year - 2004 Design Year - 2024.

The US 1 Transportation Study set a short term (five year) time frame as an opening year of corridor improvements. Since what the final preferred alternative improvements would be was not known at the onset of the Study, the opening year was set to be five (5) years after the completion of the US 1. Transportation Study's recommendations. The Study was scheduled to be completed by the summer of 1999. The opening year was set for 2004. The standard FDOT Project Development and Environmental (PD&E) guidelines was used for setting and evaluating future years. The design year was set 20 years after the opening year (2024) and the mid-design year was set mid way between at 2014.

2. Analysis Scenarios

The initial step of the alternative development process and determination of the preferred alternative was to examine the two extremes of traffic volume projections and congestion on the US 1 corridor, from the "NO-BUILD" or "Do Nothing" scenario which maintained an existing 4-lane facility and identified Transportation System Management (TSM) intersection geometry improvements for existing operational deficiencies as suggested in the "Supporting Documentation for Existing Traffic Conditions Analysis" by Frederic R. Harris, Inc., and a "BUILD" or "Full Build" scenario which was consistent with the VCMPO Long Range Transportation Plan (LRTP). Traffic projections assisted in the development of the alternatives.

The next step involved looking at widening logical roadway segments as well as improving individual intersections along the US 1 corridor. Alternatives developed considered various lengths of widening US 1 from as little as three (3) miles to over fifteen (15) miles within the urbanized area. All signalized intersections within the corridor were analyzed and intersection improvement suggestions ranged from the addition of right- or left-turn lanes on one approach to additional turn lanes on all approaches. Various multi-modal options were also considered in combination with roadway and intersection improvements. Two (2) sets of multi-modal alternatives were developed; the first placed a lower emphasis on multi-modal features within the US 1 corridor, the second, a high emphasis alternative, was developed with the intent of placing a higher level of multi-modal options.

A description of the six (6) separate alternatives that were developed follows. Each alternative had three (3) main components: roadway widening from 4 lanes to 6 lanes, intersection improvements, and multimodal features.

Alternative 1: NO-BUILD

This alternative assumed that no intersection, capacity, or multi-modal improvements would be made. The existing roadway, intersection, and multi-modal facilities would remain as they are today.

Alternative 2: Intersection Improvements Only

Alternative 2 would maintain the existing roadway configuration of US 1 as a 4-lane facility. This alternative is highlighted by intersection improvements at 15 strategic intersections with a high emphasis on multi-modal features.

Alternative 3: Intersection Improvements and Low Highway Emphasis

Alternative 3 would widen US 1 to six (6) lanes from SR 400 (Beville Road) to SR 430 (Mason Avenue). In addition, this alternative would include intersection improvements at 12 intersections beyond those contained in the 6-lane segment and incorporate a high emphasis on multi-modal features.

Alternative 4: Intersection Improvements and Low Highway Emphasis

Alternative 4 would widen US 1 to six (6) lanes from SR 421 (Dunlawton Avenue) to SR 430 (Mason Avenue). In addition, this alternative would include intersection improvements at 8 intersections beyond those contained in the 6-lane segment and incorporate a high emphasis on multi-modal features.

Alternative 5: Intersection Improvements and Medium Highway Emphasis

Alternative 5 would widen US 1 to six (6) lanes from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard). In addition, this alternative would include intersection improvements at 7 intersections beyond those contained in the 6-lane segment and incorporate a low emphasis on multi-modal features.

Alternative 6: FULL-BUILD and Highway Emphasis

Alternative 6 would widen US 1 to six (6) lanes from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard) and from SR 442 to Turnbull Bay Road. In addition, this alternative would include intersection improvements at 2 intersections beyond those contained in the 6-lane segment and incorporate a low emphasis on multi-modal features.

Alternatives 1 and 2 considered maintaining the existing four-lane configuration of US 1. Therefore, the **NO-BUILD** traffic volume projections were applied. Alternative 6 included the six-lane build-out of US 1 consistent with the VCMPO LRTP. Therefore, the **BUILD** scenario volumes were applied to Alternative 6.

Alternatives 3, 4, and 5 also considered the proposed six-laning of some segments of the study corridor but less than that of Alternative 6. Consequently, the traffic volume projections used for these scenarios were a combination of **NO-BUILD** and **BUILD** volume projections. The relationship between the **NO-BUILD** and **BUILD** volume projections and those used for each alternative are summarized in Table 1 on the following page.

The figures in Appendix A illustrate the daily and design hour traffic volume projections used for the **NO-BUILD** and **BUILD** conditions and which alternatives these conditions were applied to.

Developing a unique set of traffic volume projections for each alternative would be a more accurate way to assess traffic operating conditions. Such specific traffic volume projections would tend to fall between the **NO-BUILD** and **BUILD** traffic volumes previously developed. However, the methodology described above to utilize previously developed volumes and apply them to specific alternatives was discussed with and approved by FDOT and MPO staff because it was felt that the additional level of detail and work effort would not significantly alter the analysis or change the conclusions.

TABLE 1
SUMMARY OF TRAFFIC VOLUME PROJECTIONS USED

ROADWAY SEGMENT	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt.6
South of SR 442 to SR 44 (Canal Street)	NB	NB	NB	NB	NB	В
SR 44 (Canal Street) to Turnbull Bay Road	NB	NB	NB	NB	NB	В
Turnbull Bay Road to SR 5A (Nova Road)	NB	NB	NB	NB	NB	NB
SR 5A (Nova Road) to Dunlawton Avenue	NB	NB	NB	NB	NB	NB
Dunlawton Avenue to SR 400 (Beville Road)	NB	NB	NB	В	В	В
SR 400 (Beville Road) to S.R. 430 (Mason Avenue)	NB	NB	В	В	В	В
SR 430 (Mason Avenue) to S.R. 40 (Granada Boulevard)	NB	NB	NB	NB	В	В
SR 40 (Granada Boulevard) to SR 5A (Nova Road)	NB	NB	NB	NB	NB	В
SR 5A (Nova Road) to I-95	NB	NB	NB	NB	NB	В

NB: NO-BUILD traffic volume projections utilized
B: BUILD traffic volume projections utilized

III. STRATEGIES

FDOT and VCMPO initiated the US 1 Transportation Study as a means to evaluate an integrated multi-modal transportation system within the study corridor to increase roadway capacity and provide urban mobility.

As part of the US 1 Transportation Study identification and evaluation of proposed strategies, the Study Team identified a list of strategies for increasing roadway capacity and improving urban mobility. Based on the characteristics of the corridor, as identified in the *Existing Conditions Report*, dated January 1998, a screening process was used to identify those strategies which were appropriate for the corridor.

A. Identification of Potential Strategies

After the existing conditions were identified, the US 1 Transportation Study included steps to identify strategies that addressed deficiencies. The requirements of the Inter-modal Surface Transportation Efficiency Act (ISTEA) and the supporting Congestion Management System (CMS) regulations, dated September 23, 1997, guided the identification of potential strategies for US 1. These strategies included demand management, operational management, and capital intensive approaches. The CMS regulations require that appropriate consideration be given to all reasonable alternatives and, more specifically, that consideration be given to strategies that reduce single occupant vehicle (SOV) travel. The key was to identify strategies that were reasonable and effective for each particular location or deficiency.

The US 1 Transportation Study prepared a Strategy Screening Analysis Technical Memorandum, April 1998, to separate potential strategies into a hierarchical order that first considered actions which addressed the fundamental transportation and land use relationships that cause vehicle trips. If the reason for the trip could be eliminated, so could the trip and its contribution to congestion. In successive rounds, the residual trips not mitigated by previous levels of actions were successively dealt with using techniques aimed at the next higher level of concern. This process is described below:

• Level One: Actions that decrease the need for trip making.

• Level Two: Actions that place trips into transit or other non-auto modes.

• Level Three: Actions that put as many trips as possible into high occupancy vehicles (HOVs).

• Level Four: Actions that optimize the highway system's operation for SOV trips, and for all

other trips using highway facilities/modes.

• Level Five: Actions that increase the capacity of the highway system for SOVs by adding

general purpose lanes.

B. Strategy Screening

In the initial stages, an extensive list of potential strategies was identified. It was desirable to perform an initial screening to determine which strategies were applicable to the US 1 corridor for a given deficiency. The screening analysis was then followed by a more detailed evaluation of strategies which passed the initial screening. Therefore, screening produced a more efficient process by eliminating the analysis of strategies which were not applicable for a given deficiency.

A list of questions was identified for each strategy to determine which strategies would be appropriate for a given application. Generally, each question did not require an affirmative answer to justify additional analysis; however, the more affirmative answers to multiple questions usually indicated a higher likelihood of application.

The screening questions were presented in the same five (5) tiered hierarchy presented in the previous section. Unless otherwise noted, affirmative answers to the screening questions implied the strategy was potentially applicable. While it was not required to consider the strategies in order (i.e., beginning with Level One, then Two, Three, Four, and Five), this progression ensured all reasonable strategies were considered and an exhaustive study of the potential strategies was not necessary. The Study Technical Advisory Team (STAT), comprised of members of the Volusia County Metropolitan Planning Organization (VCMPO), Technical Coordinating Committee (TCC), and the Citizens Advisory Committee (CAC), determined the reasonableness of the strategies that were considered. The following strategies were considered appropriate for the US 1 corridor:

1. Level One Strategies

Level One Strategies included actions that decreased the need for making the trip by the single occupant vehicle. Level One Strategies which were appropriate for the US 1 corridor included various growth management/activity center strategies.

a. Growth Management/Activity Centers

Land use strategies sought to achieve concurrence between transportation infrastructure and land development. These strategies are often viewed as key to the success of any regional transportation plan and should be analyzed at the regional scale. Land use strategies that can reduce the demand for SOV travel include locating residential, commercial, or mixed use development along transit corridors. In addition, growth management practices and activity centers can eliminate vehicular trips by matching trip productions with attractions at the same site, or by providing good pedestrian, transit, and bicycle accessibility. Components of a growth management plan could include:

- land use policies/regulations, including growth boundaries,
- stricter design/zoning standards which promote this strategy,
- maintenance/development of a jobs/housing balance, and
- mixed use developments.

Typical keys to success include strong political support for growth management and the promotion of activity centers; good public information and outreach regarding the benefits of this strategy; and an emphasis on providing good pedestrian and bicycle accessibility, internal transit circulation, and permitting mixed use/compact development.

2. Level Two Strategies

Level Two Strategies included actions which attempted to place the trips not addressed in Level One into transit or other non-auto modes of travel. This level of strategies included capital investments in public transit, public transit operational improvements, intelligent transportation systems, methods to encourage the use of non-traditional modes, and certain types of transportation demand management. Level Two Strategies which were appropriate for the US 1 corridor included: improvements in the VOTRAN service, park and ride facilities, improved access to existing inter-modal facilities, Intelligent Transportation System (ITS) applications, and bicycle and pedestrian facilities.

a. Public Transit Capital Improvements

Public transit capital improvements are designed to increase ridership on transit lines by improving transit infrastructure or vehicles. These strategies were generally implemented to

address regional or corridor transportation system deficiencies. Potential improvements could include:

- fleet expansion,
- vehicle replacement/upgrades,
- park-and-ride lots, and
- new, expanded, or improved transit stations (inter-modal facilities).

The main key to success in implementing any of these strategies is a thorough study and understanding of the complicated issues which affect the use of non-automobile modes of travel. It is also important to evaluate the entire trip, from origin to destination, when determining the appropriate strategy for shifting vehicle trips away from the personal vehicle. Good inter-modal connections are crucial to providing competitive travel times. These transfers should be efficient and often require coordination between the various modes accessing inter-modal facilities to minimize transfer times. It is also important to consider the pedestrian element of any trip to achieve the complete evaluation of the entire trip from origin to destination. The convenience of alternatives is important, such as the proximity and access of transfer points and the reliability of the system.

b. Public Transit Operational Improvements

Like capital improvements, operational improvements to the transit system can increase the demand for transit, which reduces the number of vehicles on the road. Operational improvements can be implemented on specific routes or within transit corridors; although, regional operational improvements were commonly developed. Some strategies may include:

- increased service frequency,
- longer operating hours.
- improvements in service quality,
- additional bus routes,
- restructured or extended bus lines,
- fare reductions,
- improvement of coordination and transfers between systems and routes,
- improved marketing of transit, and
- transit passenger information systems.

Several of the operational improvements require a reallocation of resources to allow for increased service frequency, hours of operation, additional routes, extensions of current routes, and fare-box reductions on routes. To ensure that the reallocation is justified, it is important to conduct analyses to determine the impact on ridership and the financial implications of the changes. The analyses should include consideration and potential implementation of the keys to success identified for the various strategies.

One of the biggest keys to success for all of the improvement strategies is effectively communicating the benefits to the public. This can take place through marketing, using public and media education, and outreach. Another tool is the use of transit information systems to better communicate the services provided and increase the convenience to the user.

c. Advanced Public Transportation Systems

Advanced Public Transportation Systems (APTS) are a type of ITS and include coordinated operational strategies implemented through technology. Intelligent bus stops and advanced mode choice systems can be used to provide up-to-date travel information to transit patrons.

As with any new technology, its effectiveness often hinges on public education and outreach to create user-friendly systems. To be effective, these information systems should provide data on multiple factors which affect the trip making decision. This typically requires multiagency coordination to identify traffic conditions created by incidents or just the current extent of congestion. Elements may include:

- Travel Planning. Pre-trip multi-modal travel information and ride-matching services
 could help travelers determine their optimal mode choice, departure time, and route
 before their trips.
- Traveler Information. Real-time information to guide travelers during trips included advisory services (to warn of traffic or transit congestion or delays), route guidance systems, and traveler services information.

d. Non-Motorized Modes

In many areas, walking and bicycling are a viable alternative to vehicle use. In some cases, demand for these non-traditional modes can be increased by improving the transportation system to better accommodate pedestrians and bicyclists. The scale of these measures range from a regional approach (i.e., land use strategies) to facility-specific improvements (i.e., bicycle paths). Strategies that can be used include:

- new pedestrian and bicycle facilities;
- improved facilities (safety, aesthetic, or travel time improvements), and
- bicycle storage systems can be installed at transit terminals, on transit vehicles, and at work sites.

The keys to these types of improvements included adequate planning to ensure that facilities are effectively implemented within the overall land use and transportation system plans, and that public education and outreach are used to ensure the implemented improvements are consistent with public desires. Often, multi-agency coordination is required to achieve the level of planning needed to fully integrate these strategies within the highway and transit systems.

3. Level Three Strategies

Level Three Strategies included actions which attempted to place the trips into HOVs and included various strategies which encouraged HOV use and certain types of transportation demand management. Level Three Strategies which could appropriate for the US 1 corridor included guaranteed ride home programs and rideshare matching services.

4. Level Four Strategies

Despite the best possible results from strategies in the first three levels, a significant portion of trips on US 1 will likely remain via the single occupant vehicle. Level Four Strategies included actions to

optimize the existing highway system's operation for automobile trips, whether HOV or SOV, and traffic operational improvements and management, access management, and intelligent transportation systems. Level Four Strategies which could appropriate for the US 1 corridor included: various traffic operational improvements and management, truck restrictions, access management, and ITS applications.

a. <u>Traffic Operational Improvements</u>

Improvements in traffic operations are designed to allow more effective management of the supply and use of existing roadway facilities. These improvements can increase the effective capacity by optimizing traffic operations, especially in recurring congestion conditions. Although some of these strategies may involve the construction of additional lanes, this category encompasses improvements intended to help "optimize" existing capacity on the road system, as opposed to "adding" new capacity. Depending on the specific strategy, traffic operations improvements can be appropriate for a region, corridor, or specific facility. Some strategies included:

- intersection geometric improvements, such as minor widening to increase turning movement capacity, restriping, and channelization,
- intersection turn restrictions to eliminate conflicting movements.
- traffic signal improvements such as adjustments to signal timing and phasing, and the installation and maintenance of actuated system components,
- traffic control centers, including coordinated signal systems on arterials, and regional control centers with communication systems to interconnected signal systems;
- advanced traffic surveillance and control centers allow monitoring, dynamic updates to signal systems, and coordinated traffic signal control, and can be used to support incident management and traveler information activities;
- · roadway widening, including auxiliary lanes, passing lanes, and widened shoulders, and
- truck restrictions to increase roadway capacity.

The main keys to success for each of these strategies is through engineering studies to identify the appropriate strategy and the application of appropriate engineering criteria in the design of the improvements. Another important factor is adequate maintenance of traffic signals and loops to ensure the system operates efficiently. Some of these strategies, such as turn and truck restrictions, require public education and outreach.

b. Access Management

These strategies are designed to improve arterial flow by controlling access to and from arterial roadways. FDOT has developed standards which govern road median design and driveway connections. In general, these measures are appropriate for application on US 1. However, local governments may wish to enforce more strict access management criteria through the site plan review process. Access management strategies can be used to plan for:

- driveway control (residential and business) and
- median control.

Each of these strategies requires the appropriate application of accepted engineering criteria. For new developments, this access control can be implemented during the permitting process. Retrofitting existing roadways typically requires studies to identify the impact of proposed changes and the identification of alternate access opportunities.

c. <u>Intelligent Transportation Systems (ITS)</u>

Intelligent Transportation Systems include coordinated operational strategies implemented through technology. These systems can be applied to many of the strategies described above, especially in the areas of traffic operations, transit operations, and incident management. In addition, ITS can be applied throughout a region, along a transportation corridor, or on a specific facility. Samples of ITS's effectiveness at improving highway operations include:

- Advanced Traveler Information Systems (ATIS), which may include:
 - Travel Planning. Pre-trip multi-modal travel information and ride matching services can help travelers determine their optimal mode choice, departure time, and route before their trips;
 - Traveler Information. Real-time information to guide travelers during trips includes advisory services (to warn of traffic or transit congestion or delays), route guidance systems, and traveler services information;

One of the keys to success for implementing ITS strategies is the availability of affordable, proven technology. Some ITS strategies, such as advanced traveler information systems, require multi-agency coordination.

5. Level Five Strategies

Level Five Strategies included increasing the capacity of the highway system by providing additional general purpose lanes. Based on increasing capacity criteria, adding general purpose lanes to US 1 was an appropriate strategy.

a. Addition of General Purpose Lanes

General purpose lanes may be used by all vehicular traffic modes (i.e., SOVs, HOVs, transit, and trucks). These infrastructure improvements may be the best approach to congestion management in some cases, as long as appropriate elements of the other strategies are incorporated into the design and operation of the expanded facility. It should also be noted that several measures that would increase the number of general purpose lane miles are also identified under traffic operational improvements (Level Four). The improvements in that section generally refer to smaller scale additions (i.e., turn lanes) or those for specific purposes (i.e., passing lanes).

C. Summary

Based on this strategy screening analysis, twenty-nine (29) strategies were found to be applicable to the US 1 corridor. The applicable strategies are summarized in Table 2 on the following page.

APPLICABLE STRATEGIES

TABLE 2

LEVEL	STRATEGY	LEVEL	STRATEGY
11	Land Use Policies / Regulations	2	Pedestrian Facilities
1	Design Standards	3	Guaranteed Ride Home Program
1	Locations of Jobs and Housing	3	Ride Share Matching Services
2	Fleet Expansion	4	Intersection Widening
2	Vehicle Replacement / Upgrade	4	Channelization
2	Transit Park and Ride Facilities	4	Signalization Improvements
2	Other Inter-modal Facilities	4	Traffic Control Center
2	Service Enhancement / Expansion	4	Computerized Signal System
2	Fare Reductions	4	Roadway Widening Auxiliary Lanes
2	Transit Information System	4	Truck Restriction
2	Transit Coordination	44	Driveway Control;
2	Transit Marketing	4	Median Control
2	Intelligent Bus Stops	4	Advanced Traveler Information
2	Bicycle Facilities	5	General Purpose Lanes
2	Bicycle Storage Systems		

Additional detail on this topic is available in the Strategy Screening Analysis Technical Memorandum dated April 1998.

IV. PUBLIC INVOLVEMENT PLAN

A key element of the US 1 Transportation Study was the development, refinement, and execution of a comprehensive and effective Public Involvement Plan (PIP). At the outset of the Study an initial PIP was developed. This plan was subsequently modified during the latter stages of the Study to meet the goals that had been established. The following section describes the Original PIP and the revisions that were implemented.

A. Summary of Public Involvement Approach

The following is a brief summary of the original PIP. (Copies of the original PIP and modifications thereto are included in Appendix B.)

1. Public Involvement Summary - Original Plan

The Public Involvement Plan was found to be in compliance with the Florida Department of Transportation's (FDOT) *Project Development & Environmental Guidelines Manual*, Part 1, Chapter 8-2.1 and the Volusia County Metropolitan Planning Organization's (MPO) Public Involvement Process (as adopted on 1/24/95 and amended on 5/28/96). The overall goal of this plan was to help ensure that the study reflected the values and needs of the communities it was designed to benefit. The full Public Involvement Plan was submitted as a separate document dated March 18, 1997.

A Study Technical Advisory Team (STAT) was formed to participate in the study and guided the development of alternatives. The STAT was composed of members from the Volusia County MPO staff, the MPO Citizen's Advisory Committee (CAC) and Technical Coordinating Committee (TCC), VOTRAN (Volusia County Public Transportation Agency), Volusia County staff, FDOT, and local municipalities along the US 1 corridor. The STAT provided both technical expertise and the citizen's perspective. The STAT's input was crucial in addressing more localized transportation issues which members were intimately familiar with on a regular basis.

Four (4) public workshops were to be held during the 24-month study. These public workshops were to be conducted at various locations within the three (3) geographic sections of the study corridor for a total of twelve (12) public workshops. The first workshop was to contain a brief presentation regarding the study goals and objectives, review the initial data collection efforts and information to be used to develop preliminary alternative recommendations. The second workshop was to provide an overview of the data analysis including future courses of action, future traffic demand forecasts, surveys and engineering analysis. Initial transportation alternatives and concepts, including multi-modal improvements were also to be presented. Refined alternatives based on general public input and recommendations from project agencies were to be presented for review and comment at the third workshop, including the results of alternatives evaluation via the application of performance measures to the draft alternatives. The final public workshop was to provide the public with the final transportation improvement alternatives with their related performance measures. Questions regarding future implementation including right-of-way impacts, project prioritization, phasing, potential funding sources, and future courses of action were to be addressed at this workshop.

Other public involvement tools and processes to be utilized included a series of news releases, newsletters and study videos to summarize study progress and alternatives development and evaluation efforts. A telephone "hotline" was also used to provide a local phone number for area residents and other concerned persons to request study information or discuss specific issues with project representatives. Finally, study information was provided on the Internet through the local Volusia County homepage, including scheduled meeting dates and general information.

As previously noted, the above is a summary of the original PIP for this project. It was generally adhered to through the first two (2) rounds of Public Open Houses. Subsequent to the second Round of Open Houses, the Study Team recognized that the Open House forum was not fully meeting the goals of the study. At this point the Study Team developed the following proposed changes:

2. Proposed Modifications to the Public Involvement Plan - Finalized June 3, 1998

Public Meetings

In lieu of a third round of Open Houses, the Study Team conducted twelve (12) individual meetings and one (1) general Public Open House at a centralized location within the Study Corridor. These meetings/presentations and their planned dates were as follows:

	DATE	116/10
City of Edgewater	July 20, 1998	7:00 p.m.
Volusia County Council	July 23, 1998	9:00 a.m.
City of New Smyrna Beach	July 28, 1998	7:30 p.m.
City of Port Orange	August 4, 1998	7:00 p.m.
City of South Daytona	August 11, 1998	7:00 p.m.
City of Ormond Beach	August 18, 1998	7:00 p.m.
City of Daytona Beach	August 19, 1998	7:00 p.m.
City of Holly Hill	August 25, 1998	7:30 p.m.
Public Open House		
at Riverside Pavilion	September 8, 1998	4:00 p.m 7:00 p.m.

The Study Team also conducted meetings during July and August 1998 with four (4) Chambers of Commerce: New Smyrna Beach, Port Orange-South Daytona, Greater Daytona Beach, and Ormond Beach.

At each of the above listed meetings, the Study Team was represented by the Project Manager, one other Technical Team member from TEI Engineers & Planners (TEI), and a Public Involvement Specialist (from Herbert Halback, Inc. or Powell, Fragala, and Associates). The Study Team also met with the STAT prior to initiating these individual meetings to inform STAT members of the general items of discussion and to update them on the study progress at that time. STAT Meeting #6, was held on Friday, July 10, 1998.

Mailing List and Meeting Notifications

Since the inception of this study in February 1997, a mailing list has been developed to include interested parties who have indicated, through one of several sources, their desire to be kept informed of the Study progress and meetings. This mailing list is currently comprised of approximately 2,400 mail recipients. During July/August 1998, the Study Team recommended that rather than produce a full-color newsletter, a postcard type announcement for the September Open House be sent to the current mailing list and to all property owners within 300 feet of US 1. By substituting the postcard announcement for a newsletter, a significant number of interested parties can be contacted at no extra cost to the Project.

Press Releases and Newspaper Announcements for the September Open House were run in accordance with the original Public Involvement Plan.

During July/August 1998, the Study Team recommended that these changes be implemented and, dependent on the success of this approach, further expanded into the later stages of the project (i.e., Final Open House).

This modification to the PIP was very successful; however, the Public turnout at the September Open House was somewhat limited (approximately 82 attendees). During November/December 1998 the Study Team decided to focus on the City/County meetings for the balance of the Study.

3. Final modifications to the Public Involvement Plan

Background

The previous Revision (June 3, 1998) to the PIP included the elimination of the third round of Open Houses. These Open Houses were replaced by twelve (12) individual meetings and one (1) general Public Open House. These meetings and General Open House were conducted by the end of September, 1998. This second Revision to the PIP added two (2) additional rounds of individual meetings with the cities and County and eliminated Open House Number 4.

The following is a summary of this modified approach.

Modifications to the Public Involvement Plan

Public Meetings

In lieu of a fourth round of Open Houses, the Study Team conducted two (2) rounds of eight (8) individual meetings/presentations within the Study Corridor. One of these rounds of individual meetings/presentations was already part of the PIP and was scheduled for January/February 1999. At that time, the Study Team presented the Alternatives, evaluation thereof, and preliminary rankings. The second round of meetings took place during March/April 1999. At the second round, the Study Team presented final recommendations and solicited resolutions from each City/County Council. At these meetings/presentations, the **Study Team** was represented by the Project Manager and one other Technical Team member (from TEI). The locations and dates for these meetings are shown below:

	Council/Comm	ission Meeting	City Manager Meeting	
City	Date	Time	Date	Time
City of New Smyrna Beach	1/26/99	7:30 p.m.	3/4/99	11:00 a.m.
City of South Daytona	1/12/99	7:00 p.m.	2/26/99	2:30 p.m.
City of Edgewater	2/1/99	7:00 p.m.	2/26/99	11:30 a.m.
City of Port Orange	1/19/99	7:00 p.m.	2/26/99	10:00 a.m.
City of Ormond Beach	1/14/99 *	7:00 p.m.	3/4/99	9:30 a.m.
City of Daytona Beach	1/20/99	7:00 p.m.	2/26/99	1:00 p.m.
Volusia County Council	2/4/99	9:00 a.m.	**	
City of Holly Hill	1/12/99	7:30 p.m.	2/25/99	10:00 a.m.

- * Ormond Beach requested that the presentation be made to their planning board.
- ** The Volusia County Manager had been briefed previously and declined this meeting opportunity.

Meetings with City/County Managers

During February 1999 (between the January and March meetings), meetings with City/County Managers were conducted. The purpose of these meetings was to discuss the Study Team's recommendations and provide any additional input to key staff from each municipality. These meetings were attended by a Technical Staff Member from TEI as well as representatives from FDOT and VCMPO.

Final Meetings with City/County Commissions/Councils

The City/County Managers from each of the above meetings assisted the Study Team by scheduling the US 1 Transportation Study Resolutions for approval at each municipality on the Agendas for the upcoming Commission/Council meetings. Each of the cities and Volusia County voted for and approved Alternative 2 as the approved Resolution for the US 1 Transportation Study. Each of these meetings was attended by representatives from TEI, FDOT, and VCMPO.

City/County Commission/Council	Date
Port Orange City Council	March 2, 1999
Holly Hill City Commission	March 9, 1999
Edgewater City Council	March 15, 1999
Ormond Beach City Commission	March 16, 1999
Daytona Beach City Commission	March 17, 1999
Volusia County Council	March 18, 1999
South Daytona City Council	March 23, 1999
New Smyrna Beach City Commission	March 23, 1999

Presentations to the STAT members and the VCMPO

The following STAT and VCMPO meetings were held:

January 8, 1999	-	TEI made a presentation to the STAT which outlined the City/County meetings
		and delineated the Study Team's recommendations.

January 19, 1999	-	VCMPO staff and FDOT provided the TCC/CAC committees with an update on
		the study progress.

January 26, 1999	-	VCMPO	staff	and	FDOT	provided	VCMPO	with	an	update	on	the	study
		progress.								-			•

Mailing List, Newsletters and Meeting Notifications

The following Public Notification activities were implemented for the remainder of the project.

- November 4, 1998 TEI's Project Manager sent out a letter to each attendee from the September Open House. This letter outlined the remaining presentations, etc. for the study. The letter also contained a general description of the Alternatives and the Survey results from the Open House.
- November 4, 1998 TEI updated the Web-Page by providing information regarding the results of Open House Number 3 and listing the upcoming City/County meetings. This information was similar to that outlined above for the letter to the Open House Attendees.
- December 28 1998 A Newsletter was distributed to the mailing list. Additionally, Press Releases, etc. were distributed announcing the upcoming City/County meetings.
- March 20, 1999 TEI updated the Web-Page by providing information regarding the results of City/County meetings and inviting the public to the final VCMPO meeting on April 27, 1999.
- April 16, 1999 A Post-Card Announcement was distributed to the mailing list announcing the Final VCMPO Meeting. Included on this Postcard was information regarding the Alternatives recommendations and the fact that the VCMPO would take action on these recommendations.
- May 28, 1999 A Final Newsletter was prepared to provide a summary of the Study Findings. This newsletter was distributed to the mailing list. Additional copies were be provided to VCMPO for further distribution, as needed.

B. Documentation of Public Involvement

Throughout the entire Study process an extensive amount of documentation was produced. This documentation has been compiled into Comments and Coordination Reports. Four (4) of these reports were published during the Study period. Table 3 shows a summary of the Public Involvement activities.

Comments and Coordination Report Number 1 - November 1997 - This report was published following the Public Open Houses Round 1

Comments and Coordination Report Number 2 - April 1998 - This report was published following the Public Open Houses Round 2.

Comments and Coordination Report Number 3 - September 1998 - This report was published following the first round of City/County meetings and Public Open House Number 3.

Comments and Coordination Report Number 4 - This final report was published during May 1999 following all of the City/County meetings and VCMPO meeting in April 1999.

TABLE 3
PUBLIC INVOLVEMENT SUMMARY

DESCRIPTION	Number of Activities
Public Open House	
South Section	
North Section	2 2
Central Section	2
Area Wide	1
Total	7
Presentations/Meetings	-
City/County Presentations	16
City County Commission/Council Meetings	8
(for passing the Alternative 2 Resolutions)	
Chamber of Commerce Presentations	4
City/County Manager's Meetings	7
Total	35
Public Notification	
Press Release to Media	3
Display Ads	3
Newsletter	2
Post Card Announcement	1
Total	9
Public Input	
General Survey	
Business Owner's Survey	1
Performance Measures Survey	
Public Comment Card	1
Total	4
	
Other Public Information Venues	
Telephone Hot Line	1
Project Video	1
Web Site	1
Total	3
GRAND TOTAL	58

V. ALTERNATIVES DEVELOPMENT

The initial step of the alternative development process was to develop the future traffic projections for the US 1 corridor. The methodology and results are presented in Section II of this report, Traffic Forecasts, and in the *Design Traffic Report*, July 1998. The **NO-BUILD** and **FULL-BUILD** alternatives were simulated to look at the two (2) extremes of traffic volume projections and congestion on the corridor. As each alternative was developed, traffic projections were also developed. The next step involved defining logical corridor segments along the 30-mile US 1 corridor. The following intersection/roadway data was utilized as a beginning point in developing segments:

- urban verses rural roadway classification,
- existing right-of-way widths,
- existing multi-modal facilities and options transit, bicycle, and pedestrian,
- projected traffic volumes Average Daily Traffic and Design Hour Volumes,
- roadway capacity and LOS intersection and roadway link, and
- alternative options available (see the proposed strategies in Section III).

The corridor was divided into nine (9) segments. Figure 2, Roadway Segment Map, shows the definable segments used for the development and evaluation of alternatives. They are as follows:

- 1. South of SR 442 to SR 44 (Canal Street)
- 2. SR 44 (Canal Street) to Turnbull Bay Road
- 3. Turnbull Bay Road to SR 5A (Nova Road)
- 4. SR 5A (Nova Road) to Dunlawton Avenue
- 5. Dunlawton Avenue to SR 400 (Beville Road)
- 6. North of SR 400 (Beville Road) to SR 430 (Mason Avenue)
- 7. North of SR 430 (Mason Avenue) to SR 40 (Granada Boulevard)
- 8. North of SR 40 (Granada Boulevard) to SR 5A (Nova Road)
- 9. North of SR 5A (Nova Road) to North of I-95

Concurrent with the development of the traffic projections, a list of potential strategies was developed into a hierarchical order. The methodology is described in detail in Section III of this report - Strategies. Two (2) sets of multi-modal alternatives were developed. The first places a **lower emphasis**/lower investment on multi-modal features within the corridor and comprised of the following components:

- local government land use policies and regulations that support walking, bicycling and riding transit,
- bicycle lanes on US 1 (removal of on-street parking required),
- new sidewalks and sidewalk improvements on US 1,
- pedestrian crossing enhancements at key intersections,
- headway reductions and service time extensions on existing US 1 bus routes (3, 4, and 40),
- more bus shelters on US 1,
- the possible initiation of new trolley service as well as extensions to existing service, and
- the development of multi-modal facilities within communities along US 1.

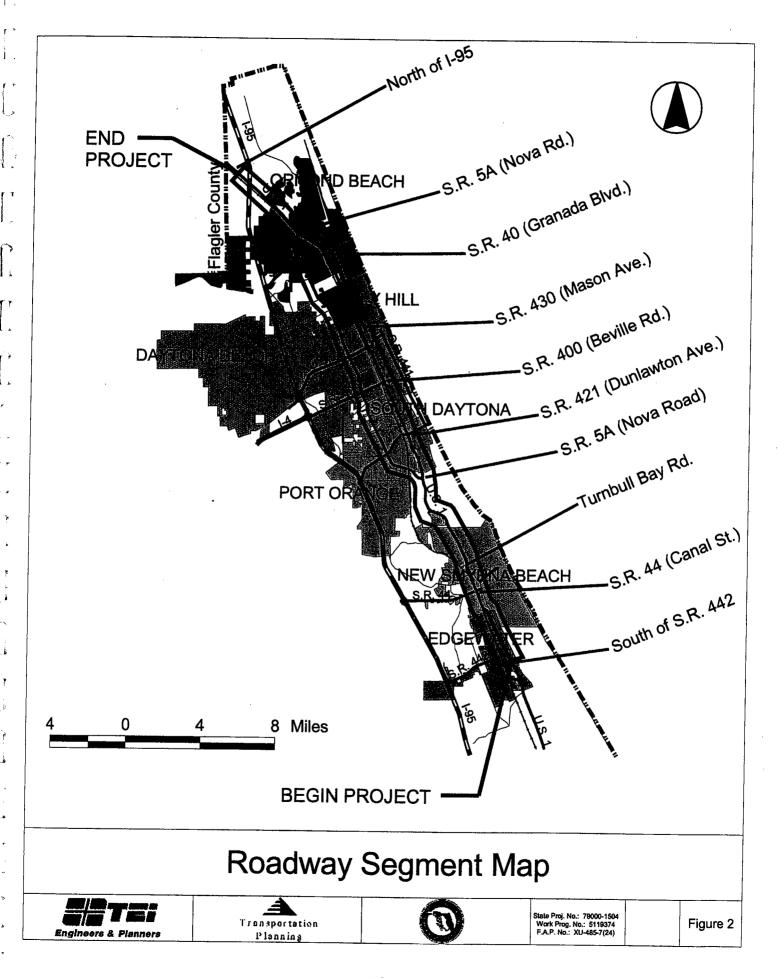
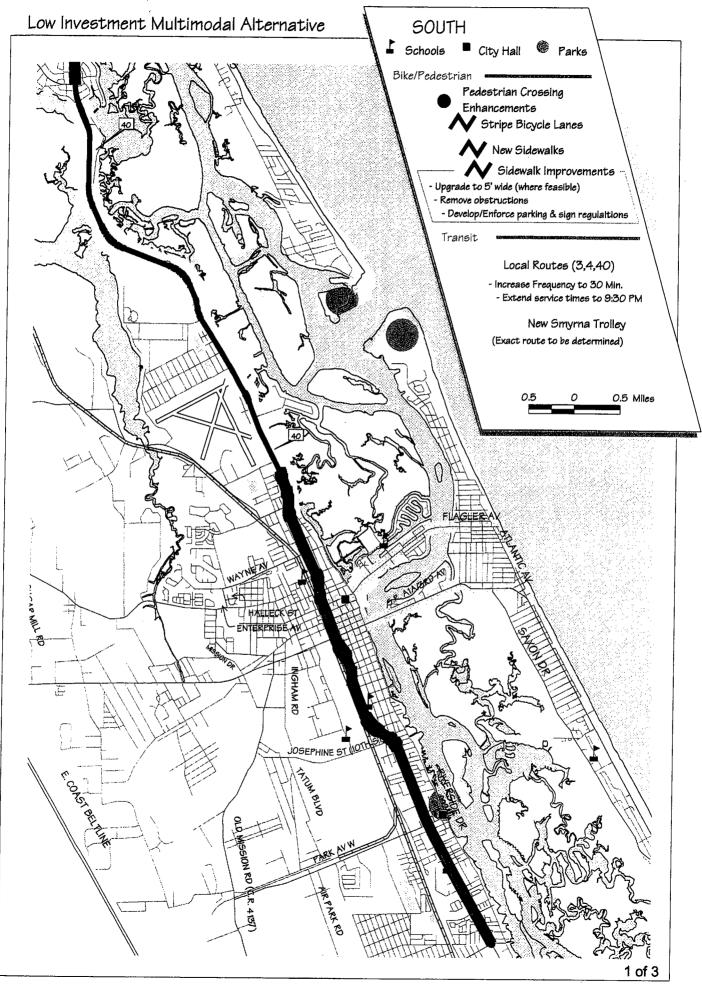
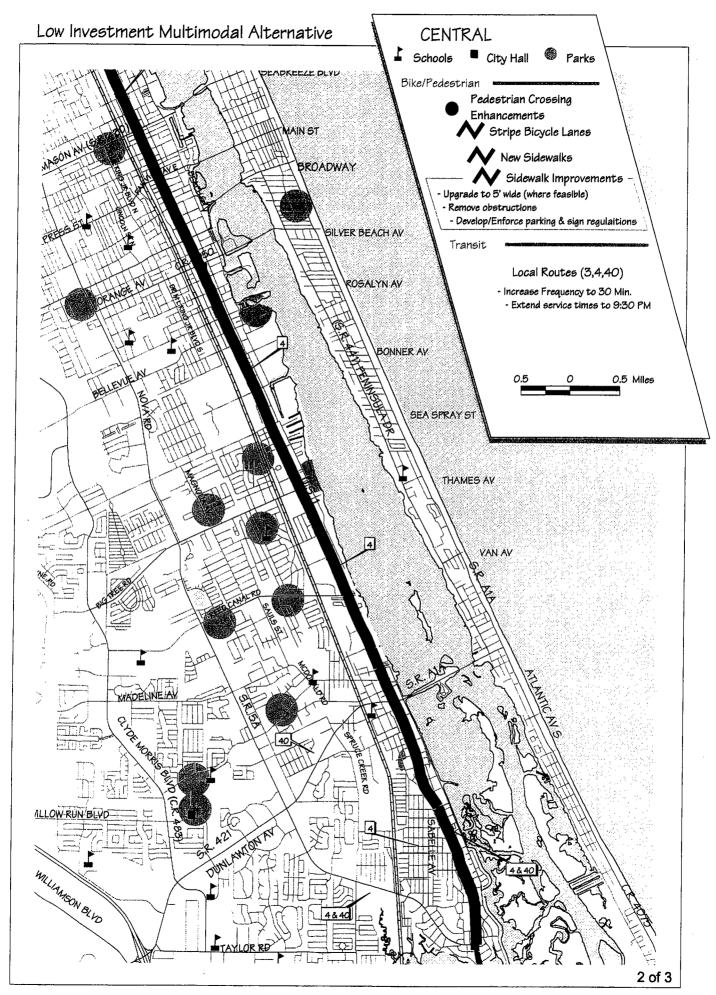


Figure 3 illustrates the Low Investment Multi-Modal Alternative.

The second investment alternative (i.e., high investment), was developed with the intent of placing a higher level of multi-modal emphasis on the corridor. The high investment alternative included all of the low emphasis strategies identified above, as well as the following components:

- the development of a design standards manual for the corridor,
- a multi-use trail system (see accompanying figure maps and Appendix F),
- express bus services,
- bus prioritization treatments, and
- enhanced multi-modal hubs within communities along the corridor, including provisions for bicycle, pedestrian and transit access, and amenities.





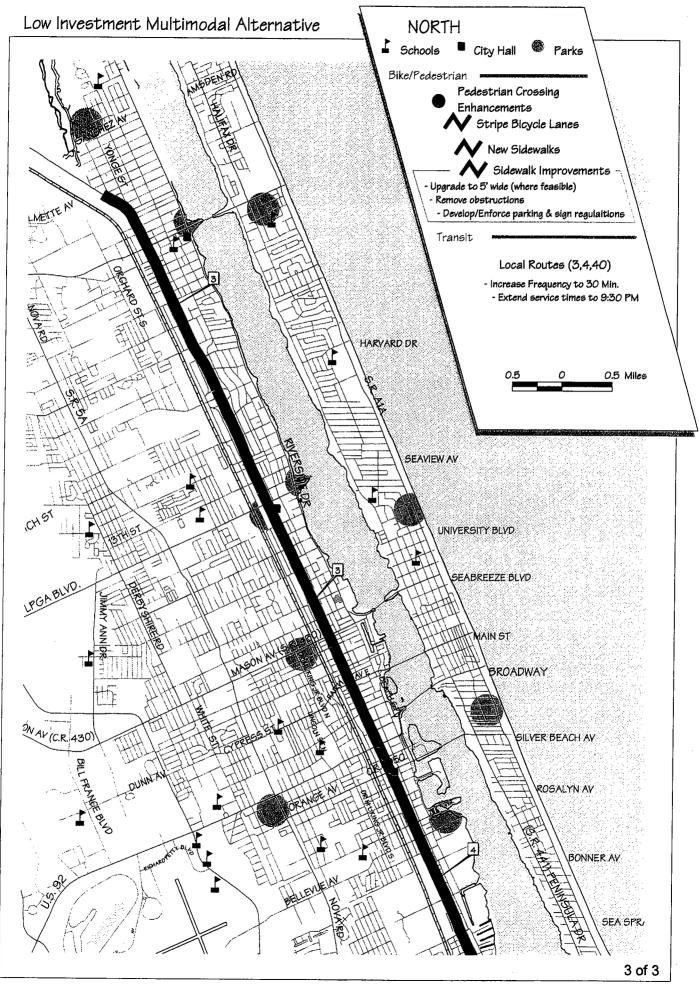


Figure 3

Figure 4 illustrates the High Investment Multi-Modal Alternative.

Each of the two multi-modal alternatives provide some benefit in terms of:

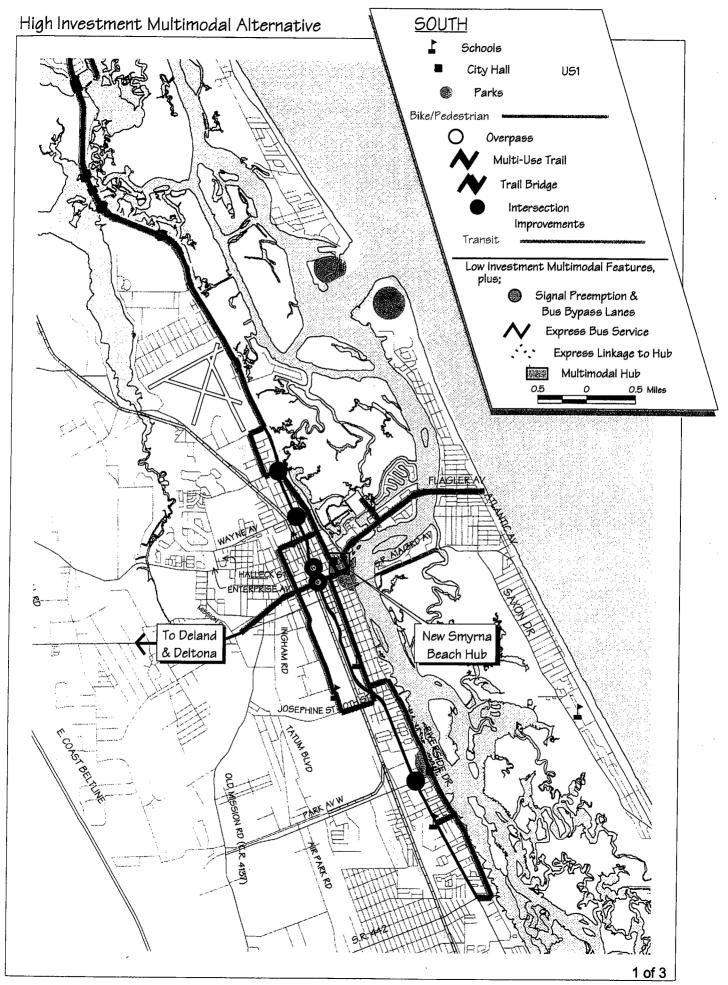
- access to bicycle, pedestrian and transit facilities and services,
- improved bicycle and pedestrian safety,
- improved transit travel times, and
- compatibility with and enhancement of local government redevelopment objectives.

Details of the multi-modal alternatives can be reviewed in the Technical Memorandum - *Multi-Modal Alternative Analysis* dated December 1998.

The development of alternatives evolved with input from the STAT, city and county councils/commissions, and private citizens. All of the alternatives developed (except the "NO-BUILD" alternative) are multi-modal and include improvements for automobile, transit, bicycle, and pedestrian modes of travel. Each alternative has three (3) main components: roadway widening from 4 lanes to 6 lanes, intersection improvements, and multi-modal features.

Alternative 1 was the "NO-BUILD" do-nothing alternative. Therefore, Alternative 2 was the next logical step in trying to improve mobility and capacity along the US 1 corridor without widening to 6-lanes. Alternative 6, "FULL-BUILD" was developed from the Volusia County MPO's Long Range Transportation Plan (LRTP). The development of Alternatives 3, 4, and 5 transpired after careful consideration from our technical analysis and input from the individual cities and citizens of Volusia County. Alternatives 3, 4, and 5, are between the extremes of "NO-BUILD" (Alternative 1) to "FULL-BUILD" (Alternative 6).

The six (6) improvement alternatives are described below. Alternatives 3, 4, 5, and 6 each have two options - A and B. Option A includes acquisition of additional right-of-way where the roadway is proposed to be widened to 6 lanes. Figure 5 illustrates the typical cross section of Option A. Option B is within existing right-of-way where the roadway is proposed to be widened to 6 lanes. Figure 6 illustrates the typical cross section of Option B. Alternatives 2 through 6 each have a multi-modal component (high or low emphasis/investment) associated with them, as illustrated in Figure 3 (on the previous pages) and Figure 4 on the following pages.



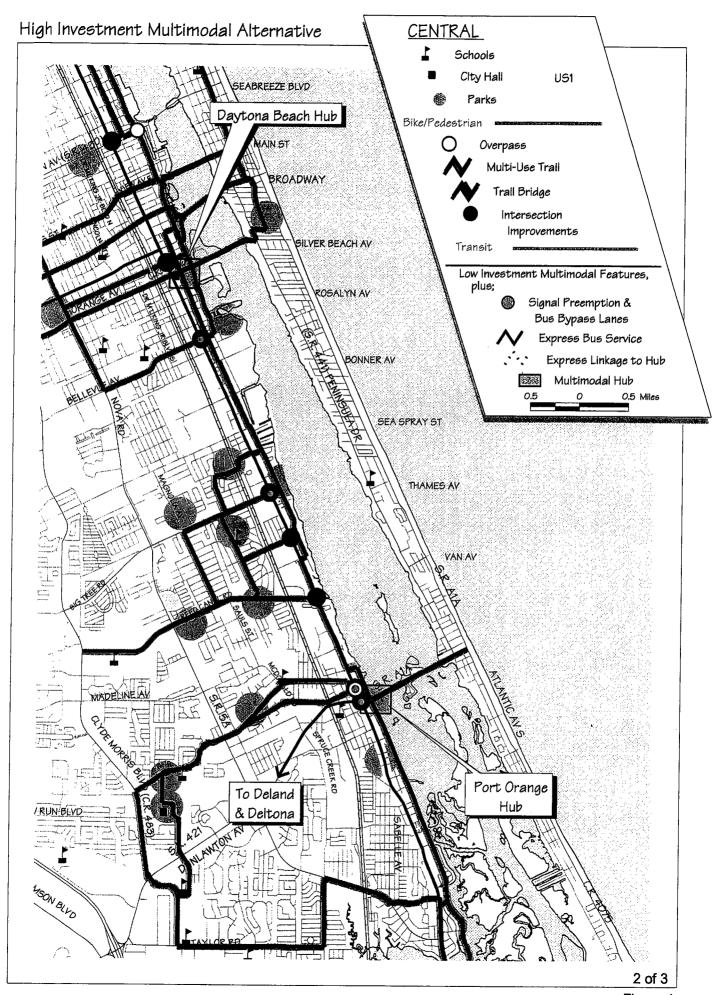
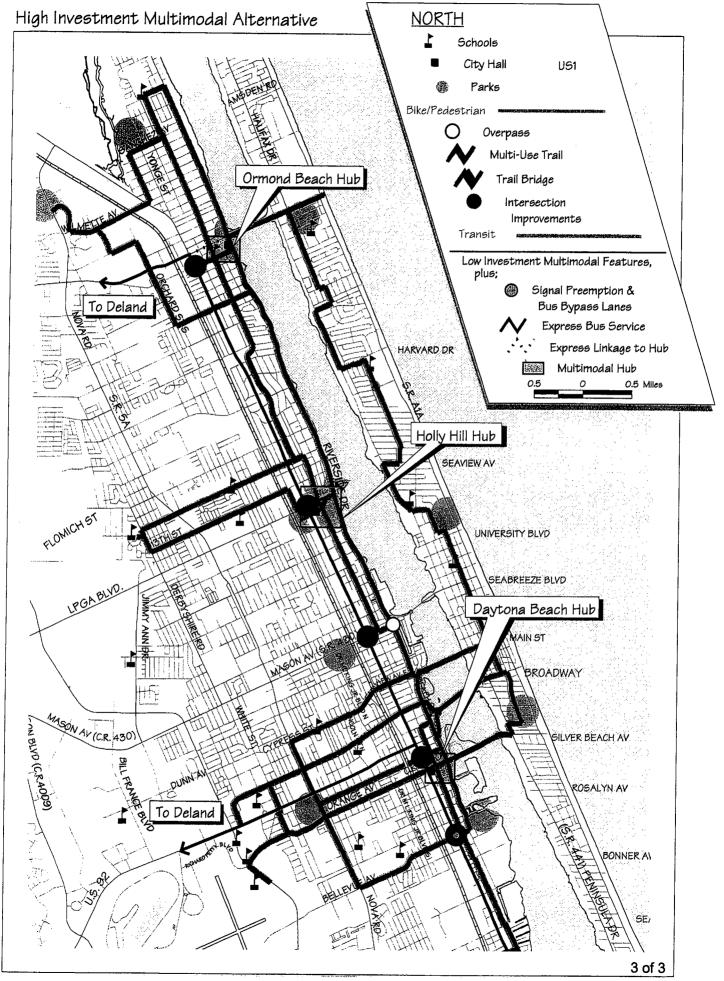
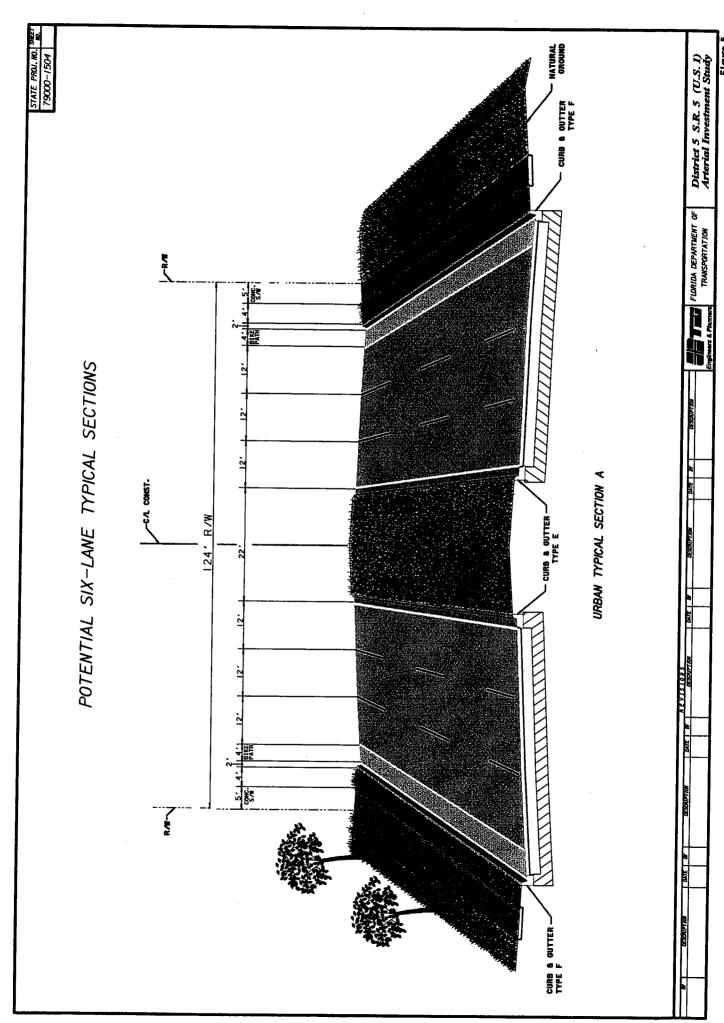
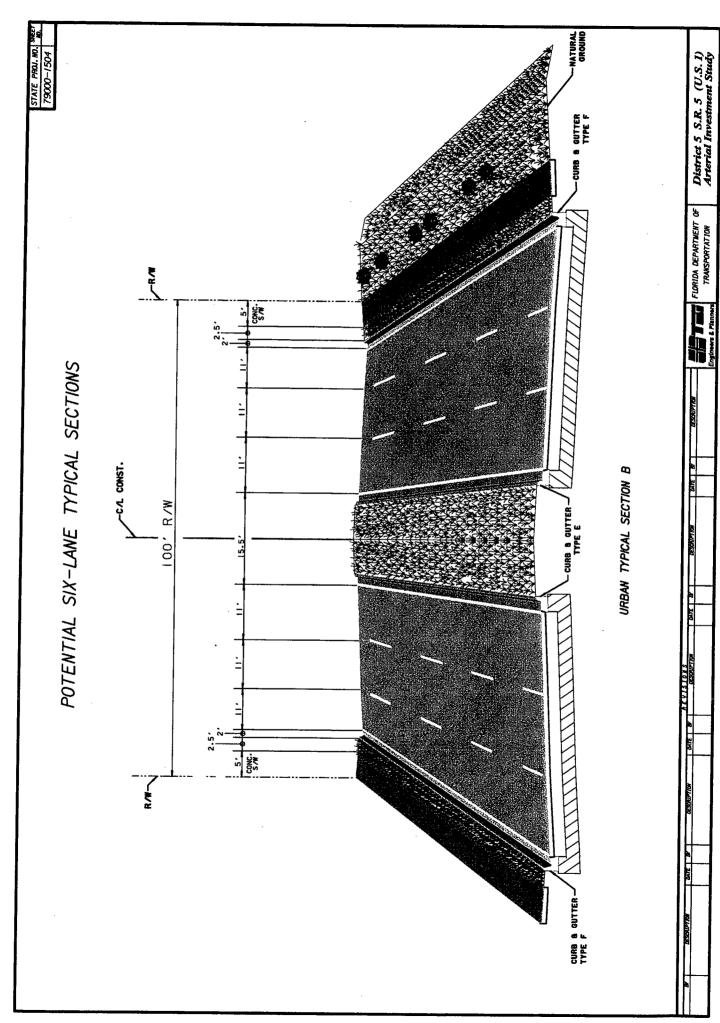


Figure 4







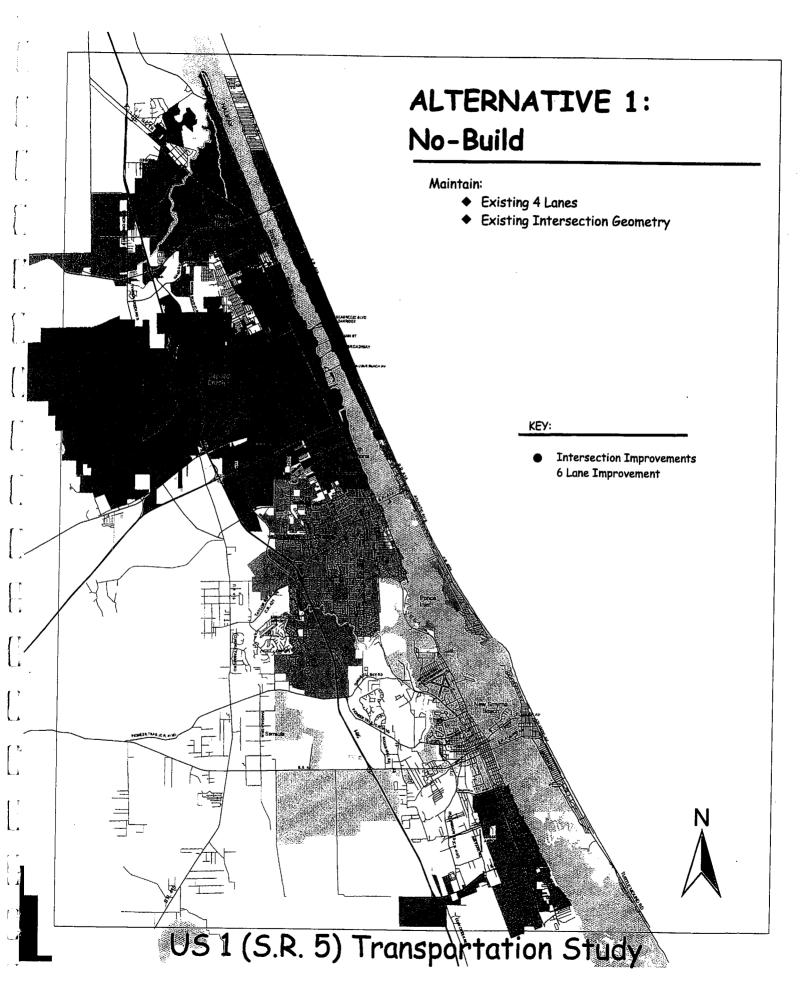
A. ALTERNATIVE 1: NO-BUILD

This alternative assumes that no intersection, capacity, or multi-modal improvements will be made. The existing roadway, intersection, and multi-modal facilities will remain as they are today. Figure 7 displays Alternative 1. A summary of Alternative 1 is listed below:

Roadway: Maintain Existing 4 lanes

Intersections: Maintain Existing Intersection Geometry

Multi-modal: Maintain Existing Bus Routes and Service



B. ALTERNATIVE 2: INTERSECTION IMPROVEMENTS ONLY

Alternative 2 would maintain the existing roadway configuration as a 4-lane facility. This alternative is highlighted by Transportation System Management (TSM) improvements and the high emphasis on multi-modal features. TSM maximizes the capacity of the existing roadway by incorporating intersection improvements such as new or additional left and right turn lanes, lane widening, improved signal timings and phasing, and improved signal progression along the US 1 corridor. Fifteen (15) intersections were identified for improvements. This alternative would require some additional right-of-way for intersection improvements as well as right-of-way for stormwater management ponds. This alternative would also include opportunities for the high emphasis multi-modal features. The intent is to place a higher level of multi-modal emphasis on the corridor. Figure 8 displays Alternative 2. Table 4 summarizes the traffic capacity improvements by segment and intersection. A summary of Alternative 2 improvements is listed below:

Roadway:

Maintain Existing 4 lanes

Intersections:

Improvements to 15 Intersections:

US 1 at:

Park Avenue Dunlawton Avenue
SR 44 (Canal Street) Herbert Street
Washington Street Reed Canal Road
Wayne Avenue Ridge Road

Bellevue Avenue SR 600 (US 92)

SR 430 (Mason Avenue) LPGA Boulevard

Turnbull Bay Road Big Tree Road

SR 40 (Granada Boulevard)

Multi-Modal:

- High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles
- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 6 Enhanced Multi-modal Transfer Centers

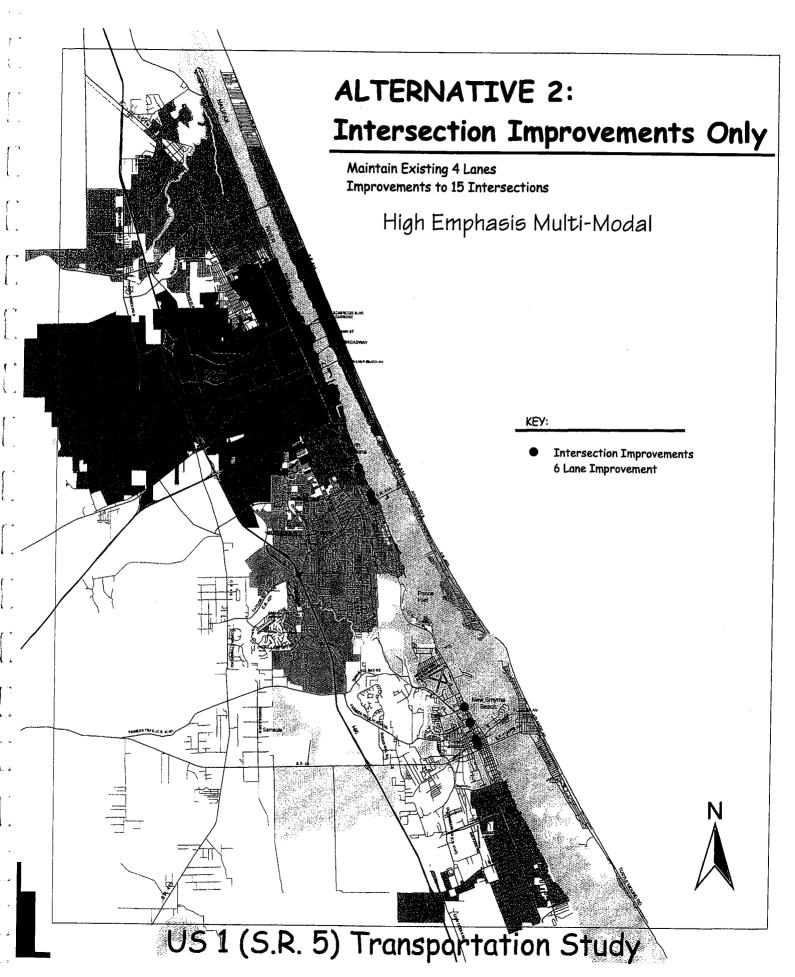


TABLE 4 TRAFFIC CAPACITY IMPROVEMENT SUMMARY: ALTERNATIVE 2

Intersection Improvements Only (TSM)

,								_								
Roadway Segment	From	То	Capacity Improvements	Maintain 4-1 ans Caulity	AJ and	6.1 and with DOW Accurication	Transmitted Acquisition	Intersection improvement	NB Right	SB Left	SB Right	EB Left	EB Right	WB Left	WB Right	Projected Year 2024 Level of Service (LOS)
A	******				上	İ	200			╁	Ι.	+	-	╁	╁	
0000000 /4 000.000	S. of SR 442 US 1 @ SR 442	SR 44 (Canal Street)	-	X	<u> </u>	40										
	US 1 @ Park Avenue			X		╁	- 2000 2000 2000		╫	\vdash	¥	x	-	┼	-	Improve LOC Ext. LOC D
	US 1 @ 10th Street			X					1	\vdash	 ^	1^	\vdash	╁	\vdash	Improve LOS F to LOS D
	US 1 @ SR A1A (SR 44) US 1 @ SR 44 Bus. (Canal Street)		- 🔛	X		Ţ										
	C076000757577607607077777777777777777777	Turnbull Bay Road		X	2 223			X	X	X	X	X	X	2:32:	Х	Improve LOS F to LOS D
	US 1 @ Washington Street			X		3 223			X	1	X	1000	273	х		Improve LOS F to LOS D
	US 1 @ Wayne Avenue		****	Х			- 33		Ľ		x		x	Ĺ		Improve LOS F to LOS C
	US 1 @ Tumbull Bay Road N. of Tumbull Bay Road	SR 5A (Nova Road)		X	3 3 3 3 3	8 888			2000	20.77	X		X			Improve LOS F to LOS C
	US 1 @ SR 5A (Nova Road)	On ON (MOVA KOND)		x	488	3 (33)	300		3 222		000	8888	3000	12:22	800	
	N. of SR 5A (Nova Road)	Dunlawton Avenue		H		100							33081		2000	
	US 1 @ Commonwealth Blvd. US 1 @ Dunlawton Avenue			X		Г										
	SR 5A @ Dunlawton Avenue		1000	X	╄-	╀		X	\vdash	L	ļ.,	Ш		Ц	\Box	No Improvement from LOS E
€	N. of Dunlawton Avenue	SR 400 (Beville Road)							8 3333	02.V20		8798	1000	1000	(2012)	
	US 1 @ Herbert Street			X							х	X	2 7 5 5 5	10.000		Improve LOS F to LOS D
	US 1 @ Venture Drive US 1 @ Reed Canal Road			X												
	US 1 @ Ridge Blvd.		33333	X		├		X	+1			X		\dashv	_	Improve LOS F to LOS D
	US 1 @ Big Tree Road			x		-		x			X	x	Ψ	v	-+	Improve LOS F to LOS C
	US 1 @ Ferndale Avenue			Х				<u> </u>	1-1		Ĥ	^	~	~	+	Improve LOS F to LOS D
	US 1 @ SR 400 (Beville Road) SR 5A @ SR 400 (Beville Road)			Х	匚											
F i		SR 430 (Mason Avenue)			55555	3335			1							
	US 1 @ Wilder Blvd.	en room and one strende se		х	1000	3000			1200	333	3333	333	:::			
	JS 1 @ Bellevue Avenue			X					x	_	x	-	\mathbf{x}^{\dagger}	\dashv	ᇵ	Improve LOS F to LOS D
	JS 1 @ Orange Avenue JS 1 @ Magnolia Avenue			X												WINDLESS COOL TO COOLD
	JS 1 @ SR 600 (US 92)			X		<u> </u>		4.		_		_	-1		\perp	
	JS 1 @ Bay Street			X	-	-		X	⊦ ∤	즤	-+	X	-+	<u> </u>	+	Improve LOS F to LOS D
	JS 1 @ Bethune Blvd.			x	Н	-		-		-	┪	\dashv	\dashv	-	+	
	JS 1 @ Mullally Street			X								\neg	寸	\dashv	\forall	
	JS 1 @ Fairview Avenue JS 1 @ Madison Avenue			X	_						\Box	\Box	\Box		T	
	JS 1 @ SR 430 (Mason Avenue)			X	\dashv			х		x	4	٠ŀ	-	J	4	
s	SR 5A @ SR 600 (US 92)				-	\dashv		1^	-	^	\dashv	X	+	X	+	Improve LOS F to LOS D
	Vilder Blvd.@ Palmetto Avenue											_	7	\dashv	-+	
	R 5A @ SR 430 (Mason Avenue)	iR 40 (Granada Blvd.)			500000	2333				J		\perp	I	I		
Ų	S 1 @ Brentwood Drive	The forming of DIACI		X	· · · · · ·	80.00							4	1		
U	IS 1 @ 3rd Street			كا	+	-			\dashv	\dashv	-	\dashv	+	+	+	
	IS 1 @ 6th Street			X					ゴ		╛	士	\pm	_	_	
	IS 1 @ LPGA Blvd.			쉬	[_		\Box	_Ţ	Ţ	\Box	T	I	T	I	
	S 1 @ Walker Street			X	-+			1-1	+	+	+	X L	X	-	4	Improve LOS F to LOS C
	S 1 @ Flornich Street			χ	_+				十	╅	-+-	+	+	+	+	
	S 1 @ Hand Avenue S 1 @ SR 40 (Granada Blvd.)			X	\Box					士		\perp	T	士	_	
	R 5A @ LPGA Blvd.	·		X	-+			\Box	_	\perp	\perp	\perp	x	T	x	Improve LOS F to LOS D
SI	R 5A @ SR 40 (Granada Blvd.)			-+	\dashv	-		1-1	-+	+	+	+	+	+	+	
H N	of SR 40 (Granada Bivd.) S	R 5A (Nova Road)			883	o f			333 83			24 12	1	() ()		
U	S 1 @ Wilmette Avenue			Х						Τ		7	T	-		
i N	S 1 @ SR 5A (Nova Road) of SR 5A (Nova Road) N	orth of I-95		Х	2530						I	I			\perp	
	S 1 @ Airport Road	Umn 01 1-70		x						4			40			
US	S 1 @ I-95 NB Ramps			솼	+	— <u>S</u>		+	+	+	-	+	+-		+	
US	S 1 @ I-95 SB Ramps			x	_			1	+	+	+	+	+	+	┿	
			333	\neg					_	+	+	+	+		+-	

Note:

Level of Service (LOS) for intersections with no improvements is LOS D or better. LOS improvements shown are compared to Year 2024 "No-Build" Alternative.

C. ALTERNATIVE 3A AND 3B: INTERSECTION IMPROVEMENTS AND LOW HIGHWAY EMPHASIS

Alternatives 3A and 3B would widen US 1 to six lanes between SR 400 (Beville Road) to SR 430 (Mason Avenue).

Adding lanes to provide additional vehicle capacity to US 1 would result in higher traffic volumes on the corridor. However, the increase in traffic volumes would be offset by the additional capacity with US 1 being able to maintain an acceptable level-of-service.

Alternative 3A would increase roadway capacity by expanding US 1 to a 6-lane facility from SR 400 (Bellville Road) to SR 430 (Mason Avenue). This alternative would require approximately 24' of additional mainline right-of-way as well as right-of-way for stormwater management ponds.

Alternative 3B would not require the acquisition of additional mainline right-of-way. This alternative also includes TSM improvements and has a high emphasis on multi-modal features. In addition, twelve (12) intersections are identified for improvements (outside of the 6-laning limits). This alternative would also include opportunities for the high investment multi-modal features. The intent is to place a higher level of multi-modal emphasis on the corridor. The high investment alternative includes all of the low emphasis strategies (noted above) plus the additional improvements noted below. Figure 9 displays Alternatives 3A and 3B. Table 5 summarizes the traffic capacity improvements by segment and intersection. A summary of Alternatives 3A and 3B improvements is listed below:

Roadway: Capacity Improvements: 6-Lane from SR 400 (Bellville Road) to SR 430 (Mason Avenue)

<u>Intersections</u>: Improvements to 12 Intersections:

US 1 at:

Park Avenue Turnbull Bay Road Ridge Boulevard SR 44 (Canal Street) Dunlawton Avenue Big Tree Road Washington Street Herbert Street LPGA Boulevard

Wayne Avenue Reed Canal Road SR 40 (Granada Boulevard)

Multi-Modal:

- High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles
- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 6 Enhanced Multi-modal Transfer Centers

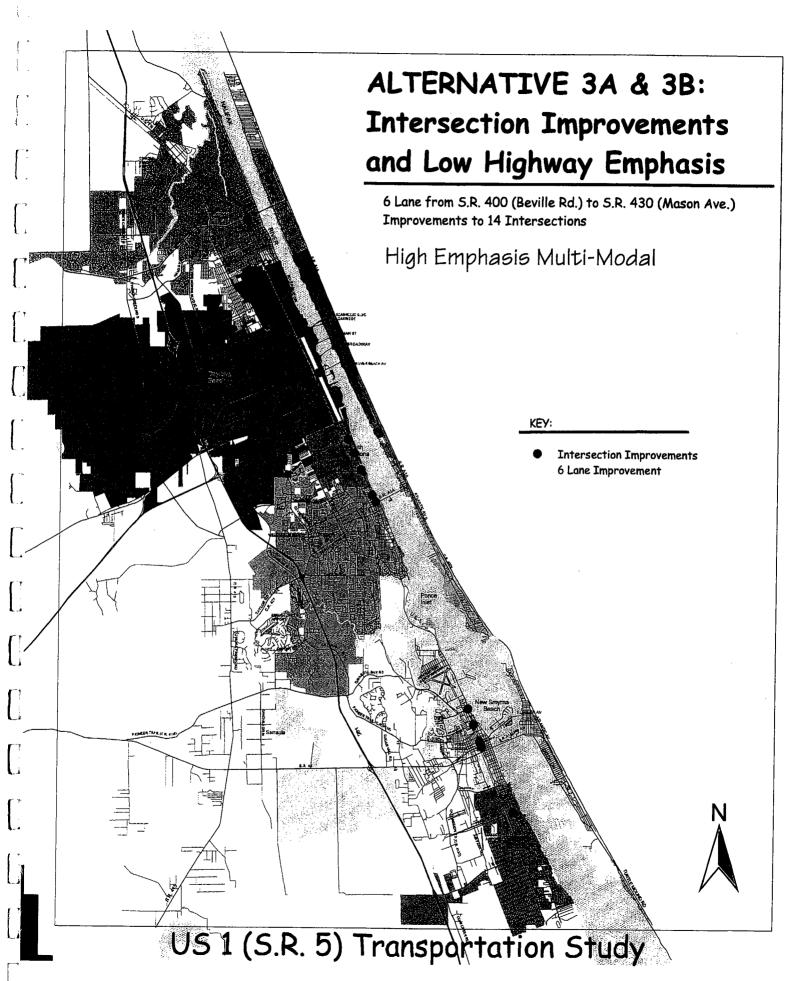


TABLE 5 TRAFFIC CAPACITY IMPROVEMENT SUMMARY: ALTERNATIVE 3A and 3B

6-Lane from SR 400 (Beville Road) to SR 430 (Mason Avenue)

Roadway Segment	From	То	Capacity Improvements	Maintain 4-Lane Facility	6-Lane	6-Lane with ROW Acquisition	Intersection Improvement	NB Left	NB Right	SB Left	SB Right	EB Left	EB Right	WB Left	WB Right	Projected Year 2024 Level of Service (LOS)
A	S. of SR 442	2 - 1 - 0 - 2 - 0 - 2 - 2 - 2 - 2 - 2 - 2 - 2	200	4	122				Ι							
კა	US 1 @ SR 442	SR 44 (Canal Street)		x	31	1112		1	1000		933	888	5530		200	
	US 1 @ Park Avenue	<u> </u>		Î		+		-	\vdash	 	Y	х	-	-	\vdash	Improve LOS E to LOS D
	US 1 @ 10th Street			Î		†		1	 	-	^	^	-	 	Н	Improve LOS F to LOS D
	US 1 @ SR A1A (SR 44)		3327	X			1318					_			Н	
	US 1 @ SR 44 Bus. (Canal Street)		100	X				X	X	Х	X	Х	Х		Х	Improve LOS F to LOS D
	N. of SR 44 Bus. (Canal Street)	Turnbull Bay Road	3 (1)				and the		100	***				W.		
	US 1 @ Washington Street US 1 @ Wayne Avenue	 		X	1-	├		1	X	\vdash	X		-	х	Щ	Improve LOS F to LOS D
	US 1 @ Turnbull Bay Road			X	 	-		-	H	Н	X	_	X	-	$\vdash \vdash$	Improve LOS F to LOS C
	N. of Turnbull Bay Road	SR 5A (Nova Road)			155	800		338	1233	2003		13134	X		32313	Improve LOS F to LOS C
	US 1 @ SR 5A (Nova Road)			X	L			1					*****			
	N. of SR 5A (Nova Road)	Dunlawton Avenue			400						1210				10.8	
	US 1 @ Commonwealth Blvd.			Х	_				Γ							
	US 1 @ Dunlawton Avenue SR 5A @ Dunlawton Avenue	 	2000	Х	├	-	11111	X	Ш	_		_	_		_	No Improvement from LOS E
	N. of Duniawton Avenue	CD 400 (Bacilla Baca)		22.2	1				3 2 2 2 2 2		11.22	22.22				
	US 1 @ Herbert Street	SK 400 (Beville Road)		X	1222	11:12	(11111) (2111)	0.00	11111	22722	x	V	39.9	3457		1005.1005
	US 1 @ Venture Drive			Î	-	H		-			~	~	ᅱ	Н	-	Improve LOS F to LOS D
	US 1 @ Reed Canal Road			X	_			x	\Box	_	x	x		_	_	Improve LOS F to LOS D
	US 1 @ Ridge Blvd.			Х						\Box	X				_	Improve LOS F to LOS C
	US 1 @ Big Tree Road		2000	Х				X			X	X	Х	Х		Improve LOS F to LOS D
	US 1 @ Ferndale Avenue US 1 @ SR 400 (Beville Road)	 		X	<u>.</u>		11122	_		4	_	_	_		_	
	SR 5A @ SR 400 (Beville Road)		2000	\vdash	х			\vdash		-		+				
	N. of SR 400 (Beville Road)	SR 430 (Mason Avenue)		1983	1000			110			3111	999		2.33	22	
	US 1 @ Wilder Blvd.				Х	-تورنور							21.22		2222	
	US 1 @ Bellevue Avenue				X							コ		\neg	_	
	US 1 @ Orange Avenue *		31.000		X					X	\Box	\Box		X		Improve LOS F to LOS D
	US 1 @ Magnolia Avenue US 1 @ SR 600 (US 92)	 			X	1		Ш		-4	-		_	_	\perp	
	JS 1 @ Bay Street	 	22222		X	\dashv		\vdash	\dashv	-		4	-		+	
	JS 1 @ Bethune Blvd.				ŵ	-		\vdash	-+	+	-+	+	-+	-+	-	
	JS 1 @ Mullally Street				Ŷ	_	1,00	H	-	+	-+	\dashv	-	-+	-+	
	JS 1 @ Fairview Avenue				x					+	_	\dashv	+	-	-+	
	JS 1 @ Madison Avenue				Х							\Box †	Ţ		_†	
	JS 1 @ SR 430 (Mason Avenue) *				X	:		х	丁	x	\Box	X	X	X	x	improve LOS F to LOS D
	SR 5A @ SR 600 (US 92) Wilder Blvd.@ Palmetto Avenue					-		_	-		_	_	4	[\bot	
	SR 5A @ SR 430 (Mason Avenue)		30000		\dashv		200	\rightarrow	\dashv	\dashv	-+	+	-	-+	-	
G N	of SR 430 (Mason Avenue)	SR 40 (Granada Blvd.)			300					113	-	888				
	JS 1 @ Brentwood Drive			х				:			2511			::::	13111	
	JS 1 @ 3rd Street			x				_ †	_†	_	\dashv	+	+	$\neg +$	\dashv	
	JS 1 @ 6th Street			X	\Box		383								丁	
	JS 1 @ 8th Street			X	[4		\supset	\bot	I	Į.	I	I		\perp	
	JS 1 @ LPGA Blvd. JS 1 @ Walker Street			X	\dashv				+	4	4	×I.	Χĺ	4	-4	Improve LOS F to LOS C
	JS 1 @ Flomich Street			X	\dashv	- }		\dashv	+	+	+	+	+	-	-	
	JS 1 @ Hand Avenue			쉯	\dashv	+		-	+	+	+	-+-	+	+	-+	
	IS 1 @ SR 40 (Granada Blvd.)			٦Ì	+	#		\dashv	+	+	+	+	┰┼	-+	x	Improve LOS F to LOS D
	R 5A @ LPGA Bivd.				_†	-		_	\top	\dashv	+	+	+	+	+	III PIOVE LOS F TO LOS D
	R 5A @ SR 40 (Granada Blvd.)		9	┚					I			_	_†		+	
	l. of SR 40 (Granada Blvd.)	SR 5A (Nova Road)					311								ा	
—— <u>\</u>	S 1 @ Wilmette Avenue IS 1 @ SR 5A (Nova Road)			X	_			_[\perp	Ţ	\bot	T	\bot	\perp	\perp	
		North of I-95		X	2201			8,722			_		\perp		1	
	S 1 @ Airport Road	MARCH OF 1570		x	<u> 2216</u>						<u> </u>	4	ា	23.1	23 2	
	S 1 @ I-95 NB Ramps			슀	-+			+	+	╁	+	+	+	+	+	
	S 1 @ I-95 SB Ramps			श ी	+			+	+		+	+	+	-+	+	

Note:

Level of Service (LOS) for intersections with no improvements is LOS D or better. LOS improvements shown are compared to Year 2024 "No-Build" Alternative.

