Preliminary Engineering Analysis
CR 44 Corridor Study
From US 441 to CR 44B

CR 44 Corridor Transportation Study
Executive Summary

FOR

BY

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1.0 Background

Lake County, in conjunction with the City of Eustis, City of Leesburg, and the City of Mount Dora initiated a Corridor Transportation Study for CR 44 from the junction of CR 44 and SR 500/US 441 continuing east to the junction of CR 44 and SR 44, then continuing east on SR 44 to the intersection of SR 44 and CR 44B. The project, initiated in January 2002, was completed in July of 2003. The purpose of this Executive Summary is to provide an overview of the process and results of the Alternatives Analysis for the CR 44 Corridor Transportation Study.

It is anticipated that CR 44 will be a critical element in the transportation network for Central Lake County. CR 44 provides an alternative route to SR 500/US 441, as well as, serve as the impetus for redevelopment and economic enhancement for areas adjacent to the Corridor. Several agencies were brought together to form a Study Advisory Group to assist in the completion of the CR 44 Corridor Study. The Study Advisory Group is composed of the following agencies:

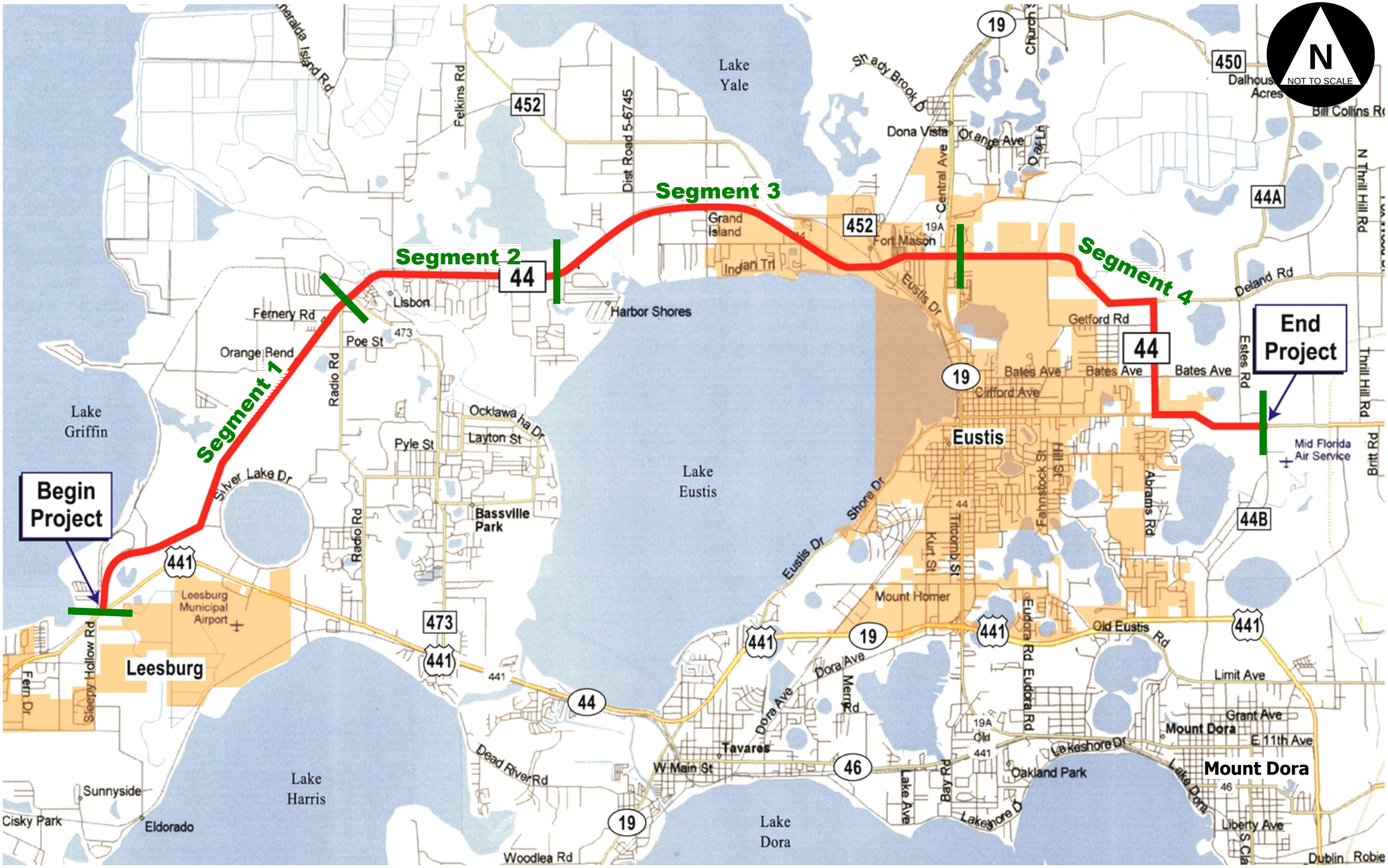
- Lake County;
- City of Eustis;
- City of Leesburg; and,
- City of Mount Dora.