* Intersection Improvements included in Widening Projects.

D. ALTERNATIVE 4A AND 4B: INTERSECTION IMPROVEMENTS AND LOW HIGHWAY EMPHASIS

Alternative 4A and 4B would increase roadway capacity by expanding US 1 to a 6-lane facility from SR 421 (Dunlawton Avenue) to SR 430 (Mason Avenue). Alternative 4A would require approximately 24' of additional mainline right-of-way as well as right-of-way for stormwater management ponds. Alternative 4B would not require additional mainline right-of-way. These alternatives include TSM improvements and have high emphasis on multi-modal features. TSM maximizes the capacity of the existing roadway by intersection improvements such as new or additional left and right turn lanes, lane widening, improved signal timings and phasing, and improved signal progression along the US 1 corridor. In addition, eight (8) intersections are identified for improvements (outside of the 6-laning limits). This alternative would also include the high investment multi-modal features. The intent is to place a higher level of multi-modal emphasis on the corridor. The high investment alternative includes all of the low emphasis strategies (noted above) plus the additional improvements noted below. Figure 10 displays Alternatives 4A and 4B. Table 6 summarizes the traffic capacity improvements by segment and intersection. A summary of Alternatives 4A and 4B improvements is listed below:

Roadway:

Capacity Improvements: 6-Lane from SR 421 (Dunlawton Avenue) to SR 430 (Mason

Avenue)

Intersections:

Improvements to 8 Intersections:

US 1 at:

Park Avenue

Wayne Avenue

LPGA Boulevard

SR 44 (Canal Street)

Turnbull Bay Road

SR 40 (Granada Boulevard)

Washington Street

Nova Road (SR 5A) at: SR 430 (Mason Avenue)

Multi-Modal:

- High Emphasis on Bus Service with Increase Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles
- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 6 Enhanced Multi-modal Transfer Centers

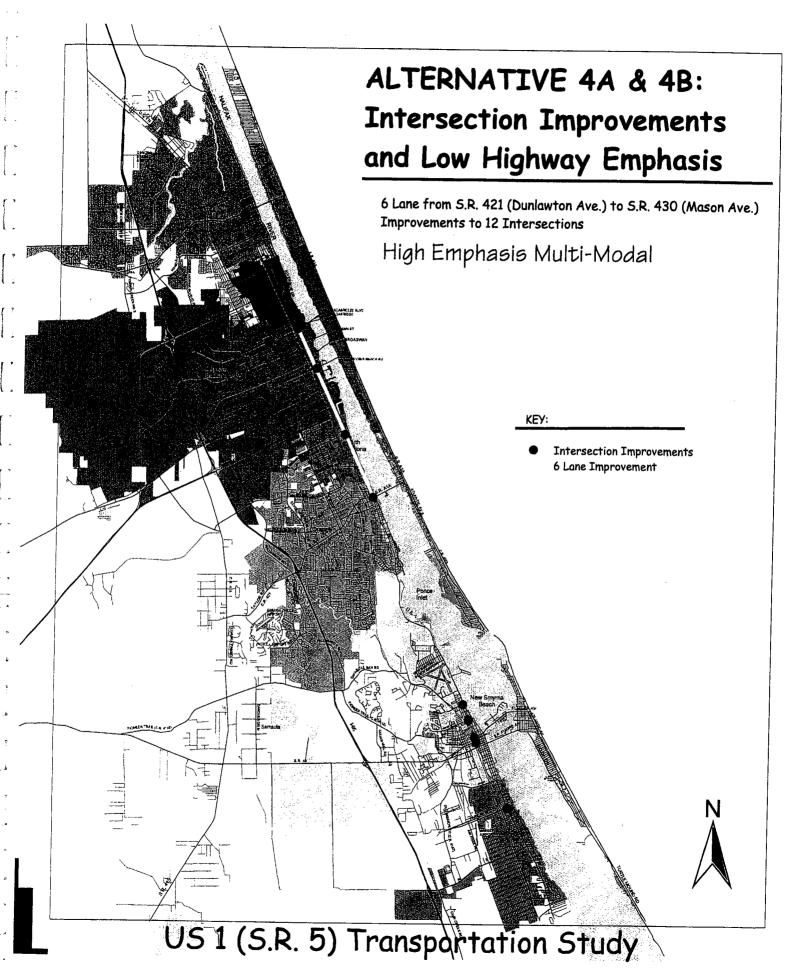


TABLE 6 TRAFFIC CAPACITY IMPROVEMENT SUMMARY: ALTERNATIVE 4A and 4B

6-Lane from Dunlawton Avenue to SR 430 (Mason Avenue)

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Roadway Segment	' I Etam	То	Capacity Improvements	Maintain 4-1 and Eacility	6-1 ane	6-Lane with ROW Acquisition	Intersection Improvement	NB Left	NB Right	SBLeft	SB Right	EB Left	EB Right	WB Left	WB Right	Projected Year 2024 Level of Service (LOS)
A	S. of SR 442				\perp	L	8776		L	L						
	US 1 @ SR 442	SR 44 (Canal Street)		X		8 5333			1000		3883					
	US 1 @ Park Avenue			x		+-		-	┼┈	╁	Ιx	x	-	┢	-	Improve LOS F to LOS D
	US 1 @ 10th Street		333	X								Ĺ		匚		IIIIpiote LOG P to LOG D
	US 1 @ SR A1A (SR 44) US 1 @ SR 44 Bus. (Canal Street)	·	988	X		╀-		<u> </u>	I					\Box		
В	N. of SR 44 Bus. (Canal Street)	Turnbull Bay Road		X	100	8 0000		X	X	X	X	X	X	2555	X	Improve LOS F to LOS D
	US 1 @ Washington Street			x		_		1	x	820/27	x		2000	X		Improve LOS F to LOS D
	US 1 @ Wayne Avenue			X		\Box					X		х			Improve LOS F to LOS C
E	US 1 @ Turnbull Bay Road N. of Turnbull Bay Road	SR 5A (Nova Road)		X	12000	3000		6 2 3000		53557	X		X	20000		Improve LOS F to LOS C
	US 1 @ SR 5A (Nova Road)	Walliota Ruauj		x	30.00	4::::										
D	N. of SR 5A (Nova Road)	Dunlawton Avenue				***				***				3333	****	
	US 1 @ Commonwealth Blvd.	-		Х												
	US 1 @ Dunlawton Avenue * SR 5A @ Dunlawton Avenue		-	1	X	-		1 x								LOS F (SB THRU FAILS)
E	N: of Dunlawton Avenue	SR 400 (Beville Road)			9 6666	1000		(1 (1)	3333	93333	33344	1 100000	20000	****	33333	
	US 1 @ Herbert Street				х	20000			-00000	2000	20000	30000	25000	00000	33333	
	US 1 @ Venture Drive				X										\neg	
	US 1 @ Reed Canal Road US 1 @ Ridge Blvd.		330	1	X					\Box						
	US 1 @ Big Tree Road *		- P. 1269 (00.00)	-	X	-		x	-	-	J			_		
	US 1 @ Ferndale Avenue			1	tê	Н	*****	1^		\dashv	X	-	X			Improve LOS F to LOS D
	US 1 @ SR 400 (Beville Road)		110000		X									_	_	
	SR 5A @ SR 400 (Beville Road) N: of SR 400 (Beville Road)	SR 430 (Mason Avenue)	10000	2.72	252.5	2255			2222	200						
	US 1 @ Wilder Blvd.	Six 430 (masoir Avenue)		100	X	3.00		10000	3333	***	3333	****	3033			
	US 1 @ Bellevue Avenue			 	Î			1		\dashv		-	\dashv	-+	\dashv	
	US 1 @ Orange Avenue *				Х					х				х	コ	Improve LOS F to LOS D
	US 1 @ Magnolia Avenue US 1 @ SR 600 (US 92)	 	10000	-	X			1	_	_	1	[\Box	
	US 1 @ Bay Street	<u> </u>		-	X	\vdash	600000 800000	-	-	-				\dashv	\dashv	
	US 1 @ Bethune Blvd.			_	x	Н		1-	-	\dashv		\dashv	┪	+	+	
	US 1 @ Mullally Street				Х					寸	_		\neg	7	_	
	US 1 @ Fairview Avenue US 1 @ Madison Avenue			<u> </u>	Х				_	\Box	\Box	\Box	\Box	\Box	\Box	
	US 1 @ SR 430 (Mason Avenue) *			-	X			x	\dashv	v	+	J	ᆔ	-	-	
	SR 5A @ SR 600 (US 92)			 	\vdash			1	\dashv	X	\dashv	^	쉬	X	^	Improve LOS F to LOS D Existing full built - LOS F
	Wilder Blvd.@ Palmetto Avenue										⇉	⇉	_		_	Existing run Dulit - LOS F
	SR 5A @ SR 430 (Mason Avenue) N. of SR 430 (Mason Avenue)	SD 40 (CHIHERET		22277		2,72				\perp	J	\Box	X	\Box	Χİ	No Improvement from LOS E
	US 1 @ Brentwood Drive	SR 40 (Granada Blvd.)		Х	636					933 3 5	::	23 3				
	US 1 @ 3rd Street			x				\vdash	\dashv	\dashv	\dashv	+	┪	\dashv	+	
	US 1 @ 6th Street			X							士	\dashv	_†		+	
	US 1 @ 8th Street US 1 @ LPGA Blvd.			X	[_[Ц	工	T	I	\bot	\Box	\Box		
	US 1 @ Walker Street		22	X					\dashv	-	+	Х	Хļ		-	Improve LOS F to LOS C
	US 1 @ Flomich Street			÷	_			+	+	+	+	+	+	+	+-	
	US 1 @ Hand Avenue			X					_†	_	_†	\top	十	+	+	
	US 1 @ SR 40 (Granada Blvd.) SR 5A @ LPGA Blvd.			X				4	T	T	I.	\Box	X		x L	Improve LOS F to LOS D
	SR 5A @ SR 40 (Granada Blvd.)							-+	-+	+	4	-	4	4		
H 1	N: of SR 40 (Granada Blvd.)	SR 5A (Nova Road)		:::1				(700)	200		330	9990	33 ls	222	00100	
	US 1 @ Wilmette Avenue		200	х					3534 (3	<u></u>	3443				900 <u>(1)</u>	
	US 1 @ SR 5A (Nova Road)			X						\perp	I	⇉	ゴ	士	1	
	N. of SR 5A (Nova Road) US 1 @ Airport Road	North of 1-95		ij	==[
	US 1 @ I-95 NB Ramps			X	\dashv			+	+	+	-	-	+	+		
	US 1 @ I-95 SB Ramps			슀	\dashv			\dashv	+	+	+	+	+	+	+	
			1		$\overline{}$			-+	-+-		+-	-	-			

Note:

Level of Service (LOS) for intersections with no improvements is LOS D or better. LOS improvements shown are compared to Year 2024 "No-Build" Alternative.

* Intersection Improvements included in Widening Project.

E. ALTERNATIVE 5A AND 5B: INTERSECTION IMPROVEMENTS AND MEDIUM HIGHWAY EMPHASIS

Alternative 5A and 5B would increase roadway capacity by expanding US 1 to a 6-lane facility from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard). Alternative 5A would require approximately 24' of additional mainline right-of-way as well as right-of-way for stormwater management ponds. Alternative 5B would not require additional mainline right-of-way. These alternatives include TSM improvements and have low emphasis on multi-modal features. TSM maximizes the capacity of the existing roadway by intersection improvements such as new or additional left and right turn lanes, lane widening, improved signal timings and phasing, and improved signal progression along the US 1 corridor. In addition, seven (7) intersections are identified for improvements (outside of the 6-laning limits). These alternatives would include the low investment multi-modal features (noted above). Figure 11 displays Alternatives 5A and 5B. Table 7 summarizes the traffic capacity improvements by segment and intersection. A summary of Alternatives 5A and 5B improvements is listed below:

Roadway:

Capacity Improvements: 6-Lane from SR 421 (Dunlawton Avenue) to SR 40 (Granada

Boulevard)

Intersections:

Improvements to 7 Intersections:

US 1 at:

Park Avenue

Washington Street

Turnbull Bay Road

SR 44 (Canal Street)

Wayne Avenue

Nova Road (SR 5A) at:

SR 430 (Mason Avenue)

SR 40 (Granada Boulevard)

Multi-Modal:

- Low Emphasis on Bus Service with Limited Route Changes
- Low Emphasis on Bicycle Facility Improvements with 3.3 miles of New Bicycle Lanes, and 35 New Major Crossing Treatments
 - Low Emphasis on Pedestrian Facility Improvements with 23 miles of New Sidewalks, 35 New Major Crossing Treatments, and 6 Basic Multi-modal Transfer Centers

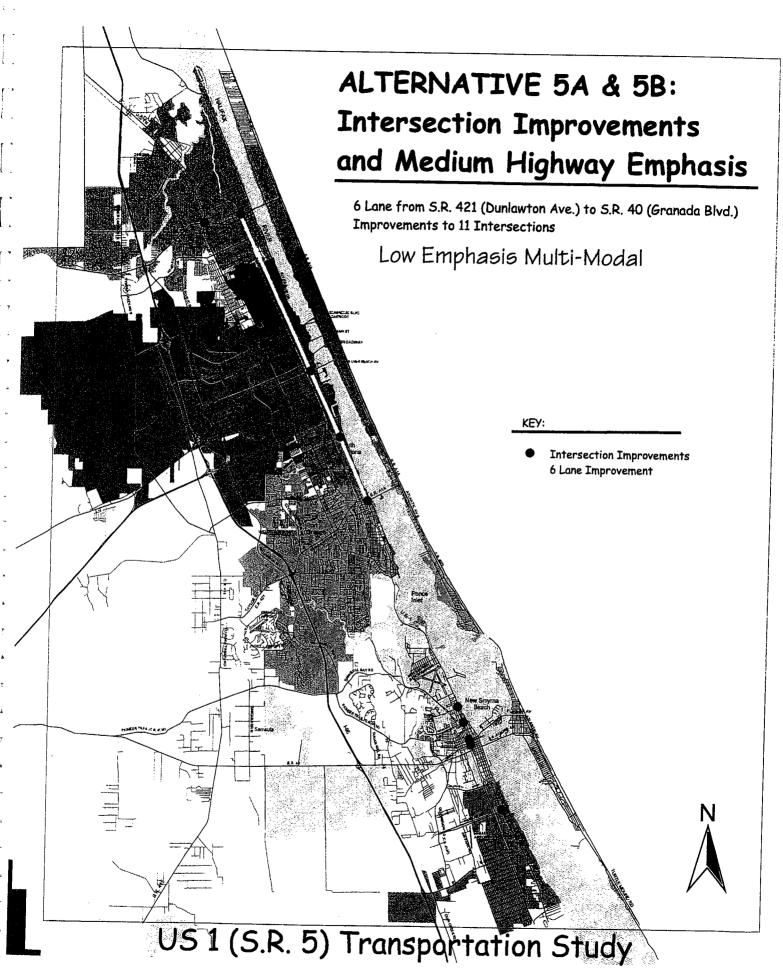


TABLE 7 TRAFFIC CAPACITY IMPROVEMENT SUMMARY: ALTERNATIVE 5A and 5B

6-Lane from Duniawton Avenue to SR 40 (Granada Blvd.)

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Roadway Segment	From	То	Capacity Improvements	Maintain 4-Lane Facility	6-Lane	6-Lane with ROW Acquisition	Intersection Improvement	NB Left	NB Right	SB Left	SB Right	EB Left	EB Right	WB Left	WB Right	Projected Year 2024 Level of Service (LOS)
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	US 1 @ Dunlawton Avenue *				x			x	7	_	+	-+	╅	十	+	LOS F (SB THRU FAILS)
**************************************	SR 5A @ Duniawton Avenue								す	\neg	寸	_	_	寸	_	LOS F (SB THRU FAILS)
	N. of Dunlawton Avenue	SR 400 (Beville Road)				***										
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Note:

Level of Service (LOS) for intersections with no improvements is LOS D or better. LOS improvements shown are compared to Year 2024 "No-Build" Alternative.

* Intersection Improvements included in Widening Project.

F. ALTERNATIVE 6A AND 6B: FULL-BUILD AND HIGHWAY EMPHASIS

Alternative 6A and 6B would increase roadway capacity by expanding US 1 to a 6-lane facility from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard) and from SR 442 (Indian River Boulevard) to Turnbull Bay Road. Alternative 6A would require approximately 24' of additional mainline right-of-way as well as right-of-way for stormwater management ponds. Alternative 6B would not require additional mainline right-of-way. These alternatives include TSM improvements and have low emphasis on multi-modal features. TSM maximizes the capacity of the existing roadway by intersection improvements, such as new or additional left and right turn lanes, lane widening, improved signal timings and phasing, and improved signal progression along the US 1 corridor. In addition, two (2) intersections are identified for improvements (outside of the 6-laning limits). This alternative would include the low investment multi-modal features. Figure 12 displays Alternatives 6A and 6B. Table 8 summarizes the traffic capacity improvements by segment and intersection. A summary of Alternatives 6A and 6B improvements is listed below:

Roadway:

Capacity Improvements: 6-Lane from SR 421 (Dunlawton Avenue) to SR 40 (Granada

Boulevard) and from SR 442 to Turnbull Bay Road

Intersections:

Improvements to 2 Intersections:

Nova Road (SR 5A) at:

SR 430 (Mason Avenue) SR 40 (Granada Boulevard)

Multi-Modal:

- Low Emphasis on Bus Service with Limited Route Changes
- Low Emphasis on Bicycle Facility Improvements with 3.3 miles of New Bicycle Lanes, and 35 New Major Crossing Treatments
 - Low Emphasis on Pedestrian Facility Improvements with 23 miles of New Sidewalks, 35 New Major Crossing Treatments, and 6 Basic Multi-modal Transfer Centers

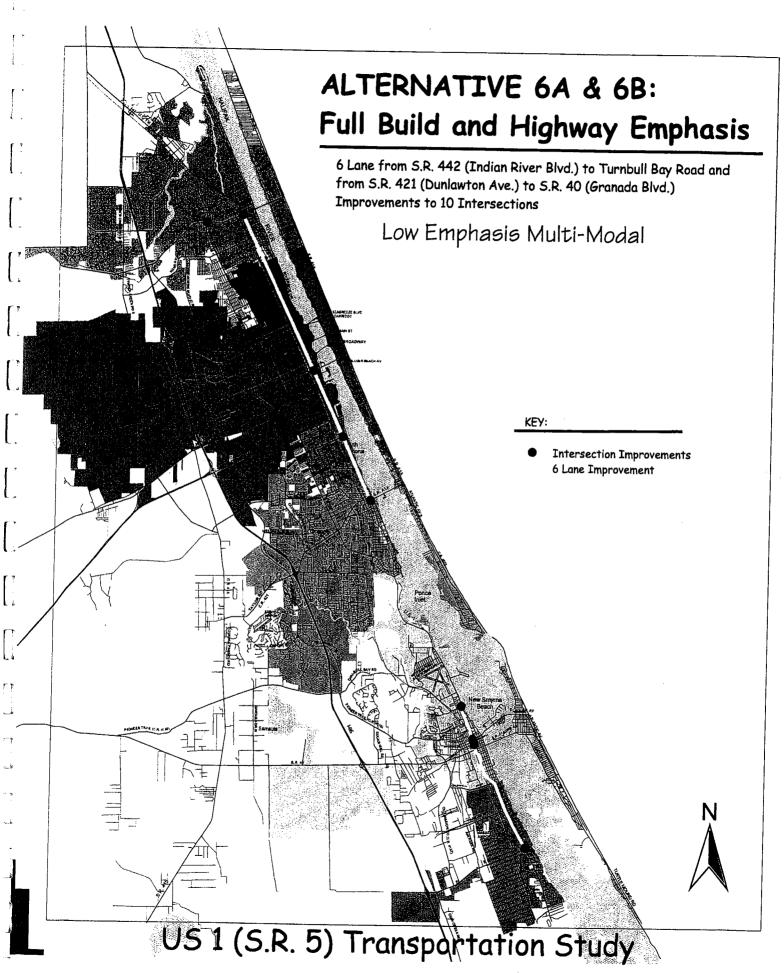


TABLE 8 TRAFFIC CAPACITY IMPROVEMENT SUMMARY: ALTERNATIVE 6A and 6B

6-Lane from SR 442 to Tumbull Bay Road and Dunlawton Avenue to SR 40 (Granada Blvd.)

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Roadway Segment		То	Capacity Improvements	Maintain 4-Lane Facility	6-Lane	6-Lane with ROW Acquisition	Intersection Improvement	NB Left	NB Right	SB Left	SB Right	EB Left	EB Right	WB Left	WB Right	Projected Year 2024 Level of Service (LOS)
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	US 1 @ Orange Avenue *				X					X				X		Improve LOS F to LOS D
	US 1 @ Magnolia Avenue US 1 @ SR 600 (US 92)			ш	Х	\sqcup	2::::				_		\Box	\Box	\Box	
	US 1 @ Bay Street	 	1000	\vdash	X	 		Ш	-	4	-	4	-	4	_	
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Note:

Level of Service (LOS) for intersections with no improvements is LOS D or better. LOS improvements shown are compared to Year 2024 "No-Build" Alternative.

* Intersection Improvements included in Widening Project.

VI. EVALUATION OF ALTERNATIVES

Based on the strategies outlined in Section III of this report, a set of 37 performance measures were developed in order to evaluate each alternative. The following sections describe how each performance measure was applied. The performance measures were then grouped into six (6) distinct categories:

- 1. Traffic Capacity/Auto Performance
- 2. Growth Management and Social/Economic Impacts
- 3. Improvement Costs
- 4. Environmental Impacts
- 5. Multi-Modal Impacts
- 6. Public Acceptance

A. Performance Measures Analysis

1. Traffic Capacity/Auto Performance

These performance measures sought to evaluate each alternative through the determination of the operation of projected traffic through the corridor. Specific performance measures and their associated measurement tools are listed below:

a. <u>Transportation Efficiency Vehicle Hours of Travel (VHT)</u>

The measure of how efficiently each alternative moved traffic through the study corridor was the basis of this performance measure. Traffic volume, speed, and segment length are the components of Vehicle Hours of Travel (VHT). VHT is used as a measurement tool for transportation efficiency. The lower the VHT, the more efficient the alternative and the higher the ranking.

b. Link Capacity (Speed)

The operating speed of each segment was also used as a measurement tool. This measurement was weighted against the length of the segments analyzed. Therefore, alternatives with longer segments, operating at faster speeds, ranked higher.

c. Link Capacity (Link Failure)

Based on the Arterial Analysis, an assessment of the operating conditions of each roadway link within the study segments was made. A goal for improvements made to the corridor was to reduce the number of failed roadway links. Based on this performance measure, an alternative with fewer failed roadway links ranked higher.

d. <u>Intersection Operating Conditions</u>

Based on the Highway Capacity Software (HCS), an assessment of the level of service of each analyzed intersection for each alternative was made. An alternative was ranked higher if a lower number of intersections were projected to operate below LOS D in the design year 2024.

e. Safety

In the existing conditions analysis, an assessment of crashes was made throughout the corridor. Although it is difficult to determine whether a specific number of crashes will be reduced if improvements are made to the roadway, it can be inferred that if an intersection or corridor improvement through an intersection is made, the crashes recorded at a specific intersection will likely be reduced.

f. Service Life of Improvement

This performance measure documents the number of years within the design life of the facility that it is expected to maintain LOS D conditions or better. Based on the analysis of each alternative, most roadway segments maintain LOS D operating conditions up to the design year. Therefore, the road segment is anticipated to fail beyond the design year. A weighted average based on road segment length was employed.

2. Growth Management and Social/Economic Impacts

The growth management and social/economic impact performance measures sought to evaluate each of the alternatives against growth management compatibility and policies, social impacts, and economic impacts. Growth management impacts included performance measures that were evaluated by the compatibility of the following criteria: all local municipal and Volusia County Land Use Plans, Volusia County MPO Congestion Management Plan, MPO Bicycle/Pedestrian Plan, and the MPO 2020 Cost Feasible Plan. Economic impacts included residential and business property impacts as well as property accessibility based on median openings. Social impacts included the maintenance of community and the opportunities for corridor beautification. Specific issues evaluated included the following:

a. Growth Management:

Compatibility with Adjacent Land Uses - The compatibility of the alternative to the adjacent land uses was evaluated by the following criteria: high impact was assessed if additional right-of-way was needed to widen US 1 to 6-lanes; some impact was assessed if the widening of US 1 to 6-lanes was done within existing right-of-way; and no impact was assessed if no widening of US 1 was proposed, therefore no business or residential properties were impacted.

Compatibility with the MPO's Congestion Management System (CMS) - Each alternative was evaluated based on the compatibility of the alternative with the existing CMS Plan. Intersection and roadway LOS was used to compare each alternative against this performance measure. Another criteria evaluated was the use of multi-modal options. The more reliant on multi-modal options, the higher the ranking. The performance measure criteria used is as follows: lower ranking when one (1) or more intersections had a LOS below D; low ranking if two (2) or more roadway links had a LOS below D, medium ranking if some multi-modal solutions are proposed; and highest ranking if the alternative had an emphasis on multi-modal solutions.

Compatibility with Bicycle/Pedestrian Plans - The bicycle and pedestrian plans of each alternative were evaluated and ranked. Alternatives 2, 3, and 4 all had high emphasis on multi-modal transportation solutions with separate bicycle and pedestrian facilities, and therefore had the highest ranking under this performance measure. Alternatives 5 and 6 had low emphasis on multi-modal options and lower rankings for the evaluation. A medium

ranking was given when an alternative proposed bicycle and pedestrian facilities shared with vehicle traffic.

Compatibility with the MPO's 2020 Cost Feasible Plan - The adopted MPO Year 2020 Long Range Transportation Cost Feasible Plan includes widening US 1 to 6 lanes from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard) and from SR 442 to Turnbull Bay Road. The evaluation of each alternative was based on the compatibility with the adopted plan. Alternative 6 had the highest ranking because it is the same as the adopted plan, while Alternatives 1 and 2 had the lowest ranking because no 6-lane widening was proposed.

b. Social Impacts:

Maintenance of Community - The extent of community disruption associated with each alternative is dependent upon the amount of right-of-way required for roadway widening and the number of intersections proposed for improvements. The maintenance of community was evaluated based on two (2) different criteria 1) right-of-way requirements and 2) number of intersections proposed for improvements. An alternative was ranked low if additional right-of-way was needed and ranked higher if the roadway improvements were able to be completed within existing right-of-way. The more intersections slated for improvements, the lower the ranking. If no intersections are proposed for improvements, the higher the ranking.

Beautification Opportunities - More beautification opportunities are available when additional right-of-way is required and the roadway segments proposed for widening are longer. For example, with additional right-of-way (Alternative 3A, 4A, 5A, and 6A) the median treatment could be landscaped and other beautification opportunities could be instituted. Option A (Alternatives 1 and 2 allowing most of the existing landscaping efforts to remain) alternatives ranked highest, while Option B (widening the existing right-of-way and severely inhibiting the landscaping) alternatives ranked lowest.

c. Economic Impact:

Residential Properties - The economic impact on residential properties created by each alternative was dependent upon the amount of right-of-way required. An evaluation was conducted to assess the potential number of residential properties that could potentially be displaced. The major difference in the number of residential displacements was between Option A (with additional right-of-way), Option B (within existing right-of-way), and the length of the proposed 6-lane improvement along the corridor. Option A had much more economic impact than Option B. The lower the number of displaced residential properties the higher the ranking.

Business Properties - The economic impact on business properties created by each alternative was dependent upon the amount of right-of-way required. An evaluation was conducted to assess the potential number of business properties that could potentially be displaced. The major difference in the number of business displacements was between Option A (with additional right-of-way), Option B (within existing right-of-way), and the length of the proposed 6-lane improvement along the corridor. Option A alternatives had much more economic impact than Option B alternatives. The lower the number of displaced commercial properties the higher the ranking.

Property Access - Another economic impact evaluated was property access or property accessibility. The roadway segments to be improved (widened to 6-lanes) included access

management measures. Access management techniques would limit direct access to some properties by limiting the number of driveways or curb cuts and limit left-turn movements by the use of raised medians. Therefore, the longer the roadway segment length slated for improvement (6-laning) the lower the ranking.

3. Improvement Costs

The improvement costs performance measures evaluated each of the alternatives against capital costs of all proposed improvements. Improvement costs included performance measures that were evaluated by the following criteria: general cost by intersection, cost by lane mile of improvement, and by total improvement costs. Right-of-way costs were not included in any cost estimates. Multi-modal costs were calculated for all of the different components of the low and high investment/emphasis multi-modal options. These estimates included the following capital costs: bicycle lanes, sidewalks, bicycle/pedestrian crossings, multi-use trail, trail bridge, pedestrian overpass, bus shelters, multi-modal hubs (basic and enhanced), signal preemption, and 40 foot buses. See section 5. Multi-Modal Impacts of this report and the Multi-modal Alternatives Analysis, December 1998 for more detailed information. Specific issues that were evaluated include the following:

a. General Cost by Intersection

The cost estimates associated with intersection improvements included the following: right-and left-turn lanes construction costs, signalization costs, maintenance of traffic (MOT) costs, and mobilization costs. The number of additional or new right- and left-turn lanes and modified or new signals were calculated for each intersection and each alternative. At each intersection, the higher the intersection improvement costs the lower the ranking and conversely the lower the intersection improvement costs the higher the ranking. See Appendix C for detailed intersection improvement cost estimate calculations.

b. Cost by Lane-Mile of Improvement

The variables taken into consideration in developing the lane-mile improvement costs contained the following: project length, typical section, median width, lane width, and sod width. The cost estimates associated with widening improvements of US 1 from 4 lanes to 6 lanes included the following: engineering costs, construction costs, maintenance of traffic (MOT) costs, and mobilization costs. The longer length of the improvement the lower the ranking and conversely the shorter length of the improvement the higher the ranking. See Appendix C for detail lane mile improvement cost estimate calculations. Option "A" reconstruction should cost more than Option "B" (curb to curb widening).

c. Total Cost

Total cost is the sum of intersection improvement costs and the lane mile costs associated with 6-laning the US 1 corridor. The higher the total costs, the lower the ranking and, conversely, the lower the total costs, the higher the ranking.

4. Environmental Impacts

These performance measures sought to evaluate each alternative through an assessment of possible environmental and cultural resource impacts. Specific performance measures were: wetlands, historical and archaeological sites, noise, and contaminated sites. Each is summarized below:

a. Wetland Impacts

Wetland locations and boundaries used in this study are based on the St. Johns River Water Management District's (SJRWMD's) Geographic Information System (GIS) and field-verified by a team of biologists conducting a drive-by survey. Additional information used to determine the location of wetlands within the study area were the National Wetlands Inventory, the Florida Association of Environmental Soil Scientists Hydric Soils of Florida Handbook, April 1995, and the Volusia County GIS. Each roadway segment was matched up with each alternative. Utilizing the data obtained from the study, it was determined that there would be no wetland impacts through this corridor for any of the alternatives. (See pages 4-9, Technical Memorandum, *Environmental Features and Issues*, July 1997).

b. Impacts to Historical and Archaeological Sites

Potential impacts to historical or archaeological sites would need to be considered on an individual basis. However, for the purpose of this study, the data collected from the Florida Department of State's Division of Historic Resources (DHR) was utilized to determine the number of possible impacts for each of the alternatives within the designated roadway segments. In addition, Dana Ste. Claire, Curator of History & Science, at the Museum of Arts and Sciences in Daytona Beach was contacted regarding this study. The number of sites possibly affected increases within each roadway segment due to the additional work proposed with each alternative, progressively. It should be noted that this study area has not been thoroughly surveyed and may contain unrecorded archaeological sites and/or historically important structures not already identified and recorded. (See page 16, Technical Memorandum, *Environmental Features and Issues*, July 1997). As shown in Table 9, two structures (VO 431, Taragona Arch and VO 454, 127 Cottage) are eligible for historic listing. Table 10 lists the Archaeological Sites within the US 1 Transportation Study area.

c. Noise Impacts

Noise level impacts for this Study were determined based on the number of hospitals, schools, churches, residential areas, and any other noise sensitive areas located within each roadway segment and analyzed with respect to each of the alternatives. The majority of the land use fronting US 1 in the study area has been heavily developed, therefore potential noise abatement walls would seem impractical. Alternative noise abatement procedures, such as heavy truck and speed restrictions, may be considered in any of the alternatives for noise improvements. The greatest noise level impacts were shown to be in the Daytona Beach area. (See page 20, Technical Memorandum, *Environmental Features and Issues*, July 1997).

d. Contaminated Sites

Information was obtained from the Environmental Risk Information and Imagining Services (ERIIS) Federal and State Data Files of all entities that generate, use, store or transport hazardous or petroleum materials adjacent to the study area. Field verification was utilized as well. As discussed in the other environmental categories, the number of sites affected by the

TABLE 9
HISTORIC LISTED or ELIGIBLE STRUCTURES

SITE ID	SITE NAME	LOCATION	Notes
VO 184	New Smyrna Sugar Mill Ruins	17S/34E/19	Built: c.1830
VO 189	Dunlawton Plantation	Old Sugar Mill Road, PO	Built: c.1835
VO 260	Mary McLeod Bethune House	Bethune Cookman Col., DB	Built: c.1920
VO 264	Daytona Beach Post Office	220 N. Beach Street, DB	Built: c.1933
VO 431	Taragona Arch	Volusia Avenue, DB	Built: c.1924
VO 432	SH Kress and Company Building	140 S. Beach Street, DB	Built: c.1932
VO 443	Anderson Price Library	42 N. Beach Street, OB	Built: c.1916
VO 454	127 Cottage	127 Cottage Street, DB	Built: c.
VO 564	The Abbey	426 S. Beach Street, DB	Built: c.1875
VO 636	The Rogers House	436 N. Beach Street, DB	Built: c.1878
VO 637	Lippencott Mansion	150 S. Beach Street, OB	Built: c.1894
VO 759	Dix House	178 N. Beach Street, OB	Built: c.1878
VO 771	The Porches	176 S. Beach Street, OB	Built: c.1883
VO 1918	Cornelia S. Young Library	302 Vermont Avenue, DB	Built: c.1916
VO 2345	Amos Kling House	222 Magnolia, DB	Built: c.1907
VO 2378	South Beach Street Historic District	Daytona Beach	Built: c.
VO 2602	Howard Thurman House	614 Whitehall Street,. DB	Built: c.1888
VO 4311	White Hall	640 Second Avenue, DB	Built: c.1916
VO 4385	Delos A Blodgett House	404 Ridgewood Avenue, DB	Built: c.1896
VO 4393	Holly Hill Municipal Building	1065 Ridgewood Avenue, HH	Built: c.1942
VO 4395	Olds Hall	15S/33E/39, DB	Built: c.1923
VO 6787	Bethune-Cookman Col. Hist. District	620 Mary McLeod Bethune Blvd.	
VO 7050	Daytona Beach Surfside Historic District	15S/33E/04, DB	Built: 1906+

PO = Port Orange, DB = Daytona Beach, OB = Ormond Beach, HH = Holly Hill Highlighted locations are eligible structures.

TABLE 10

ARCHAEOLOGICAL SITES

		
SITE ID	SITE NAME	LOCATION
VO 63	Tomoka River Midden	138/32/040
VO 83	Cotton	14S/32E/040
VO 93	Allendale	16S/33E/010
VO 94	NN	16S/33E/014
VO 095	Bill Allen Mound (P.O. Midden)	16S/33E/014
VO 113	South Canal	17S/34E/029
VO 115A	Vaut Place	18S/34E/001
VO 116A	NN	18S/34E/001
VO 117	NN	18S/34E/001
VO 118	Packwood Place	18S/34E/002
VO 180	Beached Schooner (Possible Echo)	15S/33E/009
VO 193	Addison Blockhouse	13S/32E/040
VO 196	Three Chimneys	14S/32E/041
VO 240	Mound Avenue Mound (City Hall)	14S/32E/022
VO 243	Addison's Mound	13S/32E/040
VO 550	Daytona Midden	15S/33E/039
VO 633	Osborne Place	16S/33E/022
VO 639	Lost Causeway	14S/32E/039
VO 640	Bell Mead Midden	14S/32E/039
VO 1699	Rolling Woods	15S/33E/030
VO 1703	Turnbull Ruins	16S/34E/035
VO 1704	Edgewater Shell Midden A	18S/34E/001
VO 1705	Edgewater Midden B	18S/34E/001
VO 2567	Riverbend	14S/32E/007
VO 2580	Coquina Indigo Vats	16S/33E/036
VO 2581	Moore Shell Midden	16S/33E/038
VO 2584	Cardwell	17S/33E/002
VO 3453	John's Island Still	14S/32E/039
VO 4310	Mount Oswala Plantation	13S/32E/042
VO 4388	The Fink	15S/33E/008
VO 5266	Samuel Butts	15S/33E/039
	<u> </u>	1 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -

project increases in the more heavily developed sectors of the study area. These are more densely commercial or industrialized areas and could present more hazardous and petroleum waste issues for the progressive alternatives. Once an alternative is selected, an environmental site assessment, performed according to the FDOT Project Development and Environmental (PD&E) guidelines for contamination evaluation screening, would have to be completed. (See page 21, Technical Memorandum, *Environmental Features and Issues*, July 1997).

5. Multi-Modal Features

Alternate modes of transportation are an important consideration for the US 1 corridor. A detailed list of multi-modal options, strategies, and evaluations have been documented in a separate Technical Memorandum, entitled *Multi-Modal Alternatives Analysis*, December, 1998. This report identified the type and location of multi-modal improvements appropriate for the US 1 study area. This documentation is provided in Appendix F.

Specific performance measures and their associated measurement tools are listed below:

a. Bicycle Lanes and Sidewalks: Costs

A cost of \$2,000 per lane mile was assumed for bicycle lanes. This includes striping, basic signage, and hazard removal. The total cost of striping bicycle lanes varies among the alternatives, due to the fact that the cost was considered negligible if completed concurrent with a proposed road widening.

A cost of \$23,000 was assumed to add one lane mile of sidewalk on one side. To calculate the cost of sidewalk reconstruction, it was assumed that 20 percent of the total length of the study corridor would have sidewalks reconstructed. Additional costs associated with pedestrian and bicycle crossings, overpasses, and construction of a multi-use trail are documented in The Multi-Modal Alternatives Analysis Memorandum. Alternatives with a lower associated cost ranked higher.

b. 40-Foot Bus Purchase

A cost of \$231,430 per bus was assumed to purchase vehicles for the transit improvements proposed in this memorandum, including the improvement of Routes 3, 4, and 40; a potential New Smyrna Beach trolley; and the express bus routes. Source: Votran Transit Development Plan (TDP).

c. Transit Capital Costs

Transit vehicle costs were estimated by multiplying unit vehicle costs by the vehicle requirements of each improvement. Additional capital costs, such as bus shelters, multimodal hubs, and signal pre-emption systems were also included. Alternatives with a lower capital cost ranked higher.

d. Transit Operating Costs

A cost of \$2.82 per revenue mile (source of cost: Votran TDP) was assumed to operate the transit vehicles proposed in this memorandum, including the improvement of Routes 3, 4, and

40, the New Smyrna Beach trolleys, and the express bus routes. Alternatives with a lower operating cost ranked higher.

e. Lane Miles of Bicycle, Pedestrian, and Multi-Use Trail Facilities on US 1

The total lane miles proposed for each facility was tallied. Alternatives with a higher emphasis on these facilities ranked higher.

f. 2020 Population and Employment Access to the Multi-Use Trail

All population and employment within a 1/8-mile buffer of the proposed multi-use trail was included. 2020 population and employment forecasts of the VCMPO at the traffic analysis zone level were used. Alternatives with proposed access to the trail ranked higher than those which did not.

g. Revenue Miles of Service on US 1

An assessment of the total revenue miles from local, express, and trolley service was made. Alternatives with greater projected revenue miles ranked higher.

h. Peak Period Frequency on US 1

This performance measure relates to the headway or frequency of bus stops for each transit route along US 1. Alternatives with a shorter headway (greater frequency) ranked higher.

i. Average Travel Time Between Multi-Modal Hubs

The transit travel time was measured for each alternative using the average of the travel times connecting adjacent hubs. The travel times from New Smyrna Beach to Port Orange, from Port Orange to Daytona Beach, from Daytona Beach to Holly Hill, and from Holly Hill to Ormond Beach were averaged within each alternative. The average distance between hubs is 5.0 miles. The roadway speed was estimated using the results of the ART-PLAN and Highway Capacity Software analyses prepared as part of this study.

Alternative 1 (NO-BUILD) - The existing bus schedule is assumed to be maintained. The average travel speed for the roadway is 16.9 miles per hour (closer to 12 miles per hour in the area around Daytona Beach). Including stops, average bus speeds are approximately 12 miles per hour. With the increased congestion in the US 1 corridor, it is estimated that one additional bus will be required on each route in order to maintain thirty-minute headway (currently two buses operate each of Routes 3, 4, and 40). Travel time is thus estimated at an average of 37.5 minutes between hubs (where there is currently service), assuming a travel speed of 8 miles per hour including stops.

Alternatives 2, 3A, 3B, 4A, and 4B - The implementation of express bus service means that the average travel speed will approach that of the roadway due to the elimination of bus-stops enroute. In addition, bus prioritization equipment and bus bypass lanes are included. Routes are assumed to stop at the hubs only, with no stops between hubs. Roadway travel time does not vary much between the alternatives, in spite of the larger investment in roadway infrastructure. Average vehicle travel times are 12.2 minutes in Alternative 2, 12.1 minutes in Alternatives 3A and 3B, and 11.8 minutes in Alternatives 4A and 4B.

Alternatives 5A, 5B, 6A, and 6B - In Alternatives 5A, 5B, 6A, and 6B, no express bus service is provided. Also, in these alternatives, no investment in signal prioritization or bus bypass lanes is provided. Thus, the local bus service will be similar to the bus service that is currently in place (although with a frequency of thirty minutes instead of the current one-hour frequency). Average roadway travel time between hubs is 11.8 and 11.7 minutes in Alternatives 5A, 5B, 6A, and 6B, respectively (corresponding to travel speeds of approximately 25.5 miles per hour). Bus travel times in these alternatives are thus anticipated to be 25.0 minutes, assuming an average speed of 12 miles per hour including stops.

j. Average Travel Time to West Volusia County

For Alternatives 1, 5A, 5B, 6A, and 6B, travel times for existing routes were used to estimate travel time from US 1 to west Volusia County. This estimation consisted of existing service times on Route 9 from US 1 in Daytona Beach to the Volusia Mall, and Route 18 from the Volusia Mall to DeLand. For Alternatives 2, 3A, 3B, 4A, and 4B the travel time for the proposed direct express service from US 1 at Daytona Beach to DeLand was estimated, using distance and average speed assumptions.

k. 2020 Population and Employment Access to Transit on US 1

2020 population and employment access for all alternatives was measured by a 1/4-mile buffer around each route on US 1. For Alternatives 2, 3A, 3B, 4A, and 4B, an additional 1-mile buffer was included around each hub to reflect the expanded area of influence that enhanced automobile and bicycle access would provide. 2020 population and employment forecasts of the VCMPO at the traffic analysis zone level were used. Alternatives with greater population and employment access ranked higher.

6. Public Acceptance

Public Involvement has been an important element of the US 1 Transportation Study since its beginning. Approximately 58 public involvement activities and events were completed, including Public Open Houses, newsletters, surveys, City/County presentations, and meetings with City/County Managers and the STAT.

The study's first newsletter was sent to approximate 50,000 property owners within and adjacent to the study area. The newsletter provided an overview of the study including a study area map, a milestone schedule review, and a survey. The survey resulted in 3,240 completed general survey forms. The responses included comments regarding general concerns and problem areas along the corridor. In addition to the general survey, a separate business survey was developed and distributed to businesses along the US 1corridor within the study area. This distribution resulted in over 330 completed survey forms. A study telephone hotline was also established at the TEI offices to field questions or inquiries from the public.

The second round of Public Open Houses was held in February 1998. The public was invited to provide comments regarding the findings of the *Existing Conditions Report* as well as other concerns regarding the study corridor. The public was also provided with an opportunity to rate Performance Measures for each of the preliminary alternatives based on traffic capacity, improvement costs, social impacts, economic impacts, environmental impacts, bicycle/pedestrian and multi-modal facilities, and safety. The respondents ranked the "No Improvements" with the most negative score (2.63), the second most

negative score was for the alternative that suggested a six-lane cross section in the congested areas with additional right-of-way (3.38). The highest ranked alternative (most positive) was to keep US 1 as a four-lane facility with intersection improvements (2.04), followed by keeping 4-lanes with intersection improvements and increased bus service (2.25), and 6-land congested areas within the right-of-way (2.97).

In lieu of a third round of Open Houses, the Study Team conducted City/County meetings with the seven (7) municipalities involved as well as Volusia County during August 1998. Each of these meetings included a PowerPoint presentation of the study findings from the *Existing Conditions* and *Design Traffic Reports*, including each municipalities' deficiencies and needs. On September 8, 1998 a Public Open House was held where attendees were invited to view a video presentation summarizing the purpose of the US 1 Transportation Study. Boards displaying the initial project alternatives were set up at stations around the room and members of the Study Team were present to answer questions. The attendees were also encouraged to fill out the Public Comment Cards which asked the community citizens to select alternatives and multi-modal options, a offer comments on features their particular area needed. A significant amount of feedback was received on the data collection efforts.

The third round of Open Houses was replaced by twelve (12) individual meetings. At these meetings the Study Team presented the alternatives, evaluation thereof, and preliminary rankings. Following these meetings, seven (7) meetings were conducted with City/County Managers. Each of these managers received a package containing a copy of the *Multi-Modal Alternatives Analysis*, copies of the alternative maps and fact sheets for each alternative, and a draft set of resolutions developed by VCMPO stall outlining each of the six (6) alternatives from which they could choose the preferred alternative for their area. Alternative 2 was selected as the Recommended Alternative at each of these meetings. The City/County Managers assisted the Study Team by having the US 1 Transportation Study Resolutions placed on the Agendas for the upcoming Commission/Council meetings for each municipality. Alternative 2 was voted on and unanimously approved as the Recommended Alternative for each area.

Prior to the final VCMPO Board meeting, a Post Card was mailed to approximately 7,000 persons to inform interested citizens of the upcoming Public Meeting on April 27, 1999. This meeting provided a final opportunity for the public to comment on the recommendations. The Resolution to approve Alternative 2 as the Recommended Alternative was voted on and unanimously accepted.

A final newsletter to inform the public of the results of the US 1 Transportation Study was mailed out in May, 1999. Documentation for the public involvement can be found in the four (4) Comments and Coordination Progress Reports dated November 1997, April 1998, September 1998, and May 1999.

B. Performance Measure Results

Table 11 provides an overall summary of each performance measure category and the rankings of each alternative. The overall ranking was based on a average of 37 unique performance measures which were consolidated into six (6) categories as described above. For more detailed information on the Performance Measures Evaluation see the *Alternatives Analysis Technical Memorandum*, December 1, 1998, which is in Appendix D.

TABLE 11

PERFORMANCE MEASURES SUMMARY

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		7II. 2	Ā	Alt. 3	Alt. 4	4	Alt. 5	5	NA	Alt G
			(A)-Max ROW	(B)-Min ROW	(A)-Max ROW	(B)-Min ROW	/A)-May DOM	, a, C, C - 184 , C,		
		Intersections,	Six lane from	Six lane from		Six lane from	Six lane from	Six lane from	(A)-Max ROW Six	(B)-Min ROW Six
Performance Measures Category Do Nothing Bicycle, Transit	Do Nothing	Pedestnan, Bicycle, Transit	Beville Rd. to Mason Ave.	Beville Rd. to Mason Ave.	Dunlawton Ave.	Dunlawton Ave.	Beville Rd. to	Beville Rd. to	Granada, SR 442	Granada, SR 442 to
						Common And	Cialiada Divu.	Glaffada BIVO.	to I umbull Bay	Tumbull Bay
Traffic Capacity / Auto Performance	5	4	3	က	8	2	_	•	c	
								-	7	7
Growth Management,					-					
Economic/Social Impacts	9	•	က	8	ហ	7	•	,		
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Improvement Costs	-	2	4	ო	Œ	u	0	·		
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Environmental Impacts	1	2	ო	ო	4	٧	u	Ļ	(
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Multi-Modal Features	9	7	ო	т	-	•	•	,		
						-	4	4	5	5
Public Acceptance	9	1	5	4	r.	4	ď	c	ı.	
							,	7	0	4
Overall Ranking	9	-	4	7	ıç	m,	a		Ç	
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Legend: Ranking 1 = best, 6 = worst

A brief summary of the results for each alternative is described below.

1. Alternative 1: NO-BUILD

Alternative 1 was ranked sixth overall. Since a **NO-BUILD** Alternative has no costs and no economic nor environmental impacts, it ranked high in those categories. However, it was low in providing capacity improvements to the corridor with a ranking of fifth. Since no multi-modal improvements were proposed for this alternative, it is also ranked low (rank of sixth) for all of the performance measures under this category. Additionally, public opinion for this alternative was low (rank of sixth), indicating that the citizens and public officials wish to see some type of improvement to the corridor.

2. Alternative 2: Intersection Improvements

Alternative 2 was ranked first overall, and ranked first in sixteen (16) of the total of thirty-seven (37) performance measures. It also ranked first in two (2) of the six (6) performance measure categories: growth management/economic/social impacts and public acceptance/input; and second in three (3) of the six (6) performance measure categories: improvement costs, environmental impacts, and multi-modal impacts. It provided a balance between the higher cost higher impact alternatives and those which provided greater capacity for projected auto trips. Although some link capacity problems are projected to occur with this alternative, these are outweighed by other factors.

For Alternative 2, ten (10) roadway links for a total length of 1.52 miles are projected to operate at LOS F. This, compared to the total of 59.6 two-way miles through the corridor, which equates to less than 4% of the entire corridor two-way mileage that is projected to operate at LOS F by the Year 2024.

The ten roadway links are as follows:

ROADWAY SEGMENT	DISTANCE (MILES)	LOS
Peak Direction (Southbound)		
Washington to Canal	0.17	F
Lytle Avenue South		
to Lytle Avenue North	0.05	F
Herbert to SR 421	0.14	F
Bay to SR 600	0.14	F
Magnolia to Orange	0.15	F
SR 400 to Ferndale	0.20	F
Off-Peak Direction (Northbound)		
Canal to Washington	0.17	F
Magnolia to SR 600	0.15	F
Mullaly to Fairview	0.12	F
Madison to SR 430	0.23	F
Total	1.52	

Source: Capacity Analysis, April 1999.

A higher emphasis on multi-modal facilities for this alternative was considered a beneficial component of this alternative. It also ranked first with public officials and citizens who responded to the survey.

3. Alternative 3A and 3B: Intersection Improvements and Low Highway Emphasis (with Additional Right-of-Way, within Existing Right-of-Way)

These alternatives ranked fourth and second, respectively. Most performance measures ranked the same for both conditions. From a cost perspective, the lower right-of-way option ranked better. Similarly, Alternative 3B ranked higher for performance measures related to economic impacts with a ranking of second.

As expected, performance measures related to traffic capacity ranked higher than Alternative 2, but the improvements were marginal.

4. Alternative 4A and 4B: Intersection Improvements and Low Highway Emphasis (with Additional Right-of-Way, within Existing Right-of-Way)

These alternatives ranked fifth and third, respectively. As with alternatives 3A and 3B, most performance measures were ranked the same for the two (2) right-of-way options. The additional costs and greater economic and environmental impacts associated with these alternatives resulted in a lower ranking.

Multi-modal improvements for these alternatives ranked the highest; although the overall difference between these alternatives and Alternatives 2, 3A, and 3B is slight as they all represent a high emphasis option for multi-modal improvements.

With a greater highway emphasis (6-lane improvements from Dunlawton Avenue to Mason Avenue), there was a higher ranking for those performance measures related to traffic capacity. The improvements are marginal, as with an example provided in subsection 6 below.

5. Alternative 5A and 5B: Intersection Improvements and Medium Highway Emphasis (with Additional Right-of-Way, within Existing Right-of-Way)

These alternatives ranked eighth and seventh, respectively. They ranked low for performance measures related to costs, and economic and environmental impacts. Performance measures related to multi-modal impacts were also ranked lower because of a lower emphasis for these options.

With a medium emphasis on highway improvements, these alternatives ranked highest for the traffic capacity category. Improvements to capacity are outweighed by the lower rankings of the performance measures in the other categories.

As with the other alternatives in which 6-laning is proposed, the capacity improvements were marginal, as illustrated with an example provided in subsection 6 below.

6. Alternative 6A and 6B: FULL-BUILD Highway Emphasis (with Additional Right-of-Way, within Existing Right-of-Way)

These alternatives considered a six-lane option consistent with the original VCMPO Long Range Transportation Plan. They ranked tenth and ninth, respectively.

These alternatives ranked the lowest on many of the performance measures. There is a high cost associated with these alternatives and a lower emphasis was placed on multi-modal options, which contributed to a lower ranking. Additionally, public opinion for these alternatives was very unfavorable and the economic and environmental impacts were higher than the other alternatives.

Although these scenarios represent a maximization of traffic capacity improvements, the additional benefit to the corridor is often marginal compared to Alternative 2 (intersection improvements only).

Even with a full build 6-lane option, several roadway links are projected to fail by the Design Year 2024 based on the analysis performed. For Alternative 6, there are nine (9) segments at the total bi-directional length of 1.04 miles that are projected to operate at LOS F. This equates to 1.7% of the entire corridor. The Table below compares link Level-of-Service (LOS) between Alternative 2 and Alternative 6 of segments operating at LOS "F". The Table illustrates that when comparing Alternative 2 to Alternative 6, the 0.48 mile of improved link LOS for Alternative 6 is not a significant improvement that would justify widening US 1 to six lanes.

Roadway	Distance (Miles) Alternative 2	Distance (Miles) Alternative 6	Alt. 2 LOS	Alt. 6 LOS
Peak Direction (Southbound)				
Washington to Canal	0.17	0.17	F	F
Lytle Avenue South				
to Lytle Avenue North	0.05		F	
Herbert to SR 421	0.14	0.14	F	F
Bay to SR 600	0.14	0.14	F	F
Magnolia to Orange	0.15	0.15	F	F
SR 400 to Ferndale	0.20	···	F	
Off-Peak Direction (Northbound)				
Canal to Washington	0.17	0.17	F	F
Magnolia to SR 600	0.15	0.15	F	F
Mullaly to Fairview	0.12	0.12	F	F
Madison to SR 430	0.23		F	
Total	1.52	1.04		

Source: Capacity Analysis, April 1999.

This moderate improvement to overall segment operations is primarily due to the fact that segment speed and LOS are often driven by the signal spacing between the segments as well as through-lane capacity and available through-lane green time at the signalized intersections.

The gains in traffic capacity are outweighed by the lower rankings of the performance measures in the other categories.

VII. RECOMMENDATIONS

A. Summary of Recommendations and Implementation Plan

Alternative 2 had the highest overall ranking, based on the performance measures, among the six alternatives developed and evaluated, and was the preferred alternative of all seven municipalities, Volusia County, and the MPO. Therefore, Alternative 2 is the recommended alternative. Alternative 2 maintains the existing US 1 corridor roadway configuration as a 4-lane facility. This alternative is highlighted by Transportation System Management (TSM) improvements with a high emphasis on multimodal features. TSM maximizes the capacity of the existing roadway with intersection improvements such as new or additional left and right turn lanes, lane widening, improved signal timings and phasing, and improved signal progression along the US 1 corridor. Fifteen (15) intersections are recommended for improvements. This alternative would also include a higher level of emphasis on multi-modal enhancement opportunities. A summary of Alternative 2 improvements is listed below and on Table 12 on the following page. The details of this Alternative are displayed on aerial mapping in a document entitled, Build Geometry for Design Build, dated June 1999.

Roadway: Mainta

Maintain Existing 4 lanes

Intersections:

Improvements to 15 Intersections:

US 1 at:

- Park Avenue; southbound right and eastbound left turn lanes
- SR 44 (Canal Street); northbound, southbound, and eastbound left and right turn lanes, and westbound right turn lane
- Washington Street; northbound and southbound right turn lanes, and westbound left turn lane
- Wayne Avenue; southbound and eastbound right turn lanes
- Turnbull Bay Road; southbound and eastbound right turn lanes
- Dunlawton Avenue; northbound left turn lane
- Herbert Street; southbound right and eastbound left turn lanes
- Reed Canal Road; northbound left and eastbound left, and southbound right turn lanes
- Ridge Boulevard; southbound right turn lane
- Big Tree Road; northbound, eastbound and westbound left turn lanes, and southbound and eastbound right turn lanes
- Bellevue Avenue; northbound, southbound, eastbound and westbound right turn lanes
- SR 600 (US 92); northbound, southbound, eastbound, and westbound left turn lanes
- SR 430 (Mason Avenue); northbound, southbound, eastbound, and westbound left turn lanes
- LPGA Boulevard; eastbound left and right turn lanes
- SR 40 (Granada Boulevard); eastbound and westbound right turn lanes

The turn lanes described above are in addition to what exist at each intersection today. For instance, at US 1 and Park Avenue, the eastbound left turn lane would be an additional (second) left turn lane; whereas, at US 1 and Canal Street, the westbound left turn lane would be a new left turn lane (not existing today).

Multi-Modal:

 High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles

TABLE 12

ALTERNATIVE 2 - INTERSECTION IMPROVEMENTS SUMMARY

	Northbound	Northbound	Southbound	Northbound Northbound Southbound Southbound Eastbound		Eastbound Westbound	Westbound	Westbound	Projected Year 2024
	Left	Right	Left	Right		Right	Left	Right	Level of Service (LOS) *
CINEMENTON INLINENCE OF THE PROPERTY OF THE PR	0								The second secon
US 1 at Park Avenue				×	×				
US 1 at SR 44 (Canal Street)	×	>	>	; }	; ;]			Improve LOS F to LOS D
US 1 at Washington Street			< 	\	×	×		×	Improve LOS F to LOS D
US 1 at Wayne Avenue		<		×			×		mprove LOS F to LOS D
118 1 at Turnhull Box Bood				×		×			mprove LOS F to LOS C
US 1 of Pirels 45	;			×		×			mprove LOS F to LOS C
US I at Duniawton Avenue	×								No Improvement for 100 F
US 1 at Herbert Street				×	>				NO IIII DI OVERNENT ITOM LOS E
US 1 at Reed Canal Road	×			\ {\}	\				mprove LOS F to LOS D
IIS 1 at Ridge Boulevard				~	×			 .	Improve LOS F to LOS D
In a of Dia Tare Day				×					Improve LOS F to LOS C
US I at big Tree Road	×			×	×	×	×		morrow Oc 4- Oc
US 1 at Bellevue Avenue		×		×		 }			IIIDIOVE LOS F 10 LOS D
US 1 at SR 600 (US 92)	×		×		 	\ \ 		<u> </u>	mprove LOS F to LOD D
US 1 at SR 430 (Mason Avenue)	 				< ;		×		mprove LOS F to LOS D
IIS 1 at I PGA Boulooved	<		<		×		×		mprove LOS F to LOS D
110 1 of CD 40					×	×			mprove LOS F to I OS C
03 at 37 40						×		×	mprove I OC E to I OC D
MULTI-MODAL IMPROVEMENTS	6								Inplace LOS F (0 LOS D
High Emphasis on Bus Service with Increased Route Coverage 1 pages Service House	ncreased Route	Coverage Lor	Dogwood John		0				

High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles. High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing

High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 5

Enhanced Multi-Modal Transfer Centers

ROADWAYIMPROVEMENTS

Maintain Existing 4 Lanes throughout the US 1 corridor

^{*} LOS Improvements shown are compared to Year 2024 "NO-BUILD" Alternative.

- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 6 Enhanced Multi-Modal Transfer Centers

Presentations were made to each of the local municipal governments along the corridor within the study area. Each of these governments was asked to select a locally preferred alternative. A Resolution selecting Alternative 2 as the preferred alternative with the inclusion of specific municipal issues from each area was approved by the cities of Edgewater, New Smyrna Beach, Port Orange, South Daytona, Daytona Beach, Holly Hill, Ormond Beach, and Volusia County.

The final meeting on the US 1 Transportation Study with the VCMPO was held on April 27, 1999. The VCMPO Board voted to approve a Resolution accepting the recommendation of Alternative 2, which includes leaving US 1 as a four (4) lane highway with improvements to 15 key intersections plus the option to implement various bicycle, pedestrian, and public transportation improvements.

The fifteen intersection improvements identified in the study recommendations are a high priority of the VCMPO, which means that funding for additional work phase(s) for all or part of these intersections is likely to be identified in the FDOT's upcoming Fiscal Year 2004/2005 Five-Year Work Program.

With the acceptance of the study's recommendation, the MPO Board has urged FDOT to work closely with the affected local governments to ensure that local issues are addressed during the implementation of this project.

TABLE 13

Resolution Summary

	Resolution	Preferred		
Agency	Number	Alternative	Improved Intersection	Additional Items in Resolution
Edgewater	99-R-01	2	US 1 at Park Ave.	(a.) Expand Study Area
				(b.) Review Traffic patterns at two
				intersections: Ocean Avenue at
New Smyrna Beach	7-99			US 1, and Park Avenue at US 1.
inew Sillytha beach	7-99	2	US 1 at Canal St.	(a.) Includes deceleration lanes for
			US 1 at Washington St.	all intersections with US 1 north
			US 1 at Wayne Ave.	of Turnbull Bay Road to the
Port Orange	99-13	2	US 1 at Turnbull Bay Rd. US 1 at Dunlawton Ave.	Turnbull Bay bridges
r on Grango	33-13	2	US 1 at Herbert St.	N/A
South Daytona	99-03	2	US 1 at Reed Canal Rd.	(a.) Est. Special Transportation Area
,		_	US 1 at Ridge Blvd.	w/ LOS "E" or "F"
			US 1 at Big Tree Road	(b.) Est. Transportation Concurrency
				Exception Area
				(c.) May choose to maintain LOS "E"
				or "F" on US 1
Daytona Beach	99-105	2	US 1 at Bellevue Ave.	(a.) Est. Special Transportation Area
	}		US 1 at SR 600 (US 92)	w/ LOS "E"
1		and the second s	US 1 at SR 430 (Mason	(b.) Est. Transportation Concurrency
į	1		Ave.)	Exception Area
				(c.) May choose to maintain LOS "E"
Holly Hill	99-R-07	2	US 1 at LPGA Blvd.	on US 1 N/A
Ormond Beach	99-44		US 1 at Granada Blvd.	(a.) Reserves Judgment as to the
		_	oo , at Granada Biya.	need to widen to six (6) lanes in
				the Future
Volusia County	99-43	2	All 15 intersections listed	N/A
			above	
Volusia County	99-08	2	All 15 intersections listed	The MPO included all of the
MPO	1	:	above	above comments by each of the
	L			municipalities.

B. Implementation Plan

Once the preferred alternative was decided upon and adopted, an implementation plan was initiated. The implementation plan prioritizes the improvements at the 15 intersections detailed in Alternative 2. The implementation plan has two (2) basic priorities.

The first priority has two criteria that are consistent for all intersections in this group. These criteria are:

- 1. If the existing (1997) intersection Level-of-Service (LOS) is "F" or worse, then the intersection should be placed in the first priority group. Seven of the fifteen intersections currently have a LOS of "F" or worse. These seven intersections were identified as deficient in the report, "Supporting Documentation for Existing Traffic Conditions Analysis" by Frederic R. Harris, Inc.
- 2. The second criteria used was the classification of the east/west arterial roadway cross streets, together with the geographic location of the intersection within the US 1 corridor. The classification of the cross streets was either major or minor. It is desirable to group 3 to 4 intersections that are geographically located together for ultimate design and construction. Major cross streets that can be grouped together geographically would have the highest priority. All of the roadways identified in the first priority are signalized, considered major arterial cross streets, and are in two general geographic areas.

The highest priority is to bring each intersection LOS up to an acceptable standard of at least "D". The maintenance of an overall highway network (that is east/west as well as north/south roadways) will help in the mobility of the US 1 corridor. The recommended intersection improvements in Alternative 2 will bring each intersection up to an acceptable LOS of "D" or better, except at US 1 and Dunlawton Avenue where the best obtainable LOS is "E".

The priorities have been further divided into logical geographical location groupings. This geographic location criteria is based on the physical location of the intersection and attempts to group three to four intersections together to expedite the design and construction phases of project development. Packaging of intersections for design and construction helps reduce the overall costs of completing the necessary improvements. Intersection improvement and detail lane mile cost estimate calculations costs do not include right-of-way cost and represent order-of-magnitude design and construction costs only. The following intersection improvement cost estimates are sorted by priority. A more complete and detailed explanation of these cost estimates are presented in Appendix C - Detail Intersection Improvement and Detail Lane Mile Cost Estimate Calculations.

Tier One: Intersections with Existing Level-of-Service Deficiencies

Sub Total	\$1,226,000
US 1 at SR 40 (Granada Boulevard)	<u>\$126,000</u>
US 1 at SR 430 (Mason Avenue)	\$195,000
US 1 at SR 44 (Canal Street)	\$298,000
US 1 at Big Tree Road	\$229,000
US 1 at Reed Canal Road	\$160,000
US 1 at Herbert Street	\$126,000
US 1 at Dunlawton Avenue	\$92,000
· ·	

The second tier is the remaining intersections that will need to be improved before the year 2024 because of increased traffic volumes and congestion.

Tier Two: Intersections with Anticipated Future Level-of-Service Deficiencies

Total for Tier One and Tier Two	\$2,372,000
Sub Total	\$1,146,000
US 1 at LPGA Boulevard	<u>\$126,000</u>
US 1 at SR 600 (US 92)	\$195,000
US 1 at Bellevue Avenue	\$195,000
US 1 at Ridge Boulevard	\$92,000
US 1 at Turnbull Bay Road	\$126,000
US 1 at Wayne Avenue	\$126,000
US 1 at Washington Street	\$160,000
US 1 at Park Avenue	\$126,000

Multi-Modal Enhancements

The implementation plan for the multi-modal enhancements would be divided into two major tiers. The first tier, would implement the low investment/low emphasis strategies. These low investment enhancements are outlined in the document in Appendix F, *Multi-Modal Alternatives Analysis*. These enhancements are lower in cost and easier to implement. The second tier of multi-modal improvements would include the high investment/high emphasis multi-modal strategies. These high investment enhancements are higher in cost and more difficult to implement. Table 14 shows the Multi-Modal Improvements - Low Investment Features and Table 15 shows the Multi-Modal Improvements - High Investment Features. See a detailed description of the proposed multi-use trails and the accompanying Maps (Figure 4 pages 1 of 3 through 3 of 3) on pages 73 through 79.

TABLE 14

Multi-Modal Improvements - Low Investment Features

Type of improvement	Facility/Location	From	To
Pedestrian Crossing Enhancements	US 1	SR 442	SR 40 (Granada Blvd.)
	US 1 @ SR 442		(5.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4
	US 1 @ Ocean Ave.		
	US 1 @ Canal St.		<u> </u>
	US 1 @ Washington St.		
	US 1 @ Fleming Ave.		
	US 1 @ Dunlawton Ave.		
	US 1 @ Herbert St.		
	US 1 @ Reed Canal Rd.		<u> </u>
	US 1 @ Ridge Blvd.		·
·	US 1 @ Big Tree Rd.		
	US 1 @ Bellewood Ave.		
	US 1 @ Ferndale Ave.		
	US 1 @ SR 400 (Beville Rd.)		
	US 1 @ Bellevue Ave.		
	US 1 @ Orange Ave.		
	US 1 @ Magnolia Ave.		·
	US 1 @ SR 400 (US 92)		
	US 1 @ Bethune Blvd.		
	US 1 @ Mullally St.		
	US 1 @ Fairview Ave.		
	US 1 @ SR 430 (Mason Ave.)		
	US 1 @ LPGA Blvd.		† ·····
	US 1 @ SR 40 (Granada Blvd.)		
Stripe Bicycle Lanes	US 1	 	
Stripe Dicycle Lalles	102 (SR 442	Wilmette Ave.
New Sidewalks	US 1	SR 442	
	US 1	Canal St.	Ocean Ave.
	US 1	SR 5A	Washington St.
	US 1	SR 40 (Granada Blvd.)	Poinciana Ave.
		SR 40 (Granada Bivd.)	Wilmette Ave.
idewalk Improvements	US 1	Ocean Ave.	Canal St.
	US 1	Washington St.	·
	US 1	Poinciana Ave.	Ponce St.
	001	Poinciana Ave.	SR 40 (Granda Blvd.)
Multi-Modal Hubs	New Smyrna Beach Hub	Near New Smyrna Beach City Hall	
	Port Orange Hub	Near Duniawton Ave. and US 1	
	Daytona Beach Hub	Near Daytona Beach City Hall	
	Holly Hill Hub	Near Holly Hill City Hall	
	Ormond Beach Hub	Near Ormond Beach City Hall	-

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Multi-Modal Improvements - High Investment Features (Includes Low Investment Features plus These Additional Features)

Table 15

Type of Improvement	Facility/Location	From	Ta
Overpass	US 1 @ Herbert St.		
	US 1 @ SR 430 (Mason Ave.)		
Multi-Use Trail	North Section Trails *	Bellevue Avenue	Domicilio Avenue
	Figure 3a	South Clyde Morris Boulevard	South Grandview
		Nova Road (SR 5A)	
	<u> </u>	Derbyshire Road	South Grandview
		Orchard Street	Daytona Avenue
		Andrew Street	North Beach Street
			North Beach Street
		Silver Beach Avenue	SR 40
	Central Section Trails **	+	
· · · · · · · · · · · · · · · · · · ·		Taylor Road	Charles Street
	Figure 3b	South Clyde Morris Boulevard	Riverside Drive
	- 	Charles Street	Bellevue Avenue
		Magnolia Avenue	South Palmetto Avenue
	South Section Trails ***	East Indian River Boulevard	Farmbrook Road
· · · · · · · · · · · · · · · · · · ·	Figure 3c	North/South Myrtle Street	Palmetto Street
Froit Dridge	5 Bridges over Various Sections	Along East Granada Boulevard (SR	
rail Bridge	of Turnbull Bay (Halifax River)	40) from North Beach Street	SR A1A
		Along Main Street Bridge (Fairview	
	ļ	Avenue) from North Beach Street	South Wild Olive Avenue
		Along US 92 (International	
	,	Speedway Boulevard) from North	1
		Beech Street	South Grandview Avenue
	İ	Along Memorial Bridge (Silver Beach	
		Avenue) from North Beach Street	South Peninsula Drive
		Along Dunlawton Avenue Bridge	The second secon
		(SR 421) from US 1	SR A1A
ignal Preemption & Bus Bypass Lanes	US 1 @ Canal St.		
	US 1 @ Washington St.		· · · · · · · · · · · · · · · · · · ·
······································	US 1 @ Dunlawton Ave.		
	US 1 @ Herbert St.		<u> </u>
	US 1 @ Big Tree Rd.		
	US 1 @ Bellevue Ave.		
(press Bus Service	US 1	SR 442	SP 40 (Granada Disa)
		To Deland & Deltona	SR 40 (Granada Blvd.)
	1		via Canal St.
			via Dunlawton Ave.
			via SR 600 (US 92)
	 	10 Delatio	via SR 40 (Granada Blvd.)

NOTES: Sidewalk Improvements = Upgrade to 5' Wide (where feasible), Remove Obstructions, Develop/Enforce Parking & Sign Regulations

^{*} See detailed description Figure 13a

^{**} See detailed description Figure 13b

^{***} See detailed description Figure 13c

C. Multi-Use Trails Detailed Description - South Section

The proposed multi-use trail begins south of the New Smyrna Beach multi-use hub at East Indian River Boulevard (SR 442) and runs north along Riverside Drive to the east of US 1, with a connecting trail from Edgewater Public School (800 South Old Country Road) east to Riverside Drive, continues north along Riverside Drive, then west along 8th Street to Palmetto Street.

The next multi-use trail section begins at 10th Street. The west side of this section runs north along South Myrtle Avenue, past New Smyrna Beach Middle School (1200 South Myrtle Avenue), continues north along North Myrtle Avenue to Ronnoc Lane, east along Ronnoc Lane past Chisholm Elementary School (557 Ronnoc Lane) to Faulkner Street. There is also an east-west multi-use trail crossing this section along SR 44 from approximately 0.5 miles west of Old Mission Road (SR 4137) extending east to Faulkner Street where it meets the mixed use New Smyrna Beach multi-use, then continues north along North Riverside Drive to Flagler Avenue, east along Flagler Avenue, then passes New Smyrna Beach High School (100 Barracuda Boulevard) and ends at Atlantic Avenue.

The east side of this section begins at 10th Street and South Myrtle Avenue and runs east along 10th Street to Palmetto Street, north along Palmetto Street past Read-Pattillo Elementary School (400 Sixth Street) to SR 44, east along SR 44 through the New Smyrna Beach multi-use hub to Faulkner Street, then north along Faulkner Street to Fairgreen Avenue.

The multi-use trail then runs west along Fairgreen Avenue, north along Turnbull Street, east along Industrial Park Avenue, then continues north along Faulkner Street.

End of South Section - See Figure 4 (1 of 3) Map

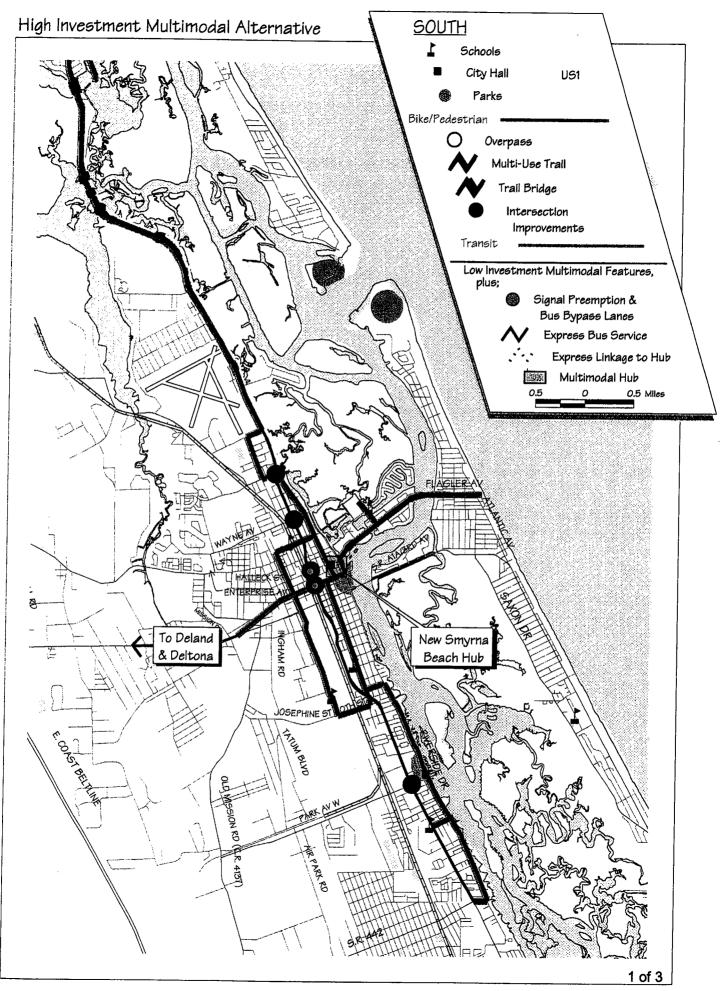


Figure 4

D. Multi-Use Trails Detailed Description - Central Section

The central section multi-use trail continues north along Riverside Drive, turns west at Seminole Avenue and continues west along Farmbrook Road (SR 5A), south along Spruce Creek Road, then west past Spruce Creek Elementary School (642 Taylor Road) and Spruce Creek High School (801 Taylor Road), along Taylor Road, then north along South Clyde Morris Boulevard. The trail then divides near Sweetwater Elementary School (5800 Victoria Gardens Boulevard) and follows South Clyde Morris Boulevard to the northwest, and Victoria Gardens Boulevard to City Center Parkway and City Center Drive to the northeast.

The divided trail meets approximately 0.25 miles west of Silver Sands Middle School (1300 Herbert Street) then follows Herbert Street where it divides to the north at Old Sugar Mill Road, passes Sugar Mill Elementary School (1101 Charles Street) then continues southeast along Charles Street, south on Louisville Street where it meets the Port Orange multi-use hub. The trail going along the south at the division continues east along Herbert Street, past Port Orange Elementary School (402 Dunlawton Avenue), then also meets the Port Orange multi-use hub.

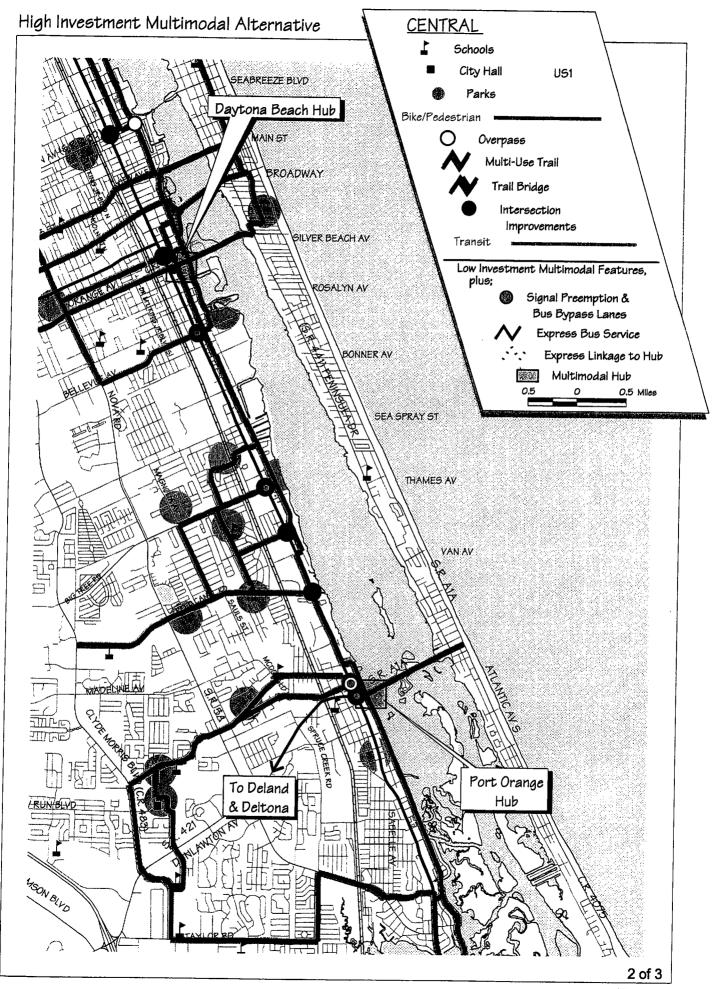
The multi-use trail continues north along Riverside Drive past the Port Orange multi-use hub, then jogs west to follow US 1 north to Reed Canal Road. An east-west trail follows Reed Canal Road from Clyde Morris Boulevard to the west, past Atlantic High School (1250 Reed Canal Road), and continues along to join the trail along US 1.

A portion of the multi-use trail in this section begins at Magnolia Avenue and Reed Canal Road to the west, follows along Magnolia Avenue north to Big Tree Road and continues east to South Palmetto Avenue.

Another portion of the multi-use trail begins at Reed Canal Road and Kenilworth Avenue and follows Kenilworth Avenue north to Big Tree Road, past South Daytona Elementary School (600 Elizabeth Place), jogs east along Big Tree Road, then north along Graham Street, curves along Golfview Boulevard, turns east on Violet Street, north along James Street, and east on Bellwood Avenue until it meets South Palmetto Avenue. A connector trail goes from Kenilworth Avenue east along Ridge Boulevard to South Palmetto Avenue.

The trail also follows a connector bridge from US 1 along the Dunlawton Avenue Bridge to SR A1A.

End of Central Section - See Figure 4 (2 of 3) Map



E. Multi-Use Trails Detailed Description - North Section

In the northern section of the US 1 Transportation Study, the multi-use trail continues north along Palmetto Avenue. The trail turns west at Bellevue Avenue and passes Turie T. Small Elementary School (800 South Street), then turns north on Nova Road (SR 5A) passes Campbell Middle School (601 South Keech Street) and continues on to Cypress Street. At Cypress Street the multi-use trail goes east along Fairview Avenue, passing Bonner Elementary School (868 George West Engram Boulevard), and continues across the Main Street Bridge to meet the trail at South Wild Olive Avenue.

A connecting trail begins approximately 0.5 miles south of Orange Avenue along Clyde Morris Boulevard, goes northwest to Orange Avenue passing Embry Riddle Aeronautical University, then continues east along Orange Avenue, crossing the Halifax River along Memorial Bridge (Silver Beach Avenue).

Several additional connecting trails cross the area as well. One trail starts at Nova Road (SR 5A) and Magnolia, continuing east along Magnolia to the Daytona Beach multi-use hub where it connects to the trail on North Beach Street. Another trail begins at Mainland High School (125 South Clyde Morris Boulevard), goes north along Highland and curves east at 2nd Avenue where it passes Daytona Beach Community College then continues east passing Bethune Cookman College to join the trail at North Beach Street, follows North Beach Street south, then turns east to cross the Halifax River along US 92 where it connects with the trail at South Wild Olive Avenue. A north-south connector trail starts at Orange Avenue and Taragona Way, travels north to White Street, and continues north were it connects with the trail at 2nd Avenue.

The multi-use trail running north along Palmetto Avenue continues north from Bellevue Avenue to Bay Street where it turns east to North Beach Street. The trail also turns east at Bellevue Avenue to North Beach Street where it travels north on North Beach Street, past the Daytona Beach multi-use hub, and continues north to Fairview Avenue.

The multi-use trail continues north at Fairview Avenue along North Beach Street to Mason Avenue (SR 430). At this intersection, the trail separates into two (2) trails. The trail to the west begins at North Beach Street and Mason Avenue, running west to Daytona Avenue where it travels north through the Holly Hill multi-use hub and continues to 15th Street. At the Holly Hill multi-use hub, the trail turns west at LPGA Boulevard, then north along Magnolia Avenue, west along 13th street passing Holly Hill Middle School (1200 Center Street), turning north at Derbyshire Road where it passes Hurst Elementary School (1340 Wright Street), then continues east along 15th Street past Holly Hill Elementary School (1500 Center Street) to join the trail again at Daytona Avenue.

The eastern side of the trail in this section continues straight north along Riverside Drive to Domicilio Avenue where it ends. The trail to the west begins again at 15th Street and Ridge Avenue, running north where it becomes Ridgewood Avenue, past the Ormond Beach multi-use hub and Ormond Beach Elementary School (100 Corbin Avenue), then continues to Domicilio Avenue where it turns east on Domicilio Avenue past Ormond Beach Middle School (151 Domicilio Avenue) and joins the eastern side of the trail at North Beach Street.

An east-west connecting trail runs east from US 1 along Tomoka Avenue, travels through the Ormond Beach multi-use hub, north along North Beach Street, then east across the Haifax River along Granada Boulevard (SR 40) to SR A1A.

One additional trail begins at Division Avenue and North Beach Street, follows Division Avenue west to Orchard Street. Continues north along Orchard Street to Sterthaus Drive, west along Sterthaus Drive,

then north along North Center Street. The trail then begins approximately 0.25 miles west of North Center Street and continues east along Wilmette Avenue, north along Andrew Street, then east along Sanchez Avenue where it joins the trail at Ridgewood Avenue.

The coastal multi-use trail begins at Silver Beach Avenue, travels north along South Peninsula Drive, east along Phoenix Avenue, and north along South Grandview Avenue. The trail jogs west at International Speedway Boulevard, then north along South Wild Olive Avenue past Riverview Learning Center. The trail turns west at Belaire Drive, north along Flagstone Drive, then east along North Grandview Avenue and north along North Halifax Avenue where it passes Ortona Elementary School (1265 North Grandview Avenue) to Seaview Avenue. The trail goes southeast along Seaview Avenue then north along North Oleander Avenue where it passes Seabreeze High School (2700 North Oleander Avenue) then turns west along Harvard Drive, north along Riverside Drive, east along Ormond Shores Drive, north along Pinewood Street, west along Rockefeller Drive, and continues north on South Halifax Drive, past Osceola Elementary School (100 Osceola Avenue) and joins the east-west trail at SR 40.

End of North Section - See Figure 4 (3 of 3) Map

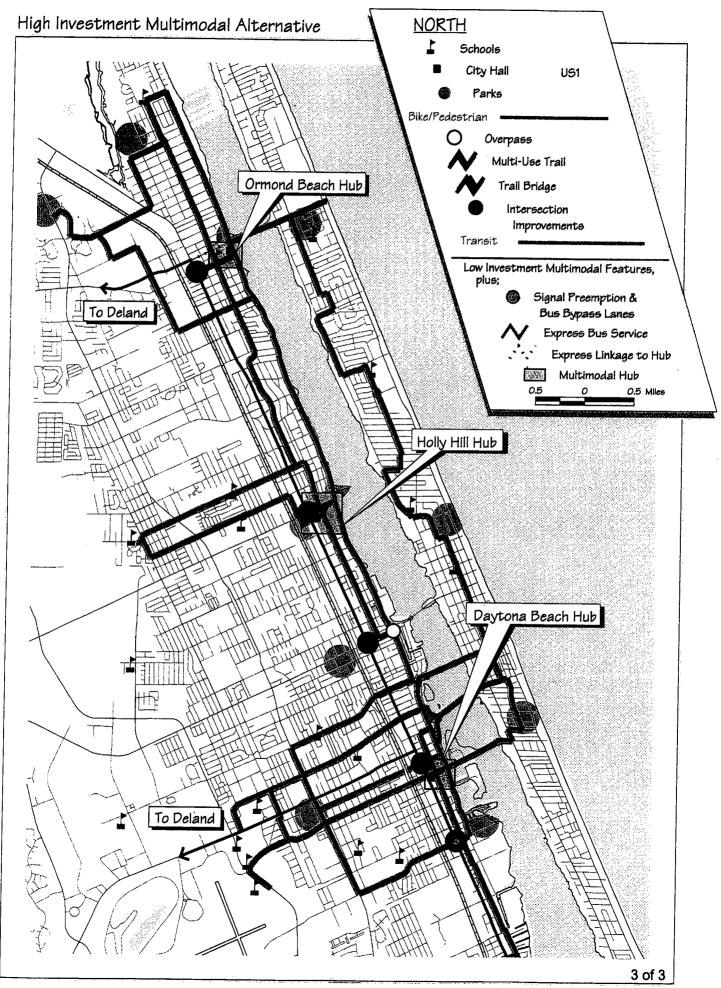


Figure 4

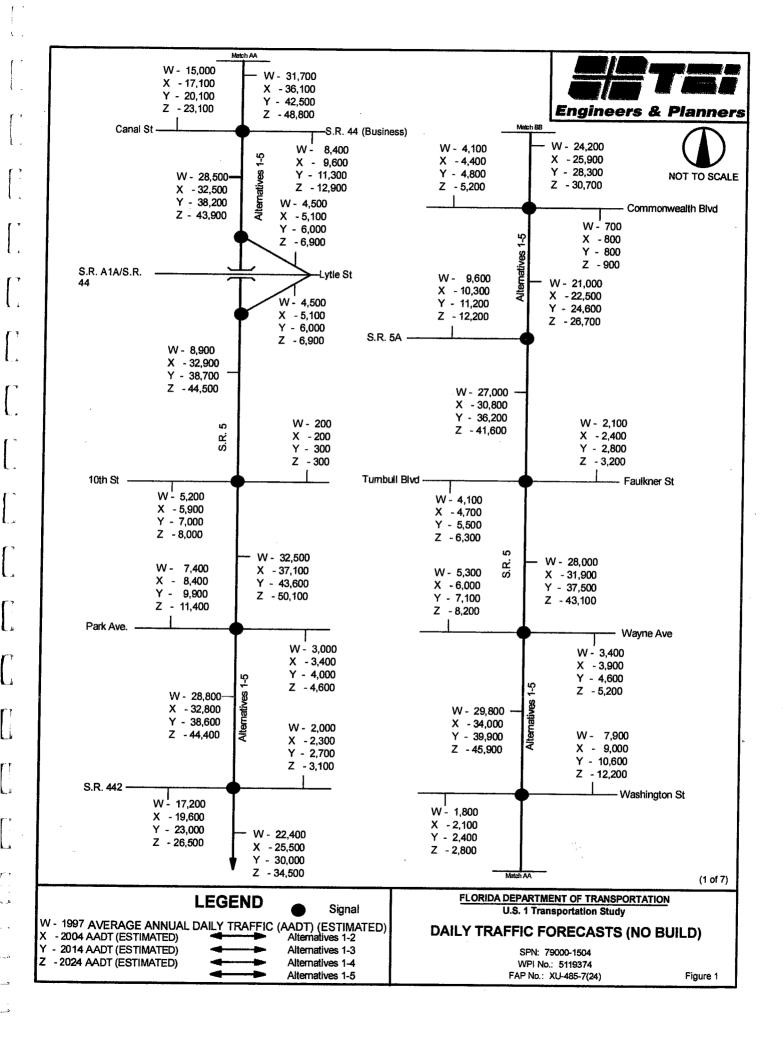
VIII. SUMMARY

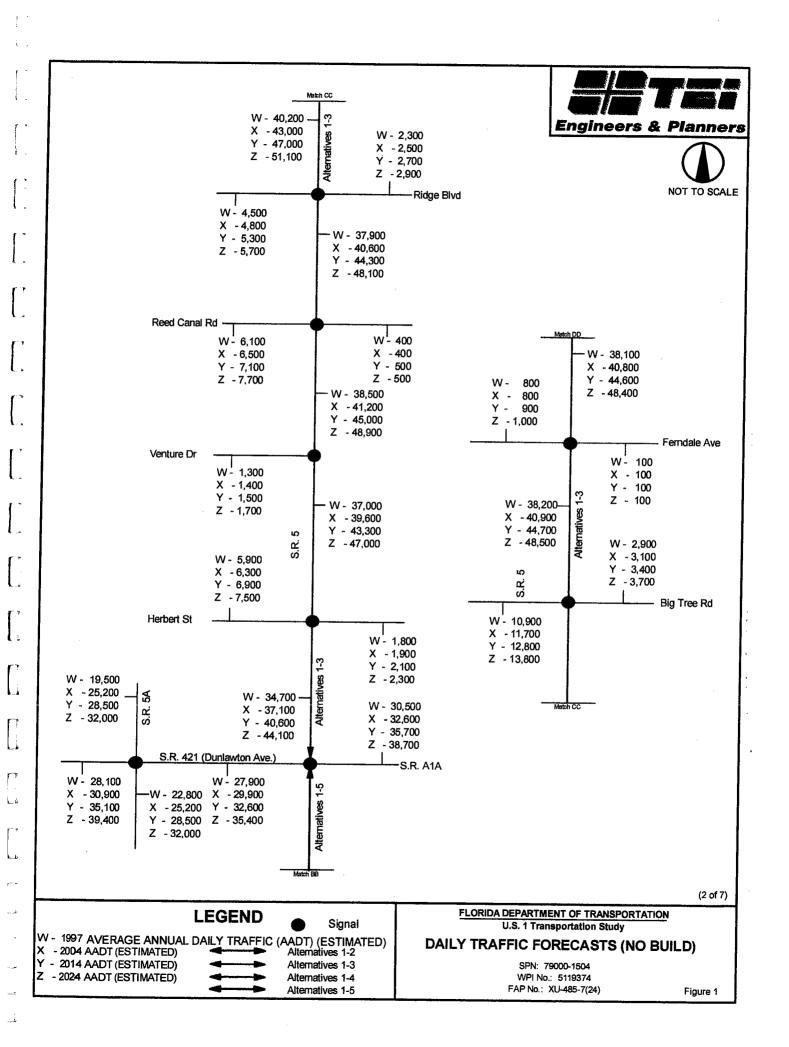
The improvements identified in Alternative 2 will be implemented through the VCMPO's normal annual prioritization process, to which the local governments provide input. The identified improvements are to be staged into the Transportation Improvement Program over time and will be funded by federal, state, and local government resources depending on project type and scope.

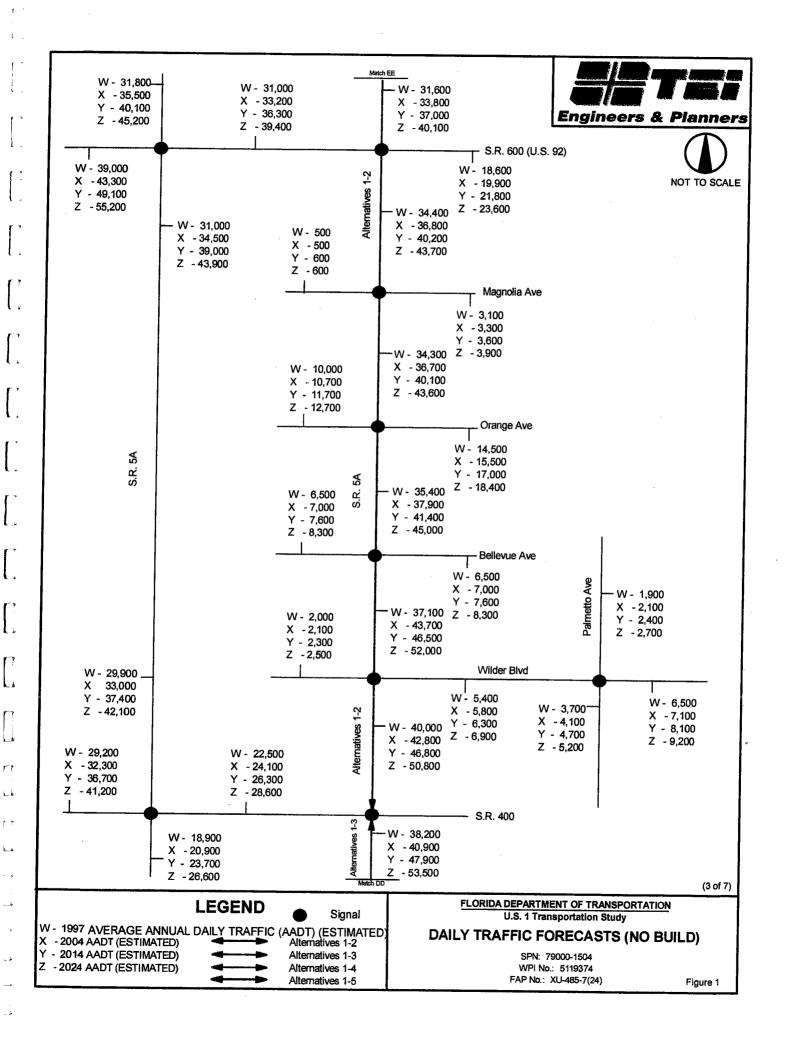
This project, which includes primarily intersection improvements, is one of the VCMPO's high priority projects, which means that funding for the next phase of this project will most likely begin in the new fifth year of FDOT's Five-Year Work Program in fiscal year 2004-2005. Some of the improvements not requiring right-of-way acquisition could, in fact, occur earlier than year 2004-2005.

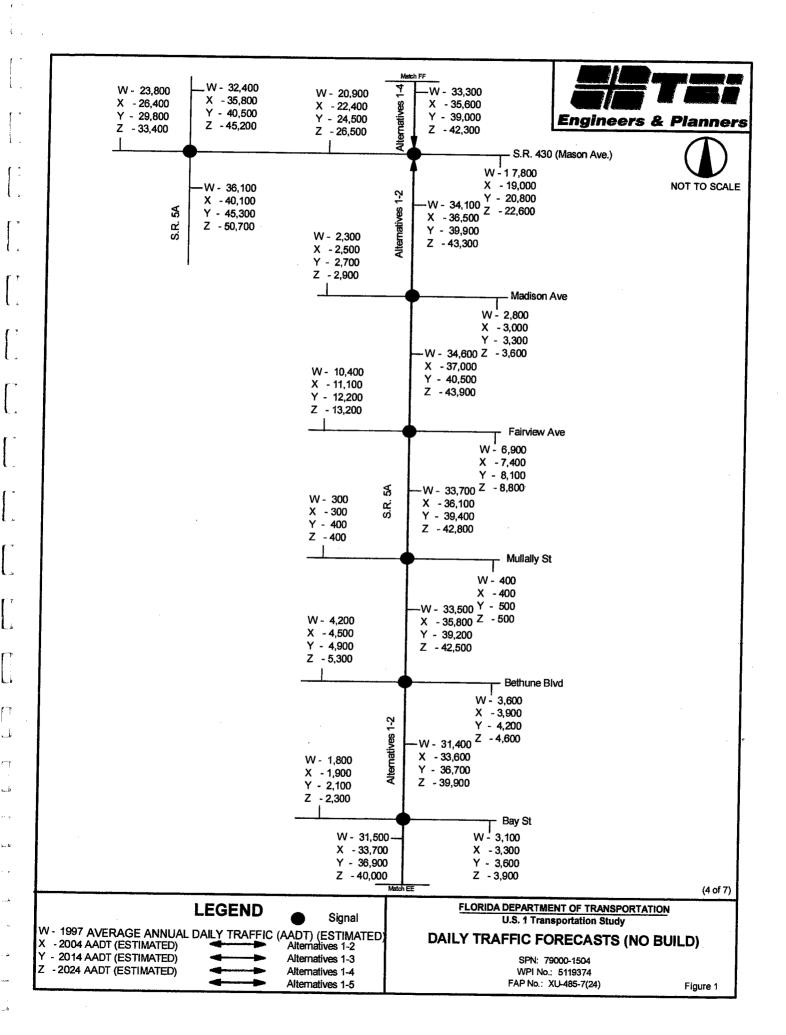
With the approval of the Study's recommendation, the VCMPO Board has urged the FDOT to work closely with the affected local governments to ensure that the issues raised in their respective resolutions (as summarized in Table 13) are addressed during the planning, design, and implementation of these projects.

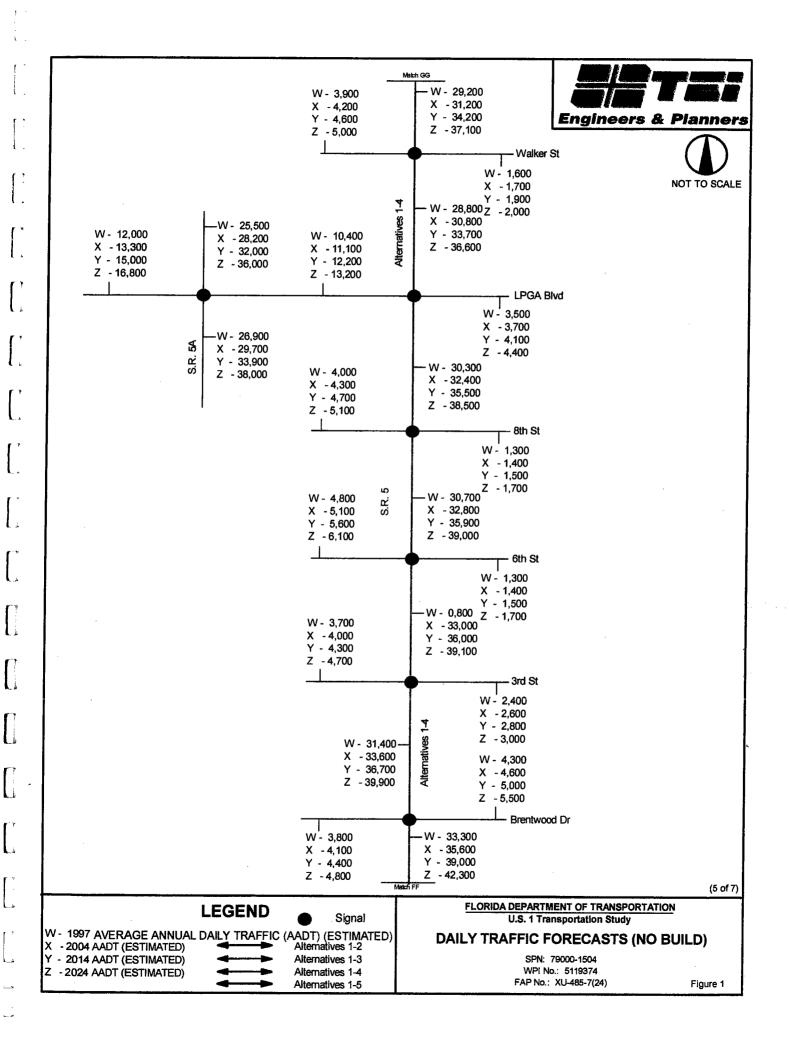
APPENDIX A **Daily and Design Hour Traffic Forecast** (BUILD) AND (NO-BUILD)

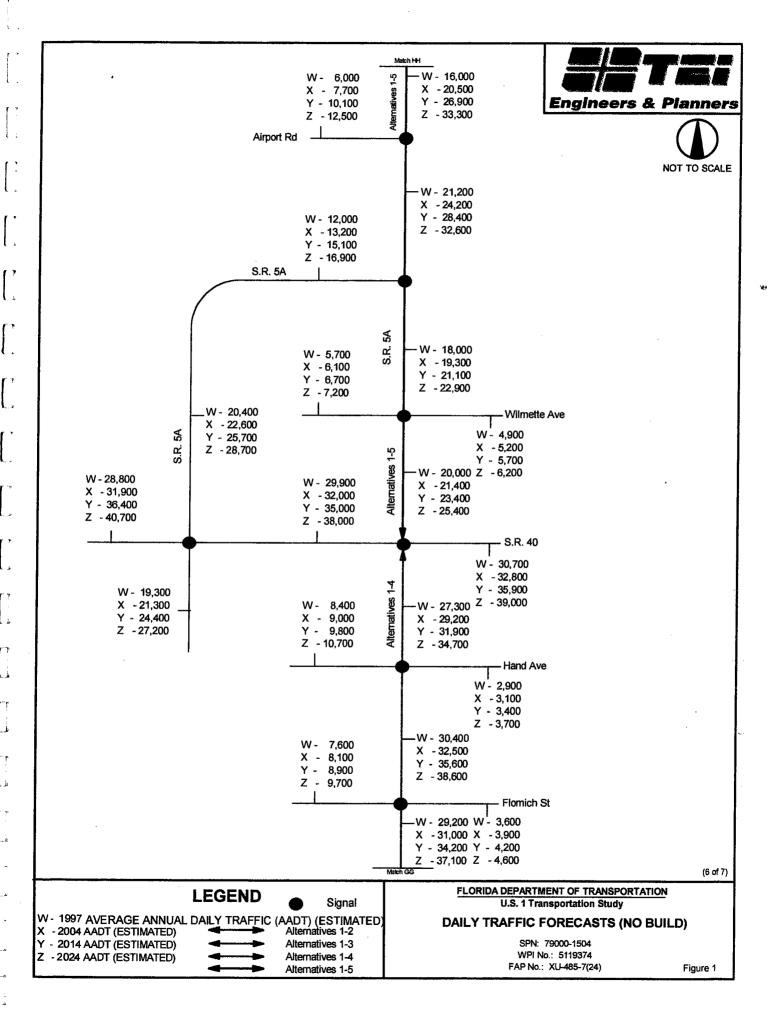


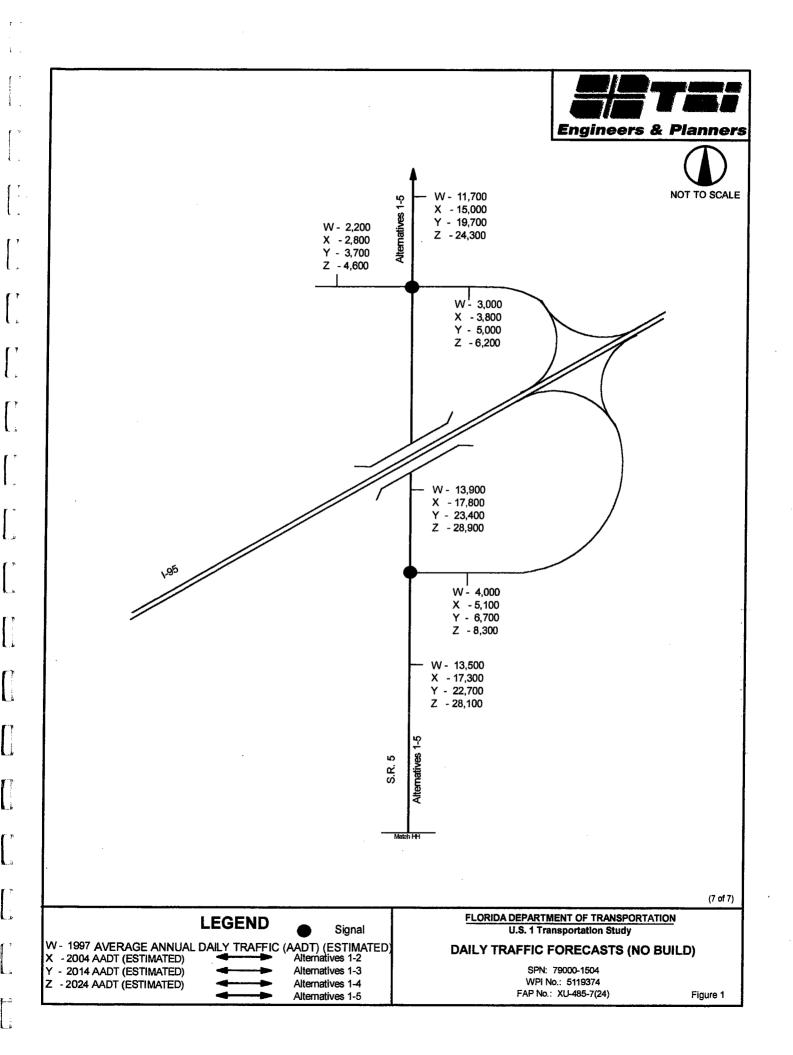


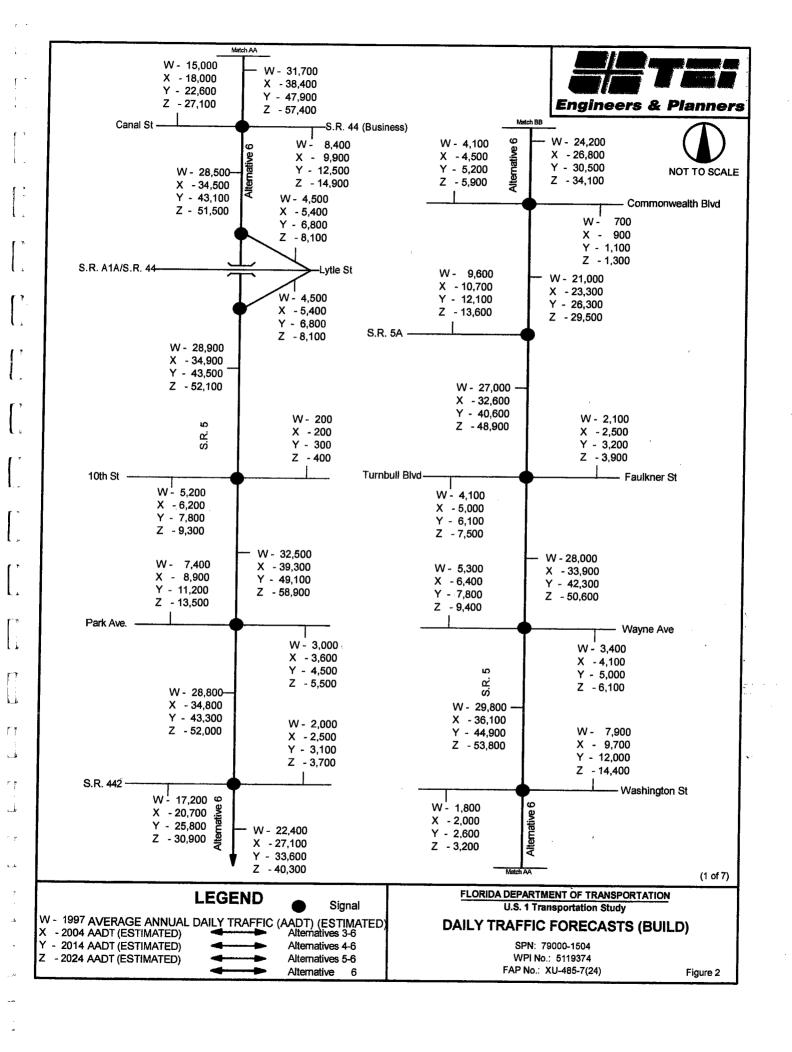


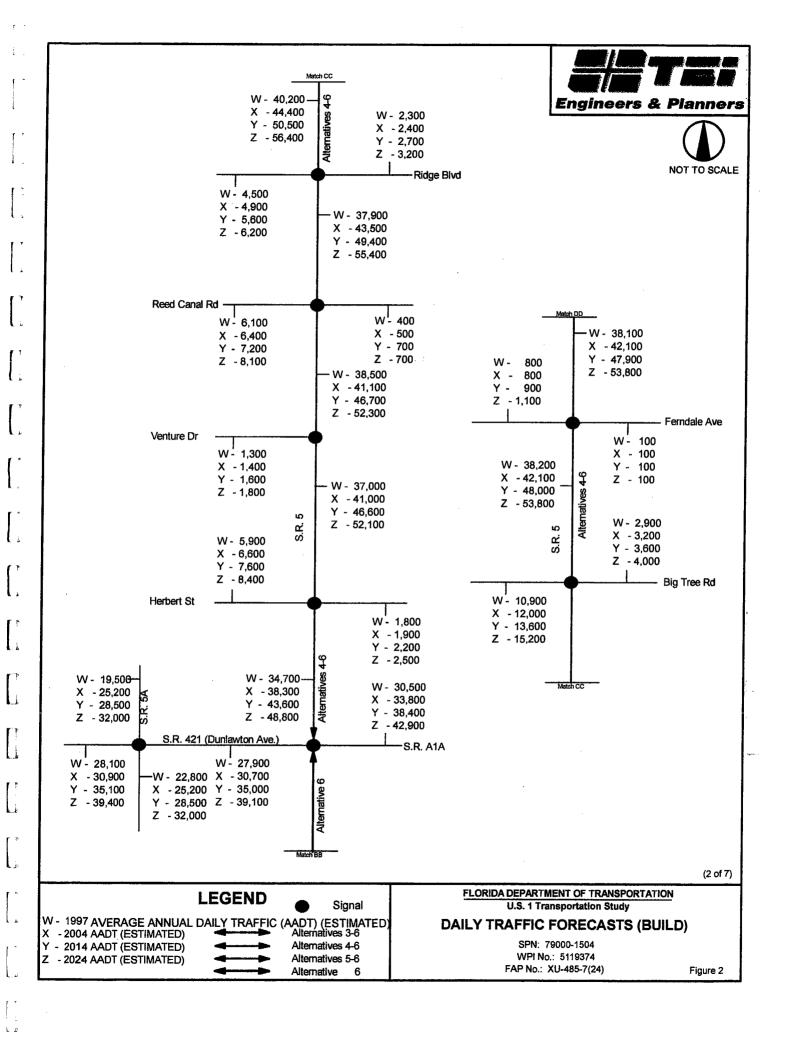


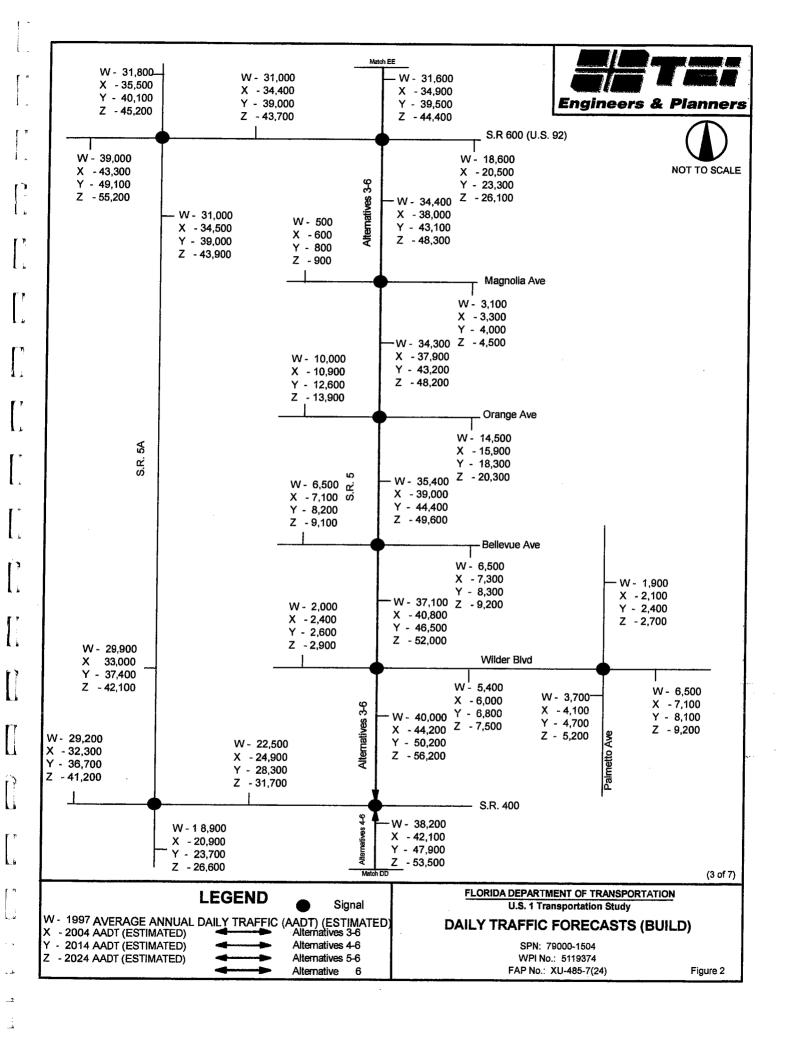


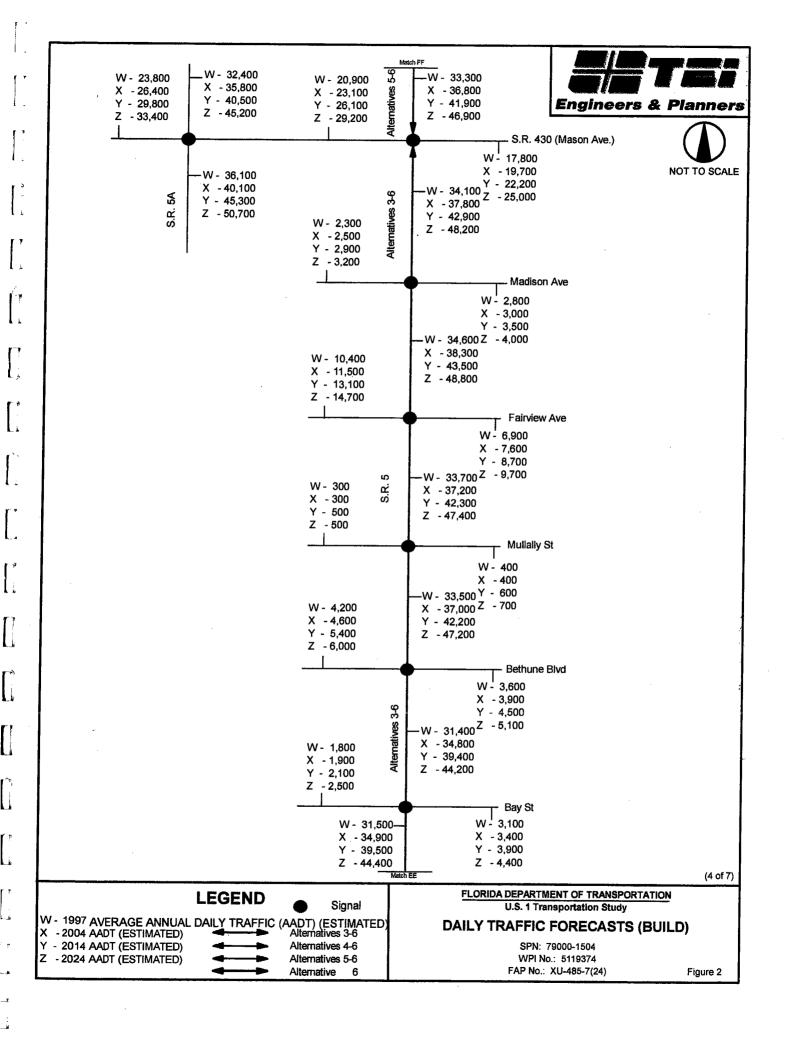


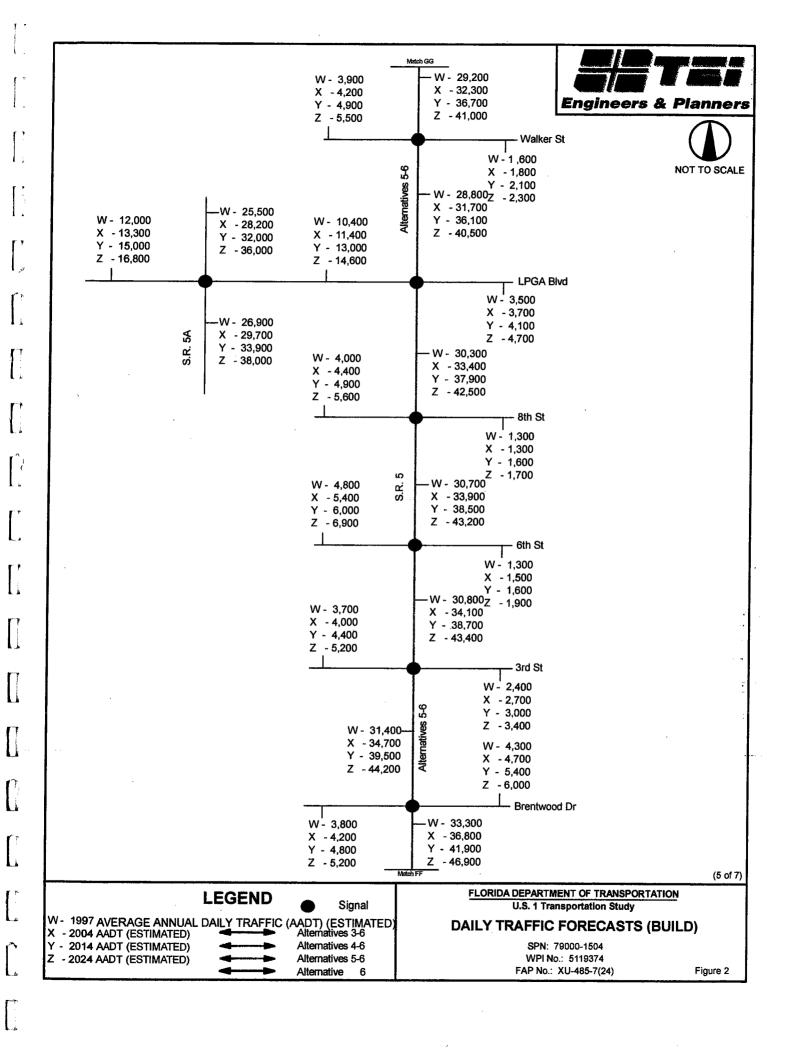


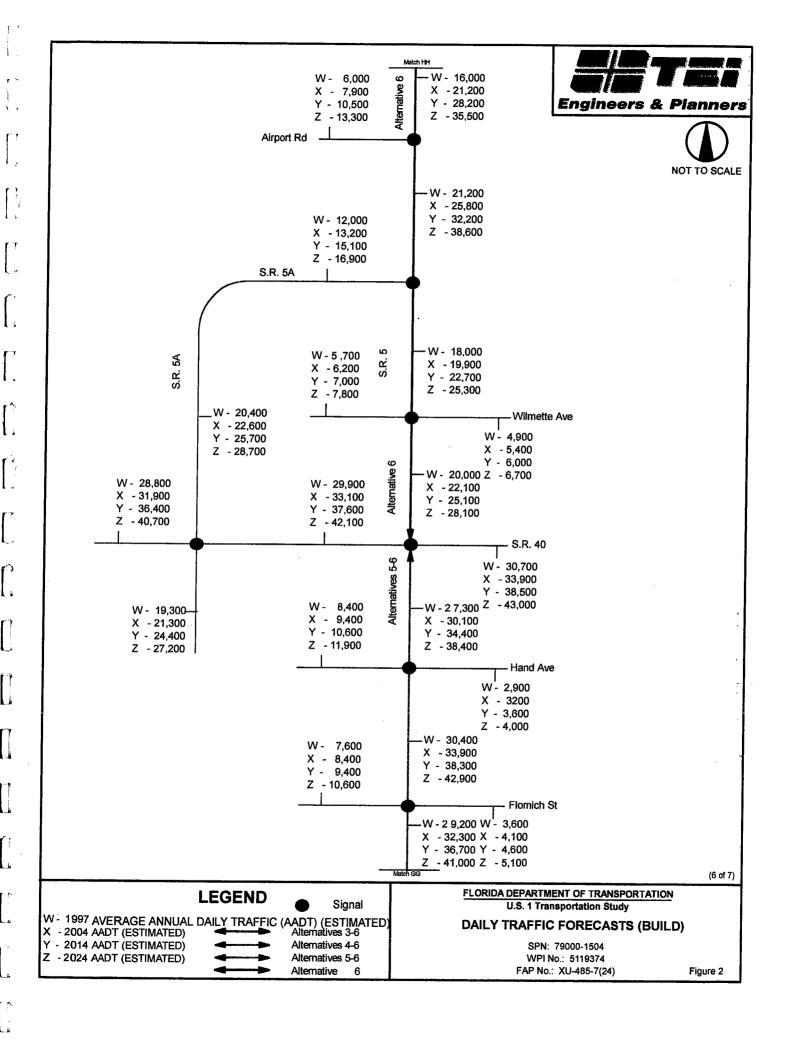


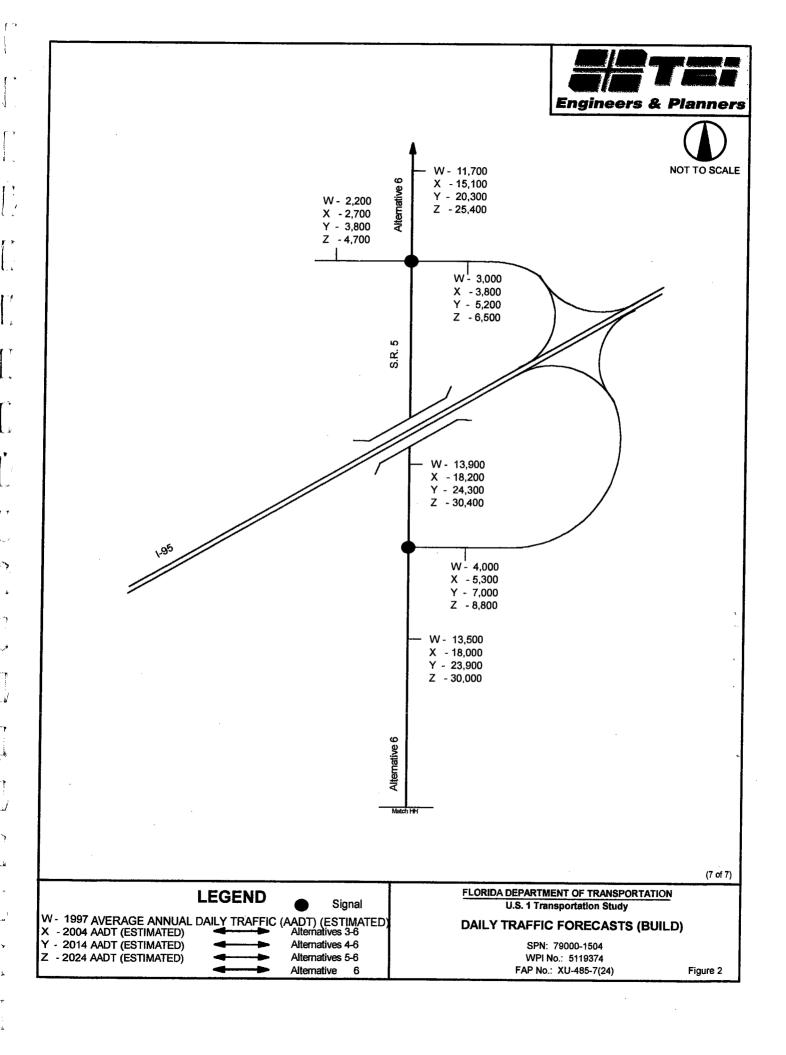


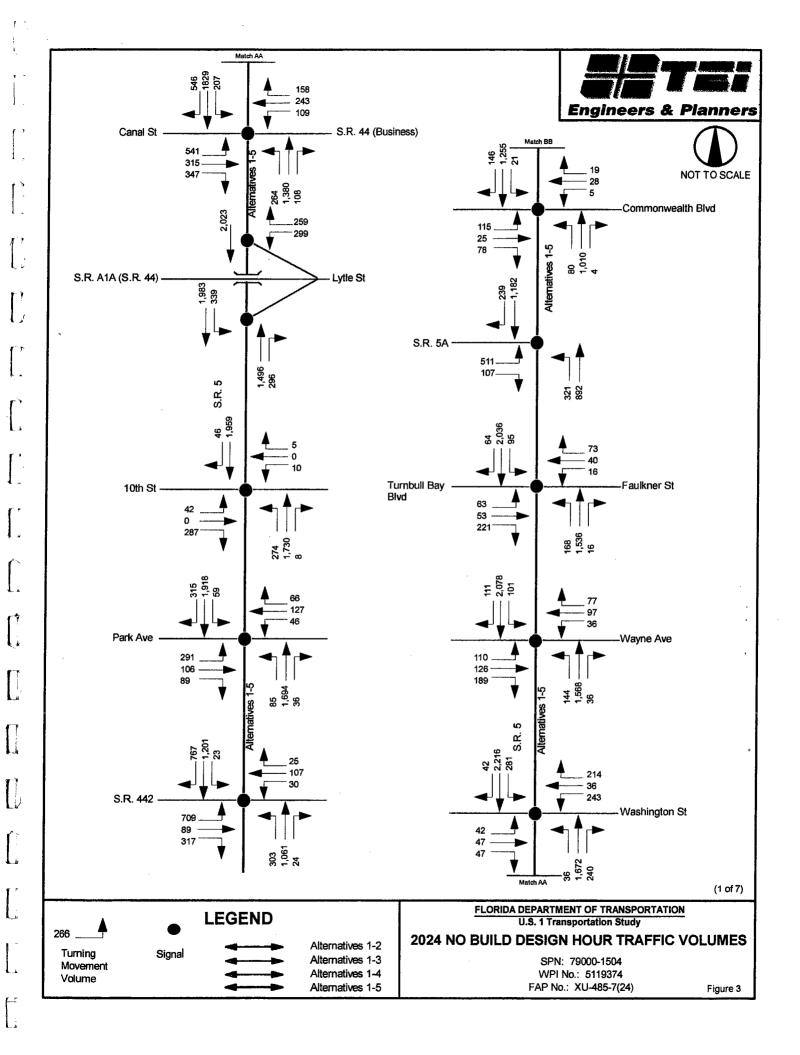


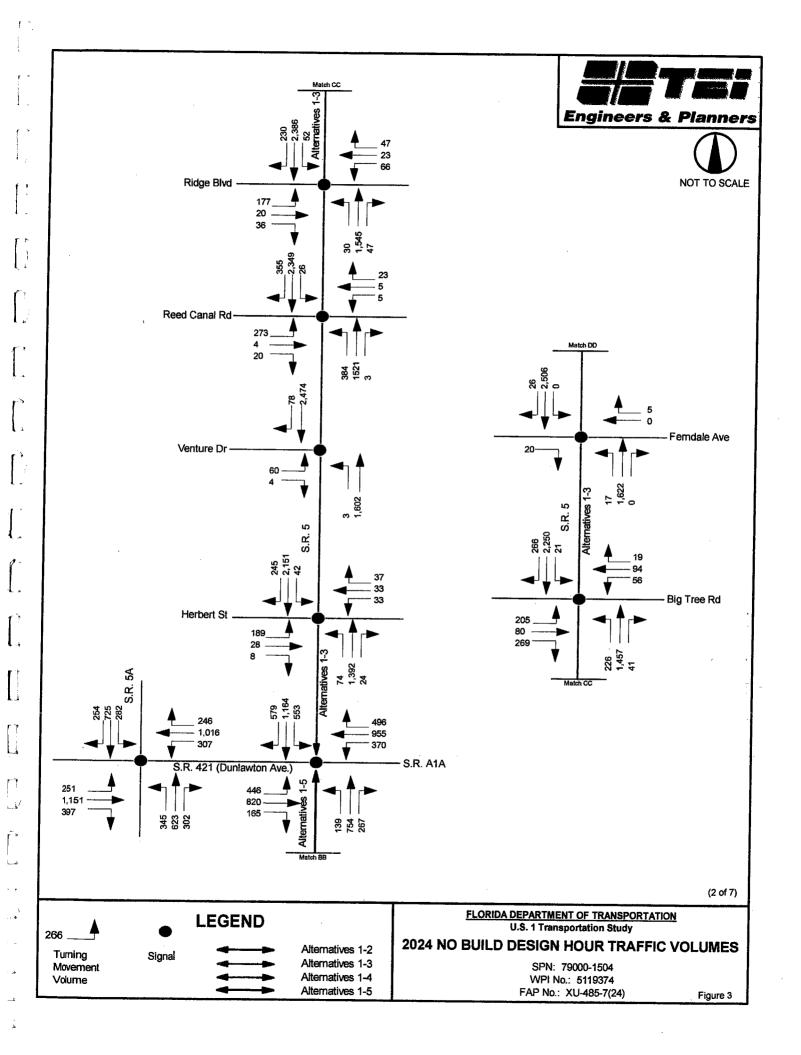


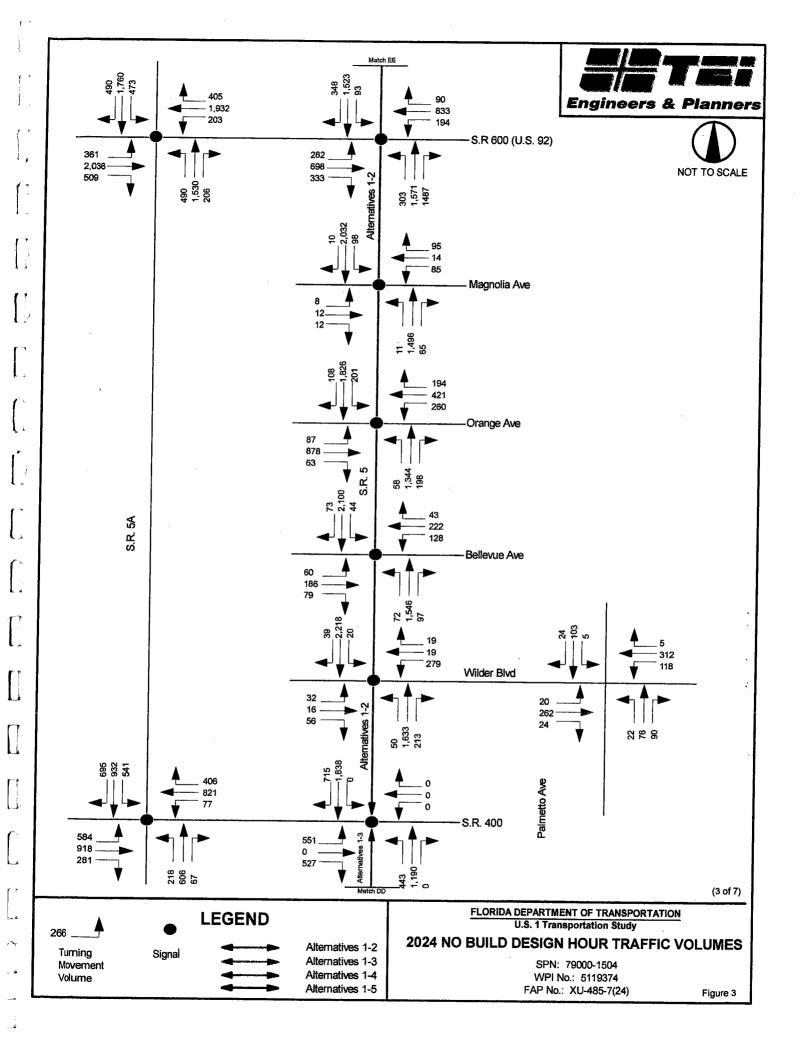


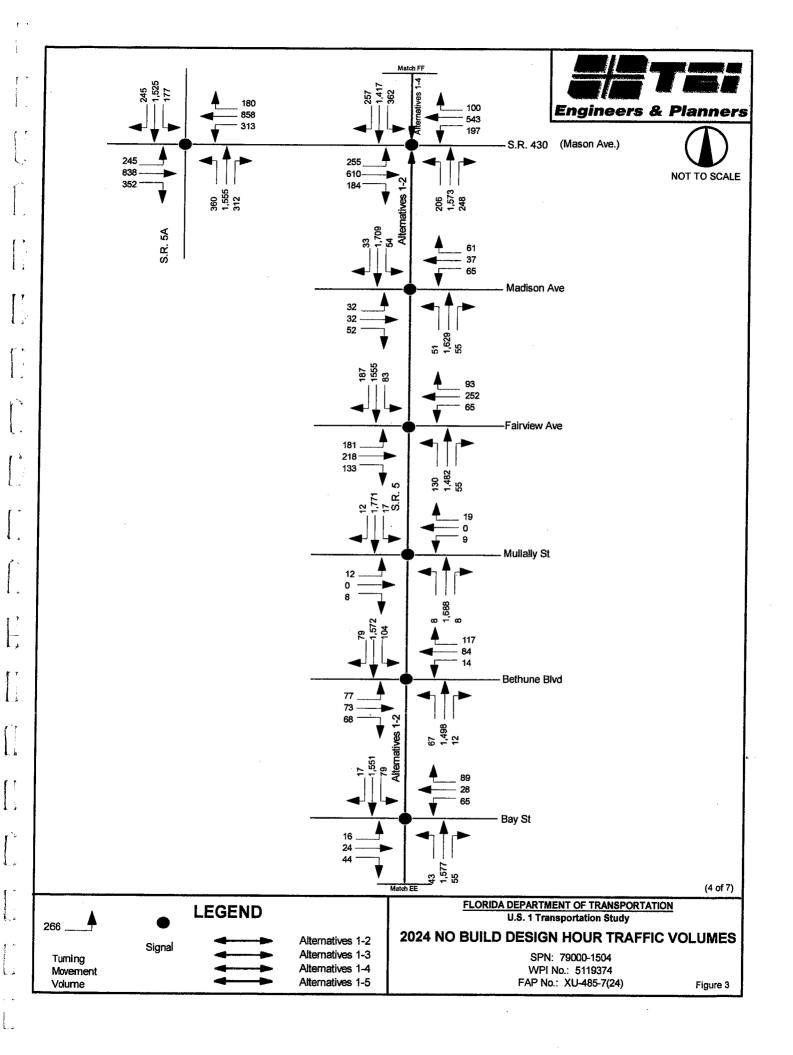


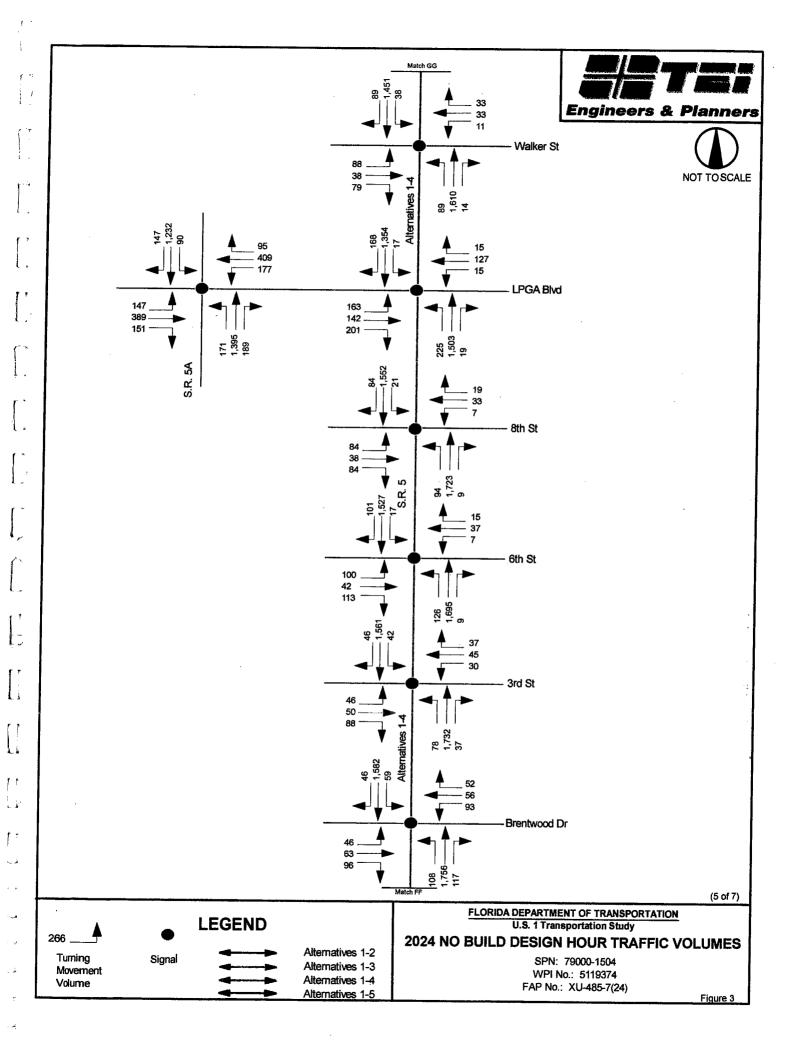


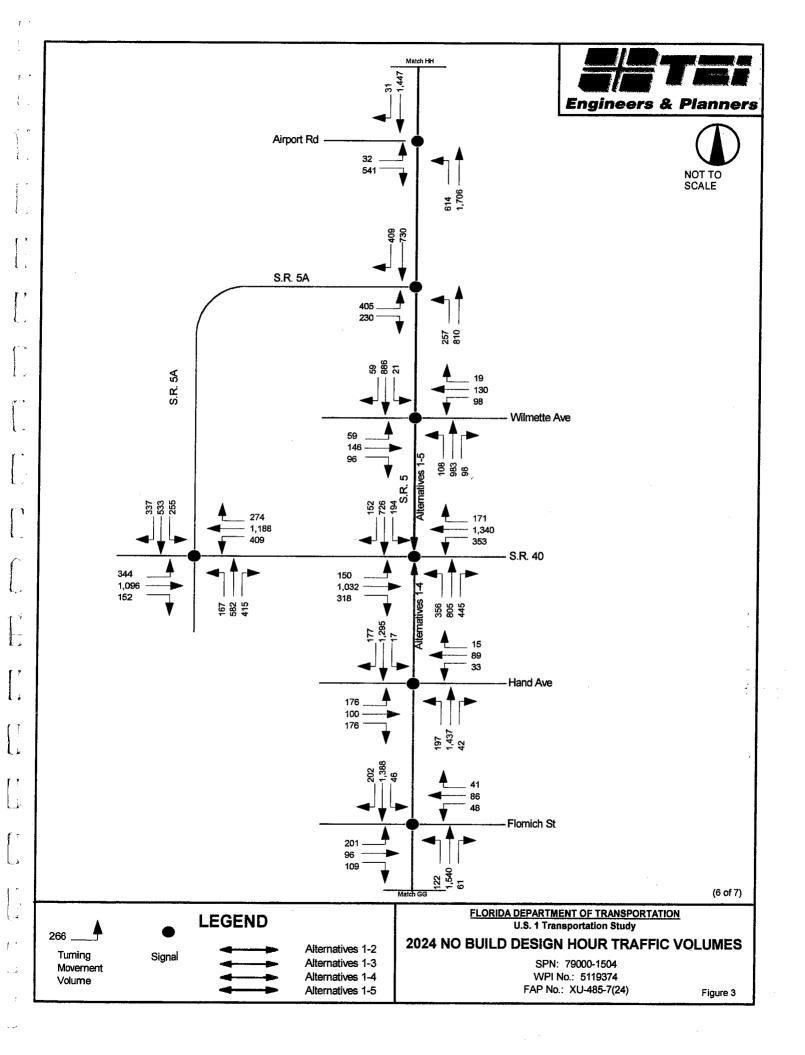








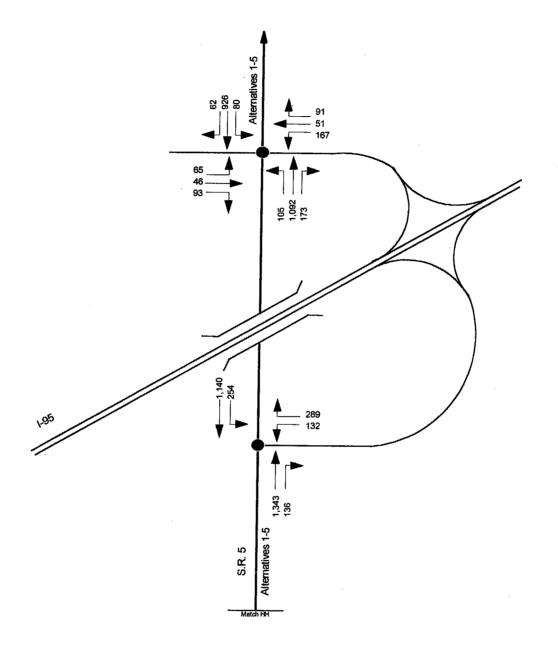




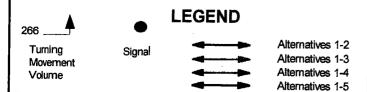








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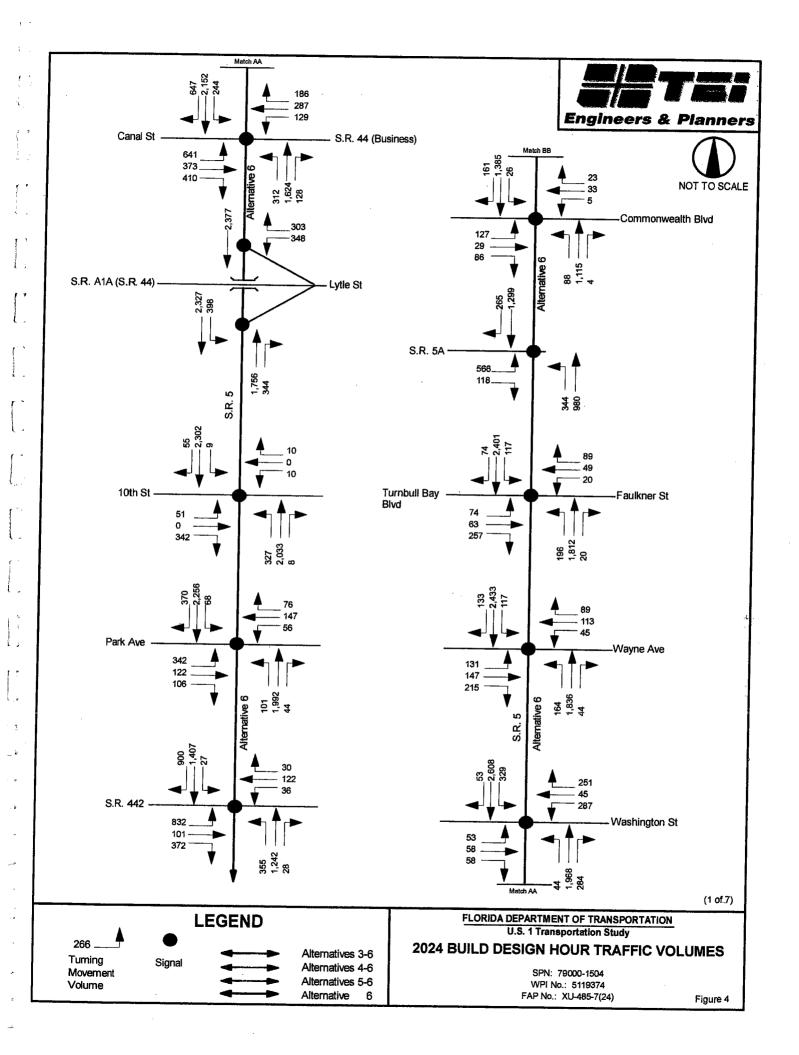


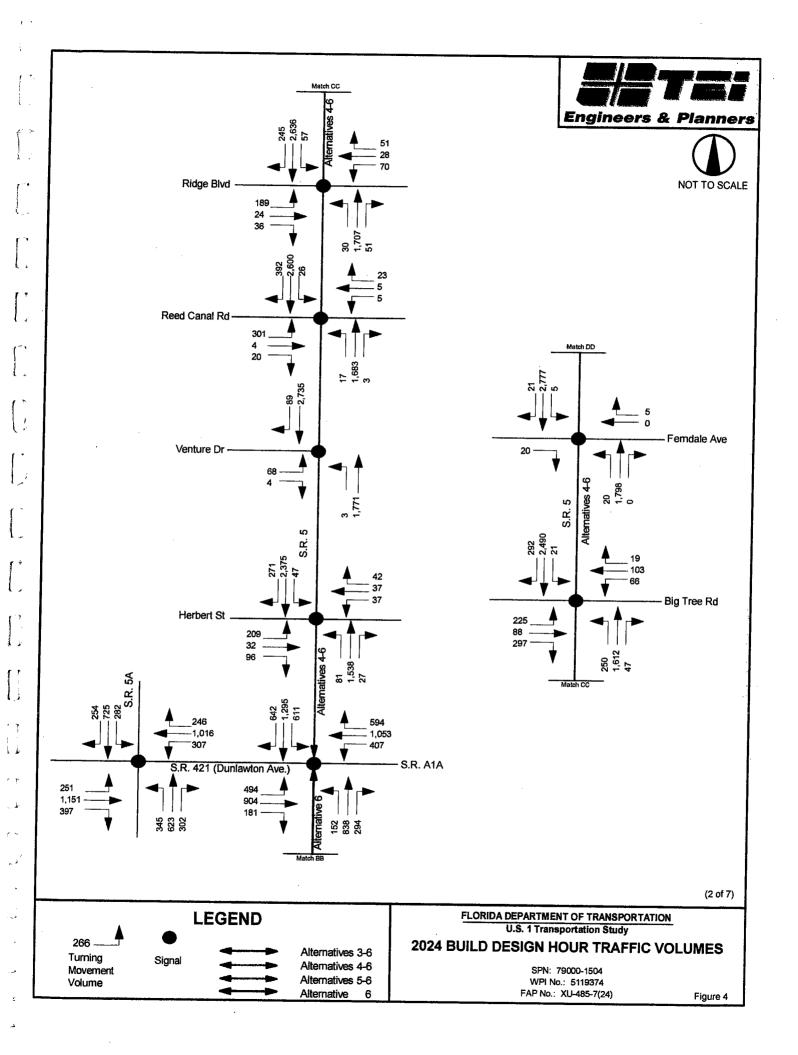
FLORIDA DEPARTMENT OF TRANSPORTATION
U.S. 1 Transportation Study

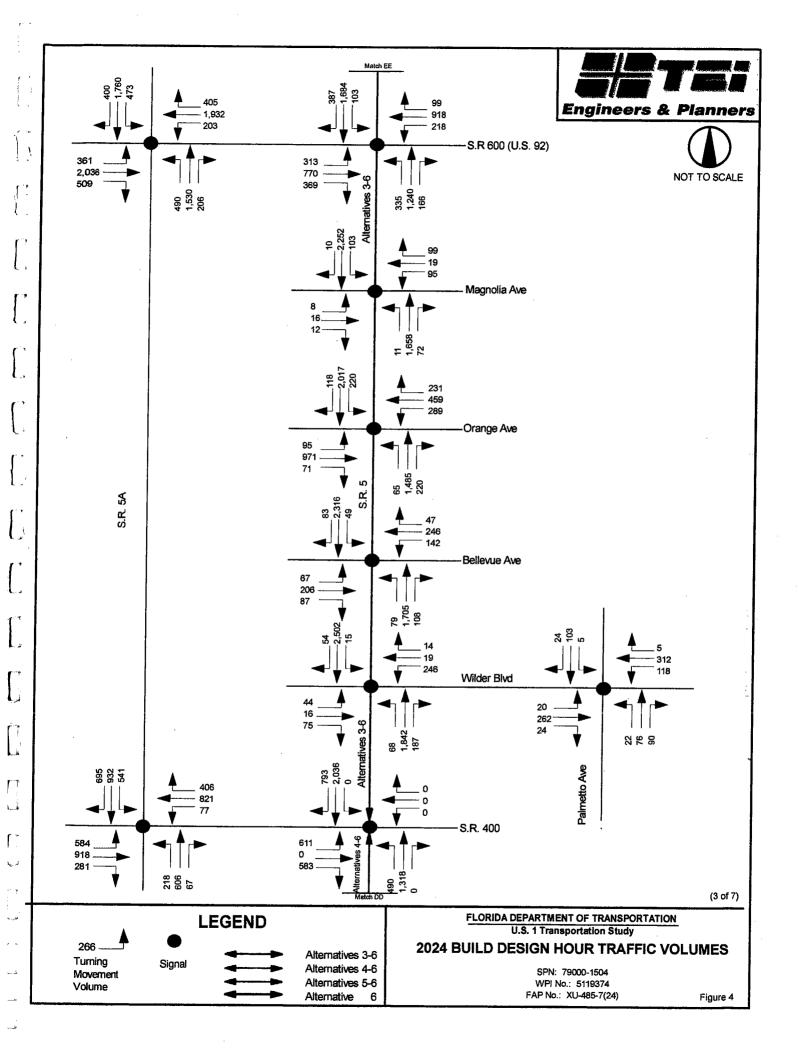
2024 NO BUILD DESIGN HOUR TRAFFIC VOLUMES

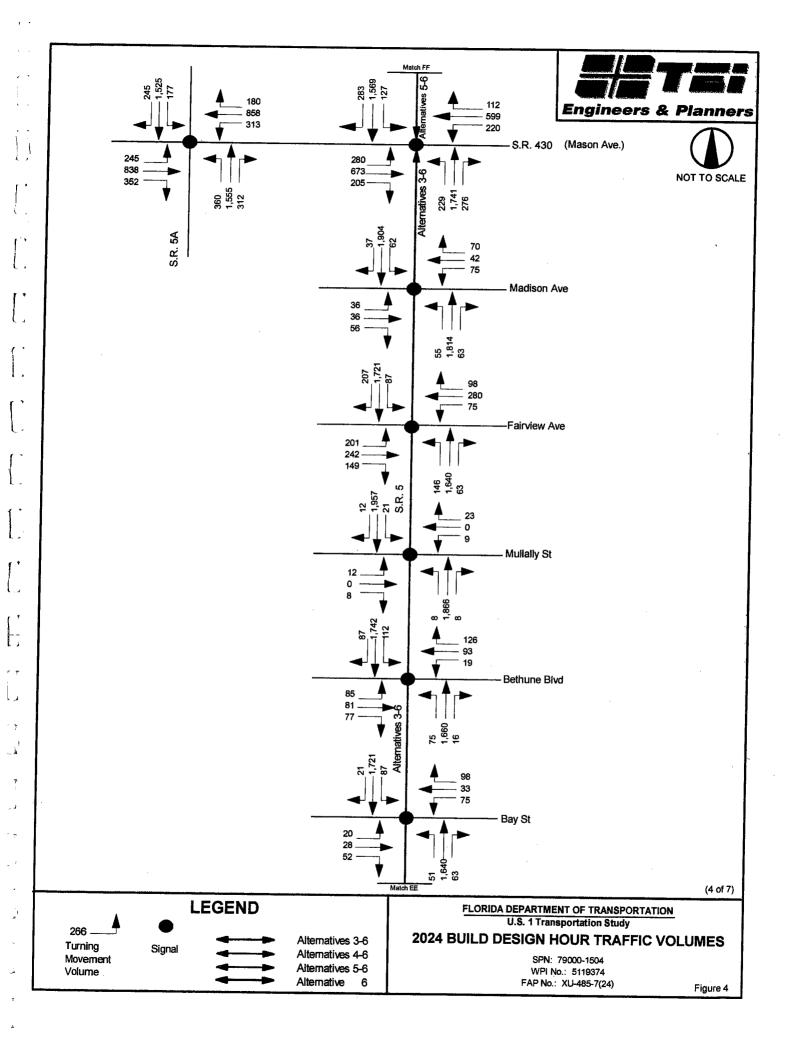
SPN: 79000-1504 WPI No.: 5119374 FAP No.: XU-485-7(24)

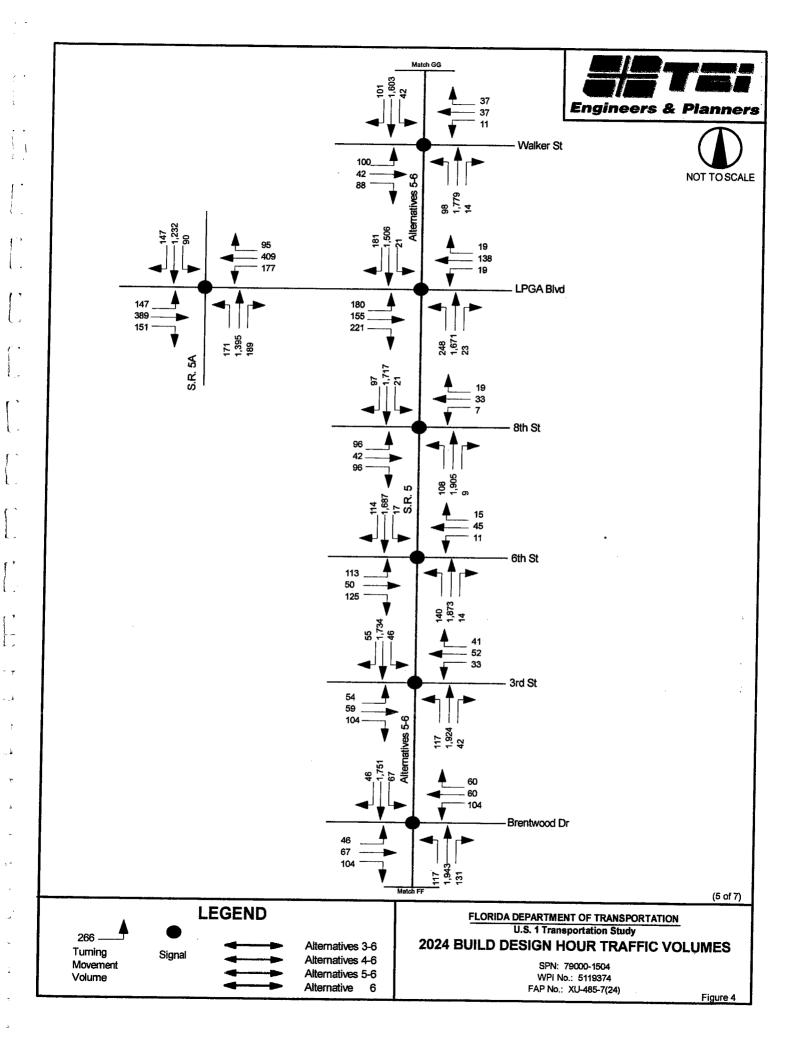
Figure 3

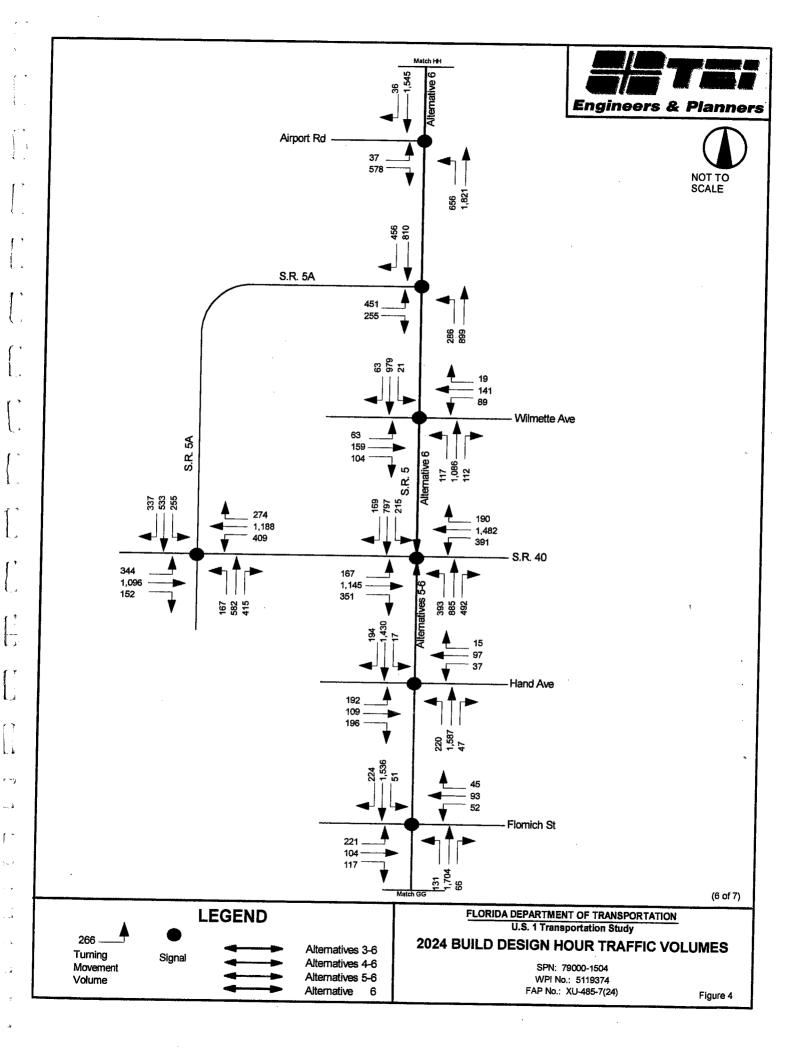








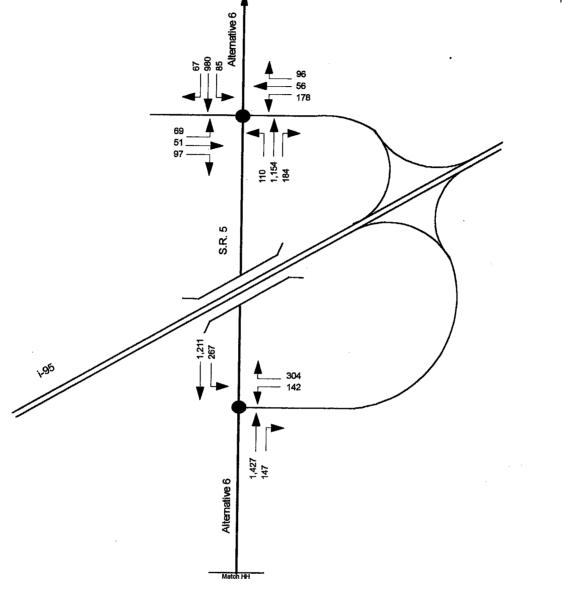












(7 of 7)

LEGEND 266 Turning Signal Alternatives 3-6 Alternatives 4-6 Alternatives 5-6 Alternative 6

FLORIDA DEPARTMENT OF TRANSPORTATION
U.S. 1 Transportation Study

2024 BUILD DESIGN HOUR TRAFFIC VOLUMES

SPN: 79000-1504 WPI No.: 5119374 FAP No.: XU-485-7(24)

Figure 4

APPENDIX B

Public Involvement Plan/ Revisions I and II





US 1 ARIERIAL INVESTMENT STUDY PUBLIC INVOLVEMENT PLAN



March 18, 1997



herbert • halback, inc





Powell, Frugala & Associates, Inc.