The CR 44 Corridor is approximately 15 miles in length and has varying characteristics. Based on discussions with Lake County and the Study Advisory Group, the Corridor was divided into four analysis segments based on adjacent land use, traffic characteristics, and roadway geometry to facilitate completion of the study. The resulting four study segments, divided to facilitate clear presentation, are as follows:

- Segment 1 - US 441 to Radio Road (approx. 4.0 miles)
- Segment 2 - Radio Road to Harbor Shores Road (approx. 2.5 miles)
- Segment 3 - Harbor Shores Road to SR 19 (approx. 4.5 miles)
- Segment 4 – SR 19 to CR 44B (approx. 4.0 miles)

The project location and study segments are displayed in Figure 1.1.

Throughout the course of the study numerous technical memorandums were written to document interim decisions and analysis procedures. In addition several reports were created to document the various stages of the study. Table 1.1 displays a list of the reports completed as part of the CR 44 Corridor Transportation Study.



Engineers & Planners	Figure No: 1.1	Page No: 2	*Project Location Map* **CR 44: US 441 to CR 44B**

Table 1.1
Summary of Reports

Report	Date
Data Collection Report	December 2002
Preliminary Short Term Improvements	December 2002
Corridor Analysis Report	March 2003
Development of Strategies / Development of Alternatives	June 2003
Public Involvement Program	June 2003
Implementation Plan	July 2003
Final Report	July 2003

The Final Report contains detailed concepts of the preferred alternative displayed on aerials at a scale of 1" = 200'. The County also has several display boards from various stages of the study. The following web site contains information for the CR 44 Corridor Transportation Study as well:

http://cr44.pbsjis.com/

On May 20, 2003 the Lake County Board of County Commissioners (BCC) unanimously approved the general recommendations as presented in the study documentation.

2.0 Public Involvement Program

An integral part of the study process included in-depth public involvement activities with the Citizens Advisory Committee (CAC), Technical Advisory Committee (TAC), 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 workshops, newsletters, website, elected official briefings, and city/county staff meetings. In all, approximately 20 public involvement activities and events were completed during this study. In addition, there was a web site, which was updated continuously, and five newsletters were mailed out during the course of the project

The following public activities, listed in Table 2.1, were conducted as part of this study.

Table 2.1
Public Involvement Summary

Activity	Date
Project Status Meeting #1	January 15th, 2002
BCC Meeting #1	February 19th, 2002
Project Status Meeting #2	March 14th, 2002
CAC-TAC Meeting #1	March 28th, 2002
CAC-TAC Meeting #2	June 11th, 2002
BCC Meeting #2	June 18th, 2002
Project Status Meeting #3	August 12th, 2002
Public Workshop #2	August 15th, 2002
Bike/Ped Advisory Meeting	October 9th, 2002
CAC-TAC Meeting #3	October 15th, 2002
BCC Meeting #3	November 5th, 2002
Project Status Meeting #4	January 21st, 2003
Public Workshop #3	January 23rd, 2003
CAC-TAC Meeting #4	April 1st, 2003
BCC Meeting #4	April 1st, 2003
Project Status Meeting #5	April 16th, 2003
Public Workshop #4	April 24th, 2003
BCC Public Hearing	May 20th, 2003

3.0 Existing and No Build Corridor Conditions

Operational analysis was performed using the existing traffic volumes to identify deficiencies at intersections and along roadway links. Trends analysis was used in conjunction with the Lake County Model to establish the future traffic volumes along the Corridor. Deficiencies identified as part of this effort provided key input to the short and long term improvement development process. Standard analysis tools such as Highway Capacity Software (HCS) and the 2002 Level of Service Handbook developed by the Florida Department of Transportation (FDOT) were used to assist in the operational analysis.

Table 3.1 and Table 3.2 document the Existing, 2012 No Build, and 2022 No Build operating conditions at the major intersections along the study Corridor. Intersections identified with a level of service (LOS) D or worse were considered strong candidates for upgrade.

Table 3.1
Existing & No Build Operating Conditions
(Signalized Intersections)

Intersection with CR 44	Existing		2012 No Build		2022 No Build	
	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service
US 441	**71.1**	**E**	**108.7**	**F**	**169.2**	**F**
CR 473	28.0	C	**68.1**	**E**	**122.2**	**F**
CR 452	**77.9**	**E**	54.6	D	**102.4**	**F**
SR 19	47.0	D	**63.7**	**E**	**81.0**	**F**
SR 44	18.8	B	22.6	C	32.8	C
CR 44B	22.1	C	31.3	C	**66.0**	**E**

Table 3.2
Existing & No Build Operating Conditions
(Unsignalized Intersections)