SR 5 (US 1) Arterial Investment Study State Project No.: 79000-1504

W.P.I. No.: 5119374 FAP No.: XU-485-7(24)

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1.b.	Formal Description of the Study
1.c.	Overall Study Goals and Public Involvement Goals
2.a.	Public Information Team
2.b.	Study Technical Advisory Team - STAT
2.c.	Coordination With Local
	Agencies and Local Elected Officials
3.a.	Kickoff Presentations (Meetings)
3.b.	Public Workshops
3.c.	Other Meetings and
	Presentations
4.a.	Public Advertisement/Notification and Media Coordination
4.b.	News Releases
4.c.	Study Newsletters
4.d.	Study Videos
4.e.	Study "Telephone Hotline"
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SR 5 (US 1) Arterial Investment Study

State Project No.: 79000-1504

W.P.I. No.: 5119374 F.A.P. No.: XU-485-7(24) PUBLIC INVOLVEMENT PLAN

1.a. Introduction

This Public Involvement Plan is in general compliance with the Florida Department of Transportation's (FDOT) Project Development & Environmental Guidelines Manual, Part 1, Chapter 8-2.1 and the Volusia County Metropolitan Planning Organization's (MPO) Public Involvement Process (as adopted on 1/24/95 and amended on 5/28/96). The overall goal of this plan is to help ensure that the study reflects the values and needs of the communities it is designed to benefit.

1.b. Formal Description of the Study

State Project Number:

79000-1504

Work Program Number:

5119374

Federal Aid Program Number:

XU-485-7(24)

Project Name:

SR 5 (US 1) Arterial Investment Study

Project Location:

SR 5 (US 1), Volusia County, Florida

Project Description:

The primary study area is generally defined as being 1,000 feet south of SR 442 to 1,000 feet north of SR 9 (I-95), 300 feet west of SR 5A (Nova Road) and one (1) mile to the west in other areas along the corridor and the Halifax River to the east, in Volusia County, Florida.

1.c. Overall Study Goals and Public Involvement Goals

The goal of this study is to develop continuous agency coordination and community outreach and education during each step of this project. The public involvement component of this study will develop these goals through the identification of locally preferred strategies while still maintaining the Florida Department of Transportation's design criteria. This goal will be supported by consideration of the unique environmental setting, the preservation and protection of residential areas, and the promotion of increased economic growth through a complete multi-modal transportation system.

Early and continuous engagement of diverse interests is necessary to build consensus for appropriate solutions and to ensure that the outcomes of the study are equitable and supported by a broad consistency. Because a lasting consensus can only be achieved through education and understanding, an informed public that understands the full range of choices to realize a future collective vision for Volusia County is the greatest contribution that this study can provide.

2.a. Public Information Team

Public involvement activities will be coordinated by the consultant team subject to review by the Department and the Volusia County MPO. The following listing provides Public Involvement Officers (PIO) for the various municipalities along the corridor and within the general study area.

Volusia County, Ormond Beach and Holly Hill:

(North Section)

Louise P. Fragala

Powell, Fragala & Associates, Inc.

Daytona Beach, South Daytona and Port Orange:

(Central Section)

Marion I. Skilling

Marion I. Skilling & Associates, Inc.

New Smyrna Beach and Edgewater:

(South Section)

Virginia M. Corless Herbert • Halback, Inc.

These three individuals and firms shall coordinate public involvement and provide the primary point of communication with government officials and local citizens. Their efforts and direction shall be coordinated through the consultant team project manager, Richard Oujevolk.

2.b. Study Technical Advisory Team - STAT

A Study Technical Advisory Team or STAT has been formed to participate in the study. This group is composed of members from the Volusia County MPO staff, MPO Citizen's Advisory Committee (CAC) and Technical Coordinating Committee (TCC), VOTRAN (Volusia County Public Transportation Agency), Volusia County staff, FDOT and local municipalities along the US 1 corridor. The STAT will be a part of the review process throughout the length of the study. Although specific members have been appointed to serve as STAT committee participants, the meetings will be open to the general public. Specific responsibilities include:

- Review public input
- Approve performance measures
- Input to develop alternative strategies
- Review future travel demands
- Input to select preferred alternatives

In addition, the STAT's role is to provide local technical guidance and the citizen's perspective. The STAT input will be crucial in addressing the more localized transportation issues on a regular basis. The STAT will also be utilized to help develop presentation formats. They will assist in the development of potential strategies as local issues arise. The STAT will play a valuable role in providing the study team with the local perspectives to identify solutions tailored to meet community specific needs and flagging potential areas of controversy or concern.

The consultant team proposes to hold ten (10) meetings with the STAT during the anticipated 24 month study. The tenative dates for these meetings (though December, 1997) are shown in the Study Calendar and Schedule included as an attachment to this Plan. Four (4) of the

ten STAT meetings will be held prior to the public workshops to discuss with the STAT the workshop agenda, information to be presented and solicit their input.

2.c. Coordination with Local Agencies and Local Elected Officials

The consultant team will be responsible for coordination with local agencies and local elected officials throughout the 24 month study. This coordination will include regular contact and correspondence with elected officials, local government engineering and planning staff, as well as the Volusia County MPO staff. It is anticipated that coordination efforts with these groups shall be through the STAT members for the respective communities along the US 1 corridor.

3.a. Kickoff Presentations (Meetings)

During the month of March 1997, the consultant team will conduct a presentation jointly with representatives from the Department, the complete CAC/TCC and the Volusia County MPO. These presentations will afford an opportunity to meet with local officials to acquaint them with the study and the study team members. Topics covered at the meeting will include a brief review of the Scope of Services, project schedule, project administration and initiate requests to the local agencies for existing information. The presentations shall be conducted in conjunction with the monthly Volusia CAC/TCC and MPO meetings.

The format of these presentations will be generally informal, with a brief presentation by the consultant team, followed by a question and answer period. All statements and comments made during the presentation will be documented in the project file and presentation minutes.

3.b. Public Workshops

The Scope of Services states that four (4) public workshops will be held during the 24 month study. These public workshops will be conducted at various locations within the three (3) geographic sections of the study corridor for a total of twelve public workshops (4 public workshops @ 3 locations). Questionnaire forms will be available at all public workshops to collect written comments. The primary focus of the workshops shall be to inform and solicit input from the general public. The following summarizes the tentative activities for each of the public workshops.

- First Public Workshop The consultant team will conduct a brief presentation regarding the study goals and objectives, review of initial data collection efforts, and outline the preliminary information to be used as input to develop preliminary concepts and alternative recommendations. The public will have an opportunity to review the data and discuss specific transportation concerns with project representatives.
- 2. Second Public Workshop A brief presentation providing an overview of the traffic data analysis including future travel demand forecasts, travel pattern information, final survey data (O/D, travel time, parking, etc.), environmental analysis, socio-economic analysis, engineering analysis and other data input sources will be provided. Initial concepts and alternatives based on the above information, will be drafted and presented for public review and comment. These alternatives shall

include various multi-modal improvements such as bicycle/pedestnan facilities, transit service enhancements and preliminary concepts for alternate corridor (other than US 1) development.

- 3. Third Public Workshop Refined concepts and alternatives as outlined in the second public workshop will be presented for review and comment. Concept and alternative refinements will be based on general public input, STAT comments, recommendations from involved public agencies and pertinent engineering design criteria. In addition, the evaluation criteria developed and approved for the study will be applied to these refined concepts and alternatives to provide performance measures for each improvement strategy.
- 4. Fourth Public Workshop The final transportation improvement concepts and alternatives with their related performance measures shall be presented to the public. Questions regarding future implementation including right-of-way impacts, project prioritization, phasing, potential funding sources and future courses of action (What happens next?) will be addressed at this presentation.

Comments and Coordination Progress Reports (CCPR) shall be prepared and submitted approximately 45 days after each public workshop (4 total plus final CCPR summary). Each Comments and Coordination Progress Report (CCPR) will include all communications, letters, comments and other pertinent project information between the consultant team and the public. The Comments and Coordination Progress Reports are provided to assure that all aspects of public involvement are accounted for during the study.

3.c. Other Meetings and Presentations

The consultant team recognizes that as alternatives development and evaluation proceed, requests for data and information concerning the project may have to be conveyed to other interested parties, groups, civic organizations or government agencies. The Scope of Services allows for an additional twelve (12) meetings with these groups or agencies to discuss the project, concepts, alternatives or specific transportation concerns. Minutes of these meetings and written comments submitted during the meeting will become part of the study documentation.

4.a. Public Advertisement/Notification and Media Coordination

Formal advertisements/notifications regarding public workshops will be made approximately one week (5 to 7 days) and two weeks (10 to 15 days) prior to the workshops utilizing the two largest "local" circulation newspapers in Volusia County within the study area. These publications are the *Daytona Beach News Journal* and the *New Smyrna Beach Observer*. Other local circulation newspapers such as the *Orlando Sentinel* (Daytona Beach section) and *Daytona Times* will be provided news releases containing similar information about the meetings as the formal advertisements/notifications. The content of both the formal notifications and news releases will include at a minimum:

- Meeting purpose
- Brief outline of meeting topics

- Study area location map
- Date, time and place of the meeting
- Name, address and telephone number of a contact person
- Statement that an opportunity for public comment will be afforded

An example of a formal public notice advertisement/notification is provided as an attachment to this Public Involvement Plan. Please see Figures 5.1, 5.2 and 5.3.

In addition to the local newspapers referenced above, the services of WCEU-TV, WBCC Radio, WPUL 1590 AM Radio, WNDB Radio, WROD Radio and WXVQ News/Talk 1490 will be enlisted to promote public workshops and information about the study through public service announcements and news releases. The local Volusia County homepage on the Internet will also be utilized to disseminate public meeting notifications and general study information.

It is the primary intent of the consultant team to take full advantage of all media formats available throughout the study area to promote interest in the project, notify the general public and to distribute information about the study. All information for distribution through these sources will be reviewed and approved by the FDOT and Volusia County MPO.

To facilitate a cost efficient method of individual or group notification, a primary mailing list shall be developed and maintained by the consultant team that consists of all interested parties who wish to receive all mailings and notifications throughout the study. This list will initially consist of all public and private agencies and individuals identified by the FDOT, the MPO and the local governments. Other entities may include homeowner association presidents, area churches, local chambers of commerce, civic groups, schools and local recreational centers.

An initial mailing announcing the study's goals, objectives, schedules and project contact persons will be sent to all property owners within 300 feet of the study area boundaries as identified in the Volusia County tax rolls. The mailing will request the recipient to either call or write the consultant team to be added to the primary mailing list. The primary mailing list will be amended throughout the study by any person, groups, organizations or agencies that request to receive future mailings or specific project information.

4.b. News Releases

Twelve news releases will be provided for the project. The news releases will be distributed to the aforementioned publications, television and radio stations. These news releases will be designed to keep the general public informed as to the status of the study, information for upcoming public workshops and opportunities for input. All news releases shall be approved by the FDOT and Volusia County MPO prior to publication or broadcast.

4.c. Study Newsletters

A series of four (4) project newsletters will be published and mailed to all persons and organizations on the primary mailing list. Newsletters or other study summary reports and documentation will be made available to groups or agencies that may wish to distribute the

materials within their respective groups. The consultant team will coordinate with any identified group or agency to provide relevant information as it becomes available. The newsletter will provide project status summaries, discuss data analysis, concept and alternatives development and evaluation, upcoming meetings or provide a list of completed work products.

4.d. Study Videos

As a part of the public information process, a three (3±) minute video will be produced during the initial phases of the study. The video will provide an overview of the study process and the study's goals and objectives. This video will be updated two (2) times during the study. The first update will occur shortly after the conclusion of the data collection process and the second update will be provided during the final recommendations phase. The videos will be used at the second and fourth public workshops, TCC/CAC and MPO presentations. They will also be available for use at all meetings of the STAT, Volusia County MPO and by local governments. The videos are also intended for use at meetings of homeowner associations, church groups, civic organizations and other local groups of interested parties as part of the twelve additional meetings as described in Section 3.c. At the conclusion of the study, the videos will serve as a tool for all involved agencies for use in subsequent meetings or specific project discussions. The consultant will make available ten (10) copies of the videos for distribution to interested agencies or groups as requested by the FDOT and the Volusia County MPO.

4.e. Study "Telephone Hotline"

A study information "telephone hotline" will be utilized by the consultant team to field questions or inquiries from the public about the study. While the telephone number will be a local number for Volusia County residents, the telephone line will be installed at the offices of Transportation Engineering, Inc. in Altamonte Springs, Florida. The hotline will be answered as the "US 1 Arterial Investment Study". All telephone calls received will be documented and included in the Comments and Coordination Progress Reports.

ATTACHMENT PIP - 1 STUDY CALENDAR AND SCHEDULE

MARCH

SUNDAY	MONDAY	TUESDAY	WEDNESDAY
23-Feb	24-Feb	25-Feb	26-Feb
		8:30 AM VCOG meeting	10:00 AM TDCB meeting
		9:00 AM MPO meeting	(Blind Services Library)
		(VCOG, Inc. bldg.)	
2	3	4	5
	12:00 PM Deadline to submit	8:30 AM Executive Committee	
	TCC, CAC, MPO & TDCB	meetings (VCOG, Inc. bldg.)	
	agenda items & attachments		
	7:00 PM Deltona City Commission		
	7:00 PM Oak Hill City Commission	7.00	
	7:00 PM Edgewater City Council 7:00 PM DeLand City Commission	7:00 PM Port Orange City Council 7:00 PM O. B. City Commission	7:00 PM DeBary City Council
			7:00 PM D. B. City Commission
9	10	11	12
		8:30 AM WVCTSP meeting	
		(FHP Office)	
		400 DM Cohort Doort (6-1-1-1-1)	
		4:00 PM School Board (tentative) 7:00 PM South Daytona City Council	
		7:00 PM Orange City City Council	
		7:30 PM Pierson Town Council	
		7:30 PM NSB City Commission	
		7:30 PM Holly Hill City Council	7:00 PM D. B. Shores City Council
16	St. Patrick's Day 17	18	19
		1:00 PM TCC meeting	
		3:00 PM CAC meeting	
		(VCOG, Inc. bldg.)	
		1:00 & 3:00 PM US 1 Kickoff	
			
	7:00 PM Edgewater City Council		7:00 PM Ponce Inlet Town Council
	7:00 PM DeLand City Commission	7:00 PM Port Orange City Council	7:00 PM DeBary City Council
	7:00 PM Oak Hill City Commission	7:00 PM O. B. City Commission	7:00 PM D. B. City Commission
Palm Sunday 23	24	25	26
		8:30 AM VCOG meeting	10:00 AM TDCB meeting
		9:00 AM MPO meeting	(Blind Services Library)
		(VCOG, Inc. bldg.)	
		9:00 AM US 1 Kickoff	
		7:00 PM South Daytona City Council	
		7:00 PM Port Orange City Council	
		7:00 PM Orange City City Council	8:00 AM Pierson Town Council
		7:30 PM NSB City Commission	7:00 PM D. B. Shores City Council
Easter 30	-	7:30 PM Holly Hill City Council	
Easter 30	31		

THURSDAY	FRIDAY	SATURDAY	
27-Feb	28-Feb	1.	Things to Do
	2:00 PM MPO Staff meeting		TCC & CAC approve draft
			TIP & UPWP
		W-V	MPO reviews draft TIP
·			and UPWP
	i .		
	7	8	
Mail TCC & CAC agendas	2:00 PM MPO Staff meeting		
Wall 100 & CAC ageridas	2.00 FIM MFO Stall Meeting	· · · · · · · · · · · · · · · · · · ·	
			
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
13	14	15	
1	I - I	1.0	
Mail MPO & TDCB agendas	2:00 PM MPO Staff meeting		
	04	00	
711		22	
	2:00 PM MPO Staff meeting		
9:00 AM Councty Council 7:30 PM Lake Helen City Commission			
27	Good Friday 28	29	
8:30-11:30 AM EVCWSP	VCOG, inc.		
meeting (DB Public Works)	Offices Closed		
			· · · · · · · · · · · · · · · · · · ·

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APRIL

SUNDAY	MONDAY	TUESDAY	WEDNESDAY
30-Mar	31-Mar	1	2
	12:00 PM Deadline to submit	8:30 AM Executive Committee	
	TCC, CAC, MPO & TDCB	meetings (VCOG, Inc. bldg.)	
	agenda items & attachments		
· · · · · · · · · · · · · · · · · · ·			
-			
		7:00 PM Port Orange City Council	7:00 PM DeBary City Council
		7:00 PM O. B. City Commission	7:00 PM D. B. City Commission
. 6	7	8	9
		8:30 AM WVCTSP meeting	
		(FHP Office)	
		4:00 PM School Board (tentative)	· · · · · · · · · · · · · · · · · · ·
		7:00 PM South Daytona City Council	· · · · · · · · · · · · · · · · · · ·
	7:00 PM Deltona City Commission	7:00 PM Orange City City Council	
	7:00 PM Oak Hill City Commission	7:30 PM Pierson Town Council	7.0
	7:00 PM Edgewater City Council	7:30 PM NSB City Commission	
APA Conference - San Diego	7:00 PM DeLand City Commission	7:30 PM Holly Hill City Council	7:00 PM D. B. Shores City Council
Daylight Savings Time Begins	APA Conference - San Diego	APA Conference - San Diego	APA Conference - San Diego
13	14	15	16
		1:00 PM TCC meeting	
		3:00 PM CAC meeting	
		(VCOG, Inc. bldg.)	
			7:00 PM Pance Inlet Town Council
		7:00 PM Port Orange City Council	7:00 PM DeBary City Council
		7:00 PM O. B. City Commission	7:00 PM D. B. City Commission
20	Secretary's Week 21	Secretary's Week 22	Secretary's Day 23
		8:30 AM VCOG meeting	
		9;00 AM MPO meeting	
· · · · · · · · · · · · · · · · · · ·		(VCOG, inc. bldg.)	
		7:00 PM Port Orange City Council	
		7:00 PM Grange City City Council	
	7:00 PM Oak Hill City Commission	7:00 PM South Daytona City Council	
	7:00 PM Edgewater City Council	7:30 PM NSB City Commission 7:30 PM Hally Hill City Council	8:00 AM Pierson Town Council
	7:00 PM DeLand City Commission	9:00 AM School Board (tentative)	7:00 PM D. B. Shores City Council
		Passover	1.55 T M D. D. Orloles Oily Council
27	28	29	30
			10:00 AM TDCB meeting
			(Blind Services Library)
		·	
			
			
	3		

THURSDAY	FRIDAY	SATURDAY	
	4	5	Things to Do
Mail TCC/CAC agendas	2:00 PM MPO Staff meeting		MPO approves draft TIP & UPWP and reviews draft
			& UPWP and reviews draft
			MPO budget
9:00 AM County Council			
7:30 PM Lake Helen City Commission		APA Conference - San Diego	
10	11	12	
Mail MPO agendas	2:00 PM MPO Staff meeting		
	2.55 Firm 5 Star Meeting		
7070820074.500777			
	18	19	
Mail TDCB agendas	10:00-11:30 AM ADA meeting		
	(Blind Services Library)	- · · · · · · · · · · · · · · · · · · ·	
	2:00 PM MPO Staff meeting		
		·	
9:00 AM County Council 7:30 PM Lake Helen City Commission			· · · · · · · · · · · · · · · · · · ·
Secretary's Week 24	Secretary's Week 25	26	
8:30-11:30 AM EVCWSP mtg.	2:00 PM MPO Staff meeting		
(DB Public Works bldg.)			, , , , , , , , , , , , , , , , , , , ,
			· · · · · · · · · · · · · · · · · · ·
			
		· · · · · · · · · · · · · · · · · · ·	
MPOAC meeting			
	2-May	3-May	
		з-мау	
ļ	2:00 PM MPO Staff meeting		

MAY

SUNDAY	MONDAY	TUESDAY	WEDNESDAY
27-Apr	28-Apr	29-Арг	30-Арг
			10:00 AM TDCB meeting
			(Blind Services Library)
:			
4	5	6	7
	12:00 PM Deadline to submit	8:30 AM Executive Committee	
	TCC, CAC, MPO & TDCB	meetings (VCOG, Inc. bldg.)	
	agenda items & attachments		
	7:00 PM Deltona City Commission		
	7:00 PM Oak Hill City Commission	4:00 PM School Board (tentative)	
	7:00 PM Edgewater City Council 7:00 PM DeLand City Commission	7:00 PM O. B. City Commission 7:00 PM Port Orange City Council	7:00 PM DeBary City Council
Mother's Day 11	12	13	7:00 PM D. B. City Commission
notificity 11		8:30 AM WVCTSP meeting	
		(FHP Offices)	
		7:00 PM South Daytona City Council	
		7:00 PM Orange City City Council	
		7:30 PM Pierson Town Council	
		7:30 PM NSB City Commission	
40	4.0	7;30 PM Holly Hill City Council	7:00 PM D. B. Shores City Council
18	19	20	21
		1:00 PM TCC meeting	
		3:00 PM CAC meeting	
		(VCOG, Inc. bldg.) 1:00 & 3:00 PM US 1	
		Presentation 1	·
		1 Toseinadon 1	
	7:00 PM Oak Hill City Commission	4:00 PM School Board (tentative)	7:00 PM Ponce Inlet Town Council
	7:00 PM Edgewater City Council	7:00 PM Port Orange City Council	7:00 PM DeBary City Council
	7:00 PM DeLand City Commission	7:00 PM O. B. City Commission	7:00 PM D. B. City Commission
25	Memorial Day 26	27	28
	VCOG, Inc.	8:30 AM VCOG meeting	10:00 AM TDCB meeting
	Offices Closed	9:00 AM MPO meeting	(Blind Services Library)
		(VCOG, Inc. bldg.)	
		9:00 AM US 1 Presentation 1	
		7:00 PM South Daytona City Council	
·		7:00 PM Orange City City Council	
		7:00 PM Port Orange City Council	3.00 444 87
		7:30 PM NSB City Commission 7:30 PM Holly Hill City Council	8:00 AM Pierson Town Council
<u></u>		7.30 FIVE HOLLY CHILD COUNCIL	7:00 PM D. B. Shores City Council

THURSDAY	FRIDAY	SATURDAY	
	2	3	Things to Do
	2:00 PM MPO Staff meeting		MPO reviews draft budget
			MPO reviews draft priority
			lists
		·····	
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
8	9	10	
Mail TCC & CAC agendas	2:00 PM MPO Staff meeting		
			<u> </u>
	4.0		
	16	17	
Mail MPO & TDCB agendas	2:00 PM MPO Staff meeting		
			**
9:00 AM County Council 7:30 PM Lake Helen City Commission			
	00		
22	23	24	
8:30-11:30 AM EVCWSP	2:00 PM MPO Staff meeting		
meeting (DB Public Works)			
			· · · · · · · · · · · · · · · · · · ·
			
	20	24	
	30	31	
	2:00 PM MPO Staff meeting		
			
			
<u> </u>			

JUNE

SUNDAY	MONDAY	TUESDAY	WEDNESDAY
1	2	3	4
	12:00 PM Deadline to submit	8:30 AM Executive Committee	
	TCC, CAC, MPO & TDCB	meetings (VCOG, Inc. bldg.)	
	agenda items & attachments		
	7:00 PM Deltona City Commission		
	7:00 PM Oak Hill City Commission		
 	7:00 PM Edgewater City Council	7:00 PM Port Orange City Council	7:00 PM DeBary City Council
	7:00 PM DeLand City Commission	7:00 PM O. B. City Commission	7:00 PM D. B. City Commission
8	9	10	11
		8:30 AM WVCTSP meeting	
		(FHP Office)	
		4:00 PM School Board (tentative)	
····		7:00 PM South Daytona City Council	
		7:00 PM Orange City City Council	
		7:30 PM Pierson Town Council	
		7:30 PM NSB City Commission	
		7:30 PM Holly Hill City Council	7:00 PM D. B. Shores City Council
Father's Day 15	16	17	18
		1:00 PM TCC meeting	
		3:00 PM CAC meeting	
·		(VCOG, Inc. bldg.)	
			
	7:00 PM Oak Hill City Commission		7:00 PM Ponce Inlet Town Council
	7:00 PM Edgewater City Council	7:00 PM Port Orange City Council	7:00 PM DeBary City Council
-	7:00 PM DeLand City Commission	7:00 PM O. B. City Commission	7:00 PM D. B. City Commission
22	23	24	25
		8:30 AM VCOG meeting	10:00 AM TDCB meeting
		9:00 AM MPO meeting	(Blind Services Library)
		(VCOG, Inc. bldg.)	
		4:00 PM School Board (tentative)	
		7:00 PM South Daytona City Council	
		7:00 PM Orange City City Council	
		7:00 PM Port Orange City Council	
		7:30 PM NSB City Commission	8:00 AM Pierson Town Council
		7:30 PM Holly Hill City Council	7:00 PM D. B. Shores City Council
29	30	1-Jul	2-Jul
	12:00 PM Deadline to submit	8:30 AM Executive Committee	
	TCC, CAC, MPO & TDCB	meetings (VCOG, Inc. bldg.)	
	agenda items & attachments		
		 	
···			
	End of MPO FY 1996/97	7:00 PM US 1Public Hearing/ Wrkshp 1: South (tentve)	7:00 PM US 1Public Hearing/ Wrkshp 1: Central (tentve)

THURSDAY	FRIDAY	SATURDAY	
5	6	7	Things to Do
Mail TCC & CAC agendas	2:00 PM MPO Staff meeting		MPO approves draft budget
			MPO approves priority lists
			TD A
			TD Annual Budget Estimates to be submitted to CTD by
			30-Jun-97
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
12	13	14	
Mail MPO & TDCB agendas	2:00 MPO Staff meeting		
Mail Mil O & TDOD agenças	2.00 NF O Stait meeting		
		T	
19	20	21	
	2:00 PM MPO Staff meeting		
			wa
			
9:00 AM County Council			
7:30 PM Lake Helen City Commission		· · · · · · · · · · · · · · · · · · ·	
26	27	28	
8:30-11:30 AM EVCWSP mtg.	2:00 PM MPO Staff meeting		
(DB Public Works bldg.)	2.00 FIVE INFO Stair meeting		
\			
7:00 PM / IC (C) / E: () - : : /			
7:00 PM US 1Public Hearing/ Wrkshp 1: North (tentve)			
(41/10/10 (Tentre)	<u> </u>		
3-Jul	4-Jul	5-Jul	
Mail TCC/CAC agendas	Independence Day		
	VCOG, Inc. Offices Closed		
	<u> </u>		

JULY

SUNDAY	MONDAY	TUESDAY	WEDNESDAY
29-Jun	30-Jun	1	2
	12:00 PM Deadline to submit	8:30 AM Executive Committee	
	TCC, CAC, MPO & TDCB	meetings (VCOG, Inc. bldg.)	
	agenda items & attachments	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
		7:00 PM US 1Public	7:00 PM US 1Public
		Wrkshp 1: South (tentve)	Wrkshp 1: Central (tentve)
		7:00 PM O. B. City Commission	
		7:00 PM Port Orange City Council Begin MPO's FY 1997/98	7:00 PM DeBary City Council
			7:00 PM D. B. City Commission
. 6	7	8	9
		8:30 AM WVCTSP meeting	
		(FHP Office)	
		<u></u>	
		7.00 DM Binner True Council	
	7:00 PM Deltona City Commission	7:30 PM Pierson Town Council 7:00 PM South Daytona City Council	
	7:00 PM Oak Hill City Commission	7:00 PM Orange City City Council	
	7:00 PM Edgewater City Council	7:30 PM NSB City Commission	
	7:00 PM DeLand City Commission	7:30 PM Hally Hill City Council	7:00 PM D. B. Shores City Council
13	14	15	16
	1 7	1:00 PM TCC meeting	10
		3:00 CAC meeting	·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·
		(VCOG, Inc. bldg.)	
		1:00 & 3:00 PM US 1	
		Presentation 2	
			7:00 PM Ponce Inlet Town Council
		7:00 PM Port Orange City Council	7:00 PM DeBary City Council
00	0.4	7:00 PM O. B. City Commission	7:00 PM D. B. City Commission
20	21	22	23
		8:30 AM VCOG meeting	
		9:00 AM MPO meeting	
		(VCOG, Inc. bldg.) 9:00 AM US 1 Presentation 2	
		4:00 PM School Board (tentative)	
		7:00 PM South Daytona City Council	
		7:00 PM Port Orange City Council	
	7:00 PM Oak Hill City Commission	7:00 PM Orange City City Council	
	7:00 PM Edgewater City Council	7:30 PM NSB City Commission	8:00 AM Pierson Town Council
	7:00 PM DeLand City Commission	7:30 PM Holly Hill City Council	7:00 PM D. B. Shores City Council
27	28	29	30
			10:00 AM TDCB meeting
			(Blind Services Library)
			
			· · · · · · · · · · · · · · · · · · ·

THITTOTAL	EDIDATE	CATELLO	T
THURSDAY	FRIDAY	SATURDAY	
3	Independence Day 4	5	Things to Do
Mail TCC & CAC agendas	VCOG, Inc.		Special Note: All meetings
	Offices Closed		scheduled for the MPO or its
<u>.</u>			Committees in July are subject
			to cancellation due to summer
			vacations
			MPO Staff submits the
			adopted priority lists to FDOT
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
	11	12	
Mail MPO agendas	2:00 PM MPO Staff meeting		
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			· · · · · · · · · · · · · · · · · · ·
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17	18	19	i
Mail TDCB agendas	10:00 AM ADA meeting		
	(Blind Services Library)		
	2:00 PM MPO Staff meeting		
			
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
249	25	26	
		20	
8:30-11:30 AM EVCWSP mtg.	2:00 PM MPO Staff meeting		
(DB Public Works bldg.)			
MPOAC meeting			
24	_		
31	1-Aug	2-Aug	ì
	2:00 PM MPO Staff meeting		
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		······································	
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AUGUST

WEDNESDAY	TUESDAY	MONDAY	SUNDAY
30-Ju	29-Jul	28-jul	27-Jul
10:00 AM TDCB meeting			
(Blind Services Library)			
			· · · · · · · · · · · · · · · · · · ·
	5		2
6		4	3
	8:30 AM Executive Committee	12:00 PM Deadline to submit	
	meetings (VCOG, Inc. bldg.)	TCC, CAC, MPO & TDCB	
		agenda items & attachments	
		7:00 PM Deltona City Commission	
		7:00 PM Edgewater City Council	
7:00 PM D. B. City Commission	7:00 PM Port Orange City Council	7:00 PM Oak Hill City Commission	
7:00 PM DeBary City Council	7:00 PM O. B. City Commission	7:00 PM DeLand City Commission	
13	12	11	10
	8:30 AM WVCTSP meeting		
	(FHP Office)		
	(FAI Office)		
	7:00 PM Orange City City Council		
	7:00 PM South Daytona City Council		
	7:30 PM Holly Hill City Council		
	7:30 PM NSB City Commission		
7:00 PM D. B. Shores City Council	7:30 PM Pierson Town Council		
20	19	18	17
	1:00 PM TCC meeting		
	3:00 PM CAC meeting (VCOG, Inc. bldg.)		
	(VCOG, Inc. bidg.)		
7:00 PM D. B. City Commission	4:00 PM School Board (tentative)	7:00 PM Oak Hill City Commission	
7:00 PM DeBary City Council	7:00 PM Port Orange City Council	7:00 PM Edgewater City Council	
7:00 PM Ponce Inlet Town Council	7:00 PM O. B. City Commission	7:00 PM DeLand City Commission	
27	26	25	24
10:00 AM TDCB meeting	8:30 AM VCOG meeting		
(Blind Services Library)	9:00 AM MPO meeting		
	(VCOG, Inc. bldg.)		
	7:00 PM Orange City City Council		
	7:00 PM Port Orange City Council		
	7:00 PM South Daytona City Council		
8:00 AM Pierson Town Council	7:30 PM Holly Hill City Council		
7:00 PM D. B. Shores City Council	7:30 PM NSB City Commission		
			31

THURSDAY	FRIDAY	SATURDAY	
31-Jul	1	2	Things to Do
*	2:00 PM MPO Staff meeting		
			
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7.6	8	9	
Mail TCC & CAC agendàs	2:00 MPO Staff meeting		
			· · · · · · · · · · · · · · · · · · ·
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
14	15	16	
		10	
Mail MPO & TDCB agendas	2:00 PM MPO Staff meeting		
			
			·
2.1	22	23	
	2:00 PM MPO Staff meeting		
	2.50 TW WIT O GRAIT INCERTING		
			·
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
	20	20	
28	29	30	
3:30-11:30 AM EVCWSP mtg.	2:00 PM MPO Staff meeting		
(DB Public Works)	12:00 PM Deadline to submit		
	TCC, CAC, MPO & TDCB		
	agenda items & attachments		
			······································
			
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SEPTEMBER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY
31-Aug	Labor Day 1	2	3
	VCOG, Inc.	8:30 AM Executive Committee	
	Offices Closed	meetings (VCOG, Inc. bldg.)	
	7:00 PM DeLand City Commission	7:00 PM Port Orange City Council	7.00 014 0-22 - 03 - 0
	7:00 PM Edgewater City Council 7:00 PM Orange City City Council	7:00 PM O. B. City Commission	7:00 PM DeBary City Council 7:00 PM D. B. City Commission
7	8	9	10
	0		10
		8:30 AM WVCTSP meeting (FHP Office)	
		(FHF Office)	
		4:00 PM School Board (tentative)	
		7:00 PM Orange City City Council	
		7:00 PM South Daytona City Council	
		7:30 PM Holly Hill City Council	
		7:30 PM NSB City Commission	
	7:00 PM Deltona City Commission	7:30 PM Pierson Town Council	7:00 PM D. B. Shores City Council
14	15	16	17
		1:00 PM TCC meeting	
		3:00 PM CAC meeting	
		(VCOG, Inc. bldg.)	
	7:00 PM DeLand City Commission		7:00 PM D. B. City Commission
- · · · · · · · · · · · · · · · · · · ·	7:00 PM Edgewater City Council 7:00 PM Oak Hill City Commission	7:00 PM O. B. City Commission 7:00 PM Port Orange City Council	7:00 PM DeBary City Council 7:00 PM Ponce Inlet Town Council
21	22	23	24
21	44	·	
	·	8:30 AM VCOG meeting 9:00 AM MPO meeting	10:00 AM TDCB meeting
		(VCOG, Inc. bldg.)	(Blind Services Library)
		(VCOG, Mc. blag.)	
		4:00 PM School Board (tentative)	
		7:00 PM South Daytona City Council	
		7:00 PM Port Orange City Council	
		7:00 PM Orange City City Council	
		7:30 PM Holly Hill City Council	8:00 AM Pierson Town Council
		7:30 PM NSB City Commission	7:00 PM D. B. Shores City Council
28	29	30	1-Oct
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1997

THURSDAY	FRIDAY	SATURDAY	***************************************
34	5	6	Things to Do
Mail TCC & CAC agendas	2:00 PM MPO Staff meeting		Documents to be submitted to the
			CTD by September 1, 1997:
			Annual Operating Report
			TD Planning / Trip Equipment Grants
			If annual updates are required:
			TD Service Plan (TDSP)
			Memorandum of Agreement
9:00 AM County Council			Documents to be submitted by 9/15:
7:30 PM Lake Helen City Commission			TD Actual Budget Estimates
11	12	13	
Mail MPO & TDCB agendas	2:00 PM MPO Staff meeting		
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	19	20	
(0)		20	
	2:00 PM MPO Staff meeting 10:00 AM ADA meeting		
		-	
	(Blind Services Library)		
		····	
9:00 AM County Council			
7:30 PM Lake Helen City Commission		· · · · · · · · · · · · · · · · · · ·	
25	26	27	•
8:30-11:30 AM EVCWSP mtg.	2:00 PM MPO Staff meeting	··· · · · · · · · · · · · · · · · ·	
(DB Public Works bldg.)			
	3-0ct	4-0ct	
	2:00 PM MPO Staff meeting		
-			

OCTOBER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY
28-Ѕер	29-Ѕер	30-Ѕер	1
			
			7.00 014 0 0 07 0
			7:00 PM D. B. City Commission 7:00 PM DeBary City Council
5	G	7	
	6		8
	12:00 PM Deadline to submit	8:30 AM Executive Committee	
	TCC, CAC, MPO & TDCB	meetings (VCOG, Inc. bldg.)	
	agenda items & attachments		·
-			· · · · · · · · · · · · · · · · · · ·
	7:00 PM Edgewater City Council		
	7:00 PM Oak Hill City Commission		
	7:00 PM Deltona City Commission	7:00 PM O. B. City Commission	
	7:00 PM DeLand City Commission	7:00 PM Port Orange City Council	7:00 PM D. B. Shores City Council
12	Columbus Day 13	14	15
		8:30 AM WVCTSP meeting	
		(FHP Offices)	
		4:00 DM Sahari Paged (tasketi a)	
		4:00 PM School Board (tentative) 7:00 PM Orange City City Council	
		7:00 PM South Daytona City Council	
		7:30 PM Holly Hill City Council	7:00 PM D. B. City Commission
		7:30 PM NSB City Commission	7:00 PM DeBary City Council
		7:30 PM Pierson Town Council	7:00 PM Ponce Inlet Town Council
19	20	21	22
		1:00 PM TCC meeting	
		3:00 PM CAC meeting	
		(VCOG Inc. bldg.) 1:00 & 3:00 PM US 1	
		Presentation 3	
	7:00 PM DeLand City Commission		
	7:00 PM Edgewater City Council	7:00 PM O. B. City Commission	8:00 AM Pierson Town Council
	7:00 PM Oak Hill City Commission	7:00 PM Port Orange City Council	7:00 PM D. B. Shores City Council
26	27	28	29
		8:30 AM VCOG meeting	10:00 AM TDCB meeting
		9:00 AM MPO meeting	(Blind Services Library)
		(VCOG, Inc. bldg.) 9:00 AM US 1 Presentation 3	
		4:00 PM School Board (tentative)	
		7:00 PM Orange City City Council	
		7:00 PM Port Orange City Council	
		7:00 PM South Daytona City Council	
Daylight Savings Time Fact		7:30 PM Holly Hill City Council	
Daylight Savings Time Ends		7:30 PM NSB City Commission	

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THURSDAY	FRIDAY	SATURDAY	
Rode estetra 2	3	4	Things to Do
	2:00 PM MPO Staff meeting		
	2.55 1 W W C Gran meeting	 	
			
9:00 AM County Council			
7:30 PM Lake Helen City Commission		· · · · · · · · · · · · · · · · · · ·	
9	10	Yom Kippur 11	· · · · · · · · · · · · · · · · · · ·
Mail TCC & CAC agendas	2:00 PM MPO Staff meeting	rom Kippur II	
	2.55 ; M M G Glair friceting		
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表达为2000年的企业的企业。1900年中的企业的企业的企业的企业的企业的企业。	Mr 1	18	
Mail MPO & TDCB agendas	2:00 PM MPO Staff meeting		
			
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
23	24	25	
8:30-11:30 AM EVCWSP mtg.	2:00 PM MPO Staff meeting		
(DB Public Works bldg.)			
			······································
MPOAC meeting			
	Halloween 31		
	2:00 PM MPC 21-#		
	2:00 PM MPO Staff meeting		
			· · · · · · · · · · · · · · · · · · ·
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NOVEMBER

WEDNESDAY	TUESDAY	MONDAY	SUNDAY
29-0	28-0ct	27-0ct	26-0ct
Ę	4	3	2
	8:30 AM Executive Committee	12:00 PM Deadline to submit	```
	meetings (VCOG, Inc. bldg.)	TCC, CAC, MPO & TDCB	
- "		items & attachments	
	· · · · · · · · · · · · · · · · · · ·	7:00 PM Oak Hill City Commission	
		7:00 PM Edgewater City Council	
7:00 PM DeBary City Council	7:00 PM Port Orange City Council	7:00 PM DeLand City Commission	
7:00 PM D. B. City Commission	7:00 PM O. B. City Commission	7:00 PM Deltona City Commission	
12	Veteran's Day 11	10	9
	8:30 AM WVCTSP meeting		
7:00 PM US 1Public Hearing	(FHP Offices)	7:00 PM US 1Public Hearing/	
Wrkshp 2: Central (tentve)		Wrkshp 2: North (tentve)	· · · · · · · · · · · · · · · · · · ·
Trinonp E. Connai (tontro)	4:00 PM School Board (tentative)	remond L. rectal (tentre)	
	7:00 PM Orange City City Council		
	7:30 PM Holly Hill City Council		
	7:30 PM NSB City Commission		
7:00 PM D. B. Shores City Council	7:30 PM Pierson Town Council 7:00 PM South Daytona City Council		
1 S	18	17	16
	1:00 PM TCC meeting		10
	3:00 PM CAC meeting		
	(VCOG, Inc. bldg.)		
7:00 PM Ponce Inlet Town Council	4;00 PM School Board (tentative)	7:00 PM Oak Hill City Commission	
7:00 PM D. B. City Commission	7:00 PM Port Orange City Council	7:00 PM Edgewater City Council	
7:00 PM DeBary City Council	7:00 PM O. B. City Commission	7:00 PM DeLand City Commission	
26	25	24	23
10:00 AM TDCB meeting	8:30 AM VCOG meeting		
(Blind Services Library)	9:00 AM MPO meeting		
	(VCOG, Inc. bldg.)		
·	7:00 PM South Daytona City Council		
	7:00 PM Port Orange City Council		
· · · · · · · · · · · · · · · · · · ·	7:00 PM Orange City City Council		
7:00 PM D. B. Shores City Council	7:00 PM Orange City City Council 7:30 PM NSB City Commission		
7:00 PM D. B. Shores City Council 8:00 AM Pierson Town Council	7:00 PM Orange City City Council 7:30 PM NSB City Commission 7:30 PM Holly Hill City Council		

THURSDAY	FRIDAY	SATURDAY	
30-0ct	31-0ct	1	Things to Do
	2:00 PM MPO Staff meeting		FDOT Presentation on the
			Tentative 5 Year Work
	· · · · · · · · · · · · · · · · · · ·		Program
····			
			····
6	7	8	
Mail TCC & CAC agendas	2:00 PM MPO Staff meeting		
			·
			
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
13	14	15	
Mail TDCB & MPO agendas	2:00 PM MPO Staff meeting		
Wall 1202 G Wil C agericas	2.00 FW WIF O Statt Meeting		
7:00 PM US 1Public Hearing/			
Wrkshp 2: South (tentve)			
			<u> </u>
20	21	22	
8:30-11:30 AM EVCWSP mtg.	10:00 AM ADA meeting		
(DB Public Works bldg.)	(Blind Services Library)		
(======================================	2:00 PM MPO Staff meeting		
9:00 AM County Council			
7:30 PM Lake Helen City Commission			· · · · · · · · · · · · · · · · · · ·
hanksgiving 27	28	29	
		29	
VCOG, Inc. Offices Closed	VCOG, Inc.		
Offices Closed	Offices Closed		
			

METROPOLITAN PLANNING ORGANIZATION

DECEMBER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY
	1	2	3
	12:00 PM Deadline to submit	8:30 AM Executive Committee	
	TCC, CAC, MPQ & TDCB	meetings (VCOG, Inc. bldg.)	* <u></u>
	agenda items & attachments		
	7:00 PM DeLand City Commission		
	7:00 PM Edgewater City Council		
	7:00 PM Oak Hill City Commission	7:00 PM O. B. City Commission	7:00 PM DeBary City Council
	7:00 PM Deltona City Commission	7:00 PM Port Orange City Council	7:00 PM D. B. City Commission
7	8	9	10
 		8:30 AM WVCTSP meeting	
		(FHP Offices)	
		4:00 PM School Board (tentative)	
		7:00 PM Orange City City Council	
		7:00 PM South Daytona City Council	
		7:30 PM Holly Hill City Council	
· · · · · · · · · · · · · · · · · · ·		7:30 PM NSB City Commission 7:30 PM Pierson Town Council	7:00 PM D. B. Shores City Council
14	15	16	17
		1:00 PM TCC meeting	
		3:00 PM CAC meeting	
		(VCOG, Inc. bldg.)	
	7:00 PM DeLand City Commission		7:00 PM D. B. City Commission
	7:00 PM Edgewater City Council	7:00 PM Port Orange City Council	7:00 PM DeBary City Council
	7:00 PM Oak Hill City Commission	7:00 PM O. B. City Commission	7:00 PM Ponce inlet Town Council
21	22		Christmas Eve 24
		8:30 AM VCOG meeting	
		9:00 AM MPO meeting	
		(VCOG, Inc. bldg.)	
		7:00 PM Port Orange City Council	<u> </u>
· · · · · · · · · · · · · · · · · · ·		7:00 PM South Daytona City Council	
		7:00 PM Orange City City Council	
		7:30 PM Holly Hill City Council	8:00 AM Pierson Town Council
	,	7:30 PM NSB City Commission	7:00 PM D. B. Shores City Council
28	29	30	New Year's Eve 31
			10:00 AM TDCB meeting
			(Blind Services Library)

VOLUSIA COUNTY

THURSDAY	FRIDAY	SATURDAY	
4	5	6	Things to Do
Mail TCC & CAC agendas	2:00 PM MPO Staff meeting		Special Note: All meetings
			scheduled in December for the
			MPO & its committees are
			subject to cancellation due to the
			holidays
		·	
9:00 AM County Council 7:30 PM Lake Helen City Commission		 	
	12	13	
Mail MPO agendas	2:00 PM MPO Staff meeting		
Ividit Ivii O ageridas	2.00 I WI WI O Stall meeting		
18	19	20	
		20	
Mail TDCB agendas	2:00 PM MPO Staff meeting		
8:30-11:30 AM EVCWSP mtg.		·	
(DB Public Works bldg.)			
			
	· · · · · · · · · · · · · · · · · · ·		
	· · · · · · · · · · · · · · · · · · ·		
9:00 AM County Council	···		
7:30 PM Lake Helen City Commission			_ ,
On Franciscon 745	26	27	
	20	21	
VCOG, inc.	2:00 PM MPO Staff meeting		
Offices Closed			
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	· · · · · · · · · · · · · · · · · · ·		
			
1-Jan-98	2-Jan-98	3-Jan-98	
New Year's Day	2:00 PM MPO Staff meeting		
VCOG, Inc.			
Offices Closed	· · · · · · · · · · · · · · · · · · ·		
			,

METROPOLITAN PLANNING ORGANIZATION

JANUARY

WEDNESDAY	TUESDAY	MONDAY	SUNDAY
31-Dec-97	30-Dec-97	29-Dec-97	28-Dec-97
10:00 AM TDCB meeting			
(Blind Services Library)			
······································			
New Year's Eve			
7	6	5	4
	8:30 AM Executive Committee	12:00 PM Deadline to submit	
	meetings (VCOG, Inc. bldg.)	TCC, CAC, MPO & TDCB	
		agenda items & attachments	
		7:00 PM DeLand City Commission	
		7:00 PM Edgewater City Council	
7:00 PM D. B. City Commission	7:00 PM O. B. City Commission	7:00 PM Oak Hill City Commission	
7:00 PM DeBary City Council	7:00 PM Port Orange City Council	7:00 PM Deltona City Commission	
14	13	12	11
	8:30 AM WVCTSP meeting		
	(FHP Offices)		
· · · · · · · · · · · · · · · · · · ·			
	7:00 PM Orange City City Council	<u> </u>	
	7:00 PM South Daytona City Council		
V 2 - 2-	7:30 PM Holly Hill City Council		
7:00 PM D. B. Shores City Council	7:30 PM NSB City Commission 7:30 PM Pierson Town Council		<u> </u>
21	20	M.L.K., Jr. Day 19	18
	1:00 PM TCC meeting	VCOG, Inc.	
	3:00 PM CAC meeting	Offices Closed	
	(VCOG, Inc. bldg.)	Ollico Oloca	
7:00 PM D. B. City Commission		7:00 PM DeLand City Commission	
7:00 PM DeBary City Council	7:00 PM O. B. City Commission	7:00 PM Cok Hill City Commission	
7:00 PM Ponce Inlet Town Council	7:00 PM Port Orange City Council	7:00 PM Oak Hill City Commission	
28	27	26	25
10:00 AM TDCB meeting	8:30 AM VCOG meeting		
(Blind Services Library)	9:00 AM MPO meeting (VCOG, Inc. bldg.)		
	7:00 PM Orange City City Council		
	7:00 PM Port Orange City Council 7:00 PM South Daytona City Council		
8:00 AM Pierson Town Council	7:30 PM Holly Hill City Council		
7:00 PM D. B. Shores City Council	7:30 PM NSB City Commission		

VOLUSIA COUNTY

1998

THURSDAY	FRIDAY	SATURDAY	
lew Year's Day 1	2	3	Things to Do
VCOG, Inc.	2:00 PM MPO Staff meeting		TCC & CAC appoint
Offices Closed	¥		subcommittees
			·
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
		40	
(c)	9	10	
Mail TCC & CAC agendas	2:00 PM MPO Staff meeting		
Wall 100 & CAC agendas	2.00 FWI WIFO Staff Theeting		
			
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	· <u>-</u>		
15	16	17	
Mail MPO & TDCB agendas	2:00 PM MPO Staff meeting		<u> </u>
	10:00 AM ADA meeting		
	(Blind Services Library)		
	<u>i</u>		
9:00 AM County Council			
7:30 PM Lake Helen City Commission			
9492	23	24	
	23	24	
3:30-11:30 AM EVCWSP mtg.	2:00 PM MPO Staff meeting		
(DB Public Works bldg.)	~		
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MPOAC meeting	· · · · · · · · · · · · · · · · · · ·		
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29	30	31	
	2:00 PM MPO Staff meeting		
	2.55 Five lyin O Glair meeting		
			
			

METROPOLITAN PLANNING ORGANIZATION

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1	Multimodel Transportation	84	3/17/97	5/9/97	90h			Carriery .						į	!	***************************************
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12	Study Area Cher (3)	8w	5/1/98	6/25/98	72h		ll			ring						
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14	Accident Data (2) Transf. and Use Plans	Sw	11/17/07	12/26/97 3/17/97	350 144h										!	
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21	Relocation Info (2)	144	5/1/98	5/1/98	3h							!		!	!	
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39	Natural (2)	44	11/2/97	11/28/97	59h						;	,	2			
30	Hebret (3)	411	5/1/96	5/28/98	59h						į	<u> </u>	ļ	· 	·	
31	Aerial Photography (1)	12w.	2/17/97	5/9/97	3h 3h	1		and the second	, <u>-</u> ,-			İ	j		:	
32	Aerial Photography (2) Aerial Photography (3)	6w Bwi∶	11/3/97 5/1/98	12/26/97 6/25/98	3h					ning		ļ	<u> </u>	·····	j	
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4	Access Management (1)	Bri j	2/17/97	3/28/97	40h				lenning	·	0			<u> </u>	·	
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4	AR Developme/Courses of Action	3704	4/187	8/28/98	Oh.		1						1			1
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4	Access Mgmt Analysis (1)	8w	5/1/97	6/25/97	40h								1		ì	ŀ
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4	Oranege System Analysis (1)	12w	7/1/97	9/22/97	203h		1				<u> </u>	<u> </u>	ļ	ļ		ļ
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*	Ped Facility Analysis (1)	4 41	6/1/97	6/26/97	180		ļļ				Plenning	<u> </u>	 			·····
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-	Transit Services Analysis (3)	411	7/1/98	7/28/98	40h			!			Jack	!	1	<u> </u>		
e1	Park n Ride Feoil Analysis (1)	· 🔐	8/1/97	9/11/97	25h		·····				1		T			
•	Perk n Rode Fecal Analysis (2)	Ber	12/1/97	1/23/98 -	25					,	1	<u>i</u>		·		
65	Park is Ride Feoil Analysis (3)	4	7/1/98	7/26/98	120						jack .			į		1
64	Multi-Model Connex Analysis (1)	411	8/1/97	8/26/97	8h		1				ļ	<u>.</u>				ļ
=	M.A-Model Connex Analysis (2)	24	7/1/98	7/14/98	67h					J. J.K				į		
-	Transportation Plans Analysis (1)		5/1/97	5/26/97	16h			······					 	<u> </u>		
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-	Land Use Analysis (2)	Bre .	7/1/96	8/25/98	60h						P.	 F igl	†·····			
70	Cultural Features Analysis (1)	6×	9/1/97	10/24/97	65h			1			1		1	1		<u> </u>
7	Cultral Features Analysis (2)	BH .	5/1/58	6/25/98	640		 			H EM8		;	!	7		
73	Hose Analysis (1)	8-4	8/1/97	9/11/97	12h		i				<u>i</u>					ļ
73	Nase Analysis (2)	4,00	87%	8/28/98	126			······································				EMS	<u>L</u>			<u> </u>

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74	Teek Herre Hezerdous Weste Analysis (1)	Duretic Ov	Stort 8/1/97	Finish 8- 9/11/97	esoline Wi	2/2 2/0 2	V 16 2/2	3 3/2 3/9 3/16 3/23	3/30 4/6	7/5 7/12 7/19 7/2	6 8/2 8/9 8/18/8/23	8/30] 8/2 8/13 8/30 8/	October 27 10/4 0/1 0/1 0/2	197 11/8 1/1 1/2	1/2 12/8 2/1 2/2 2/	2 V3 V10 V17 V2
76		4ee	6/3/98	8/28/98	17h	····	ļ		ļ				ļ			
70	1	e	6/1/97	9/11/97	ion			I i	į		2000, 2000	ĖMS ļ	!	ļ		
-		411	8/3/98	8/26/96	12h			ļ	ļ	·····			i			
70	Travel Time Analysis	16w	4/1/97	1/21/97	170h				-516-00		And the state of the			İ		
70	Exst/Future Demand Determin (1)	12w	7/1/07	9/22/97	50h		ļ	ļ			}	 	†			
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61.	LOS Analysis (1)	444	8/1/97	8/28/97	16h	·	·····	i	†		t	 	<u> </u>	·····		
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63	Accident Analysis (1)	16~	5/1/97	6/20/97	100n		·····	†	†·····		t	i	†	!		}
84	Acodert Analysis (2)	Bw	2/1/98	3/26/98	52n		l		l		Ī					
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er	Alternatives Evaluation	321e	9/1/07	11/20/98	Öñ											•
-	Construction Costs	. 8w	9/1/98	10/26/96	46h								Pickers Pickers	nning		
-	ROW Costs	1wr	9/1/98	9/7/98	- in	-			1			Plunning		***************************************		
90	Design Costs	417	9/1/98	9/26/98	20ti			ļ i	<u> </u>]	Name of Street	Plenning			
91	Relocations Estimate	4	9/1/98	9/28/98	161						1		Plenning			
162	Traffic Capacity	12w	6/1/98 -	8/21/98	1325					المراكبين والمراجع والمراجع والمراجع	Pleas	ing JHK				
-	Soc/Eneron Impacts	8**	8/3/98	9/25/98	124h								н			
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#	Main of Traffic	6w	8/3/98	9/25/98	36h		į		'		2-68-5-68-55	CARTERIOR P	errikig			
*	Oevelop Pten Sets (1)	10m	9/1/97	12/19/97	2921				ļ		·	<u> </u>		ļ. 		
97	Develop Plen Sets (2)	16w	8/3/98	11/20/98	292h				:			men and experience of the second		Road	vay	
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1	ROW Refresherts	944 A'			. [ł				determinado	Ro	1				
100	Implementation Plan	Ger 4m	8/3/98 5/1/98	9/25/98 ° 5/28/98	54h				<u>!</u> ,	· · · · · · · · · · · · · · · · · · ·		Reserved Re	andwey	· -		
102	Draft Easting Cond Report	4-	L/T/ST	5/2/97	134n	İ										!
163	Final Existing Cond. Report	411	10/1/97	10/28/97	101h						[
104	Pre-dreft AIS Report	12w.	1/2/98	3/25/98	286h	l	l		ļ .			1				' -
100	Draft AJS Report	8~	7/1/98	8/25/98	254h				<u>Ł</u>			ennina				
106	Finel AIS Report	Ber!	12/1/98	1/11/99	172n		ł		•	ng politika na politika						
107	Erec Summery	4w	12/15/98	1/11/99	131h				·····					***************************************		Plenning Plenning
100		3764	3/3/97	6/7/96	62h	1										ramang ramang
100	Comments/Coordination Report 1	tw.	3/3/97	1/7/97	2in			Plenning	}·····			 				
110	Comments/Coordination Report 2	··· Ivr	8/4/97	8/6/97	210	- 1	ļ		,		}	į				
111	Comments/Coordination Report 3	lm :	2/2/98	2/6/98	20h							ļ				•••••
112	Comments/Coordination Report 4	twe.	8/3/98	8/7/98	20n	- 1					Planning	ļ				
143	STAT Meeting No. 1	1d	3/17/97	3/17/97	20h			Plenning	*******	·······		†·····				
114	STAT Mosting No. 2	14	5/7/97	5/7/07	1911		1	- 1				:	[
118	TCC/CAC Presentation No. 1	1d	5/20/97	5/20/97	36h	·····								•••••		
196	MPO Presentation No. 1	16	5/21/91	9/21/97	291											
	STAT Heating No. 3	1d	6/16/97	6/16/97	19h							 				
	Public Heaning/Widthp No. 1: North	1d .	6/26/97	6/26/97	58h	.]						! !				
110	Public Hearing/Wicing No. 1: Central	14	7/1/97	7/1/97	56h							!				
	Public Hearing/Widthp No. 1: South STAT Meeting No. 4	10	7/2/97	1/2/91	Sen		1					į				
		1d :	7/6/97	7/8/97	19h	1						;				
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	MPO Preservation No. 3	1d	10/28/97	10/28/97	296			ŀ								
	STAT Heeting No. 8	td.	11/3/97	11/3/97	191				<u>.</u> ;.							
	Public Hearing/Midno No 2 North	10 -	11/11/97	11/11/97	56h	1						•	!			
	Public Hearing/Wistip No. 2: Central		101297.	11/12/97	Sen				. بر		ļ	······	<u>i</u>			
	Public Hearing/Wiship No. 2 South	10	11/13/97	11/13/97	56h		1	1			,	,			-	
Ĺ	STAT Meeting No. 7	10	3/10/98	3/10/96	191				·		•••••	•••••••••••••••••••••••••••••••••••••••	ļ <u>-</u>			
	TCC/CAC Presentation No. 4	14	4/21/98	4/21/98	35h	1		<u>i</u>				:				
	MPO Presentation No. 4	1d	4/26/98	4/26/96	281	·····			k.					•••••		,
	ETAT Mosting No. 8	id	5/5/98	5/5/98	19h	- 1	ĺ			1			l			
	Public Hearing/Wilship No. 3: North	id	6/2/98	6/2/98	SSh		····	i					····	••••		
136	Public Hearing/Wiship No. 3: Central	_{1d} .	8/3/98	6/3/98	. 55h	-	1	i i		i		. i				
197	Public Henng/Wight No. 3: South	. 1d .	6/4/98	6/4/98	55h	······································	•	i					·			
- t	STAT Meeting No. 9	1d	9/22/98	9/22/98	19h	ļ	İ					⊕Flan	ung .			
139	CC/CAC Presentation No. 5	10	10/20/98	10/20/98	35h	··········· ·	••••	-	•••••				⊕ Plannin			
140	PO Presentation No. 5	1d	10/27/98	10/27/98	28n	-	!	:				ļ	⊕™	,		
,141 F	Public Hearing/Wishp No. 4. North	10	11/3/95	11/3/98	55h			·····			•••••••		· · · · · · · · · · · · · · · · · · ·			
142	Note Heaning/Wishp No. 4. Central	10	11/4/98	11/4/98	SSh		-	:				1		♦ /4		
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144 5	TAT Weeing No. 10	10	12/1/98	12/1/98	190					!		į		·	Planning	
146	CC/CAC Presentation No. 6	14	1/19/99	1/19/99	35h		•••••						•••••••••••••••••••••••••••••••••••••••		ī	⊕ Plenti
146	IPO Presentation No. 6	10	1/26/99	1/26/99	28h	1				:						⊕r
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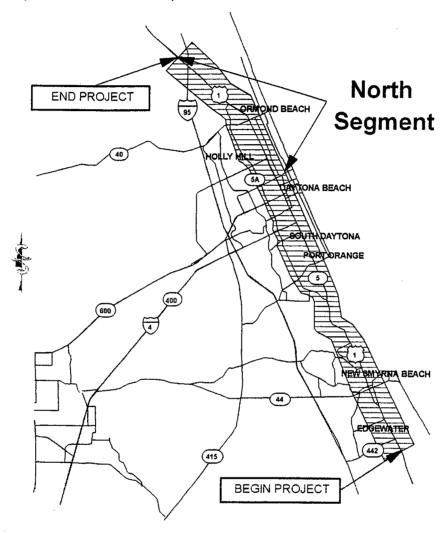
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ATTACHMENT PIP - 2 EXAMPLE PUBLIC WORKSHOP ADVERTISEMENT/NOTIFICATION

FIGURE 5.1 NOTICE OF PUBLIC MEETING

U.S. 1 Arterial Investment Study in Volusia County, Florida

The Florida Department of Transportation and Volusia Metropolitan Planning Organization has scheduled a Public Workshop to discuss transportation improvement alternatives for the U.S. 1 study area as defined in the map below.



Date:

June 26, 1997

Time: Place:

7:00 PM

Purpose:

Holly Hill City Hall, 1065 Ridgewood Avenue

A brief presentation will be made to acquaint the public with the study's goals and objectives, present preliminary data collection results, review

goals and objectives, present preliminary data collection results, review local traffic concerns and discuss initial alternatives. There will be time available for the public to provide both written comments and to talk about

specific transportation concerns with the project team.

Contact:

For further information, contact the US 1Hotline at 123-4567, or write to U.S. 1

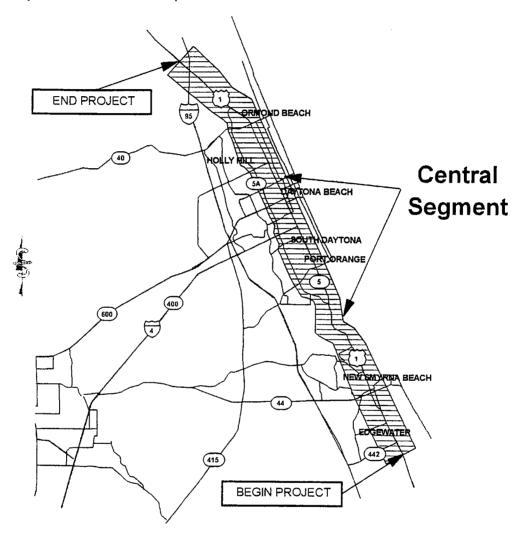
Arterial Investment Study, c/o Herbert Halback, Inc., 315 East Robinson Street

Suite 500, Orlando, Florida 32801.

FIGURE 5.2 NOTICE OF PUBLIC MEETING

U.S. 1 Arterial Investment Study in Volusia County, Florida

The Florida Department of Transportation and Volusia Metropolitan Planning Organization has scheduled a Public Workshop to discuss transportation improvement alternatives for the U.S. 1 study area as defined in the map below.



Date:

July 1, 1997

Time:

7:00 PM

Place:

South Daytona City Hall, 1672 S. Ridgewood Avenue

Purpose:

A brief presentation will be made to acquaint the public with the study's goals and objectives, present preliminary data collection results, review local traffic concerns and discuss initial alternatives. There will be time available for the public to provide both written comments and to talk about

specific transportation concerns with the project team.

Contact:

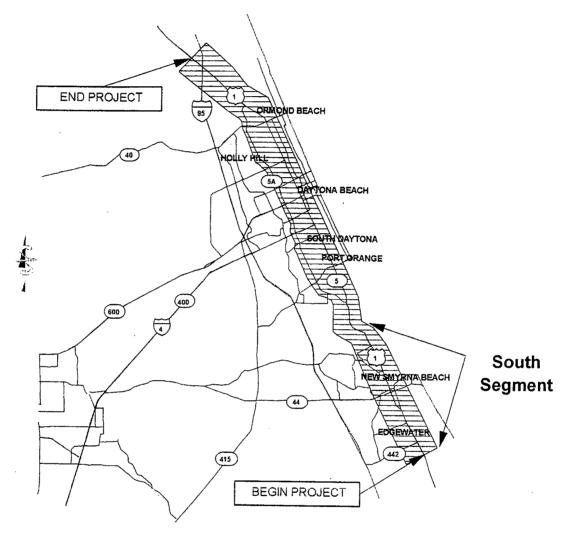
For further information, contact the US 1Hotline at 123-4567, or write to U.S. 1 Arterial Investment Study, c/o Herbert Halback, Inc., 315 East Robinson Street

Suite 500, Orlando, Florida 32801.

FIGURE 5.3 NOTICE OF PUBLIC MEETING

U.S. 1 Arterial Investment Study in Volusia County, Florida

The Florida Department of Transportation and Volusia Metropolitan Planning Organization has scheduled a Public Workshop to discuss transportation improvement alternatives for the U.S. 1 study area as defined in the map below.



Date:

July 2, 1997

Time:

7:00 PM

Place:

New Smyrna Beach City Hall, 210 Sams Avenue

Purpose: A brief presentation will be made to acquaint the public with the study's

goals and objectives, present preliminary data collection results, review local traffic concerns and discuss initial alternatives. There will be time available for the public to provide both written comments and to talk about

specific transportation concerns with the project team.

Contact:

For further information, contact the US 1 Hotline at 123-4567, or write to U.S. 1 Arterial Investment Study, c/o Herbert Halback, Inc., 315 East Robinson Street

Suite 500, Orlando, Florida 32801.



To:

Gregg Caro - Florida Department of Transportation - District 5

From:

Andy Lauzier - Project Manager

Reference:

S.R. 5 (U.S. 1) Arterial Investment Study

S.P.N.:

79000-1504 W.P.I. No.: 5119374

F.A.P. No.: XU-485-7(24)

Revised Public Involvement Approach

Date:

May 26, 1998

Revised June 3, 1998

The purpose of this memorandum is to document the planned changes in the Public Involvement Approach for the above referenced project.

Background

The U.S. 1 Arterial investment Study (AIS) was initiated in February 1997. An integral part of the study process is to work with the Study Technical Advisory Team (STAT), local business owners, the general public, and other interested parties to obtain input on the development and evaluation of alternatives. In March 1997, the Study Team published the Public Involvement Plan which outlined the approach to Public Involvement during this 24-month study. The main vehicle for interacting with the general public is the use of a series of Public Open Houses at key points in the study process. Due to the overall length of the study corridor, these workshops are to be conducted in three (3) geographic areas: North, Central, and South sections of the study corridor.

The first round of Public Open Houses was held in September 1997 and the second round in February 1998. Subsequent to the second round of Open Houses, the Study Team evaluated the effectiveness of the Open House format and decided that a modified approach should be considered, as the turnout at the Open Houses was somewhat limited.

The following is a summary of this modified approach.

Proposed Modifications to the Public Involvement Plan

Public Meetings

In lieu of a third round of Open Houses, the Study Team will conduct twelve (12) individual meetings and one (1) general Public Open House at a centralized location within the Study Corridor. These meetings/presentations and their planned dates are as follows:

	Date	Time
City of Edgewater	Monday, July 20, 1998	7:00 p.m.
Volusia County Council	Thursday, July 23, 1998	9:00 a.m.
City of New Smyrna Beach	Tuesday, July 28, 1998	7:30 p.m.
City of Port Orange	Tuesday, August 4, 1998	7:00 p.m.
City of South Daytona	Tuesday, August 11, 1998	7:00 p.m.
City of Ormond Beach	Tuesday, August 18, 1998	7:00 p.m.
City of Daytona Beach	Wednesday, August 19, 1998	7:00 p.m.
City of Holly Hill	Tuesday, August 25, 1998	7:30 p.m.
Public Open House	Tuesday, September 8, 1998 (Riverside Pavilion)	4:00 p.m 7:00 p.m.

The study team also will attempt to conduct meetings during July or August 1998 with four (4) Chambers of Commerce: New Smyrna Beach, Port Orange-South Daytona, Greater Daytona Beach, and Ormond Beach. These Chamber of Commerce meetings have not yet been scheduled.

At each of the above listed meetings, the study team will be represented by the Project Manager, one other Technical Team member (from TEI), and a Public Involvement Specialist (from HHI or PFA). The study team will also meet with the STAT prior to initiating these individual meetings to inform STAT members of the general items of discussion and to update them on the study progress at that time. This STAT Meeting #6, will be held on Friday, July 10, 1998.

Mailing List and Meeting Notifications

Since the inception of this study in February 1997, a mailing list has been developed to include interested parties who have indicated, through one of several sources, their desire to be kept informed of the Study progress and meetings. This mailing list is currently comprised of approximately 2,400 mail recipients. During July/August 1998, the Study Team is recommending that rather than produce a full-color newsletter, a postcard type announcement for the September Open House be sent to the current mailing list and to all property owners within 300 feet of U.S. 1. By substituting the postcard announcement for a newsletter, a significant number of interested parties can be contacted at no extra cost to the Project.

Press Releases and Newspaper Announcements for the September Open House will be run in accordance with the original Public Involvement Plan.

At this time, the Study Team is recommending that these changes be implemented and, dependent on the success of this approach, it may be further expanded into the later stages of the project (i.e., Final Open House).

Impacts to the Project Scope of Services/Fee

It is the opinion of the Study Team that these proposed changes are within the generalized guidelines of the Scope of Services and, as such, do not require a formal Contract Amendment. No additional fee is required for this revised approach. However, re-allocation of funds between TEI (the Prime Consultant) and the Subconsultants may be required. This would not require a formal Contract Amendment to TEI's contract with the Department.

END OF MEMORANDUM

Distribution:

Jim Martin - FDOT; Mike Niedhart-VCMPO; Ginger Coreless - HHI; Ron Grunwald - PFA; Cliff Tate - Transcore; Tom Roberts - EMS; Marion Skilling - MSA; STAT Members; File 96102; Reading



MEMORANDUM

To:

Gregg Caro - Florida Department of Transportation - District 5

From:

Andy Lauzier - Project Manager

Reference:

S.R. 5 (U.S. 1) Transportation Study

S.P.N.: 79000-1504 W.P.I. No.: 5119374 F.A.P. No.: XU-485-7(24)

Public Involvement Plan (Revision No. 2)

Date:

October 16, 1998/ Revised November 3, 1998

The purpose of this memorandum is to document the planned changes in the Public Involvement Plan (PIP) for the above referenced project.

Background

The previous Revision (June 3, 1998) to the PIP included the elimination of the third round of Open Houses. These Open Houses were replaced by twelve (12) individual meetings and one (1) general Public Open House. These meetings and General Open House were conducted by the end of September, 1998. This second Revision to the PIP adds two (2) additional rounds of individual meetings and eliminates Open House Number 4.

The following is a summary of this modified approach.

Proposed Modifications to the Public Involvement Plan

Public Meetings

In lieu of a fourth round of Open Houses, the Study Team will conduct two (2) rounds of eight (8) individual meetings/presentations within the Study Corridor. One of these rounds of individual meetings/presentations was already part of the PIP and is scheduled for January/February 1999. At this round, the Project Team will present the Alternatives, evaluation thereof, and preliminary rankings. The second round is planned for March/April 1999. At the second round the Study Team will present final recommendations and solicit resolutions from

each City/County Council. At these meetings/presentations, the study team will be represented by the Project Manager and one other Technical Team member (from TEI). The planned locations and dates are shown below:

	Rou	ınd 1	Round 2 (A	Addt'l. Date)
City	Date	Time	Date	Time
City of New Smyrna Beach	1/26/98	7:30 p.m.	TBD	7:30 p.m.
City of South Daytona	1/12/98	7:00 p.m.	TBD	7:00 p.m.
City of Edgewater	1/18/99	7:00 p.m.	TBD	7:00 p.m.
City of Port Orange	1/19/99	7:00 p.m.	TBD	7:00 p.m.
City of Ormond Beach	1/19/99**	7:00 p.m.	TBD	7:00 p.m.
City of Daytona Beach	1/20/99	7:00 p.m.	TBD	7:00 p.m.
Volusia County Council	1/21/99	9:00 a.m.	TBD	9:00 a.m.
City of Holly Hill	1/12/99	7:30 p.m.	TBD	7:30 p.m.

^{**} Ormond Beach has requested that no further presentations be made. However, this date will be held for scheduling purposes.

Meetings with City/County Managers

During February 1999 (between the January and March meetings), meetings with City/County Managers will be conducted. The purpose of these meetings will be to discuss the Study Team's recommendations and provide any additional input to these key staff from each municipality. These meetings will be attended by TEI's Project Manager and one Technical Staff Member (from TEI) as well as representatives from FDOT and VCMPO.

Presentations to the STAT members and the VCMPO

It is anticipated that the following STAT and VCMPO meetings will be held:

<u>January 8, 1999</u> - TEI will make a presentation to the STAT which will outline the upcoming City/County meetings.

<u>January 19, 1999</u> - VCMPO staff and FDOT will provide the TCC/CAC committees an update on the study progress.

<u>January 26, 1999</u> - VCMPO staff and FDOT will provide VCMPO with an update on the study progress.

April 1999 - TEI will present the Final Study findings and recommendations to the TCC/CAC and VCMPO.

Mailing List, Newsletters and Meeting Notifications

The following Public Notification activities are anticipated for the remainder of the project.

November 4, 1998 - TEI's Project Manager will send out a letter to each attendee from the September Open House. This letter will outline the remaining Presentations, etc. for the study. The letter will also contain a general description of the Alternatives and the Survey results from the Open House.

November 4, 1998 - TEI will update the Web-page by providing some information regarding the results of Open House Number 3 and listing the upcoming City/County meetings. This information will be similar to that outlined above for the letter to the Open House Attendees.

<u>Late December 1998</u> - A Newsletter will be distributed to the mailing list. Additionally, Press Releases, etc. will be distributed announcing the upcoming City/County meetings. Based upon the meeting schedule and accounting for Holidays, etc. this Newsletter will be mailed on December 28, 1998.

<u>Late February/Early March 1999</u> - A Post-Card Announcement will be distributed to the mailing list announcing the Final Round of City/County Meetings. Included on this Postcard will be information regarding the Recommendations and the fact that the VCMPO will take action on these recommendations. Additionally, Press Releases, etc. will be distributed announcing the upcoming City/County meetings.

April 1999 - At FDOT's discretion a Display Ad will be prepared announcing the April MPO meeting and noting that the US 1 Transportation Study recommendations will be addressed during this meeting. If the Display Ad is run FDOT will pay for the publication costs.

May 1999 - A Final Newsletter will be prepared. This Newsletter will be in color and provide a summary of the Study Findings. This newsletter will be distributed to the mailing list. Additional copies will also be provided to VCMPO for further distribution, as needed.

Impacts to Project Schedule

Based upon this revised approach, the Final Report and Executive Summary for this project will not be completed until May 1999.

END OF MEMORANDUM

Distribution: Jim Martin - FDOT; Mike Neidhart-VCMPO; Ginger Coreless - HHI; Ron Grunwald - PFA; Whit Blanton - SAIC; Tom Roberts - EMS; 96102; Reading

APPENDIX C **Detail Intersection Improvement** and Detail Lane Mile **Cost Estimate Calculations**

Intersection and Lane Mile Cost Estimates

Order-of-magnitude construction costs were developed for the purposes of comparing each of the six (6) alternatives. The construction costs are not intended to represent actual construction costs, but are representations only and should not be used for budgeting purposes. Construction costs were developed for the 4-lane to 6-lane roadway widening, replacement of existing traffic signals to accommodate the roadway widening, and for the addition of turn lanes. The development of each of the unit costs are described below:

- The widening costs were developed using FDOT's Long Range Estimating (LRE) system and were calculated on an average per mile basis. The costs included normal roadway and drainage construction activities.
- Two (2) intersection signal replacement costs were developed. The first cost was for upgrading an existing intersection signal in areas where US 1 would not be widened but the intersection would being improved (i.e., additional turn lanes). The second cost was to upgrade existing signals in areas where US 1 would be widened from 4 to 6 lanes. These two cost estimates were needed to calculate the cost for each of the six (6) alternatives developed and then to evaluate each alternative. The cost for a signal replacement at a 4-lane intersection is approximately \$51,000, whereas the cost for a signal replacement at a 6-lane intersection is approximately \$72,000.
- The unit costs per turn lane included the cost of pavement and drainage improvements. The unit cost is applicable to both right and left turn lanes.

Long Range Estimates (LRE) Sequence numbers refer to particular roadway segments of the US 1 corridor. The corridor has been broken into four (4) basic segments. LRE sequence numbers 1-4 represent Typical Roadway Section A, which would require the acquisition of additional mainline right-of-way. LRE sequence numbers 5-8 represent Typical Roadway Section B, which would not require the acquisition of additional mainline right-of-way. The LRE sequence numbers definition are listed below:

LRE Sequence #	From	То
1	SR 421 (Dunlawton Avenue)	SR 400 (Bellville Road)
2	SR 400 (Bellville Road)	SR 430 (Mason Avenue)
3	SR 430 (Mason Avenue)	SR 40 (Granada Boulevard)
4	SR 442 (Indian River Boulevard)	Turnbull Bay Road
5	SR 421 (Dunlawton Avenue)	SR 400 (Bellville Road)
6	SR 400 (Bellville Road)	SR 430 (Mason Avenue)
7	SR 430 (Mason Avenue)	SR 40 (Granada Boulevard)
8	SR 442 (Indian River Boulevard)	Turnbull Bay Road

Table 1 represents Alternative Cost Estimates for widening various segments of the US 1 corridor from four (4) lanes to six (6) lanes. Table 2 illustrates the total improvement costs of each alternative, which included roadway widening and/or intersection improvement costs.

TABLE 1

US 1 TRANSPORTATION STUDY ALTERNATIVE COST ESTIMATES

LRE Sequence#	Typical Section	Project Length (km)	Median Width (m)	Lane Width One Side - (m)	Sod Width One Side (m)	R/W One Side (m)	Cost (\$)
1	A	4.929	6.706	10.973	1.219	18.898	\$7,489,308
2	A	5.251	6.706	10.973	1.219	18.898	\$7,978,567
3	A	6.946	6.706	10.973	1.219	18.898	\$10,554,021
4	A	8.615	6.706	10.973	1.219	18.898	\$13,089,963
5	В	4.929	4.724	10.058	0.686	15.24	\$7,179,879
6	В	5.251	4.724	10.058	0.686	15.24	\$7,648,928
7	В	6.946	4.724	10.058	0.686	15.24	\$10,117,996
8	В	8.615	4.724	10.058	0.686	15.24	\$12,549,133
New Right/Le	ft		- 'Yy 1				\$30,600
4-Lane Signal				 		_	\$51,000
6-Lane Signal	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		<u></u>			\$72,000

TABLE 2

INTERSECTION AND 6-LANE IMPROVEMENT COSTS BY ALTERNATIVE US 1 TRANSPORTATION STUDY

\$2,371,524 \$2,223,936 \$2,223,936 \$1,950,324 \$1,950,324 \$1,858,671 \$1,858,671 \$1,858,671 \$1,858,671 \$1,837,780	LRE Sequence No.	Total Lane Costs	No of New or Add, Lt or Rt Turn Lanes	No. of 4-Lane Signalized Intersections	No. of 6-Lane Signalized Intersections	Intersection Improvement Costs	Maintenance of Traffic (MOT) (8%)	Mobilization (4%) Total Intersection Cost	Total Improvement Costs
\$0 \$2,111,400 \$2,280,312 \$2,371,524 \$798,567 40 12 2 \$1,980,000 \$2,138,400 \$2,223,936 \$7,648,928 40 12 2 \$1,980,000 \$2,138,400 \$2,223,936 \$15,467,875 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$14,828,807 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$26,021,896 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$1,858,671 \$39,111,860 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780 \$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780		80	N/A	N/A	N/A	\$0	0\$	83	\$0
\$798,567 40 12 2 \$1,980,000 \$2,138,400 \$2,223,936 \$7,648,928 40 12 2 \$1,980,000 \$2,138,400 \$2,223,936 \$15.467.875 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$14,828,807 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$26,021,896 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$ \$39,111,860 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780 \$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780	_	80	44	15	0	\$2,111,400	\$2,280,312	\$2,371,524	\$2,371,524
\$7,648,928 40 12 2 \$1,980,000 \$2,138,400 \$2,223,936 \$15.467.875 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$14,828,807 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$26,021,896 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$ \$24,946,773 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$ \$39,111,860 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780 \$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780		\$798,567	40	12	2	\$1,980,000	\$2,138,400	\$2,223,936	\$10,202,503
\$15.467.875 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$14,828,807 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$26,021,896 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$ \$24,946,773 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$ \$39,111,860 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780 \$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780		\$7,648,928	40	12	2	\$1,980,000	\$2,138,400	\$2,223,936	\$9,872,864
\$14,828,807 34 8 4 \$1,736,400 \$1,875,312 \$1,950,324 \$26,021,896 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$ \$24,946,773 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$ \$39,111,860 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780 \$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780	-2	\$15.467.875	34	8	4	\$1,736,400	\$1,875,312	\$1,950,324	\$17,418,200
\$26,021,896 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$ \$24,946,773 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$39,111,860 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780 \$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780	9	\$14,828,807	34	8	4	\$1,736,400	\$1,875,312	\$1,950,324	\$16,779,131
\$24,946,773 33 7 4 \$1654,800 \$1,787,184 \$1,858,671 \$39,111,860 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780 \$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780	+3	\$26,021,896	33	7	4	\$1654,800	\$1,787,184	\$1,858,671	\$27,880,568
\$39,111,860 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780 \$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780	1+7	\$24,946,773	33	7	4	\$1654,800	\$1,787,184	\$1,858,671	\$26,805,445
\$37,495,906 32 3 7 \$1,636,200 \$1,767,096 \$1,837,780	3+4	-	32	3	7	\$1,636,200	\$1,767,096	\$1,837,780	\$40,949,640
	7+8	-	32	3	7	\$1,636,200	\$1,767,096	\$1,837,780	\$39,333,686

Typical Section "A" Requires 124'

Typical Section "B" Requires 100'

Right and Left Turn Lanes are 300' length with 150' Tapers

APPENDIX D **Alternatives Analysis Technical Memorandum**



TECHNICAL MEMORANDUM

To:

From:

Reference:

Andy Lauzier - Project Manager Wall Lauzier
S.R. 5 (U.S. 1) Trans-

S.P.N.:

79000-1504

W.P.I. No.: 5119374 F.A.P. No.: XU-485-7(24)

Alternative Analysis Documentation

Date:

December 1, 1998

Introduction

The purpose of this Technical Memorandum is to provide an overview of the process and results of the Alternatives Analysis performed for the US 1 Transportation Study. This memorandum contains the following:

- Maps and Fact Sheets for each Alternative (Attachment Number 1)
- Explanation of the six (6) Performance Measure categories (Attachment Number 2)
- Explanation of Multi-modal Improvements
- Summary Matrix which provides an Overall Assessment
- Detailed Matrices addressing all Performance Measures (Attachment Number 3)

Description of Alternatives

Attachment Number 1 contains maps and fact sheets for each of the six (6) alternatives.

Assessment of Alternatives

In order to establish a ranking of the various alternatives and ultimately develop detailed recommendations for the US 1 corridor, the Study Team has developed detailed matrices which evaluate each Alternative based upon established Performance Measures. Attachment Number 2 provides a summary of this analysis with an explanation of the Performance Measures and Multimodal improvements, along with a Overall Assessment Matrix which provides generalized rankings of the Alternatives. The Overall Matrix is then followed by detailed Matrices (see Attachment Number 3) which illustrate the specific numerical values used to evaluate individual Performance Measures for each alternative.

Results/Conclusions

As shown in the Overall Matrix and also on the Alternative Maps and Fact Sheets, the Alternatives have been ranked, based upon our assessment, as follows:

•	First - Alternative 2	-	Transportation Systems Management (TSM - i.e. Intersection Improvements), Multi-Modal Emphasis
•	Second - Alternative 3B	-	Six-laning (within existing R/W) from Beville Road to Mason Avenue along with Intersection Improvements
•	Third - Alternative 3A	-	Six-laning (with mainline R/W acquisition) from Beville Road to Mason Avenue along with Intersection Improvements
•	Fourth - Alternative 4B	-	Six-laning (within existing R/W) from Dunlawton Avenue to Mason Avenue along with Intersection Improvements
•	Fifth (tie) - Alternative 4A	-	Six-laning (with mainline R/W acquisition) from Dunlawton Avenue to Mason Avenue along with Intersection Improvements
	- Alternative 1	-	Do nothing (No-Build)
•	Sixth - Alternative 5B	-	Six-laning (within existing R/W) from Dunlawton Avenue to Granada Boulevard along with Intersection Improvements
•	Seventh - Alternative 5A	-	Six-laning (with mainline R/W acquisition) from Dunlawton Avenue to Granada Boulevard along with Intersection Improvements
•	Eighth - Alternative 6B	-	Six-laning (within existing R/W) from Dunlawton Avenue to Granada Boulevard and SR 442 to Turnbull Bay

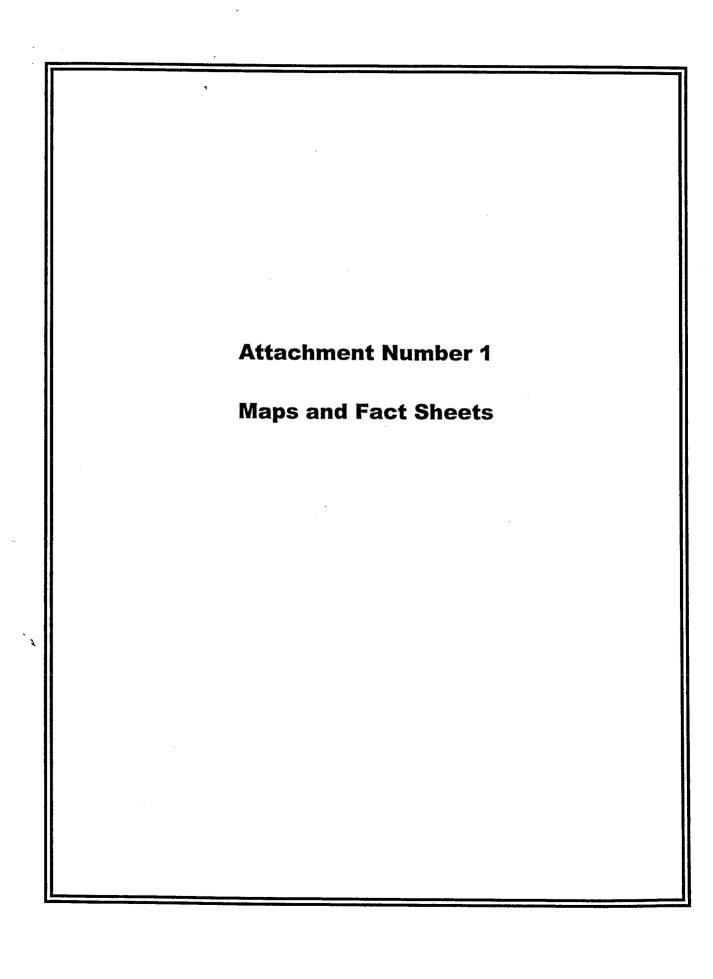
Ninth - Alternative 6A
 Six-laning (with mainline R/W acquisition) from
Dunlawton Avenue to Granada Boulevard and SR 442 to
Turnbull Bay Road along with Intersection Improvements

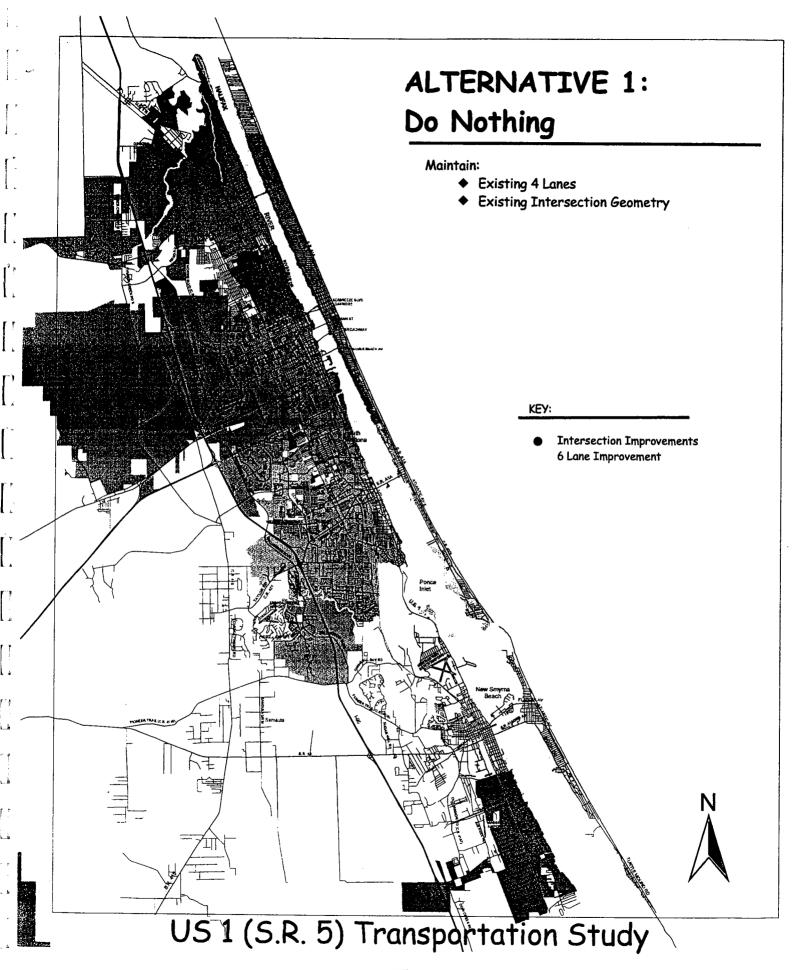
Road along with Intersection Improvements

The Study Team will be presenting these results and our preliminary recommendations to the local Municipalities and Volusia County at Council/Commission meetings in January 1999. After we have made these presentations and discussed this with FDOT and VCMPO staff the final study recommendations will be developed and presented.

END OF TECHNICAL MEMORANDUM

Distribution: Gregg Caro - FDOT, John Zielinski - FDOT; Mike Neidhart - VCMPO; Richard Ranck, Kent Black, Dave Bredahl, - TEI; 96102; Reading



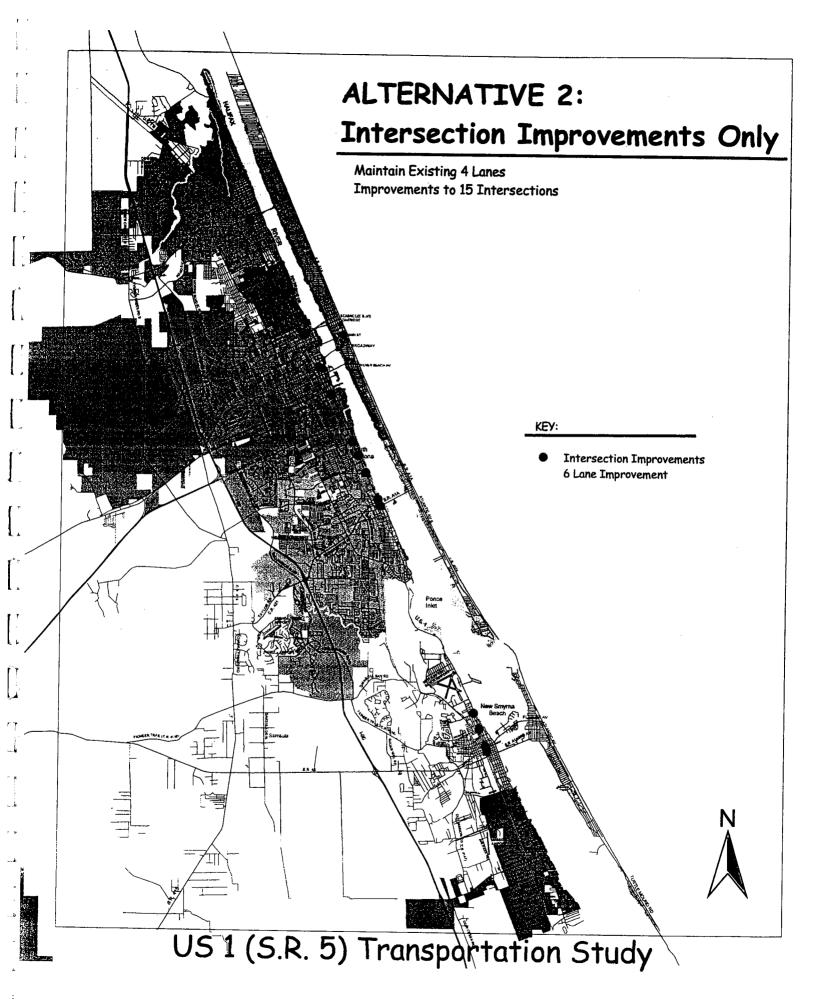


ALTERNATIVE 1: Do Nothing

Fifth (5) Tie

RANKING

ALTERNATIVE DEFINITION	
Roadway	
Maintain Existing 4 Lanes	
Intersections	
Maintain Existing Intersection Geometry	
Multi-Modal ,	
Maintain Existing Bus Routes and Service	
PERFORANCE MEASURES EVALUATION	
Costs (Right-of-Way not included)	
Roadway & Intersection Construction Costs	\$0 Million
Bicycle & Pedestrian Construction Costs	\$0 Million
Transit Improvements Costs	\$0 Million
Improvements Costs	\$0 Million
Additional Annual Transit Operating Cost	\$0 Million
Economic Impact	·
Residential Parcels	0
Business Parcels	0
Total Parcels	0



Intersection Improvements Only **ALTERNATIVE 2:**

ALTERNATIVE DEFINITION

Roadway

Maintain Existing 4 lanes

Intersections

Improvements to 15 Intersections:

US 1 at

Park Avenue

SR 44 (Canal Street)

Washington Street

Wayne Avenue

Turnbull Bay Boulevard

Dunlawton Avenue

Herbert Street

Reed Canal Road

Ridge Road

Big Tree Road

Believue Avenue

5R 600 (US 92)

SR 430 (Mason Avenue)

LPGA Boulevard

SR 40 (Granada Boulevard)

Multi-Modal

High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles

- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- ♦ High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 5 Enhanced Multi-Modal Transfer Centers

PERFORMANCE MEASURES EVALUATION

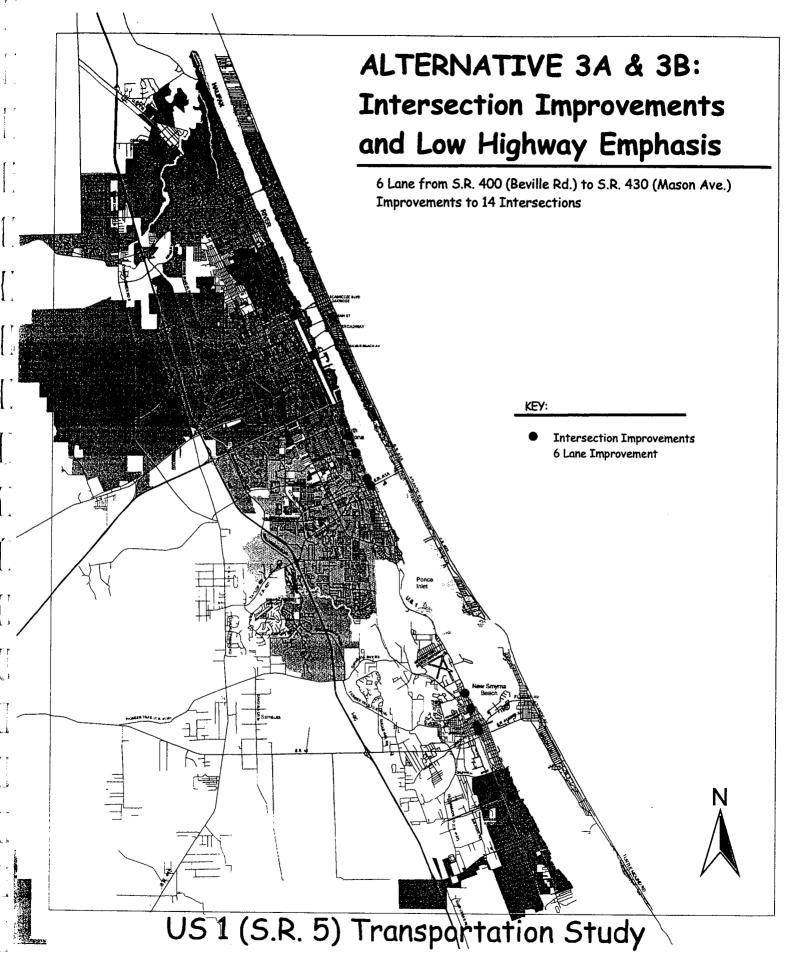
Costs (Right-of-Way not included)

Roadway & Intersection Construction Costs	\$ 2.4 Million
Bicycle and Pedestrian Construction Costs	\$ 14.4 Million
Transit Improvement Costs	\$ 11.9 Million
Improvement Costs	\$ 28.7 Million
Additional Annual Transit Operating Costs	\$ 51 Million

Econom

mic Impact	
Residential Parcels	32
Business Parcels	88
Total Parcels	120

RANKING First (1)



ALTERNATIVE 3A:

Intersection Improvements and Low Highway Emphasis with Additional Right-of-Way

ALTERNATIVE DEFINITION

Roadway

Capacity Improvements: 6 Lane from SR 400 (Bellville Road) to SR 430 (Mason Avenue)

Intersections

Improvements to 14 Intersections:

US 1 at:

Park Avenue Reed Canal Road
SR 44 (Canal Street) Ridge Boulevard
Washington Street Big Tree Road
Wayne Avenue Orange Avenue

Turnbull Bay Boulevard SR 430 (Mason Avenue)

Dunlawton Avenue LPGA Boulevard

Herbert Street

SR 40 (Granada Boulevard)

Multi-Modal

- High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles
- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 5 Enhanced Multi-Modal Transfer Centers

PERFORANCE MEASURES EVALUATION

Costs (Right-of-Way not included)
Roadway & Intersection Construction Costs
Bicycle & Pedestrian Construction Costs
Transit Improvement Costs
Improvement Costs
Additional Annual Transit Operating Costs

Economic Impact

\$ 10.2 Million
\$ 14.4 Million
\$ 11.9 Million
\$ 36.5 Million
\$ 5.1 Million

Residential Parcels 148
Business Parcels 182
Total Parcels 330

RANKING Third (3)

ALTERNATIVE 3B: 1

Interesction Improvements and Low Highway Emphasis within Existing Right-of-Way

ALTERNATIVE DEFINITION

Roadway

Capacity Improvements: 6 Lane from SR 400 (Bellville Road) to SR 430 (Mason Avenue)

Intersections

Improvements to 14 Intersections:

US 1 at:

Park Avenue
Reed Canal Road
SR 44 (Canal Street)
Ridge Boulevard
Washington Street
Big Tree Road
Wayne Avenue
Orange Avenue

Turnbull Bay Boulevard SR 430 (Mason Avenue)

Dunlawton Avenue LPGA Boulevard

Herbert Street SR 40 (Granada Boulevard)

Multi-Modal

- High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles
- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalks, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 5 Enhanced Multi-Modal Transfer Centers.

PERFORANCE MEASURES EVALUATION

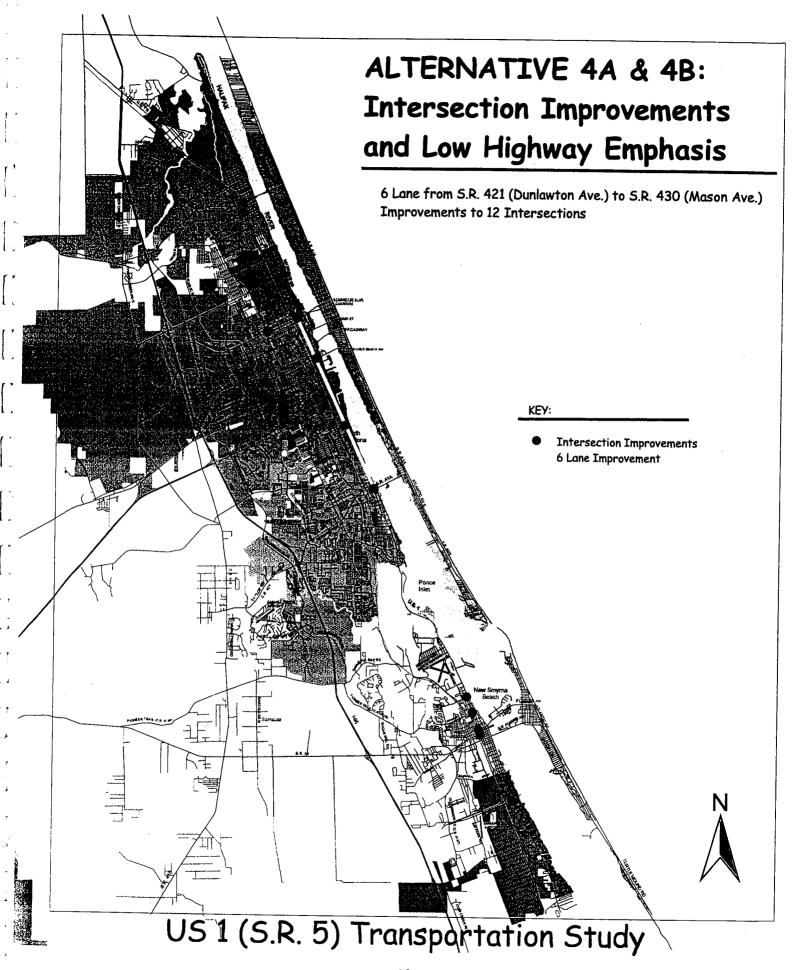
Costs (Right-of-Way not included)

Roadway & Intersection Construction Costs	\$ 9.9 Million
Bicycle & Pedestrian Construction Costs	\$ 14.4 Million
Transit Improvement Costs	\$ 11.9 Million
Improvement Costs	\$ 36.2 Million
Additional Annual Transit Operating Costs	\$ 5.1 Million

Economic Impact

p	
Residential Parcels	32
Business Parcels	88
Total Parcels	120

RANKING Second (2)



ALTERNATIVE 4A: Intersection Improvements

and Low Highway Emphasis

with Additional Right-of-Way

ALTERNATIVE DEFINITION

Roadway

Capacity Improvements: 6 Lane from SR 421 (Dunlawton Avenue) to SR 430 (Mason Avenue)

Intersections

Improvements to 12 Intersections:

US 1 at:

Park Avenue

SR 44 (Canal Street)

Washington Street

Wayne Avenue

Turnbull Bay Boulevard

Dunlawton Avenue

Big Tree Road

Orange Avenue

SR 430 (Mason Avenue)

LPGA Boulevard

SR 40 (Granada Boulevard)

Nova Road (SR 5A) at:

SR 430 (Mason Avenue)

Multi Modal

- → High Emphasis on Bus Service with Increased Route Coverage, Longer Service Hours, New Express Bus Service, and 21 New Vehicles
- High Emphasis on Bicycle Facility Improvements including 3.3 miles of New Bicycle Lanes, 86 miles of Multi-Use Trails, 1 New Multi-Use Bridge, and 35 New Major Crossing Treatments
- High Emphasis on Pedestrian Facility Improvements including 23 miles of New Sidewalk, 35 New Major Crossing Treatments, 2 New Pedestrian Overpasses, and 5 Enhanced Multi-Modal Transfer Centers

PERFORANCE MEASURES EVALUATION

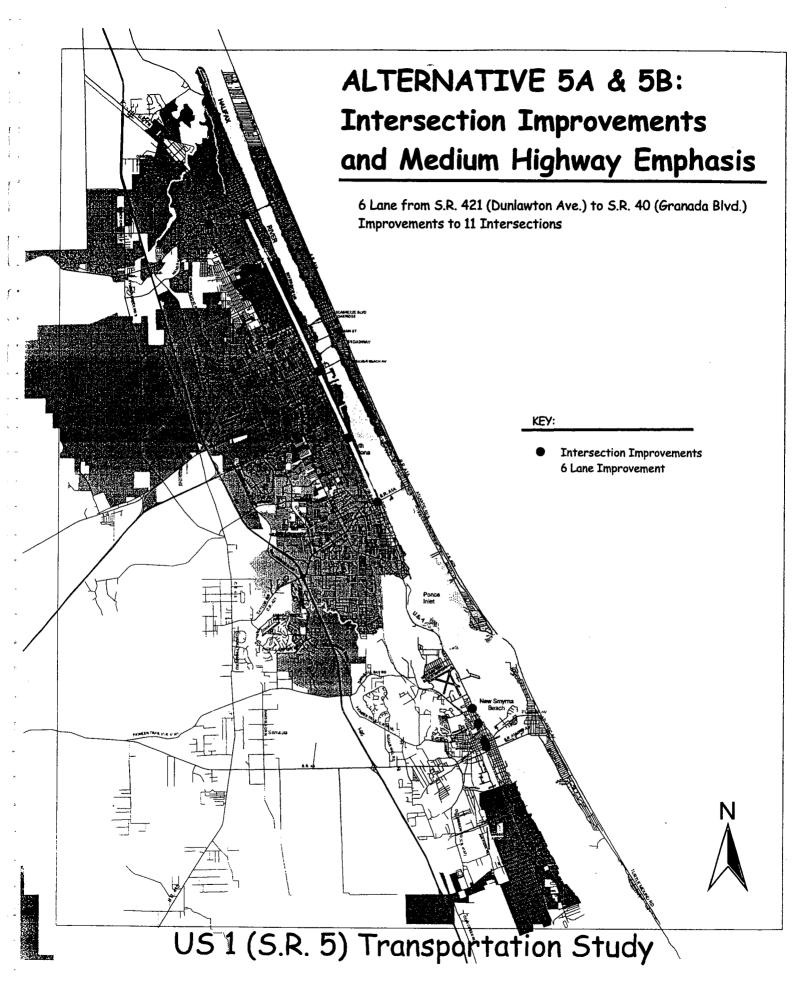
Costs (Right-of-Way not included)

Roadway & Intersection Construction Costs	\$ 17.4 Million
Bicycle & Pedestrian Construction Costs	\$ 14.4 Million
Transit Improvement Costs	\$ 11.9 Million
Improvement Costs	\$ 43.7 Million
Addition Annual Transit Operating Costs	\$ 51 Million

Economic Impact

iic Inipaci	
Residential Parcels	155
Business Parcels	315
Total Parcels	470

RANKING Fifth (5) Tie



ALTERNATIVE 5A:

Intersection Improvements and

Medium Highway Emphasis with Additional Right-of-Way

ALTERNATIVE DEFINITION

Roadway

Capacity Improvements: 6 Lane from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard)

Interesections

Improvements to 11 Intersections:

US 1 at:

Park Avenue

Dunlawton Avenue

SR 44 (Canal Street)

Big Tree Road

Washington Street

Orange Avenue

Wayne Avenue

SR 40 (Granada Boulevard)

Turnbull Bay Boulevard

Nova Road (SR 5A) at:

SR 430 (Mason Avenue)

SR 40 (Granada Boulevard)

Multi-Modal.

- Low Emphasis on Bus Service with Limited Route Changes
- Low Emphasis on Bicycle Facility Improvements with 3.3 miles of New Bicycle Lanes, and 35 New Major Crossing Treatments
- Low Emphasis on Pedestrian Facility Improvements with 23 miles of New Sidewalks, 35 New Major Crossing Treatments, and 5 Basic Multi-Modal Transfer Centers

PERFORANCE MEASURES EVALUATION

Costs (Right-of-Way not included)

,	
Roadway & Intersection Construction Costs	\$ 27.9 Million
Bicycle and Pedestrian Construction Costs	\$ 0.9 Million
Transit Improvement Costs	\$ 3.4 Million
Improvement Costs	\$ 32.2 Million
Additional Annual Transit Operating Costs	\$ 1.6 Million

Economic Impact

me zimpaci	
Residential Parcels	201
Business Parcels	568
Total Parcels	769

RANKING Seventh (7)

ALTERNATIVE 5B:

Intersection Improvements and

Medium Highway Emphasis within Existing Right-of-Way

ALTERNATIVE DEFINITION

Roadway

Capacity Improvements: 6 Lane from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard)

Intersections

Improvements to 11 Intersections:

US 1 at:

Park Avenue Dunlawton Avenue
SR 44 (Canal Street) Big Tree Road
Washington Street Orange Avenue

Wayne Avenue SR 40 (Granada Boulevard)

Turnbull Bay Boulevard

Nova Road (SR 5A) at:

SR 430 (Mason Avenue) SR 40 (Granada Boulevard)

Multi-Modal

- Low Emphasis on Bus Service with Limited Route Changes
- Low Emphasis on Bicycle Facility Improvements with 3.3 miles of New Bicycle Lanes, and 35 New Major Crossing Treatments
- Low Emphasis on Pedestrian Facility Improvements with 23 miles of New Sidewalks, 35 New Major Crossing Treatments, and 5 Basic Multi-Modal Transfer Centers

PERFORANCE MEASURES EVALUATION

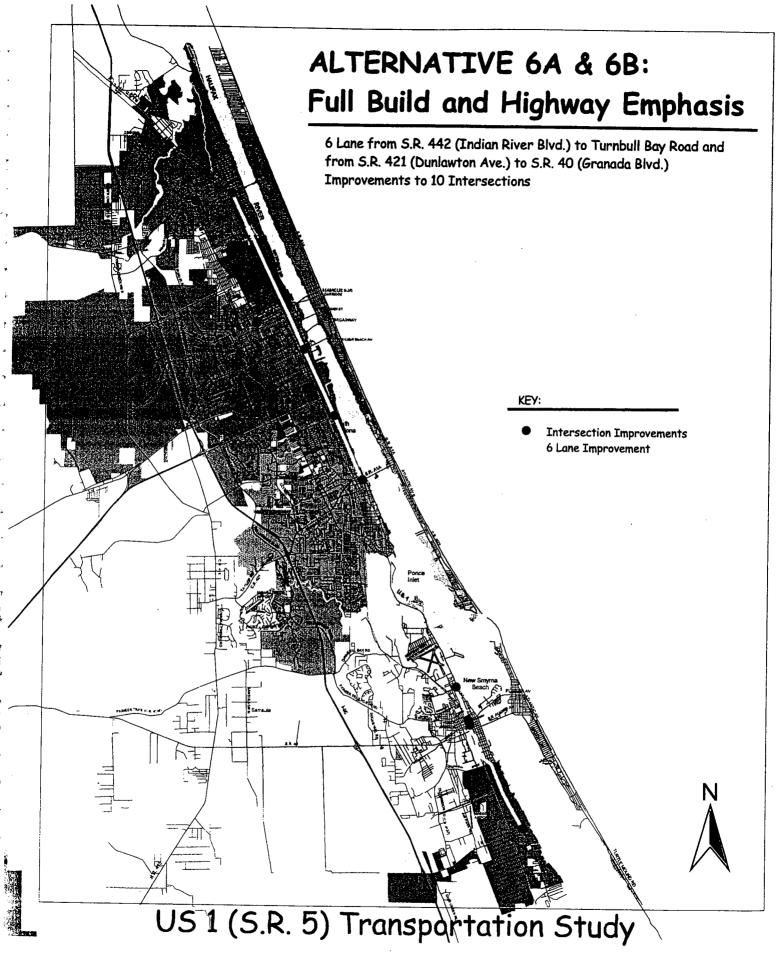
Costs (Right-of-Way not included)

Roadway & Intersection Construction Costs	\$ 26.8 Million
Bicycle & Pedestrian Construction Costs	\$ 0.9 Million
Transit Improvement Costs	\$ 3.4 Million
Improvement Costs	\$ 31.1 Million
Additional Annual Transit Operating Costs	\$ 1.6 Million

Economic Impact

iic riiibaci	
Residential Parcels	32
Business Parcels	88
Total Parcels	120

RANKING Sixth (6)



ALTERNATIVE 6A: Full Build and Highway Emphasis with Additional Right-of-Way

ALTERNATIVE DEFINITION

Roadway

Capacity Improvements: 6 Lane from SR 421 (Dunlawton Aveune) to SR 40 (Granada Boulevard) and from SR 442 to Turnbull Bay Boulevard

Intersections

Improvements to 10 Intersections:

US 1 at:

SR 442

Dunlawton Avenue

SR 44 (Canal Street)

Big Tree Road

Washington Street

Orange Avenue

Turnbull Bay Boulevard

SR 40 (Granada Boulevard)

Nova Road (SR 5A at:

SR 430 (Mason Avenue)

SR 40 (Granada Boulevard)

Multi-Modal

- Low Emphasis on Bus Service with Limited Route Changes
- Low Emphasis on Bicycle Facility Improvements with 3.3 miles of New Bicycle Lanes, and 35 New Major Crossing Treatments
- Low Emphasis on Pedestrian Facility Improvements with 23 miles of New Sidewalks, 35 New Major Crossing Treatments, and 5 Basic Multi-Modal Transfer Centers

PERFORANCE MEASURES EVALUATION

Costs (Right-of-Way not included)

Roadway & Intersection Construction Costs	\$ 40.9 Million
Bicycle & Pedestrian Construction Costs	\$ 0.8 Million
Transit Improvement Costs	\$ 3.4 Million
Improvement Costs	\$ 45.1 Million
Additional Annual Transit Operating Costs	\$ 1.6 Million

Economic Impact

o milipuo:	
Residential Parcels	307
Business Parcels	757
Total Parcels	1,064

RANKING Ninth (9)

ALTERNATIVE 6B: Full Build and Highway Emphasis within Existing Right-of-Way

ALTERNATIVE DEFINITION

Roadway

Capacity Improvements: 6 Lane from SR 421 (Dunlawton Avenue) to SR 40 (Granada Boulevard) and from SR 442 to Turnbull Bay Boulevard

Intersections

Improvements to 10 Intersections:

US 1 at:

SR 442

Dunlawton Avenue

SR 44 (Canal Street)

Big Tree Road

Washington Street

Orange Avenue

Turnbull Bay Boulevard

SR 40 (Granada Boulevard)

Nova Road (SR 5A) at:

SR 430 (Mason Avenue)

SR 40 (Granada Boulevard)

Multi-Modal

- Low Emphasis on Bus Service with Limited Route Changes
- Low Emphasis on Bicycle Facility Improvements with 3.3 miles of New Bicycle Lanes, and 35 New Major Crossing Treatments
- ◆ Low Emphasis on Pedestrian Facility Improvements with 23 miles of New Sidewalks, 35 New Major Crossing Treatments, and 5 Basic Multi-Modal Transfer Centers

PERFORANCE MEASURES EVALUATION

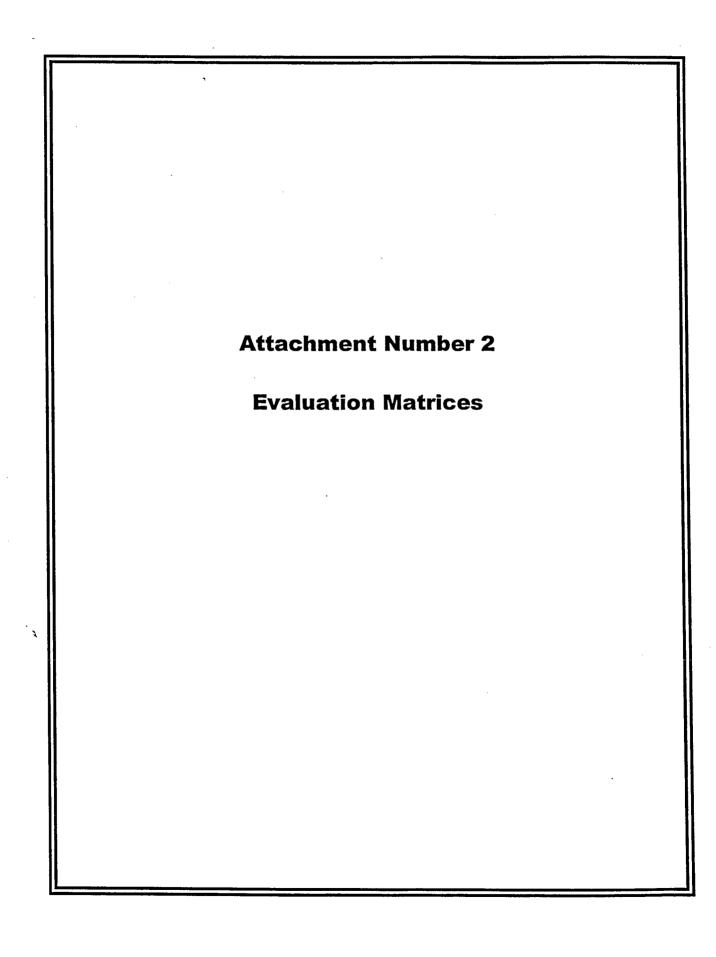
Costs (Right-of-Way not included)

Roadway & Intersection Construction Costs	\$ 39.3 Million
Bicycle & Pedestrian Construction Costs	\$ 0.8 Million
Transit Improvement Costs	\$ 3.4 Million
Improvement Costs	\$ 43.5 Million
Additional Annual Transit Operating Costs	\$ 1.6 Million

Economic Impact

··· · · · · · · · · · · · · · · · · ·	
Residential Parcels	32
Business Parcels	88
Total Parcels	120

RANKING Eighth (8)



US 1 Transportation Study - Preliminary Corridor Evaluation

Florida Department of Transportation/Volusia County MPO

Performance Measures

I. Traffic Capacity/Travel Time:

The following traffic capacity/travel time criteria were used in the evaluation of alternatives: roadway segment and intersection level of service, total vehicle hours of travel, intersection delay, and average travel speed along the corridor.

II. Growth Management and Economic/Social Impacts:

Each alternative was evaluated based on the compatibility with current: land uses plans, bicycle/pedestrian plans, and the Year 2020 Cost Feasible Plan. The economic/social impacts included the potential number of residences and businesses affected, access to properties along the corridor, preservation of community, and beautification opportunities.

III. Improvement Costs:

The following construction costs were used in the evaluation of each alternative: additional left and right turn lanes at selected intersections, new signals, additional 6-lane construction on noted roadway segments.

IV. Environmental Impacts:

The potential number of historical, archaeological, and contamination sites, along with the number of areas affected by the increase in noise levels were evaluated for each alternative.

V. Multi-Modal Enhancements:

The following transit criteria were used in the evaluation of alternatives: travel time, hours of operation, miles of bicycle and pedestrian facilities, population and employment serviced, and capital as well as operating costs for such enhancements.

VI. Public Acceptance/Input:

The evaluation measures for public acceptance consisted of two sources: 1) general comments received from each of the presentations given to each city council and county commission, 2) citizen input from the survey form filled out at the September Open House.

US 1 Transportation Study - Preliminary Corridor Evaluation

Florida Department of Transportation/Volusia County MPO

High Emphasis for Multi-Modal Improvements include:

Bus Service:

Increased route coverage, extended service hours, new express bus service , and 21 additional buses, and 5 enhanced multi-modal transfer centers.

Bicycle & Pedestrian Facilities:

3.3 miles of new bicycle lanes, 23 miles of new sidewalks, 86 miles of multi-use trails, 1 new multi-use bridge, 2 new pedestrian overpasses, and 35 new major crossing treatments.

Low Emphasis for Multi-Modal Improvements include:

3us Service:

Limited route changes, no express bus service, and 5 basic multi-modal transfer centers.

Bicycle & Pedestrian Facilities:

3.3 miles of new bicycle lanes, 23 miles of new sidewalks, and 35 new major crossing treatments.

Preliminary Corridor Evaluation

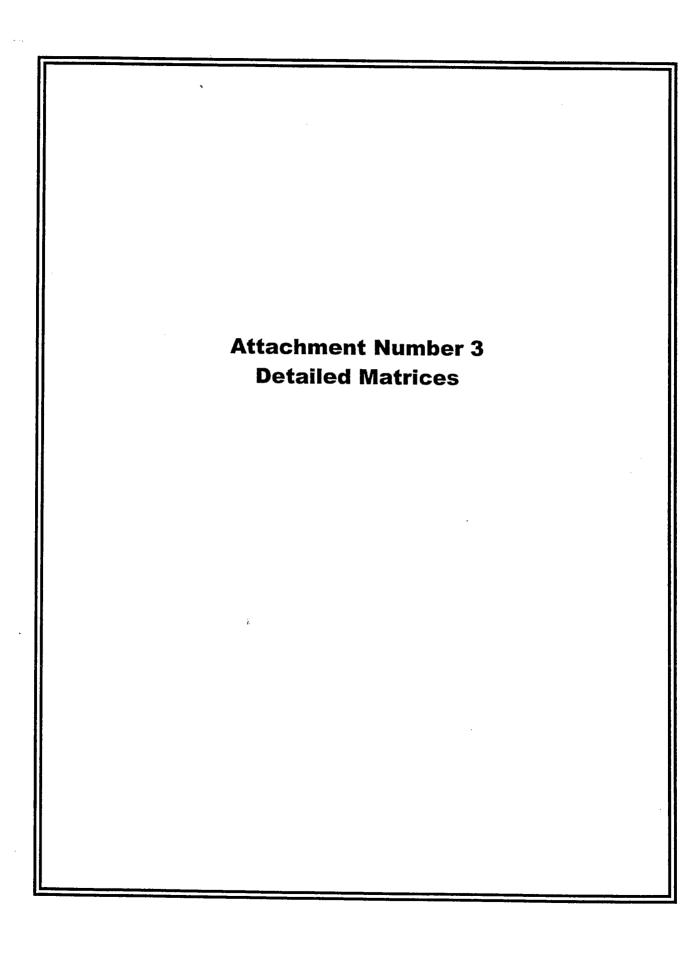
The following table illustrates the overall assessment of the six alternatives using the above described performance measures. The overall alternative rankings are shown with 1 being the most acceptable and 10 being the least acceptable.

US 1 Transportation Study - Preliminary Corridor Evaluation Florida Department of Transportation/Volusia County MPO

OVERALL ASSESSMENT

					RANKING	RANKINGS BY ALTERNATIVE	TIVE			
	Alt 1	ARZ	€ #¥	3	7 IV	14	нY	Alt 5	Ψ	Alt 6
		(A)	WON ROW	(B) - Min BOW	WOR YOM - (A) WOR I'M - (B)	(B) - Min BOW	WOR TIM - (8) WOR TIM - (8)	(B) - Min BOW	(A) - Max ROW (B) - Min ROW	(B) - Min ROW
		Pedestrian,	k lane from	Sk lane from	Six lane from	Six fane from	Six lane from	Six lane from	Dunlawton to	Dunlawton to
	8	Bicycle,	Beville Rd to	Beville Rd to	Duniawton Ave	Duniawton Ave	Dunfawton Ave.	Dunlawton Ave	Duniawton Ave Duniawton Ave Duniawton Ave Granada, SR 442 Granada, SR 442	Granada, SR 442
Performance Measure Category	Nothing	Transit	Mason Ave	Mason Ave	to Mason Ave	to Mason Ave	to Granada Blvd	to Granada Blvd	to Mason Ave to Granada Blvd to Granada Blvd to Tumbull Bay to Tumbull Bay	to Tumbull Bay
Traffic Capacity / Auto Performance	5	4	3	3	2	2	1	1	2	2
Growth Management, Economic/Social Impacts	9	1	3	2	5	4	8	7	10	6
Improvement Costs	1	2	4	3	9	5	8	7	10	6
Environmental Impacts	1	2	3	3	4	4	5	5	9	9
Multi-Modal Impacts	4	2	1	1	1	1	4	4	3	3
Public Acceptance	9	1	2	4	2	4	3	2	5	4
Overall Ranking	5	1	3	2	2	4	7	9	6	8

Note: Overall ranking is determined by computing the average ranking of each atternative.



Transportation Performance Measurement Measurement Alt A							П	흹					
Figure Control of Engineering Control of En	Category	Performance Measure	Measurement	ALT 1		3A	3B	ALT 4A	48	ALT SA	ALT 5B	ALT 6A	ALT 6B
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Economic Impacts: Vegetalization Opportunities		Economic Impacts: Business	No of Businesses Impacted	1	2	3	2	4	2	'n	2	9	2
Stocial Impacts: Beautification Opportunities		Economic Impacts: Property Access	Assessment	_	2	3	3	4	4	5	5	9	9
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Transit Total Capital Costs Cost in dollars Transit Total Capital Costs Cost in dollars Transit Total Capital Costs Cost in dollars Transit Total Annual Operating Costs Cost in dollars Cost in	Category Ranking			1	2	3	3	4	4	5	2	9	9
Transit Total Annual Operating Costs	Multi-Model Impacts	Transit Total Capital Costs	Cost in dollars	1	3	3	3	3	3	2	2	2	2
Propulation and Employment Served (East Volusia Transit) Total Population and Employment Served (East Volusia Transit) Total House Transe Transe Measures Transe Mea	SUBCHINION IN THE CONTINUES	Transit Total Applied Operating Costs	Cost in dollars	-	3	8	6	9	9	2	2	2	7
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Revenue Miles (Daily): Transit to W Volusia, Orange County Total Milescence Allescence Access to Multi-Use Trail: Population & Employment Total Milescence		Revenue Miles (Dally)	Lotal Revenue Miles	2	1	7	†	7	1	7	4	,	,
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Autority Public Acceptance / Input Public's Views of each alternative 6,000 1,000 5,000 5,000 5,000 1,000 5,000 1,000	Mean			2,100	80	1,70	<u>.</u>	1.700	3,7	2.100	31.2	2.000	2,000
Public's Views of each alternative	Category Ranking			4	7	-	1	-		r	-	7	1
Simple S	Public Acceptance / Input	Public Acceptance / Input	Public's Views of each alternative	9	7	٥	•	n	*	7	7	6	*
ing 6 1 5 4 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5	Mean			6,000	8	5.000	4.000	200	4.000	3.000	2.000	8	4.000
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1668 3.833 2.000 3.167 2.667 3.833 5.000 5.167 5.657 5.833	Overall Ranking			\$	1	6	2	5	7	7	٦	٩	8
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	Overall Bankling			2	ı	60	2	5	4	_	•	6	•
	Overall nathring												

US 1 TRANSPORTATION STUDY DRAFT CORRIDOR EVALUATION

PERFORMANCE MEASURES: TRAFFIC CAPACITY / AUTO PERFORMANCE

Transportation Efficiency

Roadway Segment	ment	Vehicle Hours of Travel	s of Travel								
•		ALT 1	ALT 2	ALT 3A	ALT 3B	ALT 4A	ALT 4B	ALT 5A	ALT 5B	ALT 6A	ALT 6B
A South of S.R. 442	S.R. 44 (Canal Street)	17,435	5,218	5,218	5,218	5,218	5,218	5,218	5,218	6,115	6,115
B N of S.R. 44 (Canal Street)	Tumbull Bay Road	6,155	1,883	1,883	1,883	1,883	1,883	1,883	1,883	2,211	2,211
C N of Tumbuil Bay Road	S.R. 5A (Nova Road)	22,630	6,822	6,822	6,822	6,822	6,822	6,822	6,822	6,822	228'9
D IN of S.R. 5A (Nova Road)	Duniawton Avenue	7,491	3,042	3,042	3,042	3,042	3,042	3,042	3,042	3,042	3,042
E N of Dunlawton Avenue	S.R. 400 (Beville Avenue)	14,902	6,039	6,402	6,402	6,549	6,549	6,549	6,549	6,549	6,549
F IN of S.R. 400 (Beville Avenue) S.R. 4	S.R. 430 (Mason Avenue)	15,636	9,209	8,463	8,463	800'8	8,008	8,008	8,008	8,008	800'8
G N of S.R. 430 (Mason Avenue) S.R.	S.R. 40 (Granada Blvd.)	5,489	5,373	5,865	5,865	598'5	5,865	5,651	5,651	5,651	5,651
H N of S.R. 40 (Granada Blvd.)	S.R. 5A (Nova Road)	1,449	1,425	1,549	1,549	1,549	1,549	1,495	1,495	1,495	1,495
I N of S.R. 5A (Nova Road)	North of I-95	3,798	3,709	3,998	3,998	3,998	3,998	3,838	3,838	3,838	3,838
											i
	Total	94,985	42,720	43,242	43,242	42,934	42,934	42,506	42,506	43,731	43,731
	Rank	9	2	4	4	က	e		-	K)	S

Link Capacity

	Roadway Segment	ment	Operating S ₁	Operating Speed/Weighted Avg	ed Avg							
Length			ALT 1	ALT 2	ALT 3A	ALT 3B	ALT 4A	ALT 4B	ALT 5A	ALT 58	ALT 6A	ALT 6B
103	4.01 A South of S.R. 442	S.R. 44 (Canal Street)	10.0	33.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1
343	B N of S.R. 44 (Canal Street)	Tumbull Bay Road	10.0	33.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1
435	435 C N of Tumbull Bay Road	S.R. 5A (Nova Road)	10.0	33.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1
909	608 D N of S.R. 5A (Nova Road)	Duniawton Avenue	10.0	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7
963	1.063 E N of Dunlawton Avenue	S.R. 400 (Beville Avenue)	10.0	24.7	23.3	23.3	24.7	24.7	24.7	24.7	24.7	24.7
283	1.263 F N of S.R. 400 (Beville Avenue) S.R. 430 (Mason Avenue)	S.R. 430 (Mason Avenue)	10.0	17.0	18.6	18.6	19.7	19.7	19.9	19.9	19.9	19.9
316	316 G IN of S.R. 430 (Mason Avenue) S.R. 40	S.R. 40 (Granada Blvd.)	30.3	31.1	31.4	31.4	31.4	31.4	32.8	32.8	32.8	32.8
827	827 H N of S.R. 40 (Granada Blvd.)	S.R. 5A (Nova Road)	30.3	31.1	31.4	31.4	31.4	31.4	32.8	32.8	32.8	32.8
3.921	1 N of S.R. 5A (Nova Road)	North of I-95	30.3	31.1	31.4	31.4	31.4	31.4	32.8	32.8	32.8	32.8
-		Weighted Average Rank	55.79 5	96.17	96.87	96.87	97.49	97.49	99.13	3 99.13 1 1	3 99.13 1 1	3 99.13 1 1
	Link Capacity											
	Roadway Segment	ment	Number of Links Failing	f Links Failing					!			

		action)	(100 ft cross se	dd. ROW (Subalternative B: Does not req add. ROW (100 ft cross section) (Granada)	salternative B: anada)	Sub SR 40 (Gra	Mason) ranada) , Dunlawton to	nn to SR 430 (I nn to SR 40 (G o Turnbull Bay	Su from Dunlawton to SR 430 (Mason) Su from Dunlawton to SR 40 (Granada) St. from SR 442 to Tumbull Bay, Dunlawton to SR 40 (Granada)		
		section)	/ (124 ft cross :	ional ROW	Subaltemative A: Requires additional ROW (124 ft cross section)	baltemative A:	Sch	430 (Mason)	overnents Only Beville) to SR	Do Nothing Intersection Improvements Only St. from SR 400 (Beville) to SR 430 (Mason)	Notes: Alternative 1 Alternative 2A,B	Notes:
	-	-	-	-	-	-	-	-	N	က	Rank	
	Φ.	œ.	8	6	æ	œ	6	Ç0	5	17	Total	-
_	٥	8	0	=	0	0	0	0	0	0	North of I-95	S.R. 5A (Nova Road)
	0	8	0	9	0	0	0	0	0	0	S.R. 5A (Nova Road)	S.R. 40 (Granada Blvd.)
	٩	0	0	-	0	0	0	0	0	1	S.R. 40 (Granada Blvd.)	S.R. 430 (Mason Avenue)
	5	2	2	2	2	5	2	5	5	5	S.R. 430 (Mason Avenue)	S.R. 400 (Beville Avenue) S.R.
	-	-	-	-	1	1	1	- 1	2		S.R. 400 (Beville Avenue)	Dunlawton Avenue
		-	0	0	0	0	0	0	0	0	Dunlawton Avenue	S.R. 5A (Nova Road)
	0	0	0	0	0	o	0	0	0	0	S.R. 5A (Nova Road)	Tumbull Bay Road
	2	2	2	2	2	2	2	2	2	2	Tumbull Bay Road	S.R. 44 (Canal Street)
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Intersection Operating Conditions

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S.R. 44 (Canal Street)	Tumbull Bay Road	S.R. 5A (Nova Road)	Duniawton Avenue	S.R. 400 (Beville Avenue)	S.R. 430 (Mason Avenue)	S.R. 40 (Granada Blvd.)	S.R. 5A (Nova Road)	North of I-95	Total Rank
A South of S.R. 442	B N of S.R. 44 (Canal Street)	C N of Tumbult Bay Road	D N of S.R. 5A (Nova Road)	E N of Dunlawton Avenue	F (N of S.R. 400 (Beville Avenue)	G N of S.R. 430 (Mason Avenue)	H N of S.R. 40 (Granada Blvd.)		
	S.	S. Street) Tu	et) Tu	et) Tu	et) Cr.	et) Tu S.I d) Du S.I	et) Tu Tu d) Du s.r verue) S.r verue) S.r	et) Tu Tu d) Du S.I venue) S.I venue) S.I strue) S.I	et) Tu (S. S. S. S. S. S. S. S. S. S. S. S. S. S

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	ALT 5A					-	2	2			80
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# Accide	ALT 1										
		(Canal Street)	Bay Road	A (Nova Road)	ton Avenue	00 (Beville Avenue)	30 (Mason Avenue)	(Granada Bivd.)	(Nova Road)	of 1-95	
ment		S.R. 44 (Tumbull	S.R. 5A (Dunlawto	S.R. 400	S.R. 430	lo	S.R. 5A (North of	Total Rank
Roadway Segment		South of S.R. 442	B N of S.R. 44 (Canal Street)	C N of Tumbull Bay Road	D N of S.R. 5A (Nova Road)		F N of S.R. 400 (Beville Avenue) S.R. 43	G N of S.R. 430 (Mason Avenue) S.R. 4	H N of S.R. 40 (Granada Blvd.)	N of S.R. 5A (Nova Road)	
		A Sout	B No	S N O	N O	E N O	FNof	GNO	H	I N of	

Service Life of Improvement

ALT 68	26	28	28	28	58	28	26	26	58	86.04	-	section) ection)
ALT 6A AL	28	28	28	28	28	28	28	26	28	86.04	-	(124 ft cross 00 ft cross s
ALT 5B ALT	28	28	28	26	28	26	26	26	28	88.04	-	itional ROW (1
ALT 5A ALT	26	26	28	26	28	28	28	28	28	88.04	-	Requires add Does not req
ALT 4B ALT	28	26	28	26	26	26	28	. 28	28	86.04		Subaltemative A: Requires additional ROW (124 ft cross section) Subaltemative B: Does not req add. ROW (100 ft cross section)
ALT 4A ALT	26	26	28	26	28	26	28	26	28	86.04	-	
	28	26	28	26	28	28	28	28	28	86.04	₩.	o SR 40 (Gra
sighted Avg	26	26	28	26	26	26	28	56	26	86.04	-	, 430 (Mason) Mason) ranada) , Dunlawton t
re Fallure/Welgh 2 ALT 3A	26	26	26	28	58	25	28	58	26	85.68	7	vements Only leville) to SR or to SR 430 (I or to SR 40 (G Tumbuil Bay
No. of Years Before Failure/Weighted Avg	23	23	23	21	21	18	28	28	28	78.40	eo	Do Nothing Intersection improvements Only 8L from SR 400 (Beville) to SR 430 (Mason) 6L from Durlawton to SR 430 (Mason) 6L from Durlawton to SR 40 (Granada) 6L from SR 442 to Tumbuil Bay, Dunlawton to SR 40 (Granada)
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ment	S.R. 44 (Canal Street)	Tumbull Bay Road	S.R. 5A (Nova Road)	Dunlawton Avenue	S.R. 400 (Beville Avenue)	S.R. 430 (Mason Avenue)	S.R. 40 (Granada Blvd.)	S.R. 5A (Nova Road)	North of I-95	Total	Rank	Notes: Attemetive 1 Alternative 2 Alternative 3A.B Alternative 4A.B Alternative 5A.B Alternative 5A.B
Roadway Segment	4.01 A South of S.R. 442	B N of S.R. 44 (Canal Street)	C N of Tumbull Bay Road	D N of S.R. 5A (Nova Road)	E N of Dunlawton Avenue	F N of S.R. 400 (Beville Avenue)		H N of S.R. 40 (Granada Blvd.)	1			Notes: Attentation
Total Length	4.01 A	1.343 B	5.435 C N	2.606 D N	3.083 E N							

PERFORMANCE MEASURES: GROWTH MANAGEMENT COMPATIBILITY

Growth Management Compatibility: Land Use Policles

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Assessment: Compatible (1), Somewhat Compatible (2), Deficient (3)	AL 38											1:1	
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		inal Stree	y Road	R. 5A (Nova Road)	Avenue	eville Ave	R. 430 (Mason Avenue)	anada Bi	R. 5A (Nova Road)	9			
Ĕ		S.R. 44 (Canal Street)	fumbull Bay Road	S.R. 5A (N	Juniawton Avenue	S.R. 400 (Beville Avenue)		S.R. 40 (Granada Blvd.)		Jorth of I-95		Average	tank
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Growth Management Compatibility. CMS

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	ALI 3 ALI 38 ALI 48 ALI 68 ALI 68 ALI 68 ALI 68 ALI 68	S.R. 44 (Canal Street)	ALI 1 ALI 2 ALI 3A ALI 3B ALI 4A ALI 4B ALI 5A ALI 5B ALI	Sire 44 (Canal Street)	S.R. 44 (Canal Street)	S.R. 44 (Canal Street) ALI 13 ALI 38 ALI 38 ALI 38 ALI 39	S.R. 44 (Canal Street)	Street Street ALI 13	Sire 44 (Canal Street)	Sire 44 (Canal Street)

Growth Management Compatibility: Blke/Ped Compatibility

S) signediik	Assessment: Compatible (1), Somewhat Compatible (2), Derwein (3)	2		!		-
	.1 ALT 2		ALT 3A AL	ALT 38 A	ALT 4A	ALT 4B	ALT 5A	ALT 5B	ALT 8A	ALT 8B
l	9	1	1	1	1		1	3	3	+
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S.R. 400 (Beville Avenue)	2	1	1	1	1		2	1	2	-
N of S.R. 400 (Beville Avenue) S.R. 430 (Mason Avenue)	2	1	-1	2	1		2	1	2	-
ı	2	1	1	1	1		-	-	2	-
H N of S.R. 40 (Granada Blvd.) S.R. 5A (Nova Road)	3	1	1	1	1		_	3	3	3
North of 1-95	3	1	-	=	1			9	3	3
Average	2.44	1.00	1.00	1.11	1.00	1.22	2 2.33		2.67 1.	1.89 2.44
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Notes: Alternative 1 Do No Alternative 2 Interse Atternative 4A,B 6L from Atternative 5A,B 6L from Atternative 5A,B 6L from	Do Nothing Intersection Improvements Only Et. from SR 400 (Beville) to SR 430 (Mason) Subatterns Et from Duniawton to SR 430 (Mason) Subatterns Et from Duniawton to SR 40 (Granada)	vements On Seville) to SR 30 of to SR 430 of to SR 430 (C	ly ? 430 (Mason (Mason) Sranada)	8 0	ubatternathy ubatternathy	e A: Requin e B: Does n	ss additional ot req add. F	ROW (124	Subattemative A: Requires additional ROW (124 ft cross section) Subattemative B: Does not req add. ROW (100 ft cross section)	€ -

Growth Management Compatibility: Cost Feasible Plan

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1), Defick ALT 3A												only SR 430 0 (Mase (Grana 3ay, Du
Assessment: Compatible (1), Deficient (3) ALT 1 ALT 2 ALT 3A AL	3	6	1	ŀ	3	က	3	1	F	2.11	ω	Do Nothing Intersection Improvements Only St. 430 (Mason) Subalterha St. 400 (Beville) to SR 430 (Mason) Subalterha Et from Duniawton to SR 430 (Mason) Subalterna St. from Duniawton to SR 40 (Granada) St. 42 to Tumbull Bay, Duniawton to SR 40 (Granada)
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ssment	3	3	1	1	3	3	3	1	٦	2.11	ю	Do Nothing Intersection I BL from SR 4 BL from Duni: BL from Duni:
Asses ALT 1	L	L		_		L	L		Ц			Do No inters 8L fro 8L fro 8L fro
	() ()	L	ad)	_	S.R. 400 (Beville Avenue)	S.R. 430 (Mason Avenue)	Blvd.)	gg)				·
	S.R. 44 (Canal Street)	Tumbull Bay Road	S.R. 5A (Nova Road)	Dunlawton Avenue	3eville /	Mason /	S.R. 40 (Granada Blvd.	S.R. 5A (Nova Road)	2			- 34,8 34,8 54,8 64,8
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	outh of S.R. 442	J of S.R. 44 (Canal Street)	A Inqu	2. 5A (N	lawton	of S.R. 400 (Beville Avenue)	of S.R. 430 (Mason Avenue)	of S.R. 40 (Granada Blvd.	of S.R. 5A (Nova Road)			
	outho	of S.F	of Tur	OSF	of Du	I of S.F	Of S.F	of S.F	of S.F		•	

PERFORMANCE MEASURES: ECONOMIC IMPACTS

Economic Impacts: Residential

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S.R. 44 (Canal Street)	Tumbull Bay Road	S.R. 5A (Nova Road)	Dunlawton Avenue	S.R. 400 (Beville Avenue)	S.R. 430 (Mason Avenue)	S.R. 40 (Granada Blvd.)	S.R. 5A (Nova Road)	North of I-95	Telef	10.0	Rank
A South of S.R. 442	B N of S.R. 44 (Canal Street)	C N of Tumbull Bay Road	D N of S.R. 5A (Nova Road)	E N of Dunlawton Avenue	F N of S.R. 400 (Beville Avenue)	G N of S.R. 430 (Mason Avenue)		I N of S.R. 5A (Nova Road)			
	S.R. 44 (Canal Street) 0 1 1 1 1 1 1 1 1 1 1	S.R. 44 (Canal Street) 0 1 1 1 1 1 1 53 53 18 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19	S.R. 44 (Canal Street) 0 1 1 1 1 1 53 53 54 (Canal Street) 0 0 0 0 0 0 0 0 0 54 54 (Nova Road) 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S.R. 44 (Canal Street) 0 1 1 1 1 1 1 1 1 1 53 Il Street) Tumbull Bay Road 0 0 0 0 0 0 0 54 Yoad S.R. 54 (Nova Road) 0 1 1 1 1 1 1 1 1 Road) Duniawton Avenue 0 0 0 0 0 0 0 0 0	S.R. 44 (Canal Street) 0 1	S.R. 44 (Canal Street) 0 1	S.R. 44 (Canal Street) 0 1 1 1 1 1 1 1 1 1 63 63 63 64 63 64	Bay Road 0 1 54 <td>Bay Road 0 1 54<!--</td--><td>Sanal Street) 0 1 1 1 1 1 1 1 1 1 53 ay Road 0 0 0 0 0 0 0 54 Iova Road) 0 1 1 1 1 1 1 1 Avenue 0 0 10 10 10 17 10 17 Asson Avenue) 0 10 10 17 10 17 Asson Avenue) 0 0 0 0 0 0 136 Asson Avenue) 0 0 0 0 0 0 0 0 ova Road) 0 0 0 0 0 0 0 0 0 ova Road) 0 0 0 0 0 0 0 0 0</td><td>Sanal Street) 0 1 <</td></td>	Bay Road 0 1 54 </td <td>Sanal Street) 0 1 1 1 1 1 1 1 1 1 53 ay Road 0 0 0 0 0 0 0 54 Iova Road) 0 1 1 1 1 1 1 1 Avenue 0 0 10 10 10 17 10 17 Asson Avenue) 0 10 10 17 10 17 Asson Avenue) 0 0 0 0 0 0 136 Asson Avenue) 0 0 0 0 0 0 0 0 ova Road) 0 0 0 0 0 0 0 0 0 ova Road) 0 0 0 0 0 0 0 0 0</td> <td>Sanal Street) 0 1 <</td>	Sanal Street) 0 1 1 1 1 1 1 1 1 1 53 ay Road 0 0 0 0 0 0 0 54 Iova Road) 0 1 1 1 1 1 1 1 Avenue 0 0 10 10 10 17 10 17 Asson Avenue) 0 10 10 17 10 17 Asson Avenue) 0 0 0 0 0 0 136 Asson Avenue) 0 0 0 0 0 0 0 0 ova Road) 0 0 0 0 0 0 0 0 0 ova Road) 0 0 0 0 0 0 0 0 0	Sanal Street) 0 1 <