Intersection with CR 44	Existing		2012 No Build		2022 No Build	
	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service
Lake Griffin Harbor	11.2	B	12.8	B	15.0	C
CR 44 (Leg A) / Shady Acres Rd	16.0/11.7	C/B	24.8/13.7	D/B	**56.7/16.4**	**F/C**
Silver Lake Rd	15.3	C	20.3	C	29.7	D
Treasure Island Rd	19.5	C	28.4	D	**43.2**	**E**
Poe St	16.8	C	22.9	C	33.7	D
Radio Rd	23.2	C	**69.7**	**F**	**262.9**	**F**
Emeralda Ave	20.2	C	**45.2**	**E**	**199.6**	**F**
Mid-Florida Lakes / Dura Stress	22.5/23.1	C/C	**48.7/38.0**	**E/E**	**247.2/88.3**	**F/F**
Goose Creek Rd	16.6	C	22.4	C	32.2	D
Harbor Shores Rd	18.9	C	**48.1**	**E**	**353.8**	**F**
Wedgefield Dr	13.3	B	19.3	C	34.7	D
Apiary Rd	19.3	C	**39.7**	**E**	**156.3**	**F**
Chain O' Lakes Rd	21.3/10.9	C/B	**48.1/12.6**	**E/B**	**237.0/14.8**	**F/B**
Fish Camp Rd	22.4/19.7	C/C	**90.7/44.1**	**F/E**	**859.0/302.3**	**F/F**
Grand Island Shores Rd	14.6	B	12.1	B	14.7	B
CR 19A	17.7/12.3	C/B	13.5/10.7	B/B	16.4/11.8	C/B
Hicks Ditch Rd	15.7	C	26.7	D	**65.2**	**F**
CR 44A	16.8	C	**89.6**	**F**	**416.3**	**F**
Bates Ave	13.3/11.2	B/B	23.4/13.5	C/B	**104.1/19.3**	**F/C**

Table 3.3 documents the Existing and No Build operating conditions along the roadway links. Links identified with a level of service (LOS) D or worse should be considered strong candidates for upgrade.

Table 3.3
Existing & No Build Link Conditions

	Count Station	Existing		2012 No Build		2022 No Build	
		Link Volume	LOS	Link Volume	LOS	Link Volume	LOS
Segment 1	0031	9,629	C	11,600	C	13,800	D
	0029	9,954	C	11,800	C	14,600	D
Segment 2	0119	**16,123**	**E**	**20,600**	**F**	**25,100**	**F**
Segment 3	0045	12,114	C	14,700	D	**17,300**	**F**
	0048	13,244	D	**19,500**	**F**	**26,300**	**F**
Segment 4	0047	9,723	C	**15,800**	**E**	**21,400**	**F**
	0080	8,738	C	13,800	D	**18,400**	**F**
	0082	7,002	C	10,300	C	13,300	D

The Existing and No Build travel conditions along the Corridor are borderline deficient. The situation could continue for a short time before portions of the study Corridor operate at unacceptable levels of service at both the intersection and link level.

In addition to the intersection and link level of service analysis, an engineer conducted a qualitative assessment along the Corridor. This qualitative assessment resulted in the identification of 19 locations, listed below, with safety and operational deficiencies. These deficiencies were evaluated as part of the short term improvement development process.

- US 441;
- CR 44 (Leg A) & US 441;
- CR 44 (Leg A) / Shady Acres Road;
- Silver Lake Road;
- Radio Road;
- CR 473;
- Dura Stress
- Mid-Florida Lakes;
- Service Trucking, Inc;
- Florida Food Products, Inc;
- Railroad Crossing;
- CR 452;
- CR 19A;
- Trout Lake Nature Center;
- Hicks Ditch Road
- CR 44A;
- Bates Avenue;
- SR 44; and,
- CR 44B.

4.0 Development of Strategies

After the existing and future no build conditions were evaluated, strategies were identified that address the existing deficiencies. The requirements of the Intermodal Surface Transportation Efficiency Act (ISTEA), the follow up legislation TEA-21, and the supporting Congestion Management System (CMS) regulations, guided the identification of potential strategies for the CR 44 Corridor. These strategies include 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. These requirements are consistent with the purpose and intent of the CR 44 Corridor Study. A comprehensive listing of potential strategies is contained in the CMS regulations. It is not, however, the intent of the regulations that all of these potential strategies be exhaustively studied. The key is to identify those strategies that are reasonable for the particular location or specific deficiency.

The CMS regulations include a comprehensive listing of strategies broken into twelve (12) categories or groups. The boundaries between these groups are not distinct and individual measures may be included in more than one category. For example, park-and-ride lots both encourage the use of high occupancy vehicles (HOVs) and transit. For the purposes of applying the ISTEA, TEA-21, and CMS requirements to the CR 44 Corridor Study, an attempt was made to separate potential strategies into a hierarchical order that considers first those actions which address the fundamental transportation and land use relationships that cause vehicle trips. If the reason for the trip can be eliminated, so can the trip and its contribution to congestion. In successive rounds, the residual trips