Economic Impacts: Business

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Number of Businesses Impacted	ALT 1												
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		Sanal Street)	ad	(oad)	en:	(Beville Avenue)	Mason Avenue)	ranada Blvd.	(oad)				
		(Canal	Bay Road		on Avenue	(Bevill		Grana	(Nova Road)	1-95			
Ę		S.R. 44 (C	umbull B	S.R. 5A (Dunkawtor	S.R. 400	.R. 430	.R. 40 (S.R. 5A (North of I-95		Total	Rank
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Roadway Segment			Street	oad	Road)	enue	lle Aver	on Ave	ida Bh	Road)			
œ		3. 442	(Cana	II Bay F	r (Nova	ton Ave	0 (Bevi	o (Mas	(Grans	(Nova			
		h of S.f	S.R. 44	Tumbu	S.R. 54	Dunlaw	S.R. 40	S.R. 43	S.R. 40	N of S.R. 5A (Nova Road)			
		A South of S.R. 442	B N of S.R. 44 (Canal Street)	C N of Tumbull Bay Road	D N of S.R. 5A (Nova Road)	E N of Dunlawton Avenue	F N of S.R. 400 (Beville Avenue) S.R. 430	G N of S.R. 430 (Mason Avenue) S.R. 40 (G	H N of S.R. 40 (Granada Blvd.)	N of			
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Economic Impacts: Property Access

A South of S.R. 44 (Canal Street)			8	က	-	F	۳	က	<u>س</u>	F	Ψ,	2.11	æ	
Assessment: Change in Access Impacts: Minimal (1), Minor (2), Major (3) ALT 1 ALT 2 ALT 3A ALT 3B ALT 4A ALT 4B ALT 5A ALT 5B ALT 6A anal Street)		LT 6B										. 7		
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Roadway Segment A South of S.R. 442 B N of S.R. 44 (Canal Street) C N of Tumbuil Bay Road C N of Tumbuil Bay Road D N of S.R. 54 (Nova Road) Dunlawton Avenue E N of Dunlawton Avenue S.R. 430 (Mason Avenue G N of S.R. 430 (Mason Avenue G N of S.R. 430 (Mason Avenue) H N of S.R. 430 (Mason Avenue) H N of S.R. 40 (Granada BNd.) I N of S.R. 5A (Nova Road) North of I-95 Rank Attermative 1 Atternative 5A,B Atternative 5A,B Atternative 6A,B Atternative 6A,B Atternative 6A,B	Asse	ALT			L	L			L	L		: 		Do N inter 6Lfm 6Lfm 6Lfm
Roadway Segment A South of S.R. 442 B N of S.R. 44 (Canal Street) C N of Tumbuil Bay Road C N of Tumbuil Bay Road D N of S.R. 54 (Nova Road) D N of S.R. 54 (Nova Road) D N of S.R. 400 (Beville Avenue) F N of Dunlawton Avenue S.R. 400 (Beville Avenue) N of S.R. 400 (Geville Avenue) H N of S.R. 400 (Geville Avenue) S.R. 54 (Nova Road) I N of S.R. 54 (Nova Road) I N of S.R. 55 (Nova Road) Average Rank Alternative 1 Alternative 3A Alternative 5A,B Alternative 5A,B Alternative 5A,B Alternative 5A,B Alternative 5A,B			reet)	-	ad)		Avenue	Avenue	Blvd.)	ad)				
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Roadway Segmen	=		2. 44 (C	a linqu	2. 5A (h	nlawton	. 400 (l. 430 (l. 40 (G	l. 5A (N	th of I-	ege	¥	mative mative mative mative
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Roger A South of S.R. 442 B N of S.R. 44 (Canal & C. N of Tumbul Bay Roger & N of Tumbul Bay Roger & N of Dunlawton Aven & N of S.R. 400 (Beviller & N of S.R. 400 (Granad H N of S.R. 40 (Granad H N of S.R. 54 (Nova F N of S.R. 54 (N of S) S.R. 54 (N of S) S.R. 54 (N of S) S.R. 54 (N of S) S.R. 54 (N of S) S.	adway S			Street)	pa	(peo)	9	Aven.	Avent	a Bhd.	(oad)			Š
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			of S.R.	.R. 44 (l linquir	R. 5A (unlawto	R. 400	R. 430	R. 40 (R. 5A (
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PERFORMANCE MEASURES: SOCIAL

Social Impacts: Maintenance of Community

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al Effec	ALT 2										-
Potent	₹	1	1	1	-	1	1	1	1	1	1.00
Positive Potential Effects to the Community: Great (1), Some (2), None/Negative (3)	ALT 1										
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		nal Street	Road	/a Road)	venue	eville Avenue)	son Avenue	nada Blvd.)	ra Road)		
			Tumbull Bay	S.R. 5A (Nov	Dunlawton Av	S.R. 400 (Be	30 (Ma	0 (Gran		North of I-95	95
ment		S.R. 44 (Car	QLIN1	S.R.	Dunka	S.R. 4	S.R. 4	S.R. 4	S.R. 5A (No.	North	Average Rank
Roadway Segment			£		(þ	ŀ	(enue)	venue)	3Md.)	q)	
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		S.R. 44	<u>\$</u>	bull Ba	5A (N	awton,	400 (B	430 (N	40 (G	5A (NC	
		A South of S.R. 442	B N of S.R. 44 (Canal Street)	C N of Tumbull Bay Road	N of S.R. 5A (Nova Road)	N of Dunlawton Avenue	N of S.R. 400 (Beville Avenue) S.R. 430 (M:	G N of S.R. 430 (Mason Avenue) S.R. 40 (Gra	N of S.R. 40 (Granada Blvd.)	N of S.R. 5A (Nova Road)	
		A S	8	S	Ω Ω	Z Ш	N L	Z O	z I	<u>z</u>	
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Social Impacts: Beautification Opportunities

Socia	Social Impacts: Beautification Opportunities	Juilles													
	Roadway Segment	ment	Beautificatio	n Opportun	Ities: Good (Beautification Opportunities: Good (1), Some (2), None/Negative (3)	, None/Neg	pative (3)							
	-		ALT 1	ALT 2	ALT 3A	ALT 3B	ALT 4A		ALT 4B	ALT 5A	ALT 5B	ALT 6A	ALT 68	8	
4	South of S.R. 442	S.R. 44 (Canal Street)		2	2	2	2	2	,		2	2	-	က	
m	al Street)	Tumbuli Bay Road		i	2	2	2	2	,		2	2	-	3	
ပ	N of Tumbull Bay Road	S.R. 5A (Nova Road)	2	21	2	2	2	2	2		2	2	2	2	
0	N of S.R. 5A (Nova Road)	Dunlawton Avenue		i	2	2	- 2	2		2	2	2	7	7	
ш	N of Dunlawton Avenue	S.R. 400 (Beville Avenue)	2	i	2	2	2	1	.,		-	3	-	6	
u.	F N of S.R. 400 (Beville Avenue) S.R. 430 (M	S.R. 430 (Mason Avenue)	2		2	1	က	ı		3	1	3	1	က	
σ	G IN of S.R. 430 (Mason Avenue) S.R. 40 (Gr				2	2	2	2		2	1	3	1	3	
Ī	H N of S.R. 40 (Granada Blvd.)				2	2	2	2			2	2	2	2	
F	1	North of I-95	2		2	2	2	2			2	2	2	2	
		Average	2.00	2.00		1.89	2.11	1.78	2.22	•	. 291	2.33	1 .	2.58	
		Rank	40		ς.	4	9	ო	-		7	∞	-	O.	
	Notes:	Notes: Atternative 1 Atternative 2 Atternative 3A,B Atternative 4A,B Atternative 6A,B Atternative 6A,B	Do Nothing Intersection Improvements Only 6L from SR 400 (Beville) to SR 430 (Mason) 6L from Dunlawton to SR 430 (Mason) 6L from Dunlawton to SR 40 (Granada) 6L from SR 442 to Tumbull Bay, Dunlawton 1	Improvement 400 (Beville) lawfon to Sf lawfon to Sf 442 to Tumf	nts Only to SR 430 (R 430 (Masc R 40 (Grana bull Bay, Dur	Do Nothing Intersection Improvements Only 6L from SR 400 (Beville) to SR 430 (Mason) Subattems 6L from Dunlawton to SR 430 (Mason) Subattems 6L from Dunlawton to SR 40 (Granada) 6L from SR 442 to Tumbuil Bay, Dunlawton to SR 40 (Granada)	Subal Subal R 40 (Gran	ternative , ternative (A: Require B: Does no	s additional rt req add. F	ROW (124 IOW (100 ft	Subattemative A: Requires additional ROW (124 ft cross section) Subattemative B: Does not req add. ROW (100 ft cross section) (Granada)	€ €		

PERFORMANCE MEASURES: IMPROVEMENT COSTS

Improvement Costs: General Cost by Intersection

	Roadway Segment	Interse	tersection Co	ost of In	nprovement A	£T3A	ALT 3B		ALT 4A A	ALT 48	ALT 5A	ALT 58		ALT 6A ALT 6B	æ
AM		5		2	371,524	\$ 2,223,8	38 8	223,936	1,950,324	\$ 1,950,324	2	858,671 \$	1,858,871 \$	1,837,760 \$	1,837,780
	Total Rank	•		8	371,524 \$	\$ 2,223,936 5	38 \$	2,223,938 \$	1,950,324 \$	\$ 1,950,324 \$ 4		1,858,671 \$	1,856,871 \$	1,837,780 \$	1,837,780

Improvement Costs: Cost by Lane Mile of Improvement

Roadway Segment	Capacity improvement Cost ALT 3 ALT 38 ALT 4A ALT 4B ALT 5A ALT 6B ALT 6A ALT 6B
INA	. \$ 7,978,687 \$ 7,648,926 \$ 16,467,876 \$ 14,828,807
Total Rank	\$ - \$ 7,978,687 \$ 7,648,828 \$ 15,467,875 \$ 14,828,807 \$ 28,021,896 \$ 24,948,773 \$ 39,111,860 \$ 37,495,906
Improvement Costs: Total Costs	
Roadway Segment	68 ALT 6
INA INA	- \$ 2,371,524 \$ 10,202,503 \$ 9,872,884
Total Rank	\$ 2,371,624 \$ 10,202,503 \$ 9,372,864 \$ 17,418,198 \$ 16,779,131 \$ 27,880,667 \$ 28,805,444 \$ 40,848,640 \$ 39,333,688
Notes: Afternative 1 Atternative 2 Atternative 3A,B Atternative 4A,B Atternative 6A,B Atternative 6A,B	Do Nothing Intersection Improvements Only Intersection Improvements Only Subalternative A: Requires additional ROW (124 ft cross section) 8L from Dunlawton to SR 430 (Mason) Subalternative B: Does not req add. ROW (100 ft cross section) 8L from Dunlawton to SR 430 (Mason) Subalternative B: Does not req add. ROW (100 ft cross section) 8L from Dunlawton to SR 40 (Granada) 8L from SR 442 to Tumbuil Bay, Dunlawton to SR 40 (Granada)

PERFORMANCE MEASURES: ENVIRONMENTAL

Environmental Impacts: Wetlands

	Vetta									
ALT 1 ALT 2	5		ALT 3A	ALT 3B	ALT 4A	ALT 4B	ALT SA	ALT 5B	ALT 6A	ALT 6B
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Environmental Impacts: Historical and Archaeological

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	ALT 6B	3	7	8	•	•	2	58	•		8
	ALT 6A	3	7	8			5	58	•		818
	ALT 5B	1	2	8	٠	4	6	39	13	9	92
	ALT SA	+	2	8		4	9	39	13	9	78
	ALT 4B /	1	2	8		4	8	•		•	۲۷ 4
	ALT 4A A	1	2	8		4	9	•	•		22.4
	ALT 3B A	1	2	8	•	1	9			-	8E &
	ALT 3A AL	1	2	8	•	1	9				85 E
sibly Affected	ALT2 A	1	2	8		1	•	- -		+	5 2
# Of Sites Possibly Affected	ALT1 A				•			,			0+
Roadway Segment #	₹.	A South of S.R. 442 S.R. 44 (Canal Street)	B N of S.R. 44 (Canal Street) Tumbull Bay Road	C N of Tumbull Bay Road S.R. 5A (Nova Road)	6	E N of Dunlawton Avenue S.R. 400 (Beville Avenue)	F N of S.R. 400 (Beville Avenue) IS.R. 430 (Mason Avenue)	G N of S.R. 430 (Mason Avenue) S.R. 40 (Granada Blvd.)	H N of S.R. 40 (Granada Blvd.) S.R. 5A (Nova Road)	N of S.R. 5A (Nova Road) North of I-95	Total Rank
		A Sou	B	S N	o N O	N N	N N	S S	N H	о 2 -	

Environmental Impacts: Noise

Roadway Segment		Areas Affected	2					1	!	;	!
		ALT 1	ALT 2	ALT 3A	ALT 3B	ALT 4A	ALT 4B	ALT 5A	ALT 5B	ALT 6A	ALT 6B
S.R. 44	44 (Canal Street)	•		•	•	•	•	•	•	15	15
Tumbul	Ibull Bay Road		ļ	1	1	1	-	1	1	2	2
S.R. 5A	5A (Nova Road)		•	- 1	•	٠	•	٠	•	•	•
Dunlaw	awton Avenue	•	•		•	•	•	٠			•
S.R. 40	400 (Beville Avenue)	•	9	9	5	12	12	12	12	12	12
N of S.R. 400 (Beville Avenue) S.R. 43	430 (Mason Avenue)	•	2	5	5	5	5	တ	2	2	2
! प	0 (Granada Blvd.)	•			•		٠	٥	6	6	a
S.R. 5A	5A (Nova Road)		•	•	•	•	•	•	•		
North of	of I-95	•	•		٠	•	•		-		
		'				,	•				
Total		0	-	_	_	_	, 2	77		•	2
Rank		-	•	~	6	m	•	•	10	ıo.	v

Environmental Impacts: Contaminated Sites

Roadway Segment	gment	No of Sites Affected	ffected									
		ALT 1	ALT 2	ALT 3A	ALT 3B	ALT 4A	ALT 4B	ALT 5A	ALT 5B	ALT BA	ALT 6B	1
A South of S.R. 442	S.R. 44 (Canal Street)		<u> </u>	1		1	1	1	1	14	14	
B N of S.R. 44 (Canal Street)	Tumbuli Bay Road	•	9	5	5	- 2	5	2	5	12	12	П
C N of Tumbull Bay Road	S.R. 5A (Nova Road)			•	•			•	-	•	•	
D N of S.R. 5A (Nova Road)	Duniawton Avenue	•	1	ļ	1	1	1 1	1	1	1	1	
E N of Dunlawton Avenue	S.R. 400 (Beville Avenue)		4	2	2	11	11	11	11	11	11	
F N of S.R. 400 (Beville Avenue)	S.R. 430 (Mason Avenue)		9	16	16	16	16	16	16	18	16	
G N of S.R. 430 (Mason Avenue)	S.R. 40 (Granada Blvd.)		8	3	3	3	3	16	18	16	18	П
H N of S.R. 40 (Granada Blvd.)	S.R. 5A (Nova Road)					•	. •	•	•	•	•	
I (N of S.R. 5A (Nova Road)	North of I-95	•		•	•		•	•	-	•	•	П
•	Total	0	23	33	33	37	37	99	05 0		2	0
	Rank	-	8	e	60	-	•		٠. ده	ιo	60	8
Notes:	Notes: Alternative 1 Alternative 2 Alternative 3A,B Alternative 4A,B Alternative 5A,B Alternative 6A,B Alternative 6A,B	Do Nothing Infersection Improvements Only Efform SR 400 (Beville) to SR 430 (M 8t. from Duniawton to SR 430 (Mason) 8t. from Duniawton to SR 40 (Granada 8t. from SR 442 to Turnbull Bay, Dunia	mprovements 00 (Beville) t awton to SR -	Do Nothing Intersection Improvements Only 6L from SR 400 (Beville) to SR 430 (Mason) Subalterns 6L from Dunlawton to SR 430 (Mason) Subalterns 6L from Dunlawton to SR 40 (Granada) 6L from SR 442 to Tumbull Bay, Dunlawton to SR 40 (Granada)	ison) vton to SR 40	Subaltemati Subaltemati	Subaitemative A: Requires additional ROW (124 ft cross section) Subaitemative B: Does not req add. ROW (100 ft cross section) (Granada)	s additional I x req add. R	3OW (124 ቤር OW (100 ቤ cn	cross section oss section)		1

PERFORMANCE MEASURES: MULTI-MODAL

.

Transit Total Capital Costs

Roadway Segment	Capital Costs in Millions	ts in Millions									
•	ALT 1	ALT 2	ALT 3A	ALT 3B	ALT 4A	ALT 4B ALT 5A	ALT 5A	ALT 5B	ALT 6A ALT 6B	ALT	88
AN		\$ 11.858	\$ 11.858	\$ 11.858	\$ 11.858	\$ 11.858	\$ 3.431	\$ 3,431	\$ 3.4	31 \$	3.431
Total	•	\$ 11.858	\$ 11.858	\$ 11.858	\$ 11.858	\$ 11.858	\$ 3.431	\$ 3.431 \$	\$ 3.431	<u>~</u>	3.431
Rank				8						8	7

Transit Total Annual Operating Costs

Roadway Segment	egment	Operating Costs in M	S	s in Mill	ions A	ALT 3A	Æ	ALT 3B ALT 4A	ALT 4A		ALT 4B	₹	ALT SA	ALT 5B		ALT 6A	ALT 6B	
AN.		s	-	ြင်	88	5.068	\$	5.068	\$ 5.	88	5.068	\$	1.585	\$	S.	1.585	\$	585
	Average	•	•	5.0	5.068 \$	5.068	•	5.068	⇔	5.088 \$	5.068	۰,	1.585	6	.585 \$	1.585	~	` 282 ´
	Rank		-		n		2			7	•	•	7		7	4		4

2020 Population and Employment Served (East Volusia Transit)

"Best" Travel Time

ALT ALT ALT ALT ALT ALT ALT ALT ALT ALT	KOROWAY SECTION					•						
ge 105 75 75 75 75 90 90 90 ge 3 1 1 1 1 2 2 2		AIT1	17.2	ALT 3A	AI T 3B	AI T 4A	ALT 4B	ALT 5A	ALT 58	ALT 6A	ALT 68	
ge 105 75 75 76 75 90 90 90 30 3 1 1 1 2 2 2		100			2			, y	-	9	00	٥
ge 105 75 75 75 75 90 90 90 30 3 1 1 1 2 2 2	WA	COL	2	1	2				2			1
	Average Rank	105	75	_	_		ν.	ئ د	o 6	0 8	90 7	0 8

Hours of Operation: Local, Express, Trolley

88	27	27 2
ALT3B ALT4B ALT5A ALT5B ALT6A ALT6B	27	27
3B ALT	27	27
A ALT	27	27
ALT 5/	33	33
ALT 4B	33	33
ALT 4A	33	33
	3	8 -
ALT 3A	3	
LT 2	3	ž,
Total Hours ALT 1 AI	12	5.,
Roadway Segment	NA	Average

Revenue Miles (Daily)

ALT4A ALT5A ALT5B ALT6B	11,530 7,930 7,930 7,930	11,530 7,930 7,930 7,930 1 1 2 2 2
	11,530 11,530	11,530 11,530
ALT 3A ALT 3B	11,530	11,530
Total Revenue Miles ALT 1 ALT 2	840 11,530	840 11,530
Roadway Segment	47	Average Rank

Revenue Miles (Daily): Transit to W Volusia, Orange County

Roadway Segment	gment	Total Revenue Miles		A 7.34	AI T.38 A	AI T 4A	AI T 4B	A T 5A	A T 58	T BA AIT	AI T AR
INA		330	83	8	8	8	8	8	8	8	390
	Average	390	930	930	930	830	930	390	390	390	380
	Rank		-	-	-	-	-	8	7	N	0
Bicycle/Pedestrian Facilities Costs											
Roadway Segment	gment	Total Costs in Millions			4 ac +	47 14	97 17 18	4 4 1		ANT ANT AN	ą
NA		\Box	433	\$ 14.422 \$	422	2	8	\$ 0.870	\$ 0.870 \$	783	0.783
	Total Rank	φ. - -	14.433 \$	14.422 \$	14.422 \$	14.422	\$ 14.422		\$ 0.870 \$	0.783 \$	0.783. 2
Bike/Ped Paths: Total Bike/Ped Route	ð										
Roadway Segment	gment	Total Mileage ALT 1 AL	ALT 2 A		ALT 3B AI	ALT 4A	ALT 4B A	ALT 5A A	ALT 5B ALT	ALT 6A ALT 6B	6 8
NA		88	228	82	82	8	228	112	112	112	112
	Total Rank	89	228	228	228	228	228	112	112	112	112
Access to Multi-Use Trail: Population								J	I	I	I
Roadway Segment	gment	2020 Population	2	ALT3A AI	AI T.38 AI	Δ1 T 4A	AIT 48	AIT5A A	ALT 5B ALT	ALT 6A ALT 68	8
INA		Π	8	g	8	8	g	Π	П	П	$\left[\cdot \right]$
	Average Rank	, ,	65,200 1	65,200	65,200	65,200	65,200	, 64	, cs	, 8	. ~
Access to Multi-Use Trail: Employment	tus										
Roadway Segment	gment	2020 Employment	2					ALT 5A A	ALT 5B ALT 6A	6A ALT 6B	88
NA		$\left[\cdot \right]$	8	g	8	41,800	41,800	•		-	
	Average Rank	, N	41,800	41,800	41,800	41,800	41,800	,	, 74	, 77	. ~
Notes:	Notes: Alternative 1 Alternative 2 Alternative 3A,B Alternative 4A,B Alternative 5A,B Alternative 5A,B	Do Nothing intersection improvements Only (Mason) Subaltems EL from SR 400 (Beville) SR 430 (Mason) Subaltems EL from Durlawton to SR 430 (Granada) EL from SR 442 to Tumbuil Bay, Dunlawton to SR 40 (Granada)	overnents O (Beville) to S on to SR 430 on to SR 40 in Tumbuil B	nly iR 430 (Maso) (Mason) (Granada) ay, Dunlawtoi	o SR 40	ibaltemative ibaltemative ranada)	A: Requires a B: Does not n	idditional RO\ eq add. ROW	Subaltemative A: Requires additional ROW (124 ft cross section) Subaltemative B: Does not req add. ROW (100 ft cross section) (Granada)	section) sction)	

APPENDIX E Alternatives Analysis Process Summary

S.R. 5 (U.S. 1) Arterial Investment Study Alternative 1

Do Nothing (No Build)

Roadway Segment	From	То	Capacity Improvements	Maintain 4-Lane Facility	6-Lane within R-O-W	6-Lane with R-O-W Acquisition	Intersection Improvement	NB Left	NB Right	. SB Left	SB Right	EB Left	EB Right	WB Left	WB Right	Level of Service (LOS)
A	S. of SR 442	SR 44 (Canal Street)		255555	055555	53350		33333	0.000	5000	00000	55550	3600	-000	100000	
	US 1 @ SR 442	SIN SHIP DANNE SHIPE I		X	122000	200000				-	20000	20000	****	****	33333	
	US 1 @ Park Avenue			X												
	US 1 @ 10th Street US 1 @ SR A1A (SR 44)		******	X	\vdash			 	╌	-	-	┢	-			<u> </u>
	US 1 @ SR 44 Bus. (Canal Street)			X	<u> </u>								Ш	L		
В	N of SR 44 Bus. (Canal Street)	Turnbull Bay Blvd.		₩,				***								
	US 1 @ Washington Street US 1 @ Wayne Avenue			X	 -	-		H	H	\vdash	\vdash	├—	H	H	\vdash	
	US 1 @ Turnbull Bay Blvd.			x					匚							
C	N. of Turnbull Bay Blvd US 1 @ SR 5A (Nova Road)	SR 5A (Nova Road)													***	
Ð	N: of SR 5A (Nova Road)	Dunlawton Avenue		X				***						3333		
	US 1 @ Commonwealth Blvd.			X								*****	×22.55		****	
	US 1 @ Duniawton Avenue SR 5A @ Duniawton Avenue			Х	<u> </u>	L			_							
E	N. of Duniawton Avenue	SR 400 (Beville Avenue)						***			9800	***	***		3333	
	US 1 @ Herbert Street			X									****	*****	30000	
	US 1 @ Venture Drive US 1 @ Reed Canal Road			X					ļ			ldash	Ц			
	US 1 @ Ridge Blvd.			Ŷ	├	\vdash		\vdash	┢	 	\vdash	┢	H			
	US 1 @ Big Tree Road			×												
	US 1 @ Ferndale Avenue US 1 @ SR 400 (Beville Avenue)			X	_				\vdash		<u> </u>	ldash	\vdash	_		
	SR 5A @ SR 400 (Beville Avenue)			X	-	⊢		-	├	 		\vdash			\vdash	
F	N. of SR 400 (Beville Avenue)	SR 430 (Mason Avenue)		***		***									***	
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	US 1 @ Orange Avenue			Ŷ	\vdash			-	 -	⊢		├	-	┢	┝	
	US 1 @ Magnolia Avenue			X												
	US 1 @ SR 600 (US 92) US 1 @ Bay Street			X	⊢	⊢		<u> </u>	ļ_	L	<u> </u>	Ļ.,				
	US 1 @ Bethune Blvd.			X		-		-	\vdash	⊢	┢		├─		⊢	
	US 1 @ Mulially Street			X												
	US 1 @ Fairview Avenue US 1 @ Madison Avenue			×	┡						ļ.,			_		
	US 1 @ SR 430 (Mason Avenue)			X	\vdash	\vdash			\vdash	\vdash	├一	├	 		├	
	SR 5A @ SR 600 (US 92)					匚										
	Wilder Blvd.@ Palmetto Avenue SR 5A @ SR 430 (Mason Avenue)			 	├	⊢			-	⊢	-	-	<u> </u>	\vdash	ļ	
	N. of SR 430 (Mason Avenue)	SR 40 (Granada Bivd.)		3333		((0)							8888			
	US 1 @ Brentwood Drive			X		Г										
	US 1 @ 3rd Street US 1 @ 6th Street			X	-	⊢		 	├	⊢	⊢	\vdash		⊢	⊢	
	US 1 @ 8th Street			X										\vdash	\vdash	
	US 1 @ LPGA Blvd.			X												
	US 1 @ Walker Street US 1 @ Flomich Street	"		X	⊢	⊢		\vdash	⊬		\vdash	⊢	-	⊢	L	
	US 1 @ Hand Avenue			x	L							-	\vdash	一	 	 - ·
	US 1 @ SR 40 (Granada Blvd.)			X						匚	\Box					
	SR 5A @ LPGA Blvd. SR 5A @ SR 40 (Granada Blvd.)			-	-	1		-	┼~	\vdash	⊢		⊢	\vdash	-	
Ĥ	N: of SR 40 (Granada Bivd.)	SR 5A (Nova Road)														
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	US 1 @ SR 5A (Nova Road) N of SR 5A (Nova Road)	North of I-95		X	5555	200		2000			33500	5000	1000	9500	10000	
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	US 1 @ I-95 NB Ramps			X	Г											
	US 1 @ I-95 SB Ramps			Х	L	<u> </u>			1_		<u> </u>	<u> </u>	_	_		

S.R. 5 (U.S. 1) Arterial Investment Study Alternative 2

Intersection Improvements Only (TSM)

Roadway Segment	From	То	Capacity Improvements	Maintain 4-Lane Facility	6-Lane within R-O-W	6-Lane with R-O-W Acquisition	Intersection Improvement	NB Left	NB Right	SBLeft	SB Right	EB Left	EB Right	WB Left	WB Right	Level of Service (LOS)
	S. of SR 442	SR 44 (Canal Street)			***			***		***	***	****	***	88		
	US 1 @ SR 442			X						П						
	US 1 @ Park Avenue			X	 -	⊢		_	├	_	X	X		<u> </u>	<u> </u>	Improve LOS F to LOS D
	US 1 @ 10th Street US 1 @ SR A1A (SR 44)			X	\vdash	┢─		-	⊢	Н	=	\dashv		H	⊢	· · · · · · · · · · · · · · · · · · ·
	US 1 @ SR 44 Bus. (Canal Street)			x	┪	┢		x	x	X	X	х	X		x	Improve LOS F to LOS D
	N. of SR 44 Bus. (Canal Street)	Turnbull Bay Blyd	*****	***	***	***		***	 	***	***	****		***	***	
	US 1 @ Washington Street			X	L	L		匚	X	П	X			×	<u> </u>	Improve LOS F to LOS D
	US 1 @ Wayne Avenue US 1 @ Turnbull Bay Blvd.		- 000000 - 000000	X	-	\vdash		\vdash	⊢	Н	X	H	×	-	├—	Improve LOS F to LOS C
	N. of Tumbull Bay Blvd.	SR 5A (Nova Road)		ŵ	888						***	3333	^	3838	333	Improve LOS F to LOS C
	US 1 @ SR 5A (Nova Road)			Х	Ľ	Ľ			Ľ				3333	-		
D	N. of SR 5A (Nova Road)	Dunlawton Avenue	*****		***	****	*****	***	***	***	***	***	***	***	***	
	US 1 @ Commonwealth Blvd.			X				_		П				L.		
	US 1 @ Duniawton Avenue SR 5A @ Duniawton Avenue			X	\vdash	\vdash		X	⊢	 - 				<u> </u>	 	No Improvement from LOS E
	N. of Duniawton Avenue	SR 400 (Beville Avenue)		3333		3333		3333	3333	83333		33333			3333	
	US 1 @ Herbert Street			X							X	X			****	Improve LOS F to LOS D
	US 1 @ Venture Drive		*****	Х												
	US 1 @ Reed Canal Road			X	L	L		Х	⊢	Щ		X			_	Improve LOS F to LOS D
 	US 1 @ Ridge Blvd. US 1 @ Big Tree Road		-	X	⊢	H		x	┝		X	÷	X	ا پ	-	Improve LOS F to LOS C Improve LOS F to LOS D
· · · · -	US 1 @ Ferndale Avenue			Î	┢	\vdash		h	╁	Н	^	^	^	^	\vdash	Improve LOS P to LOS D
	US 1 @ SR 400 (Beville Avenue)			X												
	SR 5A @ SR 400 (Beville Avenue)		****				****									
	N. of SR 400 (Beville Avenue) US 1 @ Wilder Blvd.	SR 430 (Mason Avenue)			****			***			***		***		***	
	US 1 @ Bellevue Avenue			X	┢╌	├-		 	×	H	х		х	-	 	Improve LOS F to LOS D
	US 1 @ Orange Avenue			x	\vdash	H		\vdash	┢	┢╾	^		^	-	┢	Implove LOS F to LOS D
	US 1 @ Magnolia Avenue			X												
	US 1 @ SR 600 (US 92)			Х		┖		X	<u> </u>	X		×		Х		Improve LOS F to LOS D
	US 1 @ Bay Street US 1 @ Bethune Blvd.			X	⊢	├	******	-	┝				-	ļ	⊢	
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	US 1 @ Fairview Avenue			x	\vdash	Н		\vdash	一	 	_	_		\vdash		
	US 1 @ Madison Avenue			Х			8888B									
	US 1 @ SR 430 (Mason Avenue)			X	<u> </u>	┕	88888 8888	Х	ļ.,	X		X		X		Improve LOS F to LOS D
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	US 1 @ I-95 SB Ramps			x		1		Н	1	1	-	1	Т	\vdash	T	
										L					\Box	

S.R. 5 (U.S. 1) Arterial Investment Study Alternative 3A & 3B

6-Lane from SR 400 (Beville Avenue) to SR 430 (Mason Avenue)

Roadway Segment	From	То	Capacity Improvements	Maintain 4-Lane Facility	6-Lane within R-O-W	6-Lane with R-O-W Acquisition	Intersection Improvement	NB Left	NB Right	SB Left	SB Right	EB Left	EB Right	WB Left	WB Right	Level of Service (LOS)
A	S. of SR 442	65 444		0000	50000	20000		3555	10000		20000	20000		20000		
	US 1 @ SR 442	Sit (Callat Street)		X	88888	100000 1		****	-	****	20000	2222	****	3333	100000	
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	US 1 @ SR 44 Bus. (Canal Street)	····		X	⊢	-		×	l v	x	¥	¥	¥	-	¥	Improve LOS F to LOS D
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	US 1 @ Ridge Blvd. US 1 @ Big Tree Road			×	┡	_		L.			X			<u> </u>		Improve LOS F to LOS C
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	SR 5A @ SR 400 (Beville Avenue) N. of SR 400 (Beville Avenue)															
	US 1 @ Wilder Blvd.	SR 430 (Mason Avenue)		2000	X	233		***		***	***			****	800	
	US 1 @ Bellevue Avenue			-	Î	\vdash			\vdash	 		-		\vdash	-	
	US 1 @ Orange Avenue				X		*****			х				X		Improve LOS F to LOS D
	US 1 @ Magnolia Avenue US 1 @ SR 600 (US 92)			-	X	H		<u> </u>	-		-	-	<u> </u>		_	
	US 1 @ Bay Street			_	x	H			-	\vdash		Н	-	-	H	
	US 1 @ Bethune Blvd.				X											
	US 1 @ Mulially Street US 1 @ Fairview Avenue			_	X			_	<u> </u>]	Ε			\Box	
	US 1 @ Madison Avenue				X			\vdash	\vdash	\vdash	\vdash		H	\vdash		 -
	US 1 @ SR 430 (Mason Avenue)				X		*****	Х		х		X	х	x	x	Improve LOS F to LOS D
	SR 5A @ SR 600 (US 92) Wilder Blvd.@ Palmetto Avenue					\Box										
	SR 5A @ SR 430 (Mason Avenue)			H	\vdash	├-		\vdash	⊢	H	Н	\vdash	\vdash	├	-	
3	N. of SR 430 (Mason Avenue)	SR 40 (Granada Bivd.)		***	***	:::::		***		888	***		****		200	
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	US 1 @ LPGA Blvd.			X								Х	Х	L		Improve LOS F to LOS C
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	US 1 @ Hand Avenue			X	⊢	\vdash		\vdash	┢	\vdash	Н	\dashv	-	\vdash	-	
	US 1 @ SR 40 (Granada Blvd.)			X									х		х	Improve LOS F to LOS D
	SR 5A @ LPGA Blvd. SR 5A @ SR 40 (Granada Blvd.)			 		 		Щ	<u> </u>	П	Ш					
		SR 5A (Nova Road)			8888	::::::		3333	0000		55558	.53555	8888	55555	53556	
	US 1 @ Wilmette Avenue			X	(2000)	20000		2000	P 2000	2022	20207	77660	(2000)	(2000)	200733	
	US 1 @ SR 5A (Nova Road)	***************************************	****	X												······································
	N: of SR 5A (Nova Road) US 1 @ Airport Road	North of 1-95														
	US 1 @ I-95 NB Ramps			X	\vdash	 		-	-	H	Н	Н	-	├—		*
	US 1 @ I-95 SB Ramps			x					<u> </u>	Н	Н	\vdash		H	\vdash	
			*****												П	

S.R. 5 (U.S. 1) Arterial Investment Study Alternative 4A & 4B

6-Lane from Dunlawton Avenue to SR 430 (Mason Avenue)

			vements	acility	M-Q-W	Acquisition	ovement		Ī							
Roadway Segment	From	То	Capacity Improvements	Maintain 4-Lane Facility	6-Lane within R-O-W	6-Lane with R-O-W Acquisition	Intersection improvemen	NB Left	NB Right	SBLeft	SB Right	EB Left	EB Right	WB Left	WB Right	Level of Service (LOS)
A	S. of SR 442	SR 44 (Canal Street)		0.00	30050	20000		*00000		2222	55555	5000		2000	55000	Washington
	US 1 @ SR 442	SK-994 (Canar Street)		X	100000	****		10000		***	****	****	3333	888		
	US 1 @ Park Avenue			X	┢	Т		1-	Н		X	х	\neg			Improve LOS F to LOS D
	US 1 @ 10th Street			X												
	US 1 @ SR A1A (SR 44) US 1 @ SR 44 Bus. (Canal Street)			X		_										
8		Tumbuli Bay Bivd		X	2000	20000		Į.X.	X	X	X	X	×	2222	X	improve LOS F to LOS D
	US 1 @ Washington Street			x	****			-	X	2020	X	88881	****	X	****	Improve LOS F to LOS D
	US 1 @ Wayne Avenue			X					Ë		x		X			Improve LOS F to LOS C
	US 1 @ Turnbull Bay Bivd.			X							X		X			Improve LOS F to LOS C
***************************************	N. of Turnbull Bay Blvd. US 1 @ SR 5A (Nova Road)	SR 5A (Nova Road)		X									<u></u>			
	N. of SR 5A (Nova Road)	Dunizwton Avenue		ĥ	***	333			SSSS			***	***	3333	:::::::::::::::::::::::::::::::::::::::	
	US 1 @ Commonwealth Blvd.			X								****			2222	
	US 1 @ Dunlawton Avenue				Х	П		X								LOS F (SB THRU FAILS)
	SR 5A @ Dunlawton Avenue N. of Dunlawton Avenue	SR 400 (Beville Avenue)				5000			10000	33333			20.00			
	US 1 @ Herbert Street	Shaor (Beyme Avenue)		- XXX	x	20000			*****		3330	800	888			
	US 1 @ Venture Drive			_	X	\vdash			H	-	Н	-	-	-		
	US 1 @ Reed Canal Road		****		Х											
	US 1 @ Ridge Blvd. US 1 @ Big Tree Road	- · · · · · · · · · · · · · · · · · · ·		<u> </u>	X	\vdash		L	_	Ш						
	US 1 @ Femdale Avenue			⊢	X	\vdash		X	H	-	Х		X		\vdash	Improve LOS F to LOS D
	US 1 @ SR 400 (Beville Avenue)			\vdash	Î	\vdash		\vdash	-		\vdash	\dashv	\dashv	-	\vdash	
	SR 5A @ SR 400 (Beville Avenue)					_			-	Н	Н	\neg	_			
	N. of SR 400 (Beville Avenue)	SR 430 (Mason Avenue)				***					***	***	***	***		
	US 1 @ Wilder Blvd. US 1 @ Bellevue Avenue			<u> </u>	X	Щ		-	L	-	Н	-				
	US 1 @ Orange Avenue			\vdash	Ŷ	Н		-	 	x	Н			х	_	Improve LOS F to LOS D
	US 1 @ Magnolia Avenue				Х					ı.	Н		\dashv	^		IIIIpiove LOS F to LOS D
	US 1 @ SR 600 (US 92)				X	П										
	US 1 @ Bay Street US 1 @ Bethune Blvd.			-	X	\vdash		_	<u> </u>	_	\vdash		4		ш	
	US 1 @ Mulially Street				X	Н		-	-	⊢	\vdash	\dashv		_	Н	
	US 1 @ Fairview Avenue				x	Н				-	Н	\dashv	-		-	· · · · · · · · · · · · · · · · · · ·
	US 1 @ Madison Avenue				X		****									
	US 1 @ SR 430 (Mason Avenue) SR 5A @ SR 600 (US 92)				Х	П		Х	\Box	X	\Box	X	Х	X	X	Improve LOS F to LOS D
	Wilder Blvd. @ Palmetto Avenue			\vdash	\vdash			\vdash	\vdash	-	H	-			 	Existing fully built - LOS F
	SR 5A @ SR 430 (Mason Avenue)			\vdash	 	Н		—	\vdash		Н		x		×	No Improvement from LOS E
		SR 40 (Granada Bivd.)		***	***	***		***			***	***				provement nom LOS E
	US 1 @ Brentwood Drive US 1 @ 3rd Street			X	L	Ш				П		\Box	\Box			
	US 1 @ 6th Street		*****	X	⊢	\vdash				H	Н				\vdash	
	US 1 @ 8th Street			Ŷ	 	Н			 	H	\vdash		\dashv	-	\vdash	
	US 1 @ LPGA Blvd.			X								X	x		Н	Improve LOS F to LOS C
	US 1 @ Walker Street US 1 @ Flomich Street			X		П							\Box			
	US 1 @ Hand Avenue	·		X	⊢	Н		 		\vdash		4	_4		Ш	
	US 1 @ SR 40 (Granada Blvd.)			Ŷ	\vdash	Н			\vdash	 	Н		X	-	y	Improve LOS F to LOS D
	SR 5A @ LPGA Blwd.							_	П	 	Н	-	~		┢═┪	INPOSE COS P IO COS D
	SR 5A @ SR 40 (Granada Blvd.)															
	N: of SR 40 (Granada Blvd.) US 1 @ Wilmette Avenue	SR 5A (Nova Road)		<u></u>							888			****		
	US 1 @ SR 5A (Nova Road)			X	\vdash	Н		-		H	$\vdash \vdash$	-			H	
		North of 1-95		â		3333			333		3338		() () ()	35332	33332	
	US 1 @ Airport Road			Х	Ľ	2000			40000		2000		5555	000000	33(3)	
	US 1 @ I-95 NB Ramps			X												
	US 1 @ I-95 SB Ramps			Х	\vdash	Щ		\vdash	<u> </u>		Ц	二				
			*****	<u> </u>		L			L							

S.R. 5 (U.S. 1) Arterial Investment Study Alternative 5A & 5B

6-Lane from Dunlawton Avenue to SR 40 (Granada Blvd.)

Roadway Segment	From	То	Capacity improvements	Maintain 4-Lane Facility	6-Lane within R-O-W	6-Lane with R-O-W Acquisition	Intersection Improvement	NB Left	NB Right	SBLeft	SB Right	EB Left	EB Right	WB Left	WB Right	Level of Service (LOS)
A	S. of SR 442	SR 44 (Canal Street)		33333	2000	2000		3332	22222	2000		20000	 20000	00000	10530	
	US 1 @ SR 442	CH 240 COALLAND LICENTERS		X	****	*****		****	55550	****	333	33333	*****	****		
	US 1 @ Park Avenue			x	 	_		Н	┢		x	X	-	_	-	Improve LOS F to LOS D
	US 1 @ 10th Street			X							Ë	Ë	_		┢	in provided in the Edd B
	US 1 @ SR A1A (SR 44)		*****	X			*****							Ш		
100000000000000000000000000000000000000	US 1 @ SR 44 Bus. (Canal Street)			X	<u> </u>	ļ.,		X	<u>X</u>	X.	X	X	X		X	Improve LOS F to LOS D
8	N of SR 44 Bus. (Canal Street) US 1 @ Washington Street	Tumbull Bay Blyd	!	i i				***	×			***				
	US 1 @ Wayne Avenue	 		X	 	\vdash		-	X	⊢	X	\vdash	×	X	\vdash	Improve LOS F to LOS D
	US 1 @ Turnbull Bay Blvd.			Î				Н	\vdash	_	Ŷ	⊢	÷		 	Improve LOS F to LOS C Improve LOS F to LOS C
	N. of Turnbull Bay Blvd.	SR 5A (Nova Road)				***						***		****	***	p.010 COO W EOO C
	US 1 @ SR 5A (Nova Road)			X												
	N. of SR 5A (Nova Road) US 1 @ Commonwealth Blvd.	Dunlawton Avenue							***			****		***		
	US 1 @ Commonweam Bivo.			х	١.				<u> </u>	<u> </u>	_	_			_	
	SR 5A @ Dunlawton Avenue			⊢	X			X	⊢	⊢					\vdash	LOS F (SB THRU FAILS)
	N. of Duniawton Avenue	SR 400 (Beville Avenue		38883	****	***		33333	20000		9000	3333	3000	8880	****	
	US 1 @ Herbert Street			_	X	*****		33333	20000			20,000	*****	*****		
	US 1 @ Venture Drive		******		X		*****	ĺ								
	US 1 @ Reed Canal Road				Х		*****									
	US 1 @ Ridge Blvd.			<u> </u>	X			Ļ	ļ	<u> </u>	L.,			Щ.		
	US 1 @ Big Tree Road US 1 @ Ferndale Avenue			<u> </u>	X	_		X	_	⊢	X		X		_	Improve LOS F to LOS D
	US 1 @ SR 400 (Beville Avenue)				x			\vdash	-	├	Н		H		-	
	SR 5A @ SR 400 (Beville Avenue)			_	Ĥ					1	Н	-	_		\vdash	
	N. of SR 400 (Beville Avenue)	SR 430 (Mason Avenue)	****	***	***	▓	*****	***		***	▒	***	***	***		
	US 1 @ Wilder Blvd.				Х											
	US 1 @ Bellevue Avenue US 1 @ Orange Avenue			_	X	_			L	٠	Щ			_	_	
	US 1 @ Magnolia Avenue			_	X	_		H		X	_	H		X	-	Improve LOS F to LOS D
	US 1 @ SR 600 (US 92)			-	x			H	┝┈	-	Н	-				
	US 1 @ Bay Street				X										\vdash	
	US 1 @ Bethune Blvd.		*****		X		*****								Ш	
	US 1 @ Mulially Street			_	X					L					П	
	US 1 @ Fairview Avenue US 1 @ Madison Avenue				X	Н		Щ	\vdash		Н	Н	Щ		ــــ	
	US 1 @ SR 430 (Mason Avenue)			Н	÷	 		Н	├─	\vdash	H	\vdash		—	├	
	SR 5A @ SR 600 (US 92)				 	Н		Н	-	 	\vdash	Н		_	\vdash	Existing fully built - LOS F
	Wilder Blvd.@ Palmetto Avenue													_	<u> </u>	manage range pulit - COO F
	SR 5A @ SR 430 (Mason Avenue)	~~~~					***						X		×	No Improvement from LOS E
	N. of SR 430 (Mason Avenue) US 1 @ Brentwood Drive	SR 40 (Granada Blvd.)		***												
	US 1 @ 3rd Street			H	X	\vdash		Н	├-	H	Н				H	
	US 1 @ 6th Street			\vdash	Ŷ	H		Н		\vdash		\vdash	⊣	—	⊢	
	US 1 @ 8th Street				X			П		\vdash	Н			_	Н	· · · · · · · · · · · · · · · · · · ·
	US 1 @ LPGA Blvd.				х		*****									
	US 1 @ Walker Street	<u> </u>			X				Щ							
	US 1 @ Flomich Street US 1 @ Hand Avenue			<u> </u>	×	Ш			<u> </u>	\vdash	L			_	\Box	
	US 1 @ SR 40 (Granada Blvd.)			-	X	 		х		x		W	٦	J	₩	In
	SR 5A @ LPGA Blvd.	****		-	┢	H		H	├	 ^	H	-	-	^	┝	Improve LOS F to LOS D
	SR 5A @ SR 40 (Granada Blvd.)							М		x		Н		X	x	Improve LOS F to LOS D
		SR 5A (Nova Road)		****		***			****			****	***		***	
	US 1 @ Wilmette Avenue			Х				П		匚						
	US 1 @ SR 5A (Nova Road) N. of SR 5A (Nova Road)	172 1 402 1 0 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1		X	2222	33333		55550	2006							
	US 1 @ Airport Road	North of I-95		-				***	888	1000						
	US 1 @ I-95 NB Ramps			X	\vdash			Н		\vdash	\vdash	Н		-	\vdash	
	US 1 @ I-95 SB Ramps			x	\vdash			Н	\vdash	 				-		

S.R. 5 (U.S. 1) Arterial Investment Study Alternative 6A & 6B

6-Lane from SR 442 to Turnbull Bay and Dunlawton Avenue to SR 40 (Granada Bivd.)

Roadway Segment	From	То	Capacity Improvements	Maintain 4-Lane Facility	6-Lane within R-O-W	6-Lane with R-O-W Acquisition	Intersection Improvement	NB Left	NB Right	SBLeft	SB Right	EB Left	EB Right	WB Left	WB Right	Level of Service (LOS)
***** A ******	S. of SR 442	SR 44 [Canal Street]		***							***	***	****			
	US 1 @ SR 442 US 1 @ Park Avenue			 	X	H		Х		_	-	X			_	LOS F (SB THRU FAILS)
	US 1 @ 10th Street			 	x	\vdash		-	Н	\vdash	-		_	⊢		
	US 1 @ SR A1A (SR 44)				Х				Ŀ						_	
	US 1 @ SR 44 Bus. (Canal Street)				X			X	X	X	X	X	Х		X	Improve LOS F to LOS D
	N. of SR 44 Bus. (Ganal Street) US 1 @ Washington Street	Turnbull Bay Blvd.		 	X	****		***	×	***				ŵ		100511005
	US 1 @ Wayne Avenue			\vdash	Î			-	├^	\vdash				X		Improve LOS F to LOS D
	US 1 @ Tumbuli Bay Blvd.			х					X		X		X		х	Improve LOS F to LOS D
	N. of Turnbull Bay Blvd. US 1 @ SR 5A (Nova Road)	SR 5A (Nova Road)		Į₩,								***				
	N. pf SR SA (Nova Road)	Dunlawton Avenue		X	3333			33333	35353	3333	00000	46000	300000	00000	00000	00000000000000000000000000000000000000
	US 1 @ Commonwealth Blvd.			Х	-			***	20200	*****	00000	20000	20000	*****	25500	
	US 1 @ Dunlawton Avenue				X			Х						Ш		LOS F (SB THRU FAILS)
E	SR 5A @ Dunlawton Avenue N. of Dunlawton Avenue	SR 400 (Beville Avenue)		3333	00000	35553		2000	.00000	3373	55555	1000				
	US 1 @ Herbert Street	Sic 400 (Devine Welling)		- XXX	X	****			33330		*****	::::::::::::::::::::::::::::::::::::::	30000			
	US 1 @ Venture Drive				X				_		Н				_	_ ·
	US 1 @ Reed Canal Road US 1 @ Ridge Blvd.		*****		Х									i		
	US 1 @ Ridge Bivd.			\vdash	X			x			W					
	US 1 @ Ferndale Avenue			\vdash	Ŷ	-		-	Н	Н	X		X	H	Н	Improve LOS F to LOS D
	US 1 @ SR 400 (Beville Avenue)				Х		***						_			
*****	SR 5A @ SR 400 (Beville Avenue) N. of SR 400 (Beville Avenue)				2000				3	*****						
************	US 1 @ Wilder Blvd.	SR 430 (Mason Avenue)		***	X	*****		****		****	****	800	***	::::::::::::::::::::::::::::::::::::::	****	
	US 1 @ Bellevue Avenue				x	\vdash		-	=		\vdash		-		\vdash	
	US 1 @ Orange Avenue				Х					X				х		Improve LOS F to LOS D
	US 1 @ Magnolia Avenue US 1 @ SR 600 (US 92)			Н	X	\vdash			_							
	US 1 @ Bay Street			Н	X	\vdash		Н	-		\vdash		_		-	
	US 1 @ Bethune Blvd.				x	\vdash		H	_	_	\exists		\dashv	-	\vdash	
	US 1 @ Mulially Street		***		X											
	US 1 @ Fairview Avenue US 1 @ Madison Avenue	<u></u>		Н	X			Ш		_	\dashv	\Box				
	US 1 @ SR 430 (Mason Avenue)			Н	X	Н		-		\dashv		\dashv	1	Н		
	SR 5A @ SR 600 (US 92)										\vdash		\dashv	\vdash	\dashv	Existing Fully Built - LOS F
	Wilder Blvd.@ Palmetto Avenue															
· · ·	SR 5A @ SR 430 (Mason Avenue) N. of SR 430 (Mason Avenue)	SR 40 (Granada Blvd.)		20000	(2)(2)(8)	00000		20,755	00000	0300	30000	3333	X	00000	X	No improvement from LOS E
	US 1 @ Brentwood Drive			*****	X	0000		****		100000	3333		3337	****	::::::::::::::::::::::::::::::::::::::	
	US 1 @ 3rd Street				X											
	US 1 @ 6th Street US 1 @ 8th Street			Ш	X	Ш			\Box		\square					
	US 1 @ LPGA Blvd.				X	\vdash			-		\vdash		_	\Box		
	US 1 @ Walker Street			Н	x	$\neg \dashv$		Н	-			\dashv		\dashv	-	· · · · · · · · · · · · · · · · · · ·
	US 1 @ Flomich Street				X											
	US 1 @ Hand Avenue US 1 @ SR 40 (Granada Blvd.)	-		Н	Ÿ	Н		IJ		Ų	コ	Ţ	듸			
	SR 5A @ LPGA Blvd.			\vdash	X	\vdash		Х	-	X		×	×.	X	X	Improve LOS F to LOS D
	SR 5A @ SR 40 (Granada Blvd.)					\Box			\dashv	x	\dashv	\dashv	-	X	x	Improve LOS F to LOS D
		SR 5A (Nova Road)		***	***	***		****	***		***	***	***		***	
	US 1 @ Wilmette Avenue US 1 @ SR 5A (Nova Road)			X	Щ	$\sqcup I$			\Box			コ				
1		North of I-95		X	3333	3333		35300	3333	(3) (3)	30000	3322	55553	(0)200	2222	
	US 1 @ Airport Road			X	2000	22.00		00000	55551	35555-	3333		6566	0.000	330	
					$\overline{}$	$\overline{}$		_		_			_	-		
	US 1 @ I-95 NB Ramps US 1 @ I-95 SB Ramps			X							\Box		i			

ART-PLAN 2.0

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

2024 Design Hour - Alternative 2

ART-PLAN 2.0

Arterial Level of Service Estimating Software
Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP A)

From:

SR 442

To:

SR 5A (PORT ORANGE)

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 2

TRAFFIC CHARACTERISTICS

AADT:

46,388

K FACTOR:

0.086

D FACTOR:

0.531

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1.900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

2

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

U

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

.

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Α

P≕PRETIMED

S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

N/A

SB		PEAK DIRE	CTION'S SPI	ECIFIC INP	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
]	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	2.020							· · · · · · · · · · · · · · · · · · ·
2-3	_	2,036	0	2	85		28696.80	28,697	3
1	0	2,078	0	2	90		0.57	2,983	3
3-4	0	2,216	0	2	120	0.66	0.61	3,226	3
4-5	0	1,829	0	2	120	0.52	0.17	882	3
5-6	0	1,983	0	2	96	0.69	0.18	940	4
6-7	0	2,322	0	2	96	0.69	0.05	264	4
7-8	0	2,005	2.29	2	90	0.59	1.31	6,938	4
8-9	0	1,918	0	2	100	0.5 5	1.00	5,296	3
9-10	0	1,201	0	2	90	0.34	1.49	7,846	3
10-11	0	0						.,	J
11-12	0	0							
12-13	0	0							
13-14	0	0							
14-15	0	0						•	
15-16	0	0							
16-17	0	0							
17-18	0	0							
18-19	0	0							
19-20	0	0							

SB	PEAK DIRE	CTION RES	ULTS	, <u></u>			
	NOTES	THROUGH		1	INTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 5A (PO) TO TURNBULL	2237	1.00	26.2	D	41.7	Α
2-3	TURNBULL TO WAYNE	2284	0.97	19.1	С	27.5	С
3-4	WAYNE TO WASHINGTON	2435	0.97	22.0	С	27.1	С
4-5	WASHINGTON TO CANAL	2010	1.02	39.9	D	8.6	F·
5-6	CANAL TO LYTLE SB	2179	0.83	8.3	В	21.2	D
6-7	LYTLE SB TO LYTLE NB	2 552	0.97	16.5	С	6.7	F -
7-8	LYTLE NB TO 10TH ST	2153	0.96	18.0	С	36.8	A
8-9	10TH ST TO PARK	2108	1.01	31.6	D	29.8	В
9-10	PARK TO SR 442	1320	1.02	43.7	E	30.4	В
10-11		0					_
11-12		0					
12-13		0					
13-14		0					
14-15		0				•	
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arterial S	Speed =	33.1	mph		 -	
Ļ		LOS =	В	•			

NB	OFF-PEAK [DIRECTION'	S SPECIFI	C INPUTS			
		% TURNS		CYCLE	EFFECTIVE		
		FROM		LENGTH	g/C		
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	ТҮРЕ
20-19	0			-			
19-18	0						
18-17	0						
17-16	0						
16-15	0						
15-14	0						
14-13	0						
13-12	0						
12-11	0						
11-10	0						
1 0 -9	1,730	2.08	2	100	0.55	7,846	3
9-8	1,738	0.46	2	90	0.69	5,296	
8-7	1,792	16.52	2	96	0.69	6,938	2 2 2 3
7-6	1,496	0	2	96	0.69	264	2
6-5	1,380	0	2	120	0.52	940	3
5-4	1,672	0	2	120	0.48	882	3
4-3	1,604	2.24	2	90	0.62	3,226	3
3-2	1,552	1.03	2	85	0.59	2,983	3
2-1	892	0	2	100	0.61	28,697	3

NB	OFF-PEAK	DIRECTION	RESULTS				· · · · · · · · · · · · · · · · · · ·
		THROUGH			INTERSECTION		ARTERIAL
:		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		. 0					
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12		0					
12-11		0					
11-10		0					
10-9	SR 442 TO PARK	1,862	0.89	16.6	С	38.1	Α
9-8	PARK TO 10TH ST	1,901	0.73	6.1	В	40.9	A
8-7	10TH ST TO LYTLE NB	1,644	0.63	5.5	В	42.1	A
7-6	LYTLE NB TO LYTLE SB	1,644	0.63	5.5	В	14.3	E
6-5	LYTLE SB TO CANAL	1,516	0.77	16.4	C	15.7	E
5-4	CANAL TO WASHINGTON	1,837	1.02	40.9	E	8.4	F
4-3	WASHINGTON TO WAYNE	1,723	0.73	8.5	В	34.5	В 1
3-2	WAYNE TO TURNBULL	1,688	0.76	9.5	В	33.1	В
2-1	TURNBULL TO SR 5A (PO)	980	0.42	6.7	В	44.1	A
NB	Arterial S	Speed =	37.6			7-7.1	
		LOS =	Α	•			

NOTE: PRESS ALT-P TO CALCULATE AND PRINT SPREADSHEET

ART-PLAN 2.0

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP B)

From:

SR 5A (PORT ORANGE)

To:

FERNDALE AVE

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 2

TRAFFIC CHARACTERISTICS

AADT:

45.108

K FACTOR:

0.088

D FACTOR:

0.579

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

2

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR

RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Α

P=PRETIMED S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

N/A

SB		PEAK DIRE	DISTANCE						
	LINK	% TURNS			CYCLE	EFFECTIVE	BETWEEN		
	AADT	FROM			LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	2,250	0	2	420	0.00			
2-3	0	2,386	0	2	120	0.62	0.51	2,714	4
3-4	0	2,349	0		120	0.69	0.51	2,672	4
4-5	0	2,552	3.06	2	120	0.64	0.66	3,495	4
5-6	0	2,352 2,151		2	120	0.69	0.37	1,948	4
6-7	0	1,164	0	2	120	0.60	0.67	3,522	4
7-8	0		0	2	120	0.33	0.14	760	4
8 -9	0	1,401	10.42	2	80	0.60	1.37	7,255	4
9-10		1,182	0	2	100	0.38	1.23	6, 50 5	4
10-11	0	0							,
11-12	0	0							
12-13	0	0							
	0	0							
13-14	0	0	•						
14-15	0	0							
15-16	0	0							
16-17	0	0							ı
17-18	0	0							
18-19	0	0							
19-20	0	0							

(

SB	PEAK DIRECTION RESULTS							
i	NOTES	THROUGH		1	INTERSECTION		ARTERIAL	
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK	
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS	
1-2	FERNDALE TO BIG TREE	2473	1.05	42.9	E	18.3	D	
2-3	BIG TREE TO RIDGE	2622	1.00	23.0	С	24.5	c	
3-4	RIDGE TO REED CANAL	2581	1.06	43.1	E	21.2	D	
4-5	REED CANAL TO VENTUR	2719	1.04	33.4	D	16.9	E	
5-6	VENTURE TO HERBERT	2364	1.04	37 .7	D	22.7	c	
6-7	HERBERT TO SR 421	1279	1.02	47.7	Е	6.7	F	
7-8	SR 421 TO COMMONWEAL	1379	0.60	6.7	В	41.7	A	
8-9	COMMONWEALTH TO SR	1299	0.90	23.4	C	34.4	В	
9-10		0				04.4		
10-11		0			•			
11-12		0						
12-13		0						
13-14		0						
14-15		0						
15-16		0						
16-17		0						
17-18		0						
18-19		0						
19-20		0						
SB	Arterial		24.7 r	nph				
		LOS =	C .					

NB	OFF-PEAK I	DIRECTION'	S SPECIFI	C INPUTS			
		% TURNS		CYCLE	EFFECTIVE		
		FROM		LENGTH	g/C		
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0						
19-18	0						
18-17	0						
17-16	0						
16-15	0						
15-14	0						
14-13	0						
13-12	0						
12-11	0						
11-10	0						
10-9	0						
9-8	1,014	0.39	2	80	0.60	6,505	2
8-7	754	0	2	120	0.33	7,255	2
7-6	1,416	1.69	2	120	0.60	760	2
6-5	1,602	0	2	120	0.69	3,522	2
5-4	1,524	0	2	120	0.53	1,948	
4-3	1,592	2.95	2	120	0.57	3,495	2
3-2	1,498	2.74	2	120	0.62	2,672	2 2
2-1	1,623	0	2	60	0.69	2,714	2

NB	OFF-PEAK	DIRECTION	RESULTS				
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	Los	(MPH)	LOS
20-19		0		-			
19-18		0					
18-17		0					
17-16		0					i
16-15		0					
15-14		0					
14-13		0					
13-12		0					
12-11		0					
11-10		0					
10-9		0					
9-8	SR 5A TO COMMONWEAL	1,110	0.49	5.9	В	41.7	Α
8-7	COMMONWEALTH TO SR	829	0.66	22.9		35.4	Â
7-6	SR 421 TO HERBERT	1,530	0.67	10.8	В	17.4	D
6-5	HERBERT TO VENTURE	1,760	0.67	7.3	В	36.2	Ā
5-4	VENTURE TO REED CANA	1,675	0.84	17.5	_	22.9	c
4-3	REED CANAL TO RIDGE	1,698	0.79	14.2	_	31.8	В
3-2	RIDGE TO BIG TREE	1,601	0.68	10.3	_	31.5	В
2-1	BIG TREE TO FERNDALE	1,784	0.68	3.9	_	36.9	A
NB	Arterial S	Speed =	33.8			30,9	_^_
		LOS =	В	 			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP C)

From:

FERNDALE AVE

To:

SR 430/MASON AVE

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 2

TRAFFIC CHARACTERISTICS

AADT:

42,475

K FACTOR:

0.083

D FACTOR:

0.544

PHF:

0.920

ADJ. SATURATION FLOW RATE:

1.900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

U

ARTERIAL CLASS:

1 (1, 2, or 3)

35 (45, 40, or 35)

FREE FLOW SPEED (mph):

Use Free flow speed of:

For Arterial Type and Class:

55, 50, 45, 40 or 35

Rural Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

P=PRETIMED S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIRE	CTION'S SP	ECIFIC INF	UTS		DISTANCE		· · · · · · · · · · · · · · · · · · ·
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
ľ	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	1 742	4.00		400				
2-3	0	1,742	1.89	2	120	0.62	0.23	1,214	4
!9		1,555	0	2	120	0.45	0.31	1,616	4
3-4	0	1,783	0.67	2	60	0.57	0.12	623	4
4-5	0	1,651	4.78	2	120	0.66	0.18	966	4
5-6	0	1,568	1.08	2	120	0.53	0.21	1,119	4
6-7	0	1,523	0	2	120	0.44	0.14	760	4
7-8	0	2,042	0.49	2	120	0.69	0.15	808	4
8-9	0	1,826	0	2	120	0.53	0.15	771	4
9-10	0	2,100	0	2	120	0.58	0.73	3,828	4
10-11	0	2,256	1.69	2	120	0.64	0.66	3,480	
11-12	0	1,838	0	2	120	0.55	0.39	2,043	
12-13	0	2,506	0 -	2	60	0.69	0.20	1,061	4
13-14	0	0				0.00	0.20	1,001	7
14-15	0	0							
15-16	0	0							
16-17	0	0							
17-18	0	0							
18-19	0	0							
19-20	0	0							

SB	PEAK DIR	ECTION RES	ULTS				
	NOTES	THROUGH		1	NTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 430 TO MADISON	1858	0.79	11.9	В	19.1	D
2-3	MADISON TO FAIRVIEW	1690	0.99	33.4	D	14.3	E I
3-4	FAIRVIEW TO MULLALY	1925	0.89	10.0	В	15.3	E
4-5	MULLALY TO BETHUNE	1709	0.68	8.5	В	19.4	_ D
5-6	BETHUNE TO BAY	1686	0.84	17.2	С	15.7	Ē
6-7	BAY TO SR 600	1655	0.99	33.3	D	8.5	F
7-8	SR 600 TO MAGNOLIA	2209	0.84	10.3	В	16.9	E
8-9	MAGNOLIA TO ORANGE	· 1985	0.99	28.6	D	9.5	F
9-10	ORANGE TO BELLEVUE	2283	1.03	36.5	D	21.4	D
10-11	BELLEVUE TO WILDER	2411	0.99	24.2	С	23.9	c
11-12	WILDER TO SR 400	1998	0.96	23.2	С	19.6	D
12-13	SR 400 TO FERNDALE	2724	1.04	28.0	D	11.8	F
13-14		0					· ·
14-15		0					
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0				•	
SB	Arterial	Speed =	17.0 r	mph			
		LOS =	E				

NB	OFF-PEAK DIR	OFF-PEAK DIRECTION'S SPECIFIC INPUTS						
	%	TURNS		CYCLE	EFFECTIVE			
		FROM		LENGTH	g/C			
	PEAK HOUR E	XCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL	
LINK	VOLUME I	ANES	LANES	19-1	19-1	(FT)	TYPE	
20-19	0	-		•				
19-18	0							
18-17	0							
17-16	0							
16-15	0							
15-14	0							
14-13	0							
13-12	1,191	0	2	120	0.55	1,061	2	
12-11	1,846	11.54	2	120	0.64	2,043	2	
11-10	1,546	0	2	120	0.58	3,480	2	
10-9	1,344	0	2	120	0.42	3,828	2	
9-8	1,561	4.16	2	120	0.57	771		
8-7	1,121	0	2	120	0.44	808	2	
7-6	1,533	3.59	2	120	0.53	760	2	
6-5	1,498	0	2	120	0.54	1,119	2	
5-4	1,696	0.47	2	60	0.57	966	2	
4-3	1,482	0	2	120	0.45	623	2	
3-2	1,684	3.27	2	120	0.62	1,616	2	
2-1	1,573	0	2	120	0.45	1,214	2	

NB	OFF-PEAK	DIRECTION	RESULTS	 			
1		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12	FERNDALE TO SR 400	1,295	0.62	12.2	В	17.7	D
12-11	SR 400 TO WILDER	1,775	0.73	10.0	В	25.8	C
11-10	WILDER TO BELLEVUE	1,680	0.76	12.9	В	28.0	В
10-9	BELLEVUE TO ORANGE	1,461	0.92	26.7	D	23.9	C
9-8	ORANGE TO MAGNOLIA	1,626	0,75	13.3	В	14.8	E
8-7	MAGNOLIA TO SR 600	1,218	0.73	18.6	C	12.7	F
7-6	SR 600 TO BAY	1,606	0.80	16.1	C	13.3	E
6-5	BAY TO BETHUNE	1,628	0.79	15.5	C	16.4	E
5-4	BETHUNE TO MULLALY	1,835	0.85	8.7	В	19.2	D D
4-3	MULLALY TO FAIRVIEW	1,611	0.94	26.8	D	19.2 8.6	_
3-2	FAIRVIEW TO MADISON	1,771	0.75	11.2	В		F
2-1	MADISON TO SR 430	1,710	1.00	35.8	D	22.9	C
NB		Speed =		nph	<u> </u>	11.1	F
		LOS =	D	p.ii			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION	

Road Name:

US 1 (GROUP D)

From:

SR 430/MASON AVE

To:

I-95 SB RAMPS

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 2

TRAFFIC CHARACTERISTICS

AADT:

34.344

K FACTOR:

0.089

D FACTOR:

0.526

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

2

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural Transitioning, Class 1

55, 50, 45, 40 or 35

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35 40, 35, 30 or 25

Urban or Transitioning, Class 2

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Α

P=PRETIMED

S=SEMIACTUATED A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIRE	CTION'S SP	ECIFIC INF	UTS		DISTANCE		2
ŀ	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LÌNK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	1,140						······································	
2-3	0		0	2	60	0.69	0.18	945	4
3-4	-	1,447	0	2	90	0.46	2.61	13,797	3 3 3 3
	0	730	0	2	100	0.37	1.13	5,945	3
4-5	0	886	0	2	60	0.67	1.11	5,856	3
5-6	0	726	0	2	120	0.21	0.72	3,791	3
6-7	0	1,472	12.02	2	90	0.46	0.84	4,451	3
7-8	0	1,590	12.7	2	90	0.48	1.26	6,663	3
8-9	0	1,540	5.78	2	90	0.52	0.49	2,577	4
9-10	0	1,519	10.86	2	90	0.47	0.25	1,315	اً
10-11	0	1,636	5.13	2	90	0.52	0.50	2,640	4
11-12	0	1,628	6.2	2	90	0.51	0.25	1,325	7
12-13	0	1,607	2.86	2	90	0.54	0.35	1,843	
13-14	0	1,628	2.83	2	90	0.53	0.18	935	4
14-15	0	1,417	0	2	120	0.45	0.20	1,040	4
15-16	0	0				0.40	0.20	1,040	4
16-17	0	0							
17-18	0	0							
18-19	0	0							
19-20	0	0							ļ

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SB	PEAK DIRE	CTION RES	ULTS		<u></u>		
	NOTES	THROUGH		1	NTERSECTION		ARTERIAL
1	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	I-95 NB TO I-95 SB	1253	0.48	2.9	A	27.7	С
2-3	I-95 SB TO AIRPORT RD	1590	0.91	20.0	С	40.0	A
3-4	AIRPORT TO SR 5A (OB)	802	0.57	16.7	C	36.3	A
4-5	SR 5A (OB) TO WILMETTE	974	0.38	2.9	Α	43.1	A
5-6	WILMETTE TO SR 40	798	1.01	57.6	E	19.1	D
6-7	SR 40 TO HAND	1423	0.81	15.7	С	33.7	В
7-8	HAND TO FLOMICH	1525	0.84	15.7	C	37.4	Ā
8-9	FLOMICH TO WALKER	1594	0.81	12.9	В	29.2	В
9-10	WALKER TO LPGA	1488	0.84	15.6	C	19.4	D
10-11	LPGA TO 8TH ST	1706	0.86	14.3	В	28.8	В
11-12	8TH ST TO 6TH ST	1678	0.87	14.9	В	19.9	D
12-13	6TH ST TO 3RD ST	1715	0.84	12.9	В	24.9	c
13-14	3RD ST TO BRENTWOOD	1738	0.86	14.1	В	16.9	E
14-15	BRENTWOOD TO SR 430	1557	0.91	24.2	·C	13.4	E
15-16		0		··-	-	10.4	- 1
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arterial		31.1 m	nh			·
		LOS =	В	·t- · ·			

NB	<u></u>						
	PEAK HOUR	% TURNS FROM EXCLUS.		CYCLE LENGTH SIGNALS	EFFECTIVE g/C SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0			*	·		
19-18	0						
18-17	0		•				
17-16	0						
16-15	0						
15-14	1,873	6.25	2	90	0.53	1,040	2
14-13	1,769	2.09	2	90	0.54	935	2
13-12	1,704	0.53	2	90	0.69	1,843	2
12-11	1,732	0.52	· 2	90	0.68	1,325	2
11-10	1,522	1.25	2	90	0.61	2,640	2
10-9	1,624	0.86	2	90	0.52	1,315	2
9-8	1,601	3.81	2	90	0.48	2,577	2
8-7	1,479	2.84	2	90	0.61	6,663	3
7-6	805	0	2	120	0.29	4,451	3
6-5	983	0	2	60	0.67	3,791	3
5-4	810	0	2	100	0.62	5,856	3
4-3	1,706	0	2	90	0.69	5,945	3
3-2	1,343	0	2	60	0.47	13,797	3
2-1	1,092	0	2	60	0.62	945	2

NB	OFF-PEAK	DIRECTION	RESULTS				
		THROUGH			INTERSECTION	*	ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0					
15-14	SR 430 TO BRENTWOOD	1,930	0.96	20.1	С	14.9	E
14-13	BRENTWOOD TO 3RD ST	1,903	0.93	16.9	С	15.4	E
13-12	3RD ST TO 6TH ST	1,863	0.71	6.0	В	30,3	В
12-11	6TH ST TO 8TH ST	1,893	0.73	6.6	В	26.1	C
11-10	8TH ST TO LPGA	1,652	0.71	8.3	В	32.8	В
10-9	LPGA TO WALKER	1,769	0.90	15.8	С	19.3	D
9-8	WALKER TO FLOMICH	1,692	0.93	19.3	С	25.7	C
8-7	FLOMICH TO HAND	1,579	0.68	8.2	В	40.7	Ā
7-6	HAND TO SR 40	885	0.80	28.2	D	28.6	В
6-5	SR 40 TO WILMETTE	1,080	0.43	3.1	Α	40.0	A
5-4	WILMETTE TO SR 5A (OB)	890	0.38	6.1	В	41.3	A
4-3	SR 5A (OB) TO AIRPORT	1,875	0.71	6.2	В	41.3	A
3-2	AIRPORT TO I-95 NB	1,476	0.83	11.5	В	42.0	A
2-1	I-95 NB TO I-95 SB	1,200	0.51	4.3	Ā	25.7	C
NB	Arterial	Speed =	34.1	mph		20.1	
		LOS =	В	• * * * *			
	PRESS ALT- P. TO. CALCULATION					···	

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

2024 Design Hour - Alternative 3A & 3B

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP A)

From:

SR 442

To:

SR 5A (PORT ORANGE)

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 3A & 3B

TRAFFIC CHARACTERISTICS

AADT:

46,388

K FACTOR:

0.086

D FACTOR:

0.531

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1.900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

2

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural Transitioning, Class 1

55, 50, 45, 40 or 35

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

TYPE SIGNAL SYSTEM:

Α

P=PRETIMED S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIRE	CTION'S SPI	ECIFIC INP	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1.2		2.020				0.50			
1-2	0	-,	0	2	85	0.59	28696.80	28,697	3
2-3	0	2,078	0	2	90	0.62	0.57	2,983	3
3-4	0	2,216	0	2	120	0.66	0.61	3,226	3
4-5	0	-,	0	2	120	0.52	0.17	882	3
5-6	0	•	0	2	96	0.69	0.18	940	4
6-7	0	2,322	0	2	96	0.69	0.05	264	4
7-8	0	2,005	2.29	2	90	0.59	1.31	6,938	4
8-9	0	1,918	0	2	100	0.55	1.00	5,296	3
9-10	0	1,201	0	2	90	0.34	1.49	7,846	3
10-11	0	0							
11-12	0	0							
12-13	0	0							
13-14	0	۰ 0							
14-15	0	0							
15-16	0	0		•					
16-17	0	0							,
17-18	0	0							
18-19	0	0							
19-20	0	0							

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SB	PEAK DIRE	CTION RES	ULTS			 	
	NOTES	THROUGH		I	NTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 5A (PO) TO TURNBULL	2237	1.00	26.2	D	41.7	Α
2-3	TURNBULL TO WAYNE	2284	0.97	19.1	С	27.5	С
3-4	WAYNE TO WASHINGTON	243 5	0.97	22.0	С	27.1	С
4-5	WASHINGTON TO CANAL	2010	1.02	39.9	D	8.6	F
5-6	CANAL TO LYTLE SB	2179	0.83	8.3	В	21.2	D
6-7	LYTLE SB TO LYTLE NB	2552	0.97	16.5	С	6.7	F
7-8	LYTLE NB TO 10TH ST	2153	0.96	18.0	С	36.8	Α
8-9	10TH ST TO PARK	2108	1.01	31.6	D	29.8	В
9-10	PARK TO SR 442	1320	1.02	43.7	E	30.4	В
10-11		0					
11-12		0					
12-13		0					
13-14		0					
14-15		0					
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arterial	Speed =	33.1 n	nph			
<u> </u>		LOS =	В	-			

NB	OFF-PEAK [DIRECTION'	S SPECIFI	C INPUTS			
	•	% TURNS		CYCLE	EFFECTIVE		
		FROM		LENGTH	g/C		
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0			 			
19-18	0						
18-17	0						
17-16	0						
16-15	0						
15-14	0						
14-13	0						
13-12	0						
12-11	0						
11-10	0						!
10-9	1,730	2.08	2	100	0.5 5	7,846	3
9-8	1,738	0.46	2	90	0.69	5,296	2
8-7	1,792	16.52	2	96	0.69	6,938	2
7-6	1,496	0	2	96	0.69	264	2
6-5	1,380	0	2	120	0.52	940	3 2 2 2 3
5-4	1,672	0	2	120	0.48	882	3
4-3	1,604	2.24	2	90	0.62	3,226	3
3-2	1,552	1.03	2	85	0.59	2,983	3
2-1	892	0	2	100	0.61	28,697	3

NB	OFF-PEAK	DIRECTION	RESULTS				
		THROUGH			INTERSECTION		ARTERIAL
ŀ		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0			•		
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13	•	0					
13-12		0					
12-11		0					
11-10		0					
10-9	SR 442 TO PARK	1,862	0.89	16.6	С	38.1	Α
9-8	PARK TO 10TH ST	1,901	0.73	6.1	В	40.9	A
8-7	10TH ST TO LYTLE NB	1,644	0.63	5.5	В	42.1	A
7-6	LYTLE NB TO LYTLE SB	1,644	0.63	5.5	В	14.3	E
6-5	LYTLE SB TO CANAL	1,516	0.77	16.4	С	15.7	E
5-4	CANAL TO WASHINGTON	1,837	1.02	40.9	E	8.4	F
4-3	WASHINGTON TO WAYNE	1,723	0.73	8.5	В	34.5	В
3-2	WAYNE TO TURNBULL	1,688	0.76	9.5	В	33.1	В
2-1	TURNBULL TO SR 5A (PO)	980	0.42	6.7	В	44.1	A
NB	Arterial S	Speed =	37.6	mph			- •
		LOS =	Α	-			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP B)

From:

SR 5A (PORT ORANGE)

To:

FERNDALE AVE

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 3A & 3B

TRAFFIC CHARACTERISTICS

AADT:

45,108

K FACTOR:

0.088

D FACTOR:

0.579

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

2

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR

U

RURAL DEVELOPED (U/T/R): ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45. 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION: TYPE SIGNAL SYSTEM:

2

Α

P=PRETIMED

S=SEMIACTUATED A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIREC	CTION'S SPI	ECIFIC INF	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
İ	(l if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	2,250	0	•	400	0.00			
2-3	0	2,386	0	2	120	0.62	0.51	2,714	4
3-4	0	2,349	0	2	120 120	0.69	0.51	2,672	4
4-5	0	2, 5 52	3.06	2	120	0.64 0.69	0.66	3,495	4
5-6	0	2,151	0.00	2	120	0.69	0.37	1,948	4
6-7	0	1,164	0	2	120	0.80	0.67	3,522	4
7-8	0	1,401	10.42	2	80	0.60	0.14	760 7.055	4
8-9	0	1,182	0	2	100	0.38	1.37 1.23	7,255	4
9-10	0	0	•	_	100	0.30	1.23	6, 50 5	4
10-11	0	0						•	
11-12	0	0							
12-13	0	0							
13-14	0	0							
14-15	0	0							
15-16	0	0							,
16-17	0	0							i
17-18	0	0							
18-19	0	0							
19-20	0	0							

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SB	PEAK DIRE	CTION RES	ULTS				
	NOTES	THROUGH		İ	INTERSECTION		ARTERIAL
	· or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	FERNDALE TO BIG TREE	2473	1.05	41.0	E	18.8	D
2-3	BIG TREE TO RIDGE	2622	1.00	23.7	С	24.2	С
3-4	RIDGE TO REED CANAL	2581	1.06	44.4	E	20.9	D
4-5	REED CANAL TO VENTUR	2719	1.04	33.4	D	16.9	£
5-6	VENTURE TO HERBERT	2364	1.04	37.7	D	22.7	С
6-7	HERBERT TO SR 421	1279	1.02	47.7	E	6.7	F
7-8	SR 421 TO COMMONWEAL	1379	0.60	6.7	В	41.7	A
8-9	COMMONWEALTH TO SR	1299	0.90	23.4	С	34.4	В
9-10		0				¥	_
10-11		0					
11-12		0					
12-13		0					
13-14		0					l
14-15		0					
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arterial S	Speed =	24.7	mph			
		LOS =	C	-			

NB										
		% TURNS		CYCLE	EFFECTIVE					
		FROM		LENGTH	g/C					
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL			
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE			
20-19	0				- · · · 	· · · · · · · · · · · · · · · · · · ·	•			
19-18	0									
18-17	0									
17-16	0									
16-15	0									
15-14	0									
14-13	0									
13-12	0									
12-11	0									
11-10	0									
1 0- 9	, O .									
9-8	1,014	0.39	2	80	0.60	6,505	2			
8-7	754	0	2	120	0.33	7,255	2			
7-6	1,416	1.69	2	120	0.60	7,255	2			
6-5	1,602	o	2	120	0.69	3,522	2			
5-4	1,524	0	2	120	0.53	1,948	2			
4-3	1,592	2.95	2	120	0.57	3,495	2			
3-2	1,498	2.74	2		0.62	2,672	2			
2-1	1,623	0	2	60	0.69	2,714	2			

NB	OFF-PEAK	DIRECTION	RESULTS			=	
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	·	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0					;
15-14		0					
14-13		0					
13-12		0					
12-11		0					
11-10		. 0					
10-9		0					
9-8	SR 5A TO COMMONWEAL	1,110	0.49	5.9	В	41.7	Α
8-7	COMMONWEALTH TO SR	829	0.66	22.9	С	35.4	A
7-6	SR 421 TO HERBERT	1,530	0.67	10.8	В	17.4	D
6-5	HERBERT TO VENTURE	1,760	0.67	7.3	_	36.2	A
5-4	VENTURE TO REED CANA	1,675	0.83	17.0	_	23.2	C
4-3	REED CANAL TO RIDGE	1,698	0.78	14.0		31.9	В
3-2	RIDGE TO BIG TREE	1,601	0.68	10.1	В	31.6	В
2-1	BIG TREE TO FERNDALE	1,784	0.68	3.9	A	36.9	Α .
NB	Arterial S		mph	- •	- 50.5		
		LOS =	В				

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP C)

From:

FERNDALE AVE

To:

SR 430/MASON AVE

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 3A & 3B

TRAFFIC CHARACTERISTICS

AADT:

47,088

K FACTOR:

0.083

D FACTOR:

0.544

PHF:

0.920

ADJ. SATURATION FLOW RATE:

1.900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

THRU LANES OFF-PEAK DIRECTION:

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

U

ARTERIAL CLASS:

1 (1, 2, or 3)

35 (45, 40, or 35)

FREE FLOW SPEED (mph): For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Α

P=PRETIMED

S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIRE	CTION'S SPI	ECIFIC INP	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
									
1-2	0	.,,	1.91	3	120	0.63	0.23	1,214	4
2-3	0	1,721	0	3	120	0.42	0.31	1,616	4
3-4	0	1,969	0.61	3	60	0.47	0.12	623	4
4-5	. 0	1,829	4.76	3	120	0.43	0.18	96 6	4
5-6	0	1,742	1.21	3	120	0.60	0.21	1,119	4
6-7	0	1,684	0	3	120	0.34	0.14	760	4
7-8	0	2,262	0.44	3	120	0.69	0.15	808	4
8-9	0	2,017	0	3	120	0.42	0.15	7 7 1	4
9-10	0	2,399	3.46	3	120	0.52	0.73	3,828	4
10-11	0	2,556	2.11	3	120	0.53	0.66	3,480	. 4
11-12	0	2,063	0	3	120	0.55	0.39	2,043	4
12-13	0	2,777	0	3	60	0.69	0.20	1,061	4
13-14	0	0							Ì
14-15	0	0							
15-16	0	0							
16-17	0	0							
17-18	0	0							
18-19	0	0							
19-20	0	0							

SB	PEAK DIRI	ECTION RES	ULTS				
	NOTES	THROUGH		1	NTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 430 TO MADISON	2069	0.57	8.3	В	21.4	D
2-3	MADISON TO FAIRVIEW	1871	0.79	20.6	С	18.3	D
3-4	FAIRVIEW TO MULLALY	. 2127	0.80	9.8	В	15.5	E
4-5	MULLALY TO BETHUNE	1893	0.77	19.5	С	13.7	E
5-6	BETHUNE TO BAY	1871	0.55	9.3	В	19.9	D
6-7	BAY TO SR 600	1830	0.94	30.3	D	9.0	F
7-8	SR 600 TO MAGNOLIA	2448	0.62	6.7	В	19.8	D
8-9	MAGNOLIA TO ORANGE	2192	0.92	25.2	D	10.3	F
9-10	ORANGE TO BELLEVUE	2517	0.85	17.6	С	26.7	c
10-11	BELLEVUE TO WILDER	2720	0.90	18.3	С	25.9	c
11-12	WILDER TO SR 400	2242	0.72	13.4	В	23.9	c
12-13	SR 400 TO FERNDALE	3018	0.77	4.5	Α	23.4	c
13-14		0					Ī
14-15		0					
15-16		0					
16-17		0					
17-18		0					
18-19		0					ļ
19-20	<u> </u>	0					
SB	Arterial	19.9 n	nph				
	= 	LOS =	D	•			

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NB OFF-PEAK DIRECTION'S SPECIFIC INPUTS									
		% TURNS		CYCLE	EFFECTIVE				
		FROM		LENGTH	g/C				
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL		
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE		
20-19	0	_		· · · · · · · · · · · · · · · · · · ·	·				
19-18	0								
18-17	0								
17-16	0								
16-15	0								
15-14	. 0								
14-13	0								
13-12	1,318	0	3	120	0.55	1,061	2		
12-11	2,029	9.22	3	120	0.53	2,043	2		
11-10	1,813	5.96	3	120	0.52	3,480			
10-9	1,485	0	3	120	0.42	3,828	. 2		
9-8	1,730	4.16	3	120	0.57	771	2		
8-7	1,240	0	3	120	0.34	808	2		
7-6	1,703	3.7	3	120	0.60	760	2		
6-5	1,660	0	3	120	0.43	1,119	2		
5-4	1,874	0.43	3	60	0.47	966	ءُ ا		
4-3	1,640	0	3	120	0.42	623	2		
3-2	1,877	3.36	. 3	120	0.63	1,616	2		
2-1	1,741		2	120	0.50	1,214	2		

NB	OFF-PEAK	DIRECTION	RESULTS				
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12	FERNDALE TO SR 400	1,433	0.46	10.5	В	18.6	D
12-11	SR 400 TO WILDER	2,002	0.66	13.3	В	23.9	c
11-10	WILDER TO BELLEVUE	1,853	0.63	13.6	В	27.7	c
10-9	BELLEVUE TO ORANGE	1,614	0.68	18.8	C	26.3	C
9-8	ORANGE TO MAGNOLIA	1,802	0.56	10.8	В	16.3	E
8-7	MAGNOLIA TO SR 600	1,348	0.69	22.5	C	11.4	F
7-6	SR 600 TO BAY	1,783	0.52	9.1	В	17.4	b l
6-5	BAY TO BETHUNE	1,804	0.73	18.8	C	15.1	E
5-4	BETHUNE TO MULLALY	2,028	0.76	9.3	В	18.9	ם D
4-3	MULLALY TO FAIRVIEW	1,783	0.75	19.9	C	10.5	F
3-2	FAIRVIEW TO MADISON	1,972	0.55	8.1	В	25.0	C
2-1	MADISON TO SR 430	1,892	1.00	32.2	D	25.0 11.9	F
NB	Arterial :		19.7 r			11.9	
L		LOS =	D .				

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP D)

From:

SR 430/MASON AVE

To:

I-95 SB RAMPS

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 3A & 3B

TRAFFIC CHARACTERISTICS

AADT:

34,344

K FACTOR:

0.089

D FACTOR:

0.526

PHF:

0.910

1,900

ADJ. SATURATION FLOW RATE: % TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

2

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

Α

P=PRETIMED

A=ACTUATED

S=SEMIACTUATED

TYPE SIGNAL SYSTEM:

SYSTEM CYCLE LENGTH: WEIGHTED THRU MOVEMENT g/C:

N/A

SB		PEAK DIREC	CTION'S SPI	ECIFIC INF	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
<u> </u>	(l if unavail.)	PEAK HOUR	EXCLUS.	•	SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	1,140	0	2	60	0.69	0.40		
2-3	0	1,447	0	2	90		0.18	945	4
3-4	0	730	0	2	100	0.46 0.37	2.61	13,797	3
4-5	0	886	0	2	60	0.57	1.13	5,945	3
5-6	0	726	0	2	120	0.87	1.11	5,856	3
6-7	0	1,472	12.02	2	90	0.21	0.72	3,791	3
7-8	0	1,590	12.7	2	90	0.48	0.84	4,451	3 3 3 4
8-9	0	1,540	5.78	2	90	0.48	1.26 0.49	6,663	3
9-10	0	1,519	10.86	2	90	0.32	0.49	2,577	4
10-11	0	1,636	5.13	2	90	0.52	0.25	1,315	4
11-12	0	1,628	6.2	2	90	0.52	0.30	2,640	4
12-13	0	1,607	2.86	2	90	0.54	0.25	1,325 1,843	4
13-14	0	1,628	2.83	2	90	0.53	0.33	935	4
14-15	0	1,569	0	3	120	0.50	0.18		4
15-16	0	0				0.00	0.20	1,040	4
16-17	0	0							
17-18	0	0							
18-19	0	0							
19-20	0	0							

•

SB	PEAK DIRE	CTION RES	ULTS			 	
	NOTES	THROUGH		I	NTERSECTION		ARTERIAL
]	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	I-95 NB TO I-95 SB	1253	0.48	2.9	Α	27.7	C
2-3	I-95 SB TO AIRPORT RD	1590	0.91	20.0	С	40.0	A
3-4	AIRPORT TO SR 5A (OB)	802	0.57	16.7	С	36.3	A
4-5	SR 5A (OB) TO WILMETTE	974	0.38	2.9	Α	43.1	Ä
5-6	WILMETTE TO SR 40	798	1.01	57.6	E	19.1	D
6-7	SR 40 TO HAND	1423	0.81	15.7	c	33.7	В
7-8	HAND TO FLOMICH	1525	0.84	15.7	C	37.4	Ä
8-9	FLOMICH TO WALKER	1594	0.81	12.9	В	29.2	В
9-10	WALKER TO LPGA	1488	0.84	15.6	C	19.4	D
10-11	LPGA TO 8TH ST	1706	0.86	14.3	В	28.8	В
11-12	8TH ST TO 6TH ST	1678	0.87	14.9	В	19.9	D
12-13	6TH ST TO 3RD ST	1715	0.84	12.9	В	24.9	C
13-14	3RD ST TO BRENTWOOD	1738	0.86	14.1	В	16.9	E
14-15	BRENTWOOD TO SR 430	1724	0.60	14.1	В	17.8	D
15-16		0	5,55	1 7.1	5	17.0	ט
16-17		0					
17-18		0					
18-19		0					
19-20		0					j
SB	Arterial		31.4 m	nh			
		LOS =	В	ıkıı			

NB	OFF-PEAK D	DIRECTION'	S SPECIFI	C INPUTS			·
		% TURNS		CYCLE	EFFECTIVE		
		FROM		LENGTH	g/C		
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0						
19-18	0						
18-17	0						
17-16	0						
16-15	0						•
15-14	1,873	6.25	2	90	0.53	1,040	2
14-13	1,769	2.09	2	90	0.54	935	2
13-12	1,704	0.53	2	90	0.69	1,843	2
12-11	1,732	0.52	. 2	90	0.68	1,325	2
11-10	1,522	1.25	2	90	0.61	2,640	2
10- 9	1,624	0.86	2	90	0.52	1,315	2
9-8	1,601	3.81	2	90	0.48	2,577	2
8-7	1,479	2.84	2	90	0.61	6,663	3
7-6	805	.0	2	120	0.29	4,451	3.
6-5	983	0	2	60	0.67	3,791	3
5-4	810	0	2	100	0.62	5,856	3
4-3	1,706	0	2	90	0.69	5,945	3
3-2	1,343	0 -	2	60	0.47	13,797	3
2-1	1,092	0	2	60	0.62	945	2

NB	OFF-PEAK	DIRECTION	RESULTS				
#		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0					
15-14	SR 430 TO BRENTWOOD	1,930	0.96	20.1	С	14.9	E
14-13	BRENTWOOD TO 3RD ST	1,903	0.93	16.9	С	15.4	E
13-12	3RD ST TO 6TH ST	1,863	0.71	6.0	В	30.3	В
12-11	6TH ST TO 8TH ST	1,893	0.73	6.6	В	26.1	С
11-10	8TH ST TO LPGA	1,652	0.71	8.3	В	32.8	В
10-9	LPGA TO WALKER	1,769	0.90	15.8	С	19.3	D
9-8	WALKER TO FLOMICH	1,692	0.93	19.3	С	25.7	C
8-7	FLOMICH TO HAND	1,579	0.68	8.2	В	40.7	Α
7-6	HAND TO SR 40	885	0.80	28.2	D	28.6	В
6-5	SR 40 TO WILMETTE	1,080	0.43	3.1	Α	40.0	A
5-4	WILMETTE TO SR 5A (OB)	890	0.38	6.1	В	41.3	Α .
4-3	SR 5A (OB) TO AIRPORT	1,875	0.71	6.2	В	41.3	A
3-2	AIRPORT TO 1-95 NB	1,476	0.83	11.5	В	42.0	A
2-1	I-95 NB TO I-95 SB	1,200	0.51	4.3	A	25.7	C
NB	Arterial S	Speed =	34.1	nph			
		LOS =	В	-			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

2024 Design Hour - Alternative 4A & 4B

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP A)

From:

SR 442

To:

SR 5A (PORT ORANGE)

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 4A & 4B

TRAFFIC CHARACTERISTICS

AADT:

46,388

K FACTOR:

0.086

D FACTOR:

0.531

PHF:

0.910

ROADWAY CHARACTERISTICS

ADJ. SATURATION FLOW RATE: % TURNS FROM EXCLUSIVE LANES: 1,900 N/A

THRU-LANES PEAK DIRECTION: THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR

RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45. 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Α

P=PRETIMED S=SEMIACTUATED A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB	· · · · · · · · · · · · · · · · · · ·	PEAK DIRE	CTION'S SPI	CIFIC INP	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
				· · · · · · · · · · · · · · · · · · ·					
1-2	0	2,036	0	2	85	0.59	28696.80	28,697	3
2-3	0	2,078	0	2	90	0.62	0.57	2,983	3
3-4	0	2,216	0	2	120	0.66	0.61	3,226	3
4-5	0	1,829	0	2	120	0.52	0.17	882	3
5 -6	0	1,983	0	2	96	0.69	0.18	940	4
6-7	0	2,322	0	2	96	0.69	0.05	264	4
7-8	0	2, 00 5	2.29	2	90	0.59	1.31	6,938	4
8- 9	0	1,918	0	2	100	0.55	1.00	5,296	3
9-10	0	1,201	0	2	90	0.34	1.49	7,846	3
10-11	0	0						•	
11-12	0	0							
12-13	0	0							
13-14	0	0							
14-15	0	0							
15-16	0	0							
16-17	0	0							
17-18	0	. 0							
18-19	0	0							
19-20	0	0							

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SB	PEAK DIRE	CTION RES	ULTS		<u> </u>		
	NOTES	THROUGH		1	NTERSECTION		ARTERIAL
ŀ	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 5A (PO) TO TURNBULL	2237	1.00	26.2	D	41.7	Α
2-3	TURNBULL TO WAYNE	2284	0.97	19.1	С	27.5	С
3-4	WAYNE TO WASHINGTON	2435	0.97	22.0	С	27.1	С
4-5	WASHINGTON TO CANAL	2010	1.02	39.9	D	8.6	F
5-6	CANAL TO LYTLE SB	2179	0.83	8.3	В	21.2	D
6-7	LYTLE SB TO LYTLE NB	2552	0.97	16.5	С	6.7	F
7-8	LYTLE NB TO 10TH ST	2153	0.96	18.0	С	36.8	Α
8-9	10TH ST TO PARK	2108	1.01	31.6	D	29.8	В
9-10	PARK TO SR 442	1320	1.02	43.7	E	30.4	В
10-11		0			•		
11-12		0					
12-13		0					
13-14		0					
14-15		0					
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arterial	Speed =	33.1	mph			
L		LOS =	В	-			

NB	OFF-PEAK DIRECTION'S SPECIFIC INPUTS										
		% TURNS FROM		CYCLE LENGTH	EFFECTIVE g/C						
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL				
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE				
20-19	0										
19-18	0										
18-17	0										
17-16	0										
16-15	0										
15-14	0										
14-13	0										
13-12	0										
12-11	0										
11-10	. 0										
10-9	1,730	2.08	2	100	0.55	7,846	3				
9-8	1,738	0.46	2	90	0.69	5,296	2				
8-7	1,792	16.52	2	96	0.69	6,938	2				
7-6	1,496	0	2	96	0.69	264	2				
6-5	1,380	0	2	120	0.52	940	3				
5-4	1,672	0	2	120	0.48	882	2 2 2 3 3				
4-3	1,604	2.24	2	90	0.62	3,226	3				
3-2	1,552	1.03	2	85	0.59	2,983	3				
2-1	892	0	2	100	0.61	28,697	3 3				

NB	OFF-PEAK I	DIRECTION	RESULTS			· · · · · · · · · · · · · · · · · · ·	
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					-
19-18		0					j
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12		0					
12-11		0					
11-10		0					
10-9	SR 442 TO PARK	1,862	0.89	16.6	С	38.1	Α
9-8	PARK TO 10TH ST	1,901	0.73	6.1	В	40.9	A
8-7	10TH ST TO LYTLE NB	1,644	0.63	5.5	В	42.1	A
7-6	LYTLE NB TO LYTLE SB	1,644	0.63	5.5	В	14.3	E
6-5	LYTLE SB TO CANAL	1,516	0.77	16.4	С	15.7	Ē
5-4	CANAL TO WASHINGTON	1,837	1.02	40.9	E	8.4	F
4-3	WASHINGTON TO WAYNE	1,723	0.73	8.5	В	34.5	В
3-2	WAYNE TO TURNBULL	1,688	0.76	9.5	_	33.1	В
2-1	TURNBULL TO SR 5A (PO)	980	0.42	6.7	_	44.1	A
NB	Arterial	Speed =		mph		77.1	
L		LOS =	A	•			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP B)

From:

SR 5A (PORT ORANGE)

To:

FERNDALE AVE

Peak Direction:

SB NB

Off-peak Direction:

DESIGN

Study Time Period:

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 4A & 4B

TRAFFIC CHARACTERISTICS

AADT:

49,500

K FACTOR:

880.0

D FACTOR:

0.579

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1.900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

THRU LANES OFF-PEAK DIRECTION:

URBAN, TRANSITIONING, OR

RURAL DEVELOPED (U/T/R): ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class: Rural

Use Free flow speed of: 55. 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

P=PRETIMED

TYPE SIGNAL SYSTEM:

Α

S=SEMIACTUATED A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIREC	CTION'S SPE	CIFIC INF	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
10							-		
1-2	0	_,	0	3	120		0.51	2,714	4
2-3	0	2,881	8.5	3	120	0.58	0.51	2,672	4
3-4	0	2,99 2	13.1	3	120	0.58	0.66	3,495	4
4-5	0	2,824	3.15	3	120	0.64	0.37	1,948	4
5-6	0	2,64 6	10.24	3	120	0.50	0.67	3,522	4
6-7	0	1,295	0	2	120	0.27	0.14	760	4
7-8	. 0	1,40 1	10.42	2	80	0.60	1.37	7, 25 5	4
8-9	0	1,182	0	2	100	0.38	1.23	6,505	4
9-10	0	0						·	
10-11	0	0							
11-12	0	0							
12-13	0	0							
13-14	0	0							
14-15	0	0							
15-16	. 0	0							,
16-17	0	0							
17-18	0	0							
18-19	0	0							
19-20	0								

SB	PEAK DIRE	CTION RES	ULTS				
	NOTES	THROUGH		1	NTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	FERNDALE TO BIG TREE	2736	0.94	22.4	С	24.9	С
2-3	BIG TREE TO RIDGE	28 97	0.87	15.2	С	28.3	В
3-4	RIDGE TO REED CANAL	2857	0.86	14.9	В	31.4	в
4-5	REED CANAL TO VENTUR	3006	0.82	11.4	В	26.5	С
5-6	VENTURE TO HERBERT	2610	0.92	20.8	С	28 .6	В
6-7	HERBERT TO SR 421	1423	1.40	309.3	F	1.2	F
7-8	SR 421 TO COMMONWEAL	1379	0.60	6.7	В	41.7	A
8-9	COMMONWEALTH TO SR	1299	0.90	23.4	С	34.4	в
9-10		0					1
10-11		0					
11-12		0					
12-13		0					
13-14		0					
14-15		0					
15-16		0					
16-17		0					·
17-18		0					
18-19		0					
19-20		0					
SB	Arterial	Speed =	***	mph			
L		LOS =	F	-	rsection Cap	acity Exce	eded

*Warning

NB	OFF-PEAK C	IRECTION'	S SPECIFIC	CINPUTS			OFF-PEAK DIRECTION'S SPECIFIC INPUTS									
		% TURNS		CYCLE	EFFECTIVE											
		FROM		LENGTH	g/C											
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL									
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE									
 20-19	0															
19-18	0															
18-17	0						-									
17-16	0															
1 6- 15	0															
15-14	0															
14-13	. 0															
13-12	0															
12-11	0															
11-10	0															
10-9	0															
9-8	1,014	0.39	2	80	0.60	6,505										
8-7	838	0	3	120	0.27	7,255										
7-6	1, 56 5	1.73	3	120	0.50	760	- 2									
6-5	1,771	0	3	120	0.64	3,522	2									
5-4	1,686	0	3	120	0.58	1,948	2									
4-3	1,758	2.9	3	120	0.58	3,495	2									
3-2	1,659	2.83	3	120	0.51	2,672	2									
2-1	1,798	0	3	60	0.69	2,714	2									

NB	OFF-PEAK [DIRECTION	RESULTS				
1		THROUGH			INTERSECTION		ARTERIAL
1		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0		,			
19-18	·	0					
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12		0					
12-11		0					
11-10		0					
10-9	•	0				•	
9-8	SR 5A TO COMMONWEAL	1,110	0.49	5.9	В	41.7	Α
8-7	COMMONWEALTH TO SR	921	0.61	25.2	. D	34.7	В
7-6	SR 421 TO HERBERT	1,690	0.59	14.0) В	15.3	E
6-5	HERBERT TO VENTURE	1,946	0.53	7.6	В	35.9	Ā
5-4	VENTURE TO REED CANA	1,853	0.56	10.1	В	27.4	C
4-3	REED CANAL TO RIDGE	1,876	0.56	10.2	! В	34.2	В
3-2	RIDGE TO BIG TREE	1,771	0.61	13.8	ВВ	29.2	В
2-1	BIG TREE TO FERNDALE	1,976	0.50	2.9) A	37.8	A
NB	Arterial S	34.0	mph				
		LOS =	В				

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP C)

From:

FERNDALE AVE

To:

SR 430/MASON AVE

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 4A & 4B

TRAFFIC CHARACTERISTICS

AADT:

47.088

K FACTOR:

0.083

D FACTOR:

0.544

PHF:

0.920

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

THRU LANES OFF-PEAK DIRECTION:

URBAN, TRANSITIONING, OR

RURAL DEVELOPED (U/T/R): ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

35 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION: TYPE SIGNAL SYSTEM:

2

Α

P=PRETIMED

S=SEMIACTUATED A=ACTUATED

SYSTEM CYCLE LENGTH: WEIGHTED THRU MOVEMENT g/C:

N/A N/A

SB		PEAK DIRE	CTION'S SPI	ECIFIC INP	UTS		DISTANCE		
ľ	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	1,941	1.91	3	120	0.63	0.23	1,214	
2-3	0	· ·	0	3	120	0.42	0.20	1,616	4
3-4	0		0.61	3	60	0.47	0.12	623	4
4-5	0	1,829	4.76	3	120	0.43	0.18	966	4
5-6	0	1,742	1.21	3	120	0.60	0.21	1,119	4
6-7	0	1,684	. 0	3	120	0.34	0.14	760	4
7-8	0	2,262	0.44	3	120	0.69	0 .15	808	4
8-9	0	2,017	0	3	120	0.42	0.15	771	4
9-10	0	2,399	3.46	3	120	0.52	0.73	3,828	4
10-11	0	2,556	2.11	3	120	0.53	0.66	3,480	4
11-12	0	2,063	0	3	120	0.55	0.39	2,043	4
12-13	0	2,777	0	3	60	0.69	0.20	1,061	4
13-14	0	0						.,	•
14-15	0	0			•				
15-16	0	0							
16-17	0	0							
17-18	0	0							
18-19	0	0							
19-20	0	0							

SB	PEAK DIR	ECTION RES	ULTS	 	· · · · · · · · · · · · · · · · · · ·		
	NOTES	THROUGH		I	NTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 430 TO MADISON	2069	0.57	8.3	В	21.4	D
2-3	MADISON TO FAIRVIEW	1871	0.79	20.6	С	18.3	D
3-4	FAIRVIEW TO MULLALY	2127	0.80	9.8	В	15.5	E
4-5	MULLALY TO BETHUNE	1893	0.77	19.5	С	13.7	E
5-6	BETHUNE TO BAY	1871	0.55	9.3	В	19.9	D
6-7	BAY TO SR 600	1830	0.94	30.3	D	9.0	F
7-8	SR 600 TO MAGNOLIA	2448	0.62	6.7	В	19.8	D
8-9	MAGNOLIA TO ORANGE	2192	0.92	25.2	D	10.3	F
9-10	ORANGE TO BELLEVUE	2517	0.85	17.6	С	26.7	С
10-11	BELLEVUE TO WILDER	2720	0.90	18.3	С	25.9	С
11-12	WILDER TO SR 400	2242	0.72	13.4	В	23.9	C
12-13	SR 400 TO FERNDALE	3018	0.77	4.5	Α	23.4	C
13-14		0					_
14-15		0					
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arteria	Speed =	19.9 r	nph			
<u> </u>		LOS =	D	•			

NB	OFF-PEAK DIRECTION'S SPECIFIC INPUTS								
		% TURNS		CYCLE					
		FROM		LENGTH	g/C				
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL		
LINK	VOLUME	LANES	LANES	19-1	19-1	<u>(FT)</u>	TYPE		
20-19	0			· ·					
19-18	0								
18-17	0								
17-16	0								
1 6-1 5	0								
15-14	0								
14-13	0								
13-12	1,318	0	3	120	0.55				
12-11	2,029	9.22	3	120	0.53	1,061	2		
11-10	1,813	5.96	3	120	0.52	2,043 3,480	2		
10-9	1,485	0	3	120	0.42	3,480	2		
9-8	1,730	4.16	3	120	0.57	3,628 771	2		
8-7	1,240	0	3	120	0.34	808	2		
7-6	1,703	3.7	3	120	0.60	760	2		
6-5	1,660	0	3	120	0.43	1,119	2		
5-4	1,874	0.43	3	60	0.47	966	2		
4-3	1,640	0	3	120	0.42	623	2		
3-2	1,877	3.36	3	120	0.63	1,616	2		
2-1	1,741	0	2	120	0.50	1,214	2		

NB	OFF-PEAK	DIRECTION	RESULTS				
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		. 0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12	FERNDALE TO SR 400	1,433	0.46	10.5	В	18.6	D
12-11	SR 400 TO WILDER	2,002	0.66	13.3	В	23.9	C ·
11-10	WILDER TO BELLEVUE	1,853	0.63	13.6	В	23. 3 27.7	C
10-9	BELLEVUE TO ORANGE	1,614	0.68	18.8	C	26.3	C
9-8	ORANGE TO MAGNOLIA	1,802	0.56	10.8	В	16.3	_
8-7	MAGNOLIA TO SR 600	1,348	0.69	22.5	C	11.4	E _.
7-6	SR 600 TO BAY	1.783	0.52	9.1	В	17.4	r D
6-5	BAY TO BETHUNE	1,804	0.73	18.8	C	15.1	E
5-4	BETHUNE TO MULLALY	2,028	0.76	9.3	В	18.9	D
4-3	MULLALY TO FAIRVIEW	1.783	0.75	19.9	C	10.5	-
3-2	FAIRVIEW TO MADISON	1,972	0.55	8.1	В		F
2-1	MADISON TO SR 430	1,892	1.00	32.2	D	25.0	C
NB	Arterial S		19.7 1		U	11.9	<u> </u>
<u></u> _		LOS =	D	pii			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP D)

From:

SR 430/MASON AVE

To:

I-95 SB RAMPS

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 4A & 4B

TRAFFIC CHARACTERISTICS

AADT:

K FACTOR:

34,344 0.089

D FACTOR:

0.526

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

2

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

Transitioning, Class 1

55, 50, 45, 40 or 35 55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Α

P=PRETIMED S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIRE	CTION'S SPI	DISTANCE					
	LINK		% TURNS		CYCLE	CYCLE EFFECTIVE E			
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(l if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	1,140	0	2	60	0.69	0.18	945	
2-3	0	1,447	0	2	90	0.46	2.61	13,797	3
3-4	0	730	0	2	100	0.37	1.13	5,945	3
4-5	0	886	0	2	60	0.67	1.11	5,856	.3
5-6	. 0	726	0	2	120	0.21	0.72	3,791	3
6-7	0	1,472	12.02	2	90	0.46	0.84	4,451	3
7-8	0	1,590	12.7	2	90	0.48	1.26	6,663	3
8-9	0	1,540	5.78	2	90	0.52	0.49	2,577	4
9-10	0	1,519	10.86	2	90	0.47	0.25	1,315	4
10-11	0	1,636	5.13	2	90	0.52	0.50	2,640	4
11-12	0	1,628	6.2	2	90	0.51	0.25	1,325	4
12-13	0	1,607	2.86	2	90	0.54	0.35	1,843	4
13-14	0	1,628	2.83	2	90	0.53	0.18	935	4
14-15	0	1,569	0	3	120	0.50	0.20	1,040	4
15-16	0	0						•	
16-17	0	0							
17-18	0	0							
18-19	0	0				•			
19-20	0	0							

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SB	PEAK DIRE	CTION RES	ULTS				
	NOTES	THROUGH		INTERSECTION			ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	I-95 NB TO I-95 SB	1253	0.48	2.9	Α	27.7	С
2-3	I-95 SB TO AIRPORT RD	1590	0.91	20.0	С	40.0	Α.
3-4	AIRPORT TO SR 5A (OB)	802	0.57	16.7	С	36,3	Α
4-5	SR 5A (OB) TO WILMETTE	974	0.38	2.9	Α	43.1	A
5-6	WILMETTE TO SR 40	798	1.01	57.6	E	19.1	D
6-7	SR 40 TO HAND	1423	0.81	15.7	C	33.7	В
7-8	HAND TO FLOMICH	1525	0.84	15.7	С	37.4	Ā
8-9	FLOMICH TO WALKER	1594	0.81	12.9	В	29.2	В
9-10	WALKER TO LPGA	1488	0.84	15.6	С	19.4	D
10-11	LPGA TO 8TH ST	1706	0.86	14.3	В	28.8	В
11-12	8TH ST TO 6TH ST	1678	0.87	14.9	В	19.9	D
12-13	6TH ST TO 3RD ST	1715	0.84	12.9	В	24.9	C
13-14	3RD ST TO BRENTWOOD	1738	0.86	14.1	В	16.9	E
14-15	BRENTWOOD TO SR 430	1724	0.60	14.1	В	17.8	D
15-16		Ó					
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arterial	Speed =	31.4 n	nph		 	
		LOS=	В	•			

NB	OFF-PEAK [DIRECTION'	S SPECIFI	C INPUTS		— **********	
		% TURNS FROM		CYCLE LENGTH	EFFECTIVE g/C		
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0					· · ·	
19-18	0						
18-17	0						
17-16	0						
16-15	0						
15-14	1,873	6.25	2	90	0.53	1,040	3
14-13	1,769	2.09	2	90	0.54	935	أد
13-12	1,704	0.53	2	90	0.69	1,843	2
12-11	1,732	0.52	2	90	0.68	1,325	2
11-10	1,522	1.25	2	90	0.61	2,640	2
10-9	1,624	0.86	2	90	0.52	1,315	1
9-8	1,601	3.81	2	90	0.48	2,577	2
8-7	1,479	2.84	2	90	0.61	6,663	3
7-6	805	0	2	120	0.29	4,451	1
6-5	983	0	2	60	0.67	3,791	3
5-4	810	0	2	100	0.62	5,856	3
4-3	1,706	0	2	90	0.69	5,945	1
3-2	1,343	0	2	60	0.47	13,797	3
2-1	1,092	0	2	60	0.62	945	3 2

NB	OFF-PEAK	DIRECTION	RESULTS				
		THROUGH INTERSECT					ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0		•			
15-14	SR 430 TO BRENTWOOD	1,930	0.96	20.1	С	14.9	Е
14-13	BRENTWOOD TO 3RD ST	1,903	0.93	16.9 [°]	С	15.4	E
13-12	3RD ST TO 6TH ST	1,863	0.71	6.0	В	30.3	В
12-11	6TH ST TO 8TH ST	1,893	0.73	6.6	В	26.1	C
11-10	8TH ST TO LPGA	1,652	0.71	8.3	В	32.8	В
10-9	LPGA TO WALKER	1,769	0.90	15.8	C	19.3	Đ
9-8	WALKER TO FLOMICH	1,692	0.93	19.3	С	25.7	C
8-7	FLOMICH TO HAND	1,579	0.68	8.2	В	40.7	Ā
7-6	HAND TO SR 40	885	0.80	28.2	Ð	28.6	В
6-5	SR 40 TO WILMETTE	1,080	0.43	3.1	Α	40.0	Ā
5-4	WILMETTE TO SR 5A (OB)	890	0.38	6.1	В	41.3	A
4-3	SR 5A (OB) TO AIRPORT	1,875	0.71	6.2	В	41.3	A
3-2	AIRPORT TO I-95 NB	1,476	0.83	11.5	В	42.0	A
2-1	I-95 NB TO I-95 SB	1,200	0.51	4.3	Ā	25.7	C
NB	Arterial	Speed =	34.1	mph			_
<u></u>		LOS =	В	_			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

2024 Design Hour - Alternative 5A & 5B

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP A)

From:

SR 442

To:

SR 5A (PORT ORANGE)

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 5A & 5B

TRAFFIC CHARACTERISTICS

AADT:

46,388

K FACTOR:

0.086

D FACTOR:

0.531

PHF:

0.910

1.900

ADJ. SATURATION FLOW RATE: % TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

2

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

U

ARTERIAL CLASS:

1 (1, 2, or 3)

45 (45, 40, or 35)

FREE FLOW SPEED (mph): For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

P=PRETIMED

TYPE SIGNAL SYSTEM:

S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH: WEIGHTED THRU MOVEMENT g/C: N/A

SB	PEAK DIRECTION'S SPECIFIC INPUTS						DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	2,036							
2-3	0	•	0	2	85	0.59	28696.80	28,697	3
3-4	0	2,078	0	2	90	0.62	0.57	2,983	3
4-5		2,216	0	2	120	0.66	0.61	3,226	3
II	0	1,829	0	2	120	0.52	0,17	882	3
5-6	0	1,983	0	2	96	0.69	0.18	940	4
6-7	0	2,322	0	2	96	0.69	0.05	264	4
7-8	0	2,005	2. 2 9	2	90	0.59	1.31	6,938	4
8-9	0	1,918	0	2	100	0.55	1.00	5,296	3
9-10	0	1,201	0	2	90	0.34	1.49	7,846	3
10-11	0	0							
11-12	0	0							
12-13	0	0							
13-14	0	0							
14-15	0	0							
15-16	0	0							
16-17	0	0					•		
17-18	0	0							
18-19	0	0							!
19-20	0	0							

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SB	PEAK DIRE						
	NOTES	THROUGH -		1	INTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 5A (PO) TO TURNBULL	2237	1.00	26.2	D	41.7	Α
2-3	TURNBULL TO WAYNE	2284	0.97	19.1	С	27.5	С
3-4	WAYNE TO WASHINGTON	2435	0.97	22.0	С	27.1	С
4-5	WASHINGTON TO CANAL	2010	1.02	39.9	D	8.6	F
5-6	CANAL TO LYTLE SB	2179	0.83	8.3	В	21.2	D
6-7	LYTLE SB TO LYTLE NB	255 2	0.97	16. 5	С	6.7	F
7-8	LYTLE NB TO 10TH ST	2153	0.96	18.0	С	36.8	Α
8-9	10TH ST TO PARK	2108	1.01	31.6	D	29.8	В
9-10	PARK TO SR 442	1320	1.02	43.7	E	30.4	В
10-11		0					_
11-12		0					
12-13		0					·
13-14		0					
14-15		0					
15-16		0					
16-17		0		•			
17-18		0					
18-19		0					
19-20		0					
SB	Arterial	Speed =	33.1	mph			
		LOS =	В	•			

NB	OFF-PEAK DIRECTION'S SPECIFIC INPUTS										
		% TURNS		CYCLE	EFFECTIVE						
		FROM		LENGTH	g/C						
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL				
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE				
20-19	0						···				
19-18	0										
18-17	0										
17-16	0										
16-15	0										
15-14	0										
14-13	0										
13-12	0										
12-11	0										
11-10	0										
10-9	1,730	2.08	2	100	0.5 5	7,846	3				
9-8	1,738	0.46	2	90	0.69	5,296	3 2 2 2 3				
8-7	1,792	16.52	2	96	0.69	6,938	2				
7-6	1,496	0	2	96	0.69	264	2				
6-5	1,380	0	2	120	0.52	940	3				
5-4	1,672	0	2	120	0.48	882	3				
4-3	1,604	2.24	2	90	0.62	3,226	3				
3-2	1,552	1.03	2	85	0.59	2,983	3				
2-1	892	0	2	100	0.61	28,697	3				

NB	OFF-PEAK [DIRECTION	RESULTS				
l		THROUGH			INTERSECTION		ARTERIAL
1		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	· · · · · · · · · · · · · · · · · · ·	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0		-			
19-18		0					
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12		0					
12-11		0					
11-10		0					
10-9	SR 442 TO PARK	1,862	0.89	16.6	С	38.1	Α
9-8	PARK TO 10TH ST	1,901	0.73	6.1	В	40.9	A
8-7	10TH ST TO LYTLE NB	1,644	0.63	5.5	В	42.1	A
7-6	LYTLE NB TO LYTLE SB	1,644	0.63	5.5	В	14.3	Ē
6-5	LYTLE SB TO CANAL	1,516	0.77	16.4	C	15.7	E
5-4	CANAL TO WASHINGTON	1,837	1.02	40.9	Ē	8.4	F
4-3	WASHINGTON TO WAYNE	1,723	0.73	8.5	В	34.5	В
3-2	WAYNE TO TURNBULL	1,688	0.76	9.5	В	33.1	В
2-1	TURNBULL TO SR 5A (PO)	980	0.42	6.7	В	44.1	A
NB	Arterial S	peed =	37.6			77.1	
L		LOS =	Α	•			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP B)

From:

SR 5A (PORT ORANGE)

To:

FERNDALE AVE

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 5A & 5B

TRAFFIC CHARACTERISTICS

AADT:

49,500

K FACTOR:

0.088

D FACTOR:

0.579

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

3

THRU LANES OFF-PEAK DIRECTION:

3

URBAN, TRANSITIONING, OR

RURAL DEVELOPED (U/T/R): ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

P=PRETIMED

TYPE SIGNAL SYSTEM:

Α

S=SEMIACTUATED A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIREC	CTION'S SP	ECIFIC INF	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
ļ	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2	0	. 2.400	0						
2-3	0	2,490	•	3	120	0.51	0.51	2,714	4
3-4		2,881	8.5	3	120	0.58	0.51	2,672	4
4-5	0	2,992	13.1	3	120	0.58	0.66	3,495	4
	0	2,824	3.15	3	120	0.64	0.37	1,948	4
5-6	0	2,646	10.24	3	120	0.50	0.67	3,522	4
6-7	0	1,295	0	2	120	0.27	0.14	760	4
7-8	0	1,401	10.42	2	80	0.60	1.37	7,255	4
8-9	0	1,182	0	2	100	0.38	1.23	6,505	4
9-10	0	0		•				-,	Ì
10-11	0	0							1
11-12	0	0							
12-13	0	0							
13-14	. 0	0							
14-15	0	0							
15-16	0	0							
16-17	.0	0							
17-18	0	0							
18-19	0	0							
19-20	0	0							

PEAK DIRECTION RESULTS											
NOTES	THROUGH		1	INTERSECTION		ARTERIAL					
or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK					
FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS					
	2736	0.94	22.4	С	- ` ´	С					
	2897	0.87	15.2	С		В					
RIDGE TO REED CANAL	2857	0.86	14.9	В		В					
REED CANAL TO VENTUR	3006	0.82	11.4	В		C					
VENTURE TO HERBERT	2610	0.92	20.8	С		В					
HERBERT TO SR 421	1423	1.40	309.3	F		F					
SR 421 TO COMMONWEAL	1379	0.60	6.7	В		A					
COMMONWEALTH TO SR	1299	0.90	23.4	С		В					
	0				01.4	J					
	0										
	0										
	0										
	0										
`	0										
	0										
	0										
	0										
	0										
_	0										
Arterial S	Speed =	***	mph		 						
	LOS =	F	•	section Cana	city Exces	haha					
	FROM/TO FERNDALE TO BIG TREE BIG TREE TO RIDGE RIDGE TO REED CANAL REED CANAL TO VENTUR VENTURE TO HERBERT HERBERT TO SR 421 SR 421 TO COMMONWEAL COMMONWEALTH TO SR	or MOVEMENT FROM/TO FLOW RATE FERNDALE TO BIG TREE BIG TREE TO RIDGE 2897 RIDGE TO REED CANAL 2857 REED CANAL TO VENTUR 3006 VENTURE TO HERBERT 2610 HERBERT TO SR 421 1423 SR 421 TO COMMONWEAL 1379 COMMONWEALTH TO SR 1299 0 0 0 0 0 0 Arterial Speed =	### MOVEMENT FROM/TO FLOW RATE V/c RATIO	FROM/TO FLOW RATE V/C RATIO DELAY FERNDALE TO BIG TREE 2736 0.94 22.4 BIG TREE TO RIDGE 2897 0.87 15.2 RIDGE TO REED CANAL 2857 0.86 14.9 REED CANAL TO VENTUR 3006 0.82 11.4 VENTURE TO HERBERT 2610 0.92 20.8 HERBERT TO SR 421 1423 1.40 309.3 SR 421 TO COMMONWEAL 1379 0.60 6.7 COMMONWEALTH TO SR 1299 0.90 23.4 0 0 0 0 0 Arterial Speed = *** mph	Or MOVEMENT STOPPED APPROACH FROM/TO FLOW RATE V/c RATIO DELAY LOS FERNDALE TO BIG TREE 2736 0.94 22.4 C BIG TREE TO RIDGE 2897 0.87 15.2 C RIDGE TO REED CANAL 2857 0.86 14.9 B REED CANAL TO VENTUR 3006 0.82 11.4 B VENTURE TO HERBERT 2610 0.92 20.8 C HERBERT TO SR 421 1423 1.40 309.3 F SR 421 TO COMMONWEAL 1379 0.60 6.7 B COMMONWEALTH TO SR 1299 0.90 23.4 C O O O Arterial Speed = *** mph	NOVEMENT STOPPED APPROACH SPEED					

*Warning

NB		OFF-PEAK DIRECTION'S SPECIFIC INPUTS									
			% TURNS		CYCLE	EFFECTIVE					
]			FROM		LENGTH	g/C					
[-		PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL			
LINK	* 4 .	VOLUME	LANES	LANES	19-1	19-1	(FT)	ТҮРЕ			
20-19		0									
19-18		0									
18-17		0									
17-16		0									
16-15		0									
15-14		. 0									
14-13		0									
13-12		0									
12-11	•	0									
11-10	•	0									
10-9		0									
9-8		1,014	0.39	2	80	0.60	6,505	2			
8-7		838	0	3	120	0.27	7,255	2			
7-6		1,565	1.73	3	120	0.50	760	- 2			
6-5		1,771	0	3	120	0.64	3,522	2 2 2			
5-4		1,686	0	3	120	0.58	1,948	2			
4-3		1,758	2.9	3	120	0.58	3,495	2			
3-2		1,659	2.83	3	120	0.51	2,672	2			
2-1	· · · · · · · · · · · · · · · · · · ·	1,798	0	3	60	0.69	2,714	2			

NB	OFF-PEAK [DIRECTION	RESULTS				
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0					
15-14		0					•
14-13		0					
13-12		0					
12-11		0					
11-10		0					
10-9		0					
9-8	SR 5A TO COMMONWEAL	1,110	0.49	5.9	В	41.7	Α
8-7	COMMONWEALTH TO SR	921	0.61	25.2	D	34.7	В
7-6	SR 421 TO HERBERT	1,690	0.59	14.0	В	15.3	E
6-5	HERBERT TO VENTURE	1,946	0.53	7.6	_	35.9	A
5-4	VENTURE TO REED CANA	1,853	0.56	10.1	В	27.4	Ĉ
4-3	REED CANAL TO RIDGE	1,876	0.56	10.2	_	34.2	В
3-2	RIDGE TO BIG TREE	1,771	0.61	13.8	_	29.2	В
2-1	BIG TREE TO FERNDALE	1,976	0.50	2.9	_	37.8	A
NB	Arterial S			mph		37.0	
		LOS =	В				

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP C)

From:

FERNDALE AVE

To:

SR 430/MASON AVE

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

APRIL 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 5A & 5B

TRAFFIC CHARACTERISTICS

AADT:

47,088

K FACTOR:

0.083

D FACTOR:

0.544

0.920

PHF:

1,900

ADJ. SATURATION FLOW RATE: % TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

THRU LANES OFF-PEAK DIRECTION:

3

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

35 (45, 40, or 35)

For Arterial Type and Class: Rurai

Use Free flow speed of:

Transitioning, Class 1

55, 50, 45, 40 or 35

55, 50, 45, 40 or 35

Urban, Class 1

45. 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3 35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Α

P=PRETIMED

S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIRE	CTION'S SP	ECIFIC INF	PUTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	ТҮРЕ
1-2	0	1,941	4.04						
2-3	0	1,721	1.91	3	120	0.63	0.23	1,214	4
3-4			0	3	120	0.42	0.31	1,616	4
4-5	0	1,969	0.61	3	60	0.47	0.12	623	4
	0	1,829	4.76	3	120	0.43	0.18	966	4
5-6	0	1,742	1.21	3	120	0.60	0.21	1,119	4
6-7	0	1,684	0	3	120	0.34	0.14	760	4
7-8	0	2,262	0.44	3	120	0.69	0.15	808	4
8-9	0	2,135	5.53	3	120	0.42	0.15	771	4
9-10	0	2,399	3.46	3	120	0.52	0.73	3,828	
10-11	0	2,556	2.11	3	120	0.53	0.66	3,480	- T
11-12	0	2,063	0	3	120	0.55	0.39	2,043	4
12-13	0	2,777	0	3	60	0.69	0.20	1,061	4
13-14	0	0				0.00	0.20	1,001	4
14-15	0	0							
15-16	0	0							;
16-17	0	0							
17-18	0	0	1						
18-19	0	0	•						
19-20	0	ō							

SB	PEAK DIR	ECTION RES	ULTS			·	
	NOTES	THROUGH	•	1	NTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 430 TO MADISON	2069	0.57	8.3	В	21.4	D
2-3	MADISON TO FAIRVIEW	1871	0.79	20.6	С	18.3	D
3-4	FAIRVIEW TO MULLALY	2127	0.80	9.8	В	15.5	E
4-5	MULLALY TO BETHUNE	1893	0.77	19.5	С	13.7	E
5-6	BETHUNE TO BAY	1871	0.55	9.3	В	19.9	D
6-7	BAY TO SR 600	1830	0.94	30.3	D	9.0	F
7-8	SR 600 TO MAGNOLIA	2448	0.62	6.7	В	19.8	D
8-9	MAGNOLIA TO ORANGE	2192	0.92	25.2	D	10.3	F
9-10	ORANGE TO BELLEVUE	2517	0.85	17.6	C	26.7	C
10-11	BELLEVUE TO WILDER	2720	0.90	18.3	C	25.9	C
11-12	WILDER TO SR 400	2242	0.72	13.4	В	23.9	C
12-13	SR 400 TO FERNDALE	3018	0.77	4.5	A	23.4	c
13-14		0		,,,,	, ,	20.4	Č
14-15		0					
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arterial	Speed =	19.9 m	aph			
		LOS =	D	.L.,			

NB	OFF-PEAK D	DIRECTION'	S SPECIFI	C INPUTS			
		% TURNS		CYCLE	EFFECTIVE		
		FROM		LENGTH	g/C		
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0						
19-18	0						
18-17	0						
17-16	0						
16-15	0						
15-14	0						
14-13	0						
13-12	1,318	0	3	120	0.55	1,061	
12-11	2,029	9.22	3	120	0.53	2,043	2
11-10	1,813	5.96	3	120	0.52	3,480	2
10- 9	1,485	0	3	120	0.42	3,828	2
9-8	1,730	4.16	3	120	0.57	771	2
8-7	1,240	0	3	120	0.34	808	2
7-6	1,703	3.7	3	120	0.60	760	2
6-5	1,660	0	3	120	0.43	1,119	2
5-4	1,874	0.43	3	60	0.47	966	2
4-3	1,640	0	3	120	0.42	623	2
3-2	1,877	3.36	3	120	0.63	1,616	
2-1	1,741	0	3	120	0.37	1,214	2

NB	OFF-PEAK	DIRECTION	RESULTS				
H		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	· · · · · · · · · · · · · · · · · · ·	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		. 0					
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12	FERNDALE TO SR 400	1,433	0.46	10.5	В	18.6	D
12-11	SR 400 TO WILDER	2,002	0.66	13.3	В	23.9	c
11-10	WILDER TO BELLEVUE	1,853	0.63	13.6	В	27.7	c
10-9	BELLEVUE TO ORANGE	1,614	0.68	18.8	C	26.3	c
9-8	ORANGE TO MAGNOLIA	1,802	0.56	10.8	В	16.3	E
8-7	MAGNOLIA TO SR 600	1,348	0.69	22.5	C	11.4	F
7-6	SR 600 TO BAY	1,783	0.52	9.1	В	17.4	D
6-5	BAY TO BETHUNE	1,804	0.73	18.8	C	15.1	E
5-4	BETHUNE TO MULLALY	2,028	0.76	9.3	В	18.9	D
4-3	MULLALY TO FAIRVIEW	1,783	0.75	19.9	C	10.5	F
3-2	FAIRVIEW TO MADISON	1,972	0.55	8.1	В	25.0	C
2-1	MADISON TO SR 430	1.892	0.90	26.7	D		_
NB	Arterial :			mph		13.2	E
·		LOS =	D				

Arterial Level of Service Estimating Software
Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP D)

From:

SR 430/MASON AVE

To:

I-95 SB RAMPS

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 5A & 5B

TRAFFIC CHARACTERISTICS

AADT:

37,269

K FACTOR:

0.089

D FACTOR:

0.526

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

3

THRU LANES OFF-PEAK DIRECTION:

URBAN, TRANSITIONING, OR

RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35 45, 40 or 35

Urban, Class 1 Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

4

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Δ

P=PRETIMED
S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIRE	CTION'S SP	ECIFIC INF	UTS		DISTANCE		
]	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2		4.4.0				 			
2-3	0	1,140	0	2	60	0.69	0.18	945	4
3-4	. 0	1,447	0	2	90	0.46	2.61	13,797	3
	0	730	0	2	100	0.37	1.13	5,945	3
4-5	0	886	0	2	60	0.67	1.11	5,856	3
5-6	0	797	0	3	120	0.28	0.72	3,791	3
6-7	0	1,624	11.95	3	90	0.48	0.84	4,451	3
7-8	0	1,760	12.73	3	90	0.39	1.26	6,663	3
8-9	0	1,704	5.93	3	90	0.59	0.49	2,577	4
9-10	0	1,687	10.73	3	90	0.33	0.25	1,315	4
10-11	0	1,814	5.35	3	90	0.52	0.50	2,640	4
11-12	0	1,801	6.33	3	90	0.48	0.25	1,325	
12-13	0	1,789	3.07	3	90	0.48	0.35	1,843	
13-14	0	1,797	2.56	3	90	0.48	0.18	935	4
14-15	0	1,569	0	3	120	0.37	0.20	1,040	4
15-16	0	0					0.20	1,040	4
16-17	0	0	-						
17-18	0	0							
18-19	0	0							
19-20	0	0							

[.

[

L. 1

SB	PEAK DIRE	CTION RES	ULTS			 	··············
	NOTES	THROUGH		1	INTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	1-95 NB TO 1-95 SB	1253	0.48	2.9	Α	27.7	С
2-3	I-95 SB TO AIRPORT RD	1590	0.91	20.0	С	40.0	Α
3-4	AIRPORT TO SR 5A (OB)	802	0.57	16.7	С	36.3	A
4-5	SR 5A (OB) TO WILMETTE	974	0.38	2.9	Α	43.2	A
5-6	WILMETTE TO SR 40	876	0.56	24.4	С	28.0	C
6-7	SR 40 TO HAND	1571	0.58	11.2	В	36.1	Ā
7-8	HAND TO FLOMICH	1688	0.76	16.5	С	37.1	A
8-9	FLOMICH TO WALKER	1761	0.52	7.2	В	33.4	В
9-10	WALKER TO LPGA	1655	0.87	20.8	С	16.9	E
10-11	LPGA TO 8TH ST	1887	0.63	10.2	В	31.5	В
11-12	8TH ST TO 6TH ST	1854	0.68	12.1	В	21.6	D
12-13	6TH ST TO 3RD ST	1906	0.70	12.3	В	25.3	c
13-14	3RD ST TO BRENTWOOD	1924	0.71	12.4	. В	18.0	D
14-15	BRENTWOOD TO SR 430	1724	0.82	23.8	C	13.5	E
15-16		0				10.0	_
16-17		0					
17-18		0					
18-19	i	0					
19-20		0					
SB	Arterial	Speed =	32.8 n	nph			
		LOS =	В	.h			

NB	OFF-PEAK DIRECTION'S SPECIFIC INPUTS										
		% TURNS		CYCLE	EFFECTIVE						
		FROM		LENGTH	g/C	***					
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL				
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE				
20-19		·····									
19-18	0										
18-17	0										
17-16	0										
16-15	0										
15-14	2,074	6.32	3	90	0.48	1,040	_				
14-13	1,966	2.14	3	90	0.48	935	2				
13-12	1,887	0.75	3	90	0.48	1,843	2				
12-11	1,914	0.47	3	90	0.68	1,325	2				
11-10	1,694	1.36	3	90	0.33	2,640	2				
10-9	1,793	0.78	3	90	0.59	1,315	2				
9-8	1,770	3.73	3	90	0.39	2,577	2				
8-7	1,634	2.88	3	90	0.48	6,663	2				
7-6	885	0	2	120	0.28	4,451	3				
6-5	983	0	2	60	0.67	3,791	3				
5-4	810	0	2	100	0.62	5,856	3				
4-3	1,706	0	2	90	0.69	5,945	3				
3-2	1,343	0	2	60	0.47	13,797	اد				
2-1	1,092	0	2	60	0.62	945	3				

NB	OFF-PEAK	DIRECTION	RESULTS				
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					!
18-17		0					
17-16		0					
16-15		0					
15-14	SR 430 TO BRENTWOOD	2,135	0.78	13.5	В	18.2	D
14-13	BRENTWOOD TO 3RD ST	2,114	0.78	13.4	В	17.4	D
13-12	3RD ST TO 6TH ST	2,058	0.76	13.1	В	24.8	c
12-11	6TH ST TO 8TH ST	2,093	0.54	4.9	A	27.9	c i
11-10	8TH ST TO LPGA	1,836	0.97	27.5	D	22.6	c
10-9	LPGA TO WALKER	1,955	0.58	7.6	В	25.0	c
9-8	WALKER TO FLOMICH	1,873	0.84	17.9	C	26.4	c
8-7	FLOMICH TO HAND	1,744	0.64	11.8	В	39.1	Ā
7-6	HAND TO SR 40	973	0.93	37.7	D	25.6	c
6-5	SR 40 TO WILMETTE	1,080	0.43	3.1	A	40.0	Ā
5-4	WILMETTE TO SR 5A (OB)	890	0.38	6.1	В	41.3	Â
4-3	SR 5A (OB) TO AIRPORT	1,875	0.71	6.2	В	41.3	Â
3-2	AIRPORT TO I-95 NB	1,476	0.83	11.5	В	42.0	Â
2-1	I-95 NB TO I-95 SB	1,200	0.51	4.3	A	42.0 25.7	c
NB	Arterial S		33.4 n			25.7	
		LOS =	В				

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

2024 Design Hour - Alternative 6A & 6B

Arterial Level of Service Estimating Software
Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP A)

From:

SR 442

To:

SR 5A (PORT ORANGE)

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 6A & 6B

TRAFFIC CHARACTERISTICS

AADT:

53,150

K FACTOR:

0.086

D FACTOR:

0.531

PHF:

0.001

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

3

THRU LANES OFF-PEAK DIRECTION:

2

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

. .

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

4

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

Δ

P=PRETIMED S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB	PEAK DIRECTION'S SPECIFIC INPUTS				UTS		DISTANCE	DISTANCE					
	LINK		% TURNS		CYCLE	EFFECTIVE.	BETWEEN						
	AADT		FROM		LENGTH	_g/C	SIGNALS	LINK					
	(1 if unavail.)	PEAK_HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL				
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE				
1-2		0.404							· - · · · · · · · · · · · · · · · · · ·				
	0	_,	0	3	90		28696.80	28,697	3				
2-3	0	2,566	5.18	3	90	0.54	0.57	2,983	3				
3-4	0	2,608	0	3	120	0.61	0.61	3,226	3				
4-5	0	2,152	0	3	120	0.43	0.17	882	3				
5-6	0	2,725	0	3	90	0.63	0.18	940	3 3 4				
6-7	0	2,327	0	3	90	0.69	0.05	264					
7-8	0	2,357	2.33	3	90	0.51	1.31	6,938	4 4 3 3				
8-9	0	2,626	14.09	3	100	0.52	1.00	5,296	3				
9-10	0	1,407	0	2	90	0.32	1.49	7,846	3				
10-11	0	0											
11-12	0	0											
12-13	0	0											
13-14	0	0											
14-15	0	0											
15-16	0	0											
16-17	0	0											
17-18	0	0											
18-19	0	0											
19-20	0	0											

SB	PEAK DIRE	CTION RES	ULTS				
Ĭ	NOTES	THROUGH]	NTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 5A (PO) TO TURNBULL	2638	0.87	13,9	В	43.2	Α
2-3	TURNBULL TO WAYNE	2674	0.86	13.4	В	30.6	В
3-4	WAYNE TO WASHINGTON	2866	0.83	13.2	В	31.5	В
4-5	WASHINGTON TO CANAL	2365	0.96	28.8	D	10.8	F
5-6	CANAL TO LYTLE SB	2995	0.83	9.4	В	20.3	D
6-7	LYTLE SB TO LYTLE NB	2557	0.65	5.3	В	14.6	E
7-8	LYTLE NB TO 10TH ST	2530	0.87	14.2	В	38.3	A
8-9	10TH ST TO PARK	2479	0.84	14.8	В	36.3	Ä
9-10	PARK TO SR 442	1546	1.26	173.5	F	15.5	E I
10-11		0					_
11-12		0					
12-13		0					
13-14		0					į
14-15		0					
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0		4			
SB	Arterial	Speed =	***	mph		 .	
		LOS =	F	NOTE: Inter	rsection Capa	city Exce	eded

*Warning

NB	OFF-PEAK DIRECTION'S SPECIFIC INPUTS										
		% TURNS		CYCLE	EFFECTIVE						
		FROM		LENGTH	g/C						
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL				
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE				
20-19	0										
19-18	0										
18-17	0			•							
17-16	0										
16-15	0										
15-14	0										
14-13	0										
13-12	0										
12-11	0										
11-10	0										
10-9	2,036	2.16	3	100	0.62	7,846	3				
9-8	2,041	0.39	3	90	0.69	5,296					
8-7	2,100	16.38	3	90	0.69	6,938	2				
7-6	1,756	0	3	90	0.63	264	2				
6-5	1,624	0	3	120	0.43	940	3				
5-4	1,968	0	3	120	0,41	882	3				
4-3	1,880	2.34	3	90	0.54	3,226	2 2 3 3 3 3 3				
3-2	1,812	0	2	90	0.53	2,983	3				
2-1	892	. 0	2	100	0.61	28,697	3				

NB	OFF-PEAK [DIRECTION	RESULTS				2
1		THROUGH			INTERSECTION		ARTERIAL
ii.		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12		0					
12-11		0					
11-10		0					
10-9	SR 442 TO PARK	2,189	0.62	7.8	В	41.5	Α
9-8	PARK TO 10TH ST	2,234	0.57	4.7	Α	41.8	Â
8-7	10TH ST TO LYTLE NB	1,930	0.49	4.3		42.7	Â
7-6	LYTLE NB TO LYTLE SB	1,930	0.53	6.0	В	13.6	E
6-5	LYTLE SB TO CANAL	1,785	0.72	18.9	C	14.6	E
5-4	CANAL TO WASHINGTON	2,163	0.93	27.3	D	11.2	F .
4-3	WASHINGTON TO WAYNE	2,018	0.65	9.7	В	33.7	В
3-2	WAYNE TO TURNBULL	1,991	0.98	25.5	D	24.7	c
2-1	TURNBULL TO SR 5A (PO)	980	0.42	6.7	В	44.1	Ā
NB	Arterial S	peed =	37.8			77.1	
		LOS =	Α				į

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP B)

From:

SR 5A (PORT ORANGE)

To:

FERNDALE AVE

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 6A & 6B

TRAFFIC CHARACTERISTICS

AADT:

49,500

K FACTOR:

0.088

D FACTOR:

0.579

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

THRU LANES OFF-PEAK DIRECTION:

3

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

45 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

P=PRETIMED S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIRE	CTION'S SP	ECIFIC INF	PUTS		DISTANCE		
1	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
į	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
ļ		PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
1-2			_		,		-		
2-3	0	-,	0	3	120	0.51	0.51	2,714	
	0	2,881	8.5	3	120	0.58	0.51	2,672	4
3-4	0	2,992	13.1	3	120	0.58	0.66	3,495	4
4-5	0	2,824	3.15	3	120	0.64	0.37	1,948	4
5-6	0	2,646	10.24	3	120	0.50	0.67	3,522	4
6-7	0	1,295	0	2	120	0.27	0.14	760	4
7-8	0	1, 4 01	10.42	2	80	0.60	1.37	7,25 5	4
8-9	0	1,182	0	2	100	0.38	1.23	6,505	4
9-10	0	0						-,	
10-11	0	0							
11-12	0	0							
12-13	0	0							
13-14	0	0							
14-15	0	0							
15-16	0	0							
16-17	0	0							
17-18	0	0							
18-19	0	0							
19-20	0	0							

SB	PEAK DIRE	CTION RES	ULTS				
ļ t	NOTES	THROUGH			INTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	FERNDALE TO BIG TREE	2736	0.94	22.4	С	24.9	C
2-3	BIG TREE TO RIDGE	2897	0.87	15.2	С	28.3	В
3-4	RIDGE TO REED CANAL	2857	0.86	14.9	В	31.4	В
4-5	REED CANAL TO VENTUR	3006	0.82	11.4	В	26.5	Č
5-6	VENTURE TO HERBERT	2610	0.92	20.8	С	28.6	В
6-7	HERBERT TO SR 421	1423	1.40	309.3	F	1.2	F
7-8	SR 421 TO COMMONWEAL	1379	0.60	6.7	В	41.7	A
8-9	COMMONWEALTH TO SR	1299	0.90	23.4	C	34.4	В
9-10		0				04.4	
10-11		0					
11-12		0					
12-13		0					
13-14		0					
14-15	•	0			•		
15-16		0					
16-17		0					
17-18		0					
18-19		0					
19-20		0					
SB	Arterial S		***	mph			
	·····	LOS =		-	section Capa	citv Excee	ded

*Warning

NB	OFF-PEAK D	IRECTION'	S SPECIFI	C INPUTS			
		% TURNS FROM		CYCLE LENGTH	EFFECTIVE g/C		
I D 177	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0						
19-18	0						
18-17	0						
17-16	0						
16-15	0						
15-14	0						
14-13	0						
13-12	0				•		
12-11	0					-386	
11-10	0				100 m	next-	
10-9	0				inachtz".		•
9-8	1,014	0.39	2	80	0.60	6,505	_
8-7	838	0	3	120	0.27	7,255	2
7-6	1,565	1.73	3	120	0.50	7,255	2
6-5	1,771	0	3	120	0.50		2
5-4	1,686	0	3	120	0.58	3,5 <u>22</u> 1,948	2
4-3	1,758	2.9	. 3	120	0.58	3,495	2
3-2	1,659	2.83	3	120	0.58	2,672	2
2-1	1,798	0	3	60	0.69	2,672	2

NB	OFF-PEAK	DIRECTION	RESULTS	 			
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		. 0					
19-18		0					
18-17		0					
17-16		0					ļ
16-15		0					
15-14		0					
14-13		0					,
13-12		0					
12-11		0		•			}
11-10		0					
10-9		0					ļ
9-8	SR 5A TO COMMONWEAL	1,110	0.49	5.9	В	41.7	,
8-7	COMMONWEALTH TO SR	921	0.61	25.2	-	34.7	A
7-6	SR 421 TO HERBERT	1,690	0.59	14.0	_		В
6-5	HERBERT TO VENTURE	1,946	0.53	7.6		15.3	E
5-4	VENTURE TO REED CANA	1,853	0.56	10.1	В	35.9	Α .
4-3	REED CANAL TO RIDGE	1,876	0.56	10.1	_	27.4	C
3-2	RIDGE TO BIG TREE	1,771	0.61	13.8	-	34.2	В
2-1	BIG TREE TO FERNDALE	1,976	0.50	2.9	_	29.2	В
NB	Arterial S		34.0		A	37.8	_A
		LOS =	В	pii			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP C)

From:

FERNDALE AVE

To:

SR 430/MASON AVE

Peak Direction:

SB

Off-peak Direction:

NB **DESIGN**

Study Time Period:

Analysis Date:

APRIL 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 6A & 6B

TRAFFIC CHARACTERISTICS

AADT:

47,088

K FACTOR:

0.083

D FACTOR:

0.544

PHF:

0.920

1,900

ADJ. SATURATION FLOW RATE: % TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

3

THRU LANES OFF-PEAK DIRECTION:

3

URBAN, TRANSITIONING, OR RURAL DEVELOPED (U/T/R):

ARTERIAL CLASS:

1 (1, 2, or 3)

FREE FLOW SPEED (mph):

35 (45, 40, or 35)

For Arterial Type and Class:

Use Free flow speed of:

Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

4

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

P=PRETIMED

TYPE SIGNAL SYSTEM:

Α

S=SEMIACTUATED A=ACTUATED

SYSTEM CYCLE LENGTH: WEIGHTED THRU MOVEMENT g/C:

N/A

SB		PEAK DIRE	CTION'S SP	ECIFIC INP	UTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(l if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)		TYPE
			·						
1-2	0	1,941	1.91	3	120	0.63	0.23	1,214	4
2-3	0	1,721	0	3	120	0.42	0.31	1,616	4
3-4	0	1, 9 69	0.61	3	60	0.47	0.12	623	4
4-5	0	1,829	4.76	3	120	0.43	0.18	966	4
5-6	0	1,742	1.21	3	120	0.60	0.21	1,119	4
6-7	0	1,684	0	3	120	0.34	0.14	760	4
7-8	0	2,262	0.44	3	120	0.69	0.15	808	4
8-9	0	2,135	5.53	3	120	0.42	0.15	771	4
9-10	0	2,399	3.46	3	120	0.52	0.73	3,828	4
10-11	0	2,556	2.11	3	120	0.53	0.66	3,480	الم
11-12	0	2,063	0	3	120	0.55	0.39	2,043	4
12-13	0	2,777	0	3	60	0.69	0.20	1,061	4
13-14	0	0					55	.,	7
14-15	0	0							
15-16	0	0							Ì
16-17	0	0							
17-18	0	0							
18-19	0	0							İ
19-20	0	0							

.

F :

SB	PEAK DIRI	ECTION RES	ULTS				
N .	NOTES	THROUGH]	NTERSECTION		ARTERIAL
	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	SR 430 TO MADISON	2069	0.57	8.3	В	21.4	D
2-3	MADISON TO FAIRVIEW	1871	0.79	20.6	С	18.3	D
3-4	FAIRVIEW TO MULLALY	2127	0.80	9.8	В	15.5	E
4-5	MULLALY TO BETHUNE	1893	0.77	19.5	С	13.7	E
5-6	BETHUNE TO BAY	1871	0.55	9.3	В	19.9	D
6-7	BAY TO SR 600	1830	0.94	30.3	D	9.0	F
7-8	SR 600 TO MAGNOLIA	2448	0.62	6.7	В	19.8	D
8-9	MAGNOLIA TO ORANGE	2192	0.92	25.2	D	10.3	F
9-10	ORANGE TO BELLEVUE	2517	0.85	17.6	С	26.7	c c
10-11	BELLEVUE TO WILDER	2720	0.90	18.3	С	25.9	c
11-12	WILDER TO SR 400	2242	0.72	13.4	В	23.9	č
12-13	SR 400 TO FERNDALE	3018	0.77	4.5	A	23.4	Č
13-14		0				20.1	Ĭ
14-15		0					
15-16		0					
16-17		0					İ
17-18		0					1
18-19		0					
19-2 0		0					
SB	Arterial	Speed =	19.9	mph	· · · · · · · · · · · · · · · · · · ·		
		LOS =	D	• ••			

NB	OFF-PEAK D	IRECTION'	S SPECIFIC	C INPUTS			
		% TURNS	erte.	CYCLE	EFFECTIVE		
		FROM		LENGTH	g/C		
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0					· · · · · · · · · · · · · · · · · · ·	
19-18	0						
18-17	0						
17-16	0						
16-15	0						
15-14	0						
14-13	0						
13-12	1,318	. 0	3	120	0.55	1,061	3
12-11	2,029	9.22	3	120	0.53	2,043	2
11-10	1,813	5.96	3	120	0.52	3,480	2
10-9	1,485	0	3	120	0.42	3,828	2
9-8	1,730	4.16	3	120	0.57	771	2
8-7	1,240	0	3	120	0.34	808	- 1
7-6	1,703	3.7	3	120	0.60	760	2 2
6-5	1,660	0	3	120	0.43	1,119	11
5-4	1,874	0.43	3	60	0.47	966	2
4-3	1,640	0	3	120	0.42	623	2
3-2	1,877	3.36	3	120	0.63	1,616	
2-1	1,741	0	3	120	0.37	1,214	2

NB	OFF-PEAK	DIRECTION	RESULTS			· · · · · · · · · · · · · · · · · · ·	
		THROUGH		1	NTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					•
18-17		0					
17-16		0					
16-15		0					
15-14		0					
14-13		0					
13-12	FERNDALE TO SR 400	1,433	0.46	10.5	В	18.6	D
12-11	SR 400 TO WILDER	2,002	0.66	13.3	В	23.9	C
11-10	WILDER TO BELLEVUE	1,853	0.63	13.6	В	27.7	C
10-9	BELLEVUE TO ORANGE	1,614	0.68	18.8	C	26.3	C
9- 8	ORANGE TO MAGNOLIA	1,802	0.56	10.8	В	16.3	E
8-7	MAGNOLIA TO SR 600	1,348	0.69	22.5	C	11.4	F
7 - 6	SR 600 TO BAY	1,783	0.52	9.1	В	17.4	r D
6-5	BAY TO BETHUNE	1,804	0.73	18.8	C	17.4	E
5-4	BETHUNE TO MULLALY	2,028	0.76	9.3	В	18.9	-
4-3	MULLALY TO FAIRVIEW	1,783	0.75	19.9	С		D
3-2	FAIRVIEW TO MADISON	1,972	0.75	8.1	В	10.5 25.0	F
2-1	MADISON TO SR 430	1,892	0.90	26.7	D		С
NB	Arterial			1ph	_ U	13.2	E
		LOS =	D	.b.i			

Arterial Level of Service Estimating Software Based on Chapter 11 of the 1994 Highway Capacity Manual Update

Florida Department of Transportation

August 1995

DESCRIPTION

Road Name:

US 1 (GROUP D)

From:

SR 430/MASON AVE

To:

I-95 SB RAMPS

Peak Direction:

SB

Off-peak Direction:

NB

Study Time Period:

DESIGN

Analysis Date:

AUGUST 1998

User Notes:

2024 DESIGN HOUR - ALTERNATIVE 6A & 6B

TRAFFIC CHARACTERISTICS

AADT:

37.269

K FACTOR:

0.089

D FACTOR:

0.526

PHF:

0.910

ADJ. SATURATION FLOW RATE:

1,900

% TURNS FROM EXCLUSIVE LANES:

N/A

ROADWAY CHARACTERISTICS

THRU-LANES PEAK DIRECTION:

3

THRU LANES OFF-PEAK DIRECTION:

3

URBAN, TRANSITIONING, OR

U

RURAL DEVELOPED (U/T/R): **ARTERIAL CLASS:**

1 (1, 2, or 3)

45 (45, 40, or 35)

FREE FLOW SPEED (mph):

Use Free flow speed of:

For Arterial Type and Class: Rural

55, 50, 45, 40 or 35

Transitioning, Class 1

55, 50, 45, 40 or 35

Urban, Class 1

45, 40 or 35

Urban or Transitioning, Class 2

40, 35, 30 or 25

Urban, Class 3

35, 30 or 25

SIGNALIZATION CHARACTERISTICS

ARRIVAL TYPE PEAK DIRECTION:

ARRIVAL TYPE OFF-PEAK DIRECTION:

2

TYPE SIGNAL SYSTEM:

P=PRETIMED S=SEMIACTUATED

A=ACTUATED

SYSTEM CYCLE LENGTH:

N/A

WEIGHTED THRU MOVEMENT g/C:

SB		PEAK DIREC	CTION'S SP	ECIFIC INF	PUTS		DISTANCE		
	LINK		% TURNS		CYCLE	EFFECTIVE	BETWEEN		
	AADT		FROM		LENGTH	g/C	SIGNALS	LINK	
	(1 if unavail.)	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	(Enter in	LENGTH	ARRIVAL
LINK	(0 if unused)	VOLUME	LANES	LANES	2-20	2-20	Miles or Feet)	(FT)	TYPE
							11.100 01 1 001)	(11)	TIFE
1-2	0	1,140	0	2	60	0.69	0.18	945	
2-3	0	1,447	0	2	90	0.46	2.61	13,797	•
3-4	0	730	0	2	100	0,37	1.13	5, 94 5	
4-5	0	886	0	2	60	0.67	1.11	5, 85 6	3
5-6	0	797	0	3	120	0.28	0.72	3,791	
6-7	0	1,624	11.95	3	90	0.48	0.84	4,451	3
7-8	0	1,760	12.73	3	90	0.39	1.26	6,663	3
8-9	0	1,704	5.93	3	90	0.59	0.49	2,577	3
9-10	0	1,687	10.73	3	90	0.33	0.25	1,315	4
10-11	0	1,814	5.35	3	90	0.52	0.50	2,640	4
11-12	0	1,801	6.33	3	90	0.48	0.25	1,325	4
2-13	0	1,789	3.07	3	90	0.48	0.35	1,843	4
3-14	0	1,797	2.56	3	90	0.48	0.18	935	4
4-15	0	1,569	0	3	120	0.37	0.20	1,040	4
5-16	0	0				0.07	0.20	1,040	4
6-17	0	0							
7-18	0	0							
8-19	0	0							:
9-20	0	0							

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SB	PEAK DIRE	CTION RES	ULTS		 		
1	NOTES	THROUGH			INTERSECTION		ARTERIAL
II	or	MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK	FROM/TO	FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
1-2	I-95 NB TO I-95 SB	1253	0.48	2.9	A	27.7	C
2-3	I-95 SB TO AIRPORT RD	1590	0.91	20.0	c	40.0	A
3-4	AIRPORT TO SR 5A (OB)	802	0.57	16.7	c	36.3	A
4-5	SR 5A (OB) TO WILMETTE	974	0.38	2.9	A	43.2	
5-6	WILMETTE TO SR 40	876	0.56	24.4	C	28.0	A
6-7	SR 40 TO HAND	1571	0,58	11.2	В	26.0 36.1	C
7-8	HAND TO FLOMICH	1688	0.76	16.5	C	37.1	A
8 -9	FLOMICH TO WALKER	1761	0.52	7.2	В		A
9-10	WALKER TO LPGA	1655	0.87	20.8	C	33.4	В
10-11	LPGA TO 8TH ST	1887	0.63	10.2	В	16.9	E
11-12	8TH ST TO 6TH ST	1854	0.68	12.1	В	31.5	В
12-13	6TH ST TO 3RD ST	1906	0.70	12.1	В	21.6	D
13-14	3RD ST TO BRENTWOOD	1924	0.71	12.3	В	25.3	С
14-15	BRENTWOOD TO SR 430	1724	0.82	23.8	C	18.0	D
15-16		0	0.02	25.6	C	13.5	E
16-17		0					ŀ
17-18		0					
18-19		0					İ
19-20		0					
SB	Arterial		32.8 m	nh			
		LOS =	B	hii			

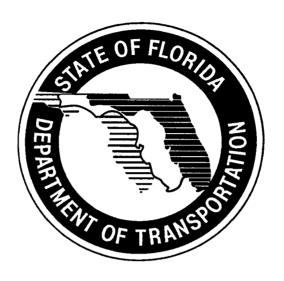
NB	OFF-PEAK [DIRECTION'	S SPECIFI	C INPUTS			
		% TURNS FROM		CYCLE LENGTH	EFFECTIVE g/C		
	PEAK HOUR	EXCLUS.		SIGNALS	SIGNALS	LENGTH	ARRIVAL
LINK	VOLUME	LANES	LANES	19-1	19-1	(FT)	TYPE
20-19	0						····
19-18	0						l
18-17	0						
17-16	0						
16-15	0						
15-14	2,074	6.32	3	90	0.48	1,040	
14-13	1,966	2.14	3	90	0.48	935	2
13-12	1,887	0.75	3	90	0.48	1,843	2
12-11	1,914	0.47	3	90	0.68	1,325	. 2
11-10	1,694	1.36	3	90	0.33	2,640	2
10-9	1,793	0.78	. 3	90	0.59	1,315	2
9-8	1,770	3.73	3	90	0.39	2,577	2
8-7	1,634	2.88	3	90	0.48	6,663	2 3
7-6	885	0	2	120	0.28	4,451	
6-5	98 3	0	2	60	0.67	3,791	3
5-4	810	0	2	100	0.62	5,856	3
4-3	1,706	o	2	90	0.69	5,945	3
3-2	1,343	0	2	60	0.47	13,797	3
2-1	1,092	0	2	60	0.62	945	_ 2

NB	OFF-PEAK	DIRECTION	RESULTS		- 11 1211 21 -		
		THROUGH			INTERSECTION		ARTERIAL
		MOVEMENT		STOPPED	APPROACH	SPEED	LINK
LINK		FLOW RATE	v/c RATIO	DELAY	LOS	(MPH)	LOS
20-19		0					
19-18		0					
18-17		0					
17-16		0					
16-15		0					
15-14	SR 430 TO BRENTWOOD	2,135	0.78	13.5	В	18.2	D
14-13	BRENTWOOD TO 3RD ST	2,114	0.78	13.4	В	17.4	D
13-12	3RD ST TO 6TH ST	2,058	0.76	13.1	В	24.8	C
12-11	6TH ST TO 8TH ST	2,093	0.54	4.9	A	27.9	C
11-10	8TH ST TO LPGA	1,836	0.97	27.5	D	22.6	C
10-9	LPGA TO WALKER	1,955	0.58	7.6	В	25.0	C
9-8	WALKER TO FLOMICH	1,873	0.84	17.9	C	26.4	C
8-7	FLOMICH TO HAND	1,744	0.64	11.8	В	39.1	A
7-6	HAND TO SR 40	973	0.93	37.7	D	25.6	Ĉ
6-5	SR 40 TO WILMETTE	1,080	0.43	3.1	A	40.0	A
5-4	WILMETTE TO SR 5A (OB)	890	0.38	6.1	В	41.3	Â
4-3	SR 5A (OB) TO AIRPORT	1,875	0.71	6.2	В	41.3	Ā
3-2	AIRPORT TO 1-95 NB	1, 47 6	0.83	11.5	В	41.3 42.0	Â
2-1	I-95 NB TO I-95 SB	1,200	0.51	4.3	A	42.0 25.7	C
NB	Arterial		33.4 r				<u> </u>
	_	LOS =	В				
VOTE - 1	ODESC NIE D. ED. CALCERT	LU3 -	D		<u> </u>		

APPENDIX F

Multi-Modal Alternatives Analysis

S.R. 5/U.S. 1 TRANSPORTATION STUDY DRAFT TECHNICAL MEMORANDUM



MULTIMODAL ALTERNATIVES ANALYSIS

State Project Number: 79000-1504 Work Program Number: 5119374 FAP Number: XU-485-7(24)

> Prepared by SAIC December, 1998

Prepared for:
FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT V – DELAND

and

VOLUSIA COUNTY METROPOLITAN PLANNING ORGANIZATION

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US 1 TRANSPORTATION STUDY MULTIMODAL ALTERNATIVES ANALYSIS DOCUMENT OVERVIEW

The purpose of this technical memorandum is to present and evaluate multimodal alternatives for the US 1 corridor. In support of this effort, two sets of alternatives have been developed. The first places a lower emphasis on multimodal enhancements within the corridor and is comprised of the following components:

- Local government land use policies and regulations that support walking, bicycling and riding transit;
- Bicycle lanes on US 1;
- New sidewalks and sidewalk improvements on US 1;
- Pedestrian crossing enhancements at key intersections;
- Headway reductions and service time extensions on existing US 1 bus routes (3, 4 and 40);
- More bus shelters on US 1;
- The initiation of new trolley service as well extensions to the existing service, and
- The development of multimodal facilities within communities along US 1.

The second, a high investment alternative, has been developed with the intent of placing a higher level of multimodal emphasis on the corridor. In addition to including all the low emphasis strategies identified above, this alternative is comprised of the following components:

- The development of a design standards manual for the corridor;
- A multi-use trail system;
- Express bus service;
- Bus prioritization treatments, and
- Enhanced multimodal hubs within communities along the corridor, including provisions for bicycle, pedestrian and transit access and amenities.

Each alternative was incorporated into the six major multimodal alternatives for the US 1 Transportation Study. A subsequent evaluation revealed that the alternatives providing a high level of multimodal emphasis entail a substantial benefit in the US 1 corridor in terms of:

- Access to bicycle, pedestrian and transit facilities and services;
- Improved bicycle and pedestrian safety;

- Transit travel time, and
- Compatability with and enhancement of local government redevelopment objectives.

The lower multimodal emphasis alternatives also provide a significant benefit in these four areas, although not to the same extent as the high emphasis alternatives. Therefore, from a multimodal perspective, the key to recommending a preferred alternative is in a consideration of the benefits each alternative will provide in relation to the cost to implement them.

The multimodal benefits of the high emphasis alternatives over the do nothing alternative and lower emphasis alternatives are well documented. However, these benefits come at a capital cost of approximately \$26 million more than the do nothing alternative and \$22 million more than the lower multimodal emphasis alternatives. In terms of transit operating costs, the high multimodal emphasis alternatives come at a cost of approximately \$5 million more annually than the do nothing alternative and \$3.5 million more annually than and the lower multimodal emphasis alternatives.

INTRODUCTION

As part of the US 1 Transportation Study, various multimodal alternatives will be considered in combination with roadway improvements. The purpose of this technical memorandum is to present and evaluate the multimodal alternatives. The strategies considered in this memorandum are from the strategy screening analysis presented in another technical memorandum. That analysis used thresholds, such as population density, to identify those multimodal strategies that make sense for the study corridor given current and future conditions.

This memorandum begins with a description of the multimodal alternatives developed for the study corridor. An evaluation of those alternatives, including an assessment of benefits and costs, follows. The results of the evaluation will ultimately lead to a recommended alternative and implementation plan.

MULTIMODAL ALTERNATIVES

The Strategy Screening Analysis technical memorandum presents a process for identifying viable strategies based on existing and future conditions (to the year 2020). The process uses a series of threshold questions that are grouped by five levels of strategies:

- Level 1 most strategies in this group are land use / growth management strategies that eliminate the need for making a vehicle trip. For example, clustering land uses in a way that encourages walking or telecommuting.
- Level 2- strategies in this group encourage the use of transit or other non-auto modes. For example, providing timely transit service or bike paths which effectively compete with travel by car or truck.
- Level 3 strategies in this group increase auto occupancies through incentives such as high occupancy vehicle lanes.
- Level 4 these strategies attempt to increase the efficiency of roadway operations. Access management and optimizing traffic signal timing are examples of Level 4 strategies.

• Level 5 – if all other strategies do not address mobility problems in the corridor, then adding lanes or building a new parallel road is considered.

Details of the strategy screening results for the study corridor are presented in the Strategy Screening Analysis technical memorandum. *Table 1* presents the shortlist of viable strategies in the study corridor, which was the starting point for developing multimodal alternatives. This memorandum focuses on viable Level 1 and 2 strategies; Level 4 and 5 strategies are addressed on other memoranda, while viable Level 3 strategies – a ride matching service and the guaranteed ride home program – are already in place.

Formulation of Multimodal Alternatives

As the study team began to formulate alternatives, it became apparent that the shortlisted Level 1 and 2 strategies are highly complimentary in the study corridor. The success of any one of the shortlisted strategies depends on the implementation of other shortlisted strategies. Thus, only two distinct alternatives evolved — one a high investment combination of shortlisted strategies and a second that kept multimodal investments to a minimum. Both high and low levels of multimodal investment, or emphasis, were developed to compliment varying levels of highway emphasis on US 1.

ALTERNATIVE 1 - LOW INVESTMENT IN MULTIMODAL STRATEGIES

Multimodal Alternative 1 has been designated as the low investment alternative because it consists of strategies that can be implemented at a relatively low cost. Thus, the Level 1 and 2 strategies identified within the low investment alternative are those shortlisted strategies in *Table 1* that require the least amount of resources. It is important to note that low investment strategies will not necessarily have a minimal effect on enhancing multimodalism within the US 1 corridor; rather, they represent actions that can be taken with less financial commitment than high investment strategies. Level 1 strategies within the low investment multimodal alternative are identified first, followed by Level 2 strategies.

Table 1
VIABLE MULTIMODAL STRATEGIES FOR THE US 1 CORRIDOR

Level 1	Land use and policies/ regulations
Strategies	Design/Zoning Standards
	Locations of jobs and housing
Level 2	Fleet expansion
Strategies	Vehicle replacement / upgrade
	Transit park and ride facilities
`	Other intermodal facilities
	Paratransit Services (already in place)
	Service enhancement / expansion
	Fare reductions
	Transit information system
	Transit coordination
	Transit marketing
	Intelligent bus stops
	Bicycle facilities
	Bicycle storage systems
	Pedestrian facilities
Level 3	Guaranteed ride home programs (already in place)
Strategies	Ride share matching services (already in place)

Level 1 Strategies - Land Use Policies and Regulations

Recommended Level 1 strategies under the low investment alternative do not entail direct action by FDOT or the MPO. Instead, these strategies involve the encouragement of regulatory and policy actions by each of the local governments within the corridor. Such actions, which include land use and transportation policies and regulations, support multimodalism within the corridor by:

- developing a transit and pedestrian supportive land use environment
- providing developer incentives for transit, bicycle and pedestrian amenities
- creating and enforcing regulations that eliminate pedestrian hazards

There are five mixed-land use areas (also referred to as hubs in this memorandum) spaced evenly from south to north along the corridor that are potential focal points for multimodal Level 1 and 2 strategies: the cities of Ormond Beach, Daytona Beach, Holly Hill, Port Orange and New Smyrna Beach. *Figure 1* shows these areas in relation to the US 1 corridor study area. The following is a description of Level 1 strategies recommended as part of the low investment alternative.

Developing A Transit And Pedestrian Supportive Land Use Environment

A crucial element of any initiative to promote bicycling, walking and riding transit is the creation of a land use environment that supports such activities. To a certain extent, supporting land use policies are in place for each of the multimodal areas along the corridor. Furthermore, each of these communities, with the exception of Ormond Beach, have made plans to redevelop and revitalize land uses adjacent to the US 1 corridor within their jurisdictions. This has occurred through the creation of redevelopment areas and districts, enterprise zones, and community redevelopment agencies.

As these communities begin to redevelop the land uses adjacent to the US 1 corridor, it is important that related planning efforts include components that support bicycling, walking and riding transit. Such components include:

- higher commercial intensities and residential densities.
- design elements that orient buildings to each other and the sidewalk/roadway, and
- the close integration of jobs and housing.

The ability to move from activity to activity by foot not only promotes pedestrian travel within the corridor, it is also necessary for encouraging non-automobile trips to and from these areas. A significant reason why people continue to drive to work, even with competitive transit options, is the need for a car to make work related trips during the day. Mixed-uses are encouraged in each of the five areas, so existing policies do not preclude locating housing close to jobs. The jobs / housing balance in the six areas is part of the complementary activity and intra-area walking objectives for these areas.

Without a supporting land use environment in place, the optimum benefits from investments into bicycle, pedestrian and transit systems cannot be reached. The only way to build such environments is through the local government planning process.

Providing Developer Incentives for Transit, Bicycle and Pedestrian Amenities

One way to promote the use of multimodal transportation alternatives within the US 1 corridor is to provide developer incentives for the integration of transit, bicycle and pedestrian amenities within new developments. Such amenities may include bus pull out bays, bus shelters, benches, bicycle racks, planters and litter receptacles. Developers can be given incentive to provide these amenities through different means, including full or partial credit for transportation impact fees and density or intensity bonuses. Each local government would develop guidelines for the level of incentive to be provided for the placement of each amenity.

Creating and Enforcing Regulations That Eliminate Pedestrian Hazards

Many conditions along the US 1 corridor currently exist which pose hazards to

pedestrians. These conditions include visual obstructions from legal and illegal signage and barriers created by illegally parked vehicles. Such hazards can not only create physical barriers for pedestrians but can also make them feel unsafe and unwelcome. In effect, such hazards send a message to potential pedestrians that they "should not be walking here."

These hazards can be mitigated through local government regulations. Sign regulations can eliminate illegal signs, while parking regulations can remove illegally parked



Illegally parked vehicles along the US 1 corridor such as this one can create physical barriers for pedestrians and make them feel unsafe and unwelcome. Adequate local government regulations must exist and be strictly enforced to ensure a hazard-free walking environment.

vehicles from pedestrian venues. Sign amortization programs can phase out existing, legal signs that pose pedestrian hazards. Many of these regulations are already in place to one degree or another along the corridor. In these instances, such regulations must be strictly enforced. In cases where necessary regulations do not exist or are inadequate, the relevant local governments must create or update them.

The Role of FDOT and the MPO

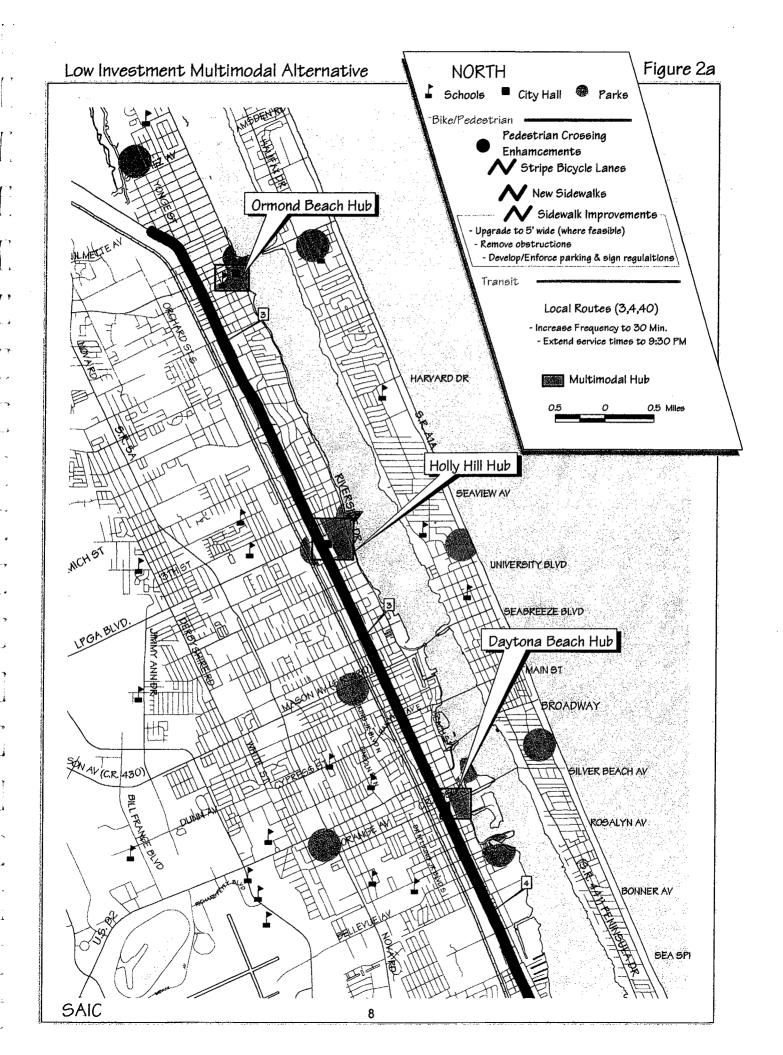
Although it is the responsibility of local governments along the US 1 corridor to implement the Level 1 strategies listed here, FDOT and the MPO may still play a role. This would occur through active involvement in the planning process for redevelopment along the corridor, as well as technical assistance in the preparation of policies, regulations and incentive programs to ensure that proper measures are taken to support walking, biking and riding transit.

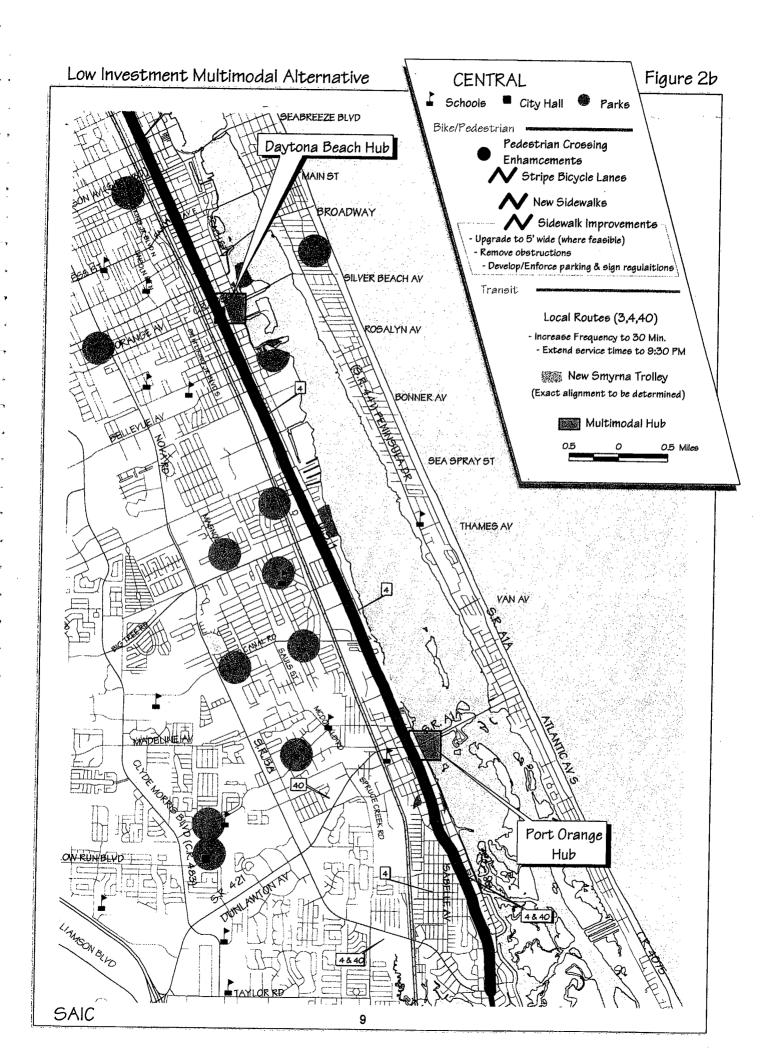
Level 2 Strategies - Bicycle, Pedestrian and Transit Improvements

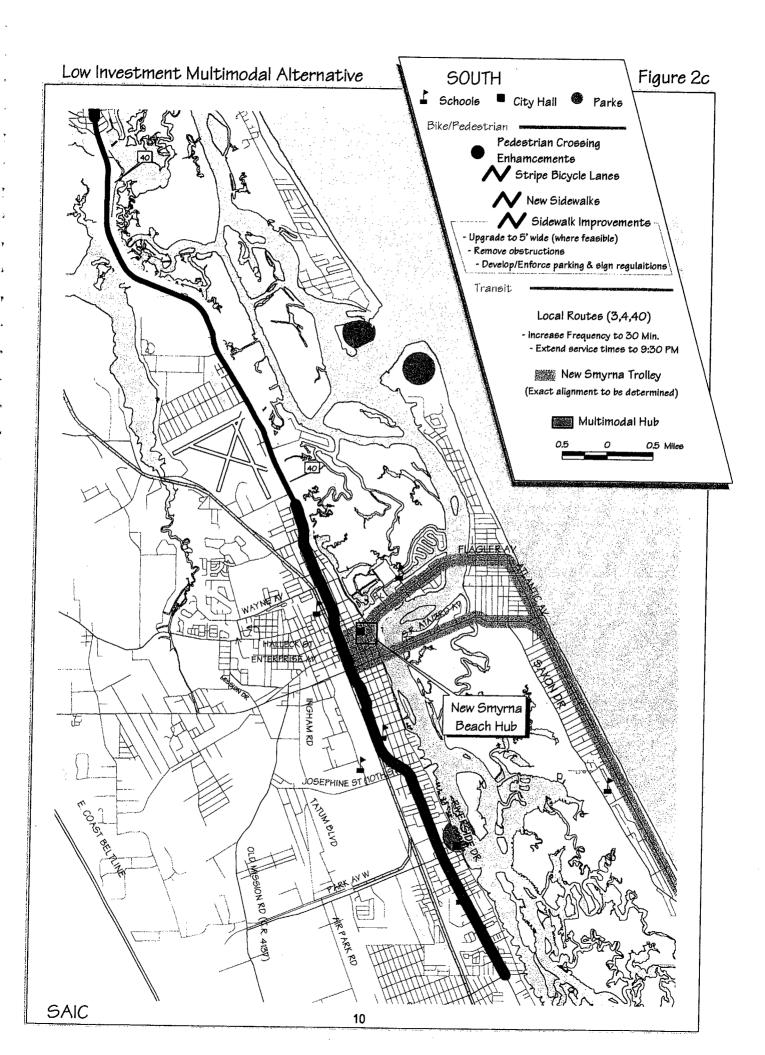
Level 2 strategies within the low investment alternative focus on improvements to existing multimodal facilities and services within the US 1 corridor as well as some new, lower cost facilities and services. These improvements are recommended based on the benefits they provide to walking, bicycling and riding transit in the corridor in relation to the cost to implement them. Each improvement is listed below. Bicycle and pedestrian improvements are identified first, followed by transit improvements. All multimodal improvements on the US 1 corridor associated with Alternative 1 are shown in *Figures 2a*, 2b and 2c.

Bicycle Lanes

To encourage the use of bicycles in the corridor, a clearly marked, dedicated facility must be present. For the low investment alternative, this would occur through the creation of on-street bicycle lanes. In order to provide bicycle lanes on US 1, the existing shoulders would need to be re-striped. Paved shoulders at least four feet wide are present for virtually the entire length of the corridor, from south of SR 442 in Edgewater to Woodland Avenue north of SR 40







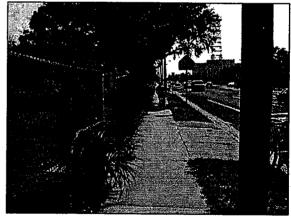
(Granada Boulevard) in Ormond Beach, with the exception of a approximately one third of a mile of the west side of US 1 one north of 10th Street in Edgewater. With exception of segments of US 1 in New Smyrna Beach and Edgewater that have recently been resurfaced, these shoulders are currently used for on-street parking. As a result, this parking would need to be removed to provide bicycle lanes (the six-lane highway alternatives call for the elimination of on-street parking as well). Also included with the provision of bicycle lanes would be signage indicating a bicycle route.

Sidewalk Improvements

For the most part, sidewalks cover the entire developed areas of the US 1 corridor. In developed areas where sidewalks do not exist, the construction of sidewalks is recommended. These areas are identified in *Figures 2a*, 2b and 2c.

Although sidewalks are present for virtually the entire length of developed areas along the corridor, in many cases they do not provide an optimum walking environment because they

are too narrow, in disrepair, or are obstructed. These deficiencies are most pronounced in areas where redevelopment efforts are focused. In order to provide a safe, sufficient walking environment, sidewalks should be a minimum of five feet wide throughout the corridor, and be free of cracks, unevenness, obstructions and other undesirable features. Where feasible, it is recommended that all deficient sidewalks be upgraded to a minimum of five feet in width, and be free from obstructions. Sidewalk upgrades are most crucial in areas where redevelopment is planned.



Narrow, cracked or obstructed sidewalks can hamper pedestrian activity. These deficiencies are most pronounced in areas where redevelopment is planned.

Pedestrian Crossing Enhancements

A key factor in enhancing the walkability of an area is the provision of an adequate street crossing environment. An unsafe street crossing environment can seriously hamper pedestrian activity along a corridor and create isolation among city blocks. Essential components of a safe street crossing environment include walk/don't walk signs (with sufficient timing), clearly marked crosswalks and curb and median cuts. In more compact street crossing environments where the street is narrow, this may also include brickwork to delineate the crossing. Where the road is wider and carries more than two lanes, pedestrian refuge islands in the medians are also recommended.

Key intersections have been identified along the US 1 corridor as candidates for street crossing improvements, based on a review of bicycle and pedestrian counts and accident records. These intersections, which are identified in *Figures 2a*, 2b and 2c, may require improvements not only on US 1, but on the cross street as well. As redevelopment occurs along the corridor and bicycle and pedestrian demand grows, additional crossing locations may be identified for enhancement in addition to the 23 locations identified in the figures.

Improve Existing US 1 Bus Routes

A majority of transit service on the US 1 corridor is attributed to three "core" bus routes operated by VOTRAN, the transit authority for Volusia County:

- Route 40 serves southern portion of the corridor, connecting Edgewater, New Smyrna Beach and Port Orange,
- Route 4 serves the central portion of the corridor, connecting Port Orange and Daytona Beach,
- Route 3 serves the north portion of the corridor, connecting Daytona Beach, Holly Hill and Ormond Beach.

These three routes serve the corridor well in terms of route coverage. Therefore, the first step in improving transit service on the corridor is a headway reduction on these routes from 60 minutes

to 30 minutes. This improvement will effectively double transit service on the corridor, and could potentially cut wait times in half. A service time extension is also proposed for all three routes to 9:30 PM from 7:00 PM, thus expanding the transportation options for individuals who must travel to or from the US 1 corridor at night. Both improvements are identified in the VOTRAN Transit Development Plan (TDP).

Improve Transit Passenger Amenities

One relatively low cost strategy for making transit more attractive along the US 1 corridor is improved passenger amenities. This would occur through the placement of shelters at key locations along the corridor. Shelters make transit more viable because they are dedicated facilities and make waiting for the bus more tolerable, especially during extremely hot or inclement weather. Although the exact placement of shelters along the corridor is subject to a more detailed examination, good shelter coverage would constitute one shelter on each side of the road every one half mile in developed areas, for a maximum of approximately 100 shelters. The shelters will be spaced more closely in the denser areas along the corridor, and spaced farther apart in lesser developed areas.

Trolley Connections

The City of New Smyrna Beach enjoys a relatively active street environment due to successful redevelopment efforts in the downtown area. In addition, the beach experiences a high level of use during the peak season. As a result, transit service to and from the US 1 corridor can be enhanced by a connection with downtown New Smyrna Beach and the beaches. This would occur through the initiation of a trolley bus. Trolleys are highly complementary to pedestrian environments (such as downtown New Smyrna Beach) and areas where parking is scarce (such as the beaches), and can reduce reliance on the automobile not only in downtown New Smyrna Beach and the beaches, but ultimately on US 1 as well. The trolley service area is identified in *Figure 2c*; exact alignments will require further, detailed operational analyses.

The beach areas north of Ponce Inlet are already served by a trolley system. It is recommend that this system also serve US 1 through connections at each of the four hub communities of Ormond Beach, Holly Hill, Daytona Beach and Port Orange.

Multimodal Hubs (Basic)

One method to improve transit service on the US 1 corridor is to provide opportunities for intermodal transfers. This would occur through the development of multimodal hubs within the communities of Ormond Beach, Holly Hill, Daytona Beach, Port Orange and New Smyrna Beach. The hubs would serve as locations for local bus transfers within each community, as well as opportunities for bicycle and pedestrian access. These facilities are similar in scale and magnitude to "superstops" currently used by VOTRAN and may be located in conjunction with an existing land use, such as a shopping center, or on a separate parcel of land. At a minimum, the hubs would include:

- Capabilities for hosting four transit vehicles at one time;
- Information on routes, running times, fares, etc.;
- Provisions for bicycle and pedestrian access;
- Bicycle storage facilities;
- A sheltered area for passengers; and
- Adequate lighting.

ALTERNATIVE 2 - HIGH INVESTMENT MULTIMODAL STRATEGIES

Alternative 1 is referred to as the "low investment" alternative because it consists of strategies that can be implemented at a relatively low cost, and focuses on improvements to existing facilities and services. By contrast, Alternative 2 requires a substantially higher level of financial commitment than Alternative 1 and consists of a range of new transit, bicycle and pedestrian facilities and services. In addition to the improvements described below, Alternative

2 includes all Alternative 1 strategies as well. Level 1 strategies are described first, followed by Level 2 strategies.

<u>Level 1 Strategies - Land Use Policies and Regulations</u>

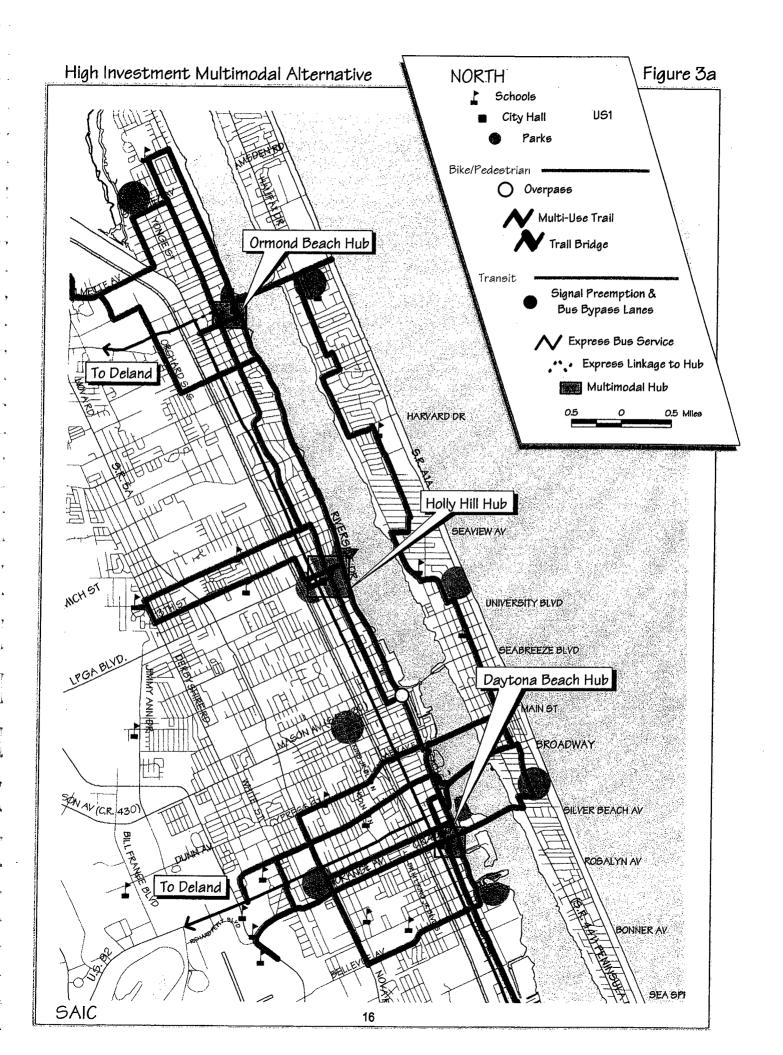
Develop Design Standards Manual

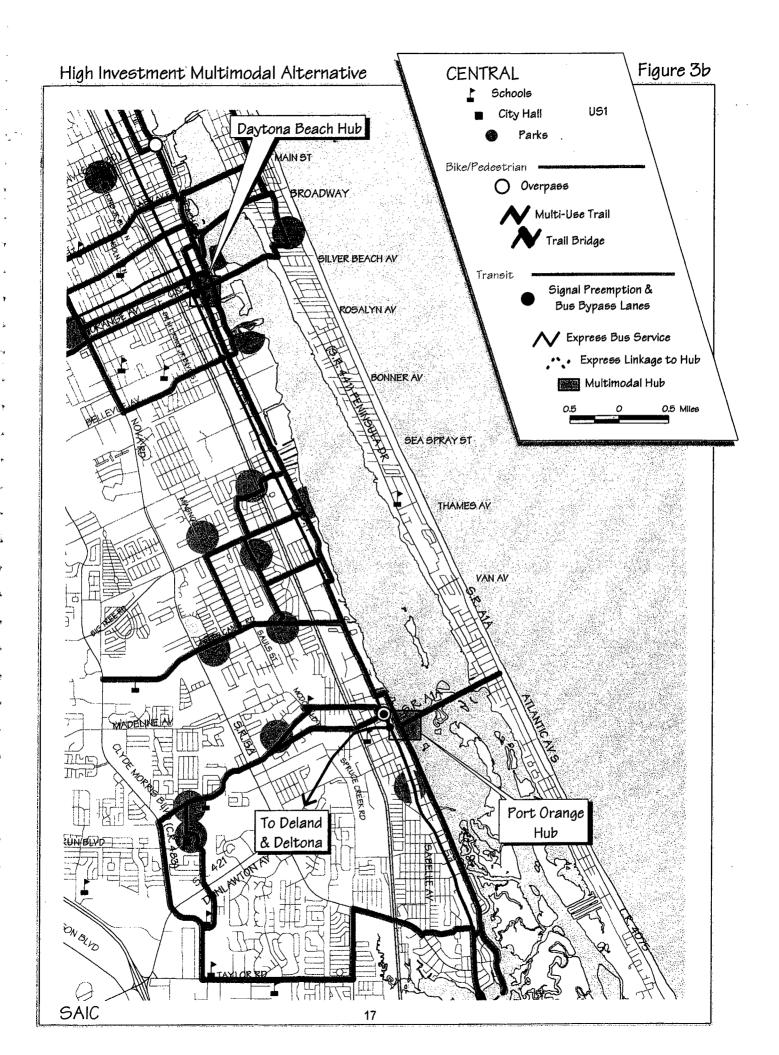
Alternative 1 identified several Level 1 strategies to enhance multimodalism along the US 1 corridor, including developing a transit and pedestrian supportive land use environment, providing developer incentives for transit, bicycle and pedestrian amenities, and creating and enforcing regulations that eliminate pedestrian hazards. While FDOT and the MPO would provide technical assistance in implementing these strategies, they are ultimately the responsibility of each local government along the corridor.

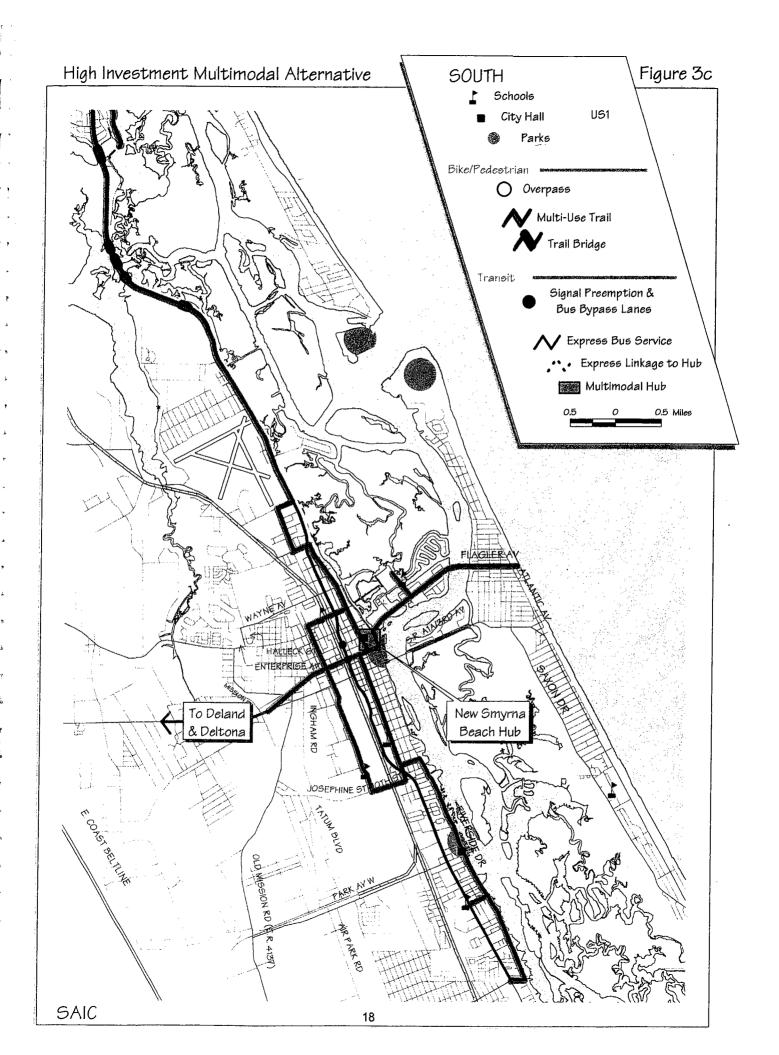
For Alternative 2, it is recommended that FDOT and the MPO not only support the Alternative 1 strategies, but also perform a study to develop transit, bicycle and pedestrian design standards for the US 1 corridor. Design standards recommended for the five areas orient buildings and open spaces in a way that promotes walking within the area, and integrate bicycle, pedestrian and transit access, in addition to automobiles, to new development. Once complete, the design standards manual would provide guidance to all jurisdictions along the corridor through illustrative examples and model ordinances.

Level 2 Strategies - Bicycle, Pedestrian and Transit Improvements

The Level 2 strategies listed in *Table 1* include transit improvements that range from fleet expansion to intelligent bus stops. They also include bicycle and pedestrian improvements, such as paths and storage systems. For Alternative 2, many of these improvements were combined and modified into a set of strategies that places a maximum level of emphasis on multimodalism within the US 1 corridor. As such, this alternative represents a maximum level of investment into multimodal facilities and services. Bicycle and pedestrian improvements are identified first, followed by transit improvements. All multimodal improvements on the US 1 corridor associated with Alternative 2 are shown in *Figures 3a*, 3b and 3c.







Multi-Use Trail System

A multi-use trail system is recommended for the US 1 corridor. This system would be predominantly off-road and accommodate both bicycles and pedestrians, as well as many other users of non-motorized transportation, such as rollerbladers. As Figures 3a, 3b and 3c show, this system would extend the entire length of the corridor, from Ormond Beach in the north to Edgewater in the south. As Figure 3b shows, portions of US 1 between Port Orange and New Smyrna Beach traverse water; this condition requires that a series of bridges be constructed to accommodate the trail. Furthermore, in some areas where the trail is proposed, it may be determined during the detailed planning and design phases that sufficient right of way is not available to construct a separate facility. In these areas, wide sidewalks (five foot minimum) and on-street bicycle lanes will link the off-road portions of the trail.

A critical aspect in the development of the trail system is an understanding that in order to encourage the use of alternate modes of transportation in the US 1 corridor, the trail must provide connections for users to get to the corridor. This objective is accomplished through a series of east-west and north-south connecting paths, or spurs. These spurs converge at the five mixed-use hub communities that are the focus of the multimodal strategies, and provide bicycle and pedestrian linkages between the corridor and educational, recreational, shopping and employment opportunities. In addition to connections with land uses adjacent to the corridor, other important components of the trail include:

- safe, clearly marked crossings at major intersections, such as US 1,
- coordinated, but unique signage designating each spur,
- bicycle storage systems at major destinations along the trail, including schools parks, shopping centers, etc., and
- kiosks containing trail maps and other information, as well as opportunities to connect with transit where the trails converge in each community (these aspects are addressed in greater detail in the section describing multimodal hubs)



The Pinellas Trail in Dunedin, Florida. An interconnected system of bicycle and pedestrian facilities can provide a safe, attractive alternative to automobile travel and encourage redevelopment and private investment.

Multi-use trail systems have been used by some local governments as a tool for redevelopment. For example, in Pinellas County, the Pinellas Trail traverses the City of Dunedin. The city was able to successfully use the trail as an attraction to its downtown area, and now enjoys a vibrant mix of restaurants, shops and other retail activities, as well as apartments and homes, all designed at a pedestrian scale and within walking distance of the trail. A multi-use trail system can be used to enhance similar redevelopment efforts of local governments along the US 1 corridor

Bicycle and Pedestrian Overpasses

In most cases, it is assumed the multi-use trail will cross roadways where existing crosswalks are located. However, there may be certain locations on the trail where heavy usage occurs concurrent with the intersection of a major roadway. In these situations, an at-grade trail crossing will create a number of bicycle and pedestrian conflicts with automobiles, and the potential for accidents will be high. To enhance the safety of trail users and eliminate conflicts, overpasses will be necessary. Two locations have been identified within the corridor where heavy use is anticipated and overpasses may be necessary – at Mason Avenue in Daytona Beach and US 1 in Port Orange. The overpasses are identified in *Figures 3a* and *3b*, respectively.

Express Bus Routes

Local bus routes make many stops along the US 1 corridor and may require one or more transfers to get from one area along US 1 to another. This results in relatively long travel times for riders, discouraging commuters. To shorten travel times and make riding the bus a more viable option, continuous express bus service is recommended for the US 1 corridor. Express bus service is much faster because it makes limited stops and travels long distances along a corridor, reducing or eliminating the need to transfer.

Recommended US 1 express bus service would consist of a route running from Edgewater to Ormond Beach, stopping only at major stops in New Smyrna Beach, Port Orange,

Daytona Beach and Holly Hill. To further enhance the viability of bus travel in the corridor, express service connections are also recommended to West Volusia County, including Deland and Deltona, departing from key points along US 1 where stops for the US 1 express route are located. Specifically, four West Volusia express routes are recommended:

- Ormond Beach to Deland via SR 40;
- Daytona Beach to Deland via US 92;
- Port Orange to Deland and Deltona via Dunlawton Avenue, and
- New Smyrna Beach to Deltona via SR 44.

Although these routes do not increase transit service directly on US 1, they do enhance multimodal options on the corridor. This is because travel from anywhere on the US 1 corridor to West Volusia County would be possible by making only one transfer. The US1 and West Volusia express routes would run every 30 minutes between the hours of 6:30 AM and 9:30 AM in the morning and 3:30 PM and 6:30 PM in the evening.

Rail transit service is currently under consideration as a long term transportation strategy for Volusia County. The existence of express bus service would complement such a strategy by building a ridership base that could eventually lead to rail service either within the US 1 corridor or between east and west Volusia County.

Bus Prioritization Treatments

Traffic congestion along the US 1 corridor creates significant delays at major intersections and makes fast, frequent bus service difficult to provide. One way to shorten bus travel times and make riding the bus more attractive is to allow transit vehicles to pass through congested intersections more easily. Signal prioritization is one way to make this happen. Signal prioritization is a system in which buses send signals to upcoming traffic lights, allowing the bus to extend the "green" phase or reduce the "red" phase, improving travel times for bus travelers. Traffic and intersection delay forecasts for the US 1 corridor were reviewed to determine intersections that will experience significant delays. Based on this review, five critical intersections were identified for signal prioritization:

- Canal Street;
- Washington Street;
- Dunlawton Avenue;
- Big Tree Road, and
- Bellevue Avenue

In addition to placing prioritization systems at these intersections, the buses that operate on US 1, including those that operate routes 3, 4, 40 and the proposed express route, would need to be equipped with in-cab transmitters.

Another prioritization strategy considered during the formulation of alternatives was bus bypass lanes. Bus bypass lanes allows buses to jump the normal vehicle queue at congested

intersections. Transportation system management (TSM) strategies identified for the highway alternatives entail improvements at the five intersections listed above, including the addition of right turn lanes. It is recommended that, under these alternatives, the turn lanes be designed to accommodate joint use as bus bypass lanes.

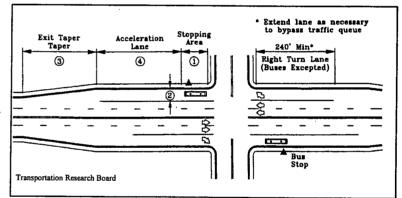


Illustration of bus bypass lanes integrated with right turn lanes.

Multimodal Hubs

Level 2 strategies identified as part of Alternative 2 include major improvements to bicycle, pedestrian and transit systems. For these systems to work effectively, they must be interconnected, allowing travel to many different destinations. Such connections should occur through the creation of multimodal hubs at five key locations along the US 1 corridor: Ormond Beach, Holly Hill, Daytona Beach, Port Orange and New Smyrna Beach. A more detailed, site-specific discussion of each hub is located in *Appendix A* of this report. Bus routes and multi-use

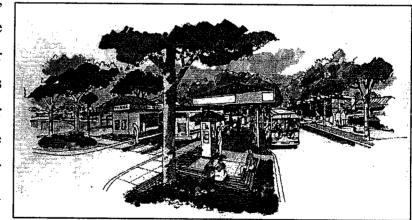
trails would all converge at these dedicated facilities, enabling easy transfer from one trail to the next, or one bus to the next, or from a bicycle to a bus.

Important amenities found within each hub should include:

- accommodations for at least four to six buses at a time,
- bicycle and pedestrian information kiosks with detailed maps showing each spur of the multi-use trail system, as well as key destinations that can be reached by foot,
- "intelligent" bus stops containing monitors with information on bus arrivals and departures,
- automobile parking (particularly at the northernmost and southernmost hubs),
- bicycle storage facilities,
- · restrooms, and
- pedestrian amenities, such as shade, benches and water fountains.

A key supporting feature at each hub will be close and easy access to surrounding activities, such as shopping, entertainment or employment. Joint development at each hub

should also be strongly considered. as it can not only enhance the hub's viability, but spur redevelopment. In effect, the hubs would serve magnet pedestrian activity, and could be used as help anchor redevelopment efforts within each addition community, in to enhancing multimodalism within the corridor.



Concept of a multimodal hub with joint development.

EVALUATION OF ALTERNATIVES

Six alternatives have been identified for the US 1 Transportation Study that include varying levels of both highway and multimodal improvements. These alternatives are summarized below:

- Alternative 1 "Do Nothing" (No highway or multimodal improvements).
- Alternative 2 Intersection improvements and high multimodal emphasis.
- Alternative 3 Intersection improvements, partial six-laning of US 1 (from Beville Road to Mason Avenue) and high multimodal emphasis.
- Alternative 4 Intersection improvements, partial six-laning of US 1 (from Dunlawton Avenue to Mason Avenue) and high multimodal emphasis.
- Alternative 5 Intersection improvements, partial six-laning of US 1 (from Dunlawton Avenue to Granada Boulevard) and low multimodal emphasis.
- Alternative 6 Full six-laning of US 1 (Dunlawton Avenue to Granada Boulevard and SR 442 to Turnbull Bay Road) and low multimodal emphasis.

In terms of the multimodal alternatives that were prepared for this technical memorandum, low multimodal emphasis refers to Alternative 1 and high multimodal emphasis refers to Alternative 2. Multimodal strategies for the US 1 Transportation Study are evaluated in terms of these six alternatives, and take into account the effect of proposed highway improvements within each alternative.

Improvement Costs

The first step in evaluating multimodal alternatives for the US 1 corridor is an identification of the costs associated with each alternative. *Table 2* shows these costs, in 1998 dollars, grouped by bicycle and pedestrian costs, transit capital costs and transit operating costs; the transit operating costs are presented on an annual basis. Specific costing methodologies are described in *Appendix B* of this memorandum.

Table 2
MULTIMODAL IMPROVEMENT COSTS

	Alternative						
Improvement	1		2	3	4	5	6
Stripe Bicycle Lanes (4')	NA		\$127,000	\$114,000	\$101,000	\$84,000	\$61,00
Add/reconstruct sidewalks (5')	NA		\$676,000	, , , , , , , , , , , , , , , , , , ,	\$676,000		
Bicycle/Pedestrian Crossing	NA		\$100,000	,	\$115,000	1 ' '	1 '
Multi-use trails (10')	NA	1 9	\$11,111,000	\$11,111,000	\$11,111,000	1	NA
Multi-use trail bridge (8')	NA		\$547,000	\$547,000	\$547,000	NA	NA
Pedestrian Overpass (2)	NA		\$1,872,000	\$1,872,000	\$1,872,000		NA
Subtotal		\$0 \$	514,433,000	\$14,435,000	\$14,422,000	\$870,000	\$783,000
Transit Improvements – Capital							
Improve Existing Routes (3, 4 & 40)	NA		\$1,620,000	\$1,620,000	\$1,620,000	\$1,620,000	\$1,620,010
New Smyrna Trolley (1)	NA		\$694,300	\$694,300	\$694,300	\$694,300	
Bus Shelters (100)	NA		\$404,000	\$404,000	\$404,000	\$404,000	
Hubs – Basic (5)	NA		NA	NA	NA	\$250,000	\$250,000
Hubs – Enhanced (5)	NA		\$2,500,000	\$2,500,000	\$2,500,000	NA	NA
US 1 Express Route (1)	NA		\$1,157,000	\$1,157,000	\$1,157,000	NA	NA
West Volusia Express Routes (4)	NA		\$4,860,000	\$4,860,000	\$4,860,000	NA	NA
Signal Preemption	NA		\$160,000	\$160,000	\$160,000	NA	NA
Bus Bypass Lanes*	NA		\$0	\$0	\$0	NA	NA
Subtotal	\$	so s	11,395,300	\$11,395,300	\$11,395,300	\$2,968,300	\$2,968,300
Total Capital Costs	\$	so s	25,828,300	\$25,840,300	\$25,817,300	\$3,838,400	\$3,751,200
						· · · · · · · · · · · · · · · · · · ·	
mprove Existing Routes (3, 4 & 40)	NA		\$1,097,000	\$1,097,000	\$1,097,000	\$1,097,000	\$1,097,000
New Smyrna Trolley (2)	NA		\$338,400	\$338,400	\$338,400	\$338,400	\$338,400
JS 1 Express Route (1)	NA		\$437,000	\$437,000	\$437,000	NA	NA
Vest Volusia Express Routes (4)	NA	;	\$3,046,000	\$3,046,000	\$3,046,000	NA	NA
otal	\$	50 3	\$4,918,000	\$4,918,000	\$4,918,000	\$1,435,400	\$1,435,400

Notes.

Facility costs do not include right of way acquisition.

All costs are in 1998 dollars.

^{*} The cost to construct bus bypass lanes is assumed to be negligible for this analysis if completed concurrent with planned intersection improvements.

As *Table 2* shows, Alternatives 2, 3 and 4, which incorporate high investment multimodal strategies, entail a substantially higher cost than Alternatives 5 and 6, which incorporate low investment strategies. The biggest cost difference between the alternatives – approximately \$13.5 million – occurs in the bicycle and pedestrian category. This can be primarily attributed to the cost of constructing a multi-use trail, although the overpasses add to the cost as well. Overall, Alternatives 2 3, and 4 entail a capital cost of approximately \$22 million more than Alternatives 5 and 6 (\$26 million versus \$4 million) and an annual operating cost of approximately \$3.5 million more (\$4.9 million versus \$1.4 million).

Evaluation Measures

A set of evaluation measures were established to determine the multimodal level of service each alternative would provide. These measures are both quantitative and qualitative, and are intended to provide a basis of comparison between the alternatives. Five quantitative measures were identified to evaluate bicycle and pedestrian improvements:

- Cost;
- Lane miles of bicycle facilities on US 1:
- Lane miles of pedestrian facilities on US 1:
- Total population access to the multi-use trail in the year 2020, and
- Total employment access to the multi-use trail in the year 2020.

In addition, two qualitative measures were identified:

- Bicycle safety on US 1, and
- Pedestrian safety on US 1.

Seven qualitative measures were identified to evaluate transit improvements:

- Cost;
- Revenue miles of service on US 1;

- Peak period frequency on US 1;
- Average travel time between multimodal hubs;
- Travel time to west Volusia County;
- Total population access to transit on US 1 in the year 2020, and
- Total employment access to transit on US 1 in the year 2020.

Two additional qualitative measures were developed to evaluate the effects of each alternative from a holistic perspective.

- Multimodal Options
- Compatibility with local government objectives.

The methodology for calculating the quantifiable measures is described in *Appendix B* of this memorandum. It is necessary to include the qualitative measures in the evaluation process because multimodal improvements, particularly with respect to bicycle and pedestrian improvements, are extremely difficult to quantify in a manner that provides meaningful results. These improvements are better evaluated from a subjective standpoint. For the purpose of this evaluation, qualitative aspects were measured in terms of high, medium and low.

Results

Bicycle and Pedestrian

Table 3 shows the results of the alternatives evaluation process. In terms of bicycle and pedestrian improvements, Alternatives 2, 3 and 4, which include the high investment multimodal strategies, provide the greatest amount of new facilities. This is attributed to the provision of the multi-use trail system. Under all five alternatives (discounting the do nothing alternative), an equal amount of bicycle facilities are provided on US 1. Alternatives 5 and 6 do not show a substantial increase in the number of new bicycle and pedestrian facilities from the do nothing

Table 3
MULTIMODAL EVALUATION MEASURES

	Alternative						
Evaluation Measure	1	2	3	4	5	6	
Bicycle and Pedestrian	_						
Cost (000s)	\$0	\$14,433	\$14,435	\$14,422	\$870	\$783	
Lane miles of bicycle facilities on US 1	0	63	63	63	63	63	
Lane miles of pedestrian facilities on US 1	37	39	39	39	39	39	
Lane miles of multi-use trail facilities	-	86	86	86	-	-	
2020 population access to the multi-use trail	-	65,200	65,200	65,200	-	-	
2020 employment access to the multi-use trail	-	41,800	41,800	41,800	-	-	
Bicycle safety in the US 1 corridor	Low	High	High	High	Medium	Med./Low	
Pedestrian safety in the US 1 corridor	Medium	Med./High	Med./High	Med./High	Med./High	Medium	
Transit							
Cost (capital 000s)	\$0	\$11,395	\$11,395	\$11,395	\$2,968	\$2,968	
Cost (annual operating 000s)	\$0	\$4,918	\$4,918	\$4,918	\$1,435	\$1,435	
Revenue miles of service on US 1	840	2,652	2,652	2,652	2,076	2,076	
Peak period frequency on US 1	60 min.	30 min.	30 min.	30 min.	30 min.	30 min.	
Average travel time between multimodal hubs	37.5 min.	11.8 min.	11.8 min.	11.5 min.	25 min.	25 min.	
Average travel time to west Volusia County	84 min.	50 min.	50 min.	50 min.	84 min.	84 min.	
2020 population access to transit on US 1	37,500	62,900	62,900	62,900	37,500	37,500	
2020 employment access to transit on US 1	31,400	46,000	46,000	46,000	31,400	31,400	
Holistic Measures							
Multimodal Options	Med./Low	High	High	High	Medium	Medium	
Compatibility with local government objectives	NA	Very High	Very High	Very High	Med./High	Med./Low	

alternative, because they are comprised predominantly of enhancements to existing facilities. Based on an analysis of year 2020 population and employment forecasts for Volusia County, approximately 65,000 residents will have access to the multi-use trail under Alternatives 2 and 3, while approximately 42,000 jobs can be accessed by the trail.

In terms of bicycle safety, Alternative 1, the do nothing alternative, results in extremely unsafe conditions. No bicycle facilities are currently delineated on US 1, and, as automobile traffic volumes increase over time, safety conditions will continue to get worse. Although Alternatives 5 and 6 include marked bicycle lanes on US 1, safety conditions are still not

optimum, particularly with respect to Alternative 6, in which a significant portion of US 1 will be a six lane facility. The low bicycle safety evaluation of Alternatives 1, 5 and 6 is indicative of the fact that US 1 is simply an unsafe road on which to ride a bicycle. Alternatives 3 and 4, on the other hand, eliminate the need to travel by bicycle on US 1 by providing a completely separate facility within the corridor, resulting in significantly higher safety evaluations.

US 1 is not a completely unsafe place to walk, although crossing streets can be difficult. The sidewalk improvements and street crossing enhancements associated with Alternatives 2, 3, 4, 5 and 6 will improve pedestrian safety on US 1. However, the inherent traffic characteristics associated with such a major roadway facility will prevent it from becoming an entirely safe place to walk. Although Alternatives 2, 3 and 4 provide a separate facility for pedestrians within the corridor, there will still be a need to walk on US 1 to get to and from establishments.

Transit

As Table 3 shows, the level of transit service on US 1, in terms of revenue miles per day, increases substantially under Alternatives 2, 3, 4, 5 and 6. Similarly, peak period frequencies are cut in half for all five alternatives, potentially reducing wait times by half. The contrast between high multimodal emphasis alternatives (2, 3 and 4) and the low multimodal emphasis alternatives (5 and 6) occurs in travel time. Average travel time between the five communities where the multimodal hubs are recommended was calculated based on a 2020 forecast of vehicle travel speed. Alternatives 2, 3 and 4, at 11.8, 11.8 and 11.5 minutes, respectively, provide a substantial travel time savings over 4 and 5, which both average approximately 25 minutes. The do nothing alternative provides an average transit travel time of 37.5 minutes between the hub communities. Alternatives 2, 3 and 4, which propose express bus service to west Volusia County, provide an average transit travel time of 50 minutes from the US 1 corridor, compared to 84 minutes for Alternatives 1, 4 and 5.

Access to transit, in terms of year 2020 population and employment, remains the same for Alternatives 1, 5 and 6, at roughly 38,000 and 31,000, respectively. This is a reflection of the fact that US 1 already receives good transit service coverage. Alternatives 2, 3 and 4 are estimated to provide access to approximately 63,000 residents and 46,000 jobs in the year 2020. This increase in transit accessibility on the US 1 corridor can be attributed to the multimodal

hubs, which are assumed to have a larger area of influence due to increased automobile and bicycle access (the other alternatives are assumed to provide predominantly walk access to transit on the corridor).

Holistic Measures

Alternatives 2, 3 and 4 provide virtually the maximum amount of multimodal options feasible for the US 1 corridor. Dedicated multimodal facilities, separate bicycle and pedestrian facilities, express bus service and higher frequency local service provide a wide range of alternatives to the automobile. This is what the high multimodal emphasis strategies were intended to do. Alternatives 5 and 6, which are comprised of low multimodal emphasis strategies, expand the multimodal options for the corridor as well, although not to the same extent as the high emphasis strategies. By improving the existing facilities and services, individuals will be more likely walk, ride a bike, or ride transit on the corridor.

Alternatives 2, 3, 4, 5 and 6 all place an emphasis on encouraging bicycle, pedestrian and transit friendly land use design and planning within the US 1 corridor. As such, they are highly compatible with the objectives of local governments, which are focused on redeveloping the corridor within their jurisdictions. Alternatives 2, 3 and 4 further advance local government objectives; the high emphasis multimodal hubs can help anchor redevelopment efforts within each jurisdiction, while the multi-use trail can be used as a tool for redevelopment and private investment, as has been successfully accomplished elsewhere.

CONCLUSIONS

Clearly, Alternatives 2, 3 and 4 are the most attractive in terms of enhancing multimodal options for the US 1 corridor. Alternatives 5 and 6 will enhance the corridor as well. Therefore, from a multimodal perspective, the key to recommending a preferred alternative is in a consideration of the benefits each alternative will provide in relation to the cost to implement them. The multimodal benefits of Alternatives 2, 3 and 4 over the do nothing alternative and Alternatives 5 and 6 are well documented in this memorandum. However, these benefits come at a capital cost of approximately \$26 million more than the do nothing alternative and \$22 million

more than Alternatives 5 and 6. In terms of transit operating costs, the high multimodal emphasis alternatives come at a cost of approximately \$5 million more annually than the do nothing alternative and \$3.5 million more annually than Alternatives 5 and 6.

APPENDIX A of F

Potential Hub Locations
within
each Community

APPENDIX A

POTENTIAL HUB LOCATIONS WITHIN EACH COMMUNITY

An analysis of the five mixed-use communities within the US 1 corridor was conducted to identify potential locations that could successfully support multimodal hubs. A physical survey of the study area was conducted, including business districts and employment centers within the corridor. Redevelopment plans and land use data specific to the study area were also considered. Based on these reviews, focus areas were identified within each community for the placement of intermodal facilities:

- Ormond Beach, along S.R. 40, east of U.S. 1, and north of Tomoka Avenue;
- Holly Hill, along U.S. 1 in the vicinity of LPGA Boulevard and the City Hall complex;
- Daytona Beach, east of U.S. 1, south of US 92 and north of Live Oak Avenue;
- Port Orange, in the vicinity of Dunlawton Avenue and U.S. 1, and
- New Smyrna Beach, east of U.S. 1, within the downtown business district.

These locations are identified in *Figures 3a*, 3b and 3c. Seven general criteria were used to identify screen potential areas:

- Proximity to U.S. 1;
- Presence of mixed-use development;
- Reasonable proximity to east-west arterial or collector roadway intersections with U.S. 1;
- Potential for connectivity with the proposed multi-use trail;
- Spacing between each hub;
- Consistency with local redevelopment plans or ability to promote redevelopment, and
- Proximity to an activity center or business district.

Obviously, more detailed planning and analysis must be conducted within each of the five areas to select a specific site for each hub. A brief description of each potential hub location is provided below:

Ormond Beach

A multimodal hub would be located near the commercial core of Ormond Beach; this area is near a causeway, providing access to barrier island residents, and is centered among proposed bicycle and pedestrian facilities serving the Ormond Beach area, as identified in this memorandum. If the hub is located close enough to US 1 it can be designed to accommodate public parking for commercial areas, possibly eliminating the need for on-street parking for portions of U.S. 1.

Holly Hill

A multimodal hub can serve as a means to redevelop areas along this segment of US 1. Several business west of US 1, along with the Holly Hill City Hall complex, are located near the intersection of LPGA Boulevard and US 1; a single family residential neighborhood surrounds City Hall. This hub site is approximately three miles from the proposed Ormond Beach hub area and five miles from the proposed Daytona Beach hub area.

Daytona Beach

A hub in the vicinity of the Daytona Beach downtown business district would likely experience the greatest use. This area contains numerous retail establishments and other businesses, as well as several apartment buildings nearby. Proximity to the causeway also allows transit accessibility to residents on the beach side via local feeder service. This hub is within three miles of the proposed Holly Hill hub area and five miles of the proposed Port Orange hub area. Parking at the transit center could also be designed to address public parking needs for shoppers visiting the downtown business district.

Port Orange

Redevelopment strategies for the City of Port Orange are focused on the intersection of Dunlawton Avenue and US 1, the general vicinity of where a hub is proposed. Apartments are located in the areas along Herbert Street/Charles Street area (north of Dunlawton Avenue and west of US 1). Additional residential land uses are located east of US. The proposed Port Orange hub area is approximately nine miles from the proposed New Smyrna Beach hub area and five miles from the proposed Daytona Beach hub area.

New Smyrna Beach

A proposed multimodal hub within the New Smyrna Beach business district would be within walking distance to numerous existing retail establishments. The Bert Fish and Daniel Medical Centers are within close proximity as well. Potential sites near the Julia Street and Faulkner Street and Julia Street and Orange Street intersections can encourage redevelopment further north of the existing business district. This location is also within a short walking distance to City Hall and downtown shopping. This proposed hub area is the most remote of all hubs, located approximately ten miles south of the proposed Port Orange hub area. The hub would have park and ride facilities, and could potentially be designed to accommodate parking for downtown patrons.

APPENDIX B of F

Calculation of Costs

and

Evaluation Measures

APPENDIX B CALCULATION OF COSTS AND EVALUATION MEASURES

Calculation of Costs

Bicycle Lanes

A cost of \$2,000 per lane mile was assumed for bicycle lanes. This includes striping, basic signage and hazard removal. The total cost of striping bicycle lanes varies among the alternatives, due to the fact that the cost was considered negligible if completed concurrent with a proposed road widening. Source: based on recent cost estimates for bicycle improvements in the City of St. Petersburg, Florida.

Sidewalks - Add and Reconstruct

A cost of \$23,000 was assumed to add one lane mile of sidewalk on one side. To calculate the cost of sidewalk reconstruction, it was assumed that 20 percent of the total length of the study corridor would have sidewalks reconstructed. Source: Florida Department of Transportation 1996-97 Transportation Costs.

Bicycle and Pedestrian Crossing

The cost of improving a roadway crossing for bicycle and pedestrians can vary depending on the improvement, such as:

- \$45 per square yard for brickwork;
- \$3,700 for a four-cornered, "walk/don't walk" signal system, and
- \$7.50 per linear foot for a curb and \$15 per square yard for sidewalk fill to construct a
 pedestrian refuge island.

An average cost of \$5,000 was assumed to improve each bicycle and pedestrian crossing at each intersection. To calculate the total cost, it was assumed that 35 total intersections would be improved on the corridor, including the 23 locations identified in *Figures 2a*, 2b and 2c of the memorandum. The total cost of crossing improvements varies among the alternatives, due to the fact that the cost was considered negligible if completed concurrent with proposed intersection improvements. Source: Florida Department of Transportation 1996-97 Transportation Costs.

Multi-Use Trail

A cost of \$150,000 per lane mile was assumed to construct the multi-use trail. To reflect the fact that a portion of the trail may be on-road due to right of way limitations, 20 percent of the total length of the trail was costed as wide, two-sided sidewalks (\$46,000 per lane mile). Source: based on a review of recently programmed trail construction projects in Orange County.

Trail Bridge

A cost of \$35 per square foot was assumed to construct the five required trail bridges between Port Orange and New Smyrna Beach. Each facility was assumed to be eight feet in width. Source: Florida Department of Transportation 1996-97 Transportation Costs.

Pedestrian Overpass

A cost of \$300 per square foot was assumed to construct the pedestrian overpasses at width of 10 feet. A maximum slope of 12:1 was assumed in estimating the required facility length. Source: Florida Department of Transportation 1996-97 Transportation Costs.

Purchase One 40 Foot Bus

A cost of \$231,430 was assumed to purchase vehicles for the transit improvements proposed in this memorandum, including the improvement of Routes 3, 4 and 40, the New

Smyrna Beach trolley and the express bus routes. Source: Votran Transit Development Plan (TDP).

Transit Vehicle Operation

A cost of \$2.82 per revenue mile was assumed to operate the transit vehicles proposed in this memorandum, including the improvement of Routes 3, 4 and 40, the New Smyrna Beach Trolleys and the express bus routes. Source: Votran Transit Development Plan (TDP).

Transit Capital Costs - Vehicle Purchase

Transit vehicle costs were estimated by multiplying the unit vehicle cost, identified above, by the vehicle requirements of each improvement. According to current schedules of Routes 3, 4, and 40, two buses operating on each provides one hour frequency for each route. It is estimated that Votran will be able to maintain the number of buses on each route with minor running time adjustments. Doubling this service will provide thirty-minute frequency. With the allowance for one spare bus, this results in a requirement of seven additional buses.

New trolley service is proposed for New Smyrna Beach, providing service between US 1, downtown and the beaches. The route is estimated to be approximately 8 to 10 miles long (round trip) and will require two buses to provide twenty minute frequency. Adding one spare brings the total to three buses for this service.

A new express route traveling between the five hubs is proposed. The round trip route length would be approximately 43 miles. Four buses plus one spare would be required to operate at thirty-minute frequency.

The final new service proposed would be express routes from the US 1 corridor to DeLand, Deltona, and Orlando. Four routes would run with round trip lengths of 48, 66, 68, and 120 miles each. Seventeen buses plus four spares are required for this service.

Bus Shelters

A cost of \$4,000 per shelter was assumed. To calculate total shelter costs, one shelter was assumed per half mile on both sides of US 1. Source: Votran Transit Development Plan (TDP).

Multimodal Hub (Basic)

A cost of \$50,000 was assumed to construct each basic hub. This is twice the cost to build a Votran Superstop, which reflects the fact that basic hubs are slightly larger in magnitude than superstops. Source: Votran Transit Development Plan (TDP).

Multimodal Hub (Enhanced)

A cost of \$500,000 was assumed to construct each enhanced multimodal hub. This reflects recent research into the cost of constructing major transit transfer facilities in Pinellas County, Florida.

Signal Preemption

A cost of \$10,000 was assumed to install a preemption system at each signal. A cost of \$2,500 was assumed to equip each bus.

Transit Operating Costs

A cost of \$2.82 per revenue mile was assumed to operate the transit vehicles proposed in this memorandum, including the improvement of Routes 3, 4 and 40, the New Smyrna Beach

Trolleys and the express bus routes. Source: Votran Transit Development Plan (TDP). The calculation of vehicle revenue hours associated with each improvement is described below.

Routes 3, 4 and 40 currently run from 6:00 a.m. to 17:00 p.m. (the #40 has a shorter service time). It is proposed that hours of operation would be extended to 10:00 p.m. Service would increase from approximately 840 to 2135 revenue-miles per day. Assuming 300 equivalent days per year, this equates to an increase of 389,000 revenue-miles per year.

The proposed hours of operation for the New Smyrna Beach trolley is 7:00 a.m. to 7:00 p.m. An estimated 400 daily revenue miles will be operated. At 300 equivalent days per year, approximately 120,000 annual revenue miles will be operated on the trolley route.

The proposed US 1 express route is anticipated to operate for three hours in the morning peak and three hours in the evening peak. An estimated 516 daily revenue-miles would be operated on this route. At 300 equivalent days per year, approximately 155,000 annual revenue miles will be operated on this express route.

The four proposed West Volusia express routes are anticipated to operate for three hours in the morning peak and three hours in the evening peak. An estimated 3,600 daily revenue-miles would be operated on these routes. At 300 equivalent days per year, approximately 1.08 million annual revenue miles will be operated on these express routes.

Calculation of Evaluation Measures

Lane Miles of Bicycle Facilities on US 1

Self explanatory.

Lane Miles of Bicycle Facilities on US 1

Self explanatory.

Lane Miles of Multi-Use Trail Facilities

Self explanatory.

2020 Population and Employment Access to the Multi-Use Trail

All population and employment within a 1/8th mile buffer of the proposed multi-use trail was included. 2020 population and employment forecasts of the Volusia County Metropolitan Planning Organization at the traffic analysis zone level were used.

Revenue Miles of Service on US 1

See the transit operating costs section.

Peak Period Frequency on US 1

Self explanatory.

Average Travel Time Between Multimodal Hubs

The transit travel time was measured for each alternative using the average of the travel times connecting adjacent hubs. Thus, the travel times from New Smyrna Beach to Port Orange, from Port Orange to Daytona Beach, from Daytona Beach to Holly Hill, and from Holly Hill to Ormond Beach were averaged within each alternative. The average distance between hubs is 5.0 miles. The roadway speed was estimated using the results of the *ART-PLAN* and Highway Capacity Software analyses prepared as part of this study.

No-Build – The existing bus schedule is assumed to be maintained. The average travel speed for the roadway is 16.9 miles per hour (closer to 12 miles per hour in the area around Daytona Beach). Including stops, average bus speeds are approximately 12 miles per hour. With the

increased congestion in the US 1 corridor, it is estimated that one additional bus will be required on each route in order to maintain thirty-minute headway (currently two buses operate each of Routes 3, 4, and 40). Travel time is thus estimated at an average of 37.5 minutes between hubs (where there currently is service), assuming a travel speed of 8 miles per hour including stops.

Build Alternatives 2, 3 and 4 – The implementation of express bus service means that the average travel speed will approach that of the roadway due to the elimination of bus-stops enroute. In addition, in these alternatives bus prioritization equipment and bus bypass lanes. Routes are assumed to stop at the hubs only, with no stops between hubs. Roadway travel time does not vary much between the alternatives, in spite of the larger investment in roadway infrastructure. Average vehicle travel times are 12.2 minutes in Alternative 2, 12.1 minutes in Alternative 3, and 11.8 minutes in Alternative 4.

The implementation of bus prioritization treatment is expected to result in a savings of approximately 100, 80, and 70 seconds of travel time over the length of the corridor in Alternatives 2, 3, and 4, respectively (or average 25, 20, and 18 seconds savings in hub-to hub travel time, respectively). This would thus give estimated travel times of 11.8 minutes in Alternatives 2 and 3, and 11.5 minutes in Alternative 4.

Build Alternatives 5 and 6 - In Alternatives 5 and 6, no express bus service is provided. Also, in these alternatives, no investment in signal prioritization or bus bypass lanes is provided. Thus, the local bus service will be similar to the bus service that is currently in place (although with a frequency of thirty minutes instead of the current one-hour frequency). Average roadway travel time between hubs is 11.8 and 11.7 minutes in Alternatives 4 and 5, respectively (corresponding to travel speeds of approximately 25.5 miles per hour). Bus travel times in these alternatives are thus anticipated to be 25.0 minutes, assuming an average speed of 12 miles per hour including stops.

West Volusia Travel Times – For Alternatives 1, 5 and 6, travel times for existing routes were used to estimate travel time from US 1 to west Volusia County. This estimation consisted of existing service times on Route 9 from US 1 in Daytona Beach to the Volusia Mall, and Route 18 from the Volusia Mall to Deland. For Alternatives 2, 3 and 4 the travel time for the proposed

direct express service from US 1 at Daytona Beach to Deland was estimated, using distance and average speed assumptions.

2020 Population and Employment Access to Transit on US 1

2020 population and employment access for all alternatives was measured by a ¼ mile buffer around each route on US 1. For Alternatives 2, 3 and 4, an additional 1 mile buffer was included around each hub, to reflect the expanded area of influence that enhanced automobile and bicycle access would provide. 2020 population and employment forecasts of the Volusia County Metropolitan Planning Organization at the traffic analysis zone level were used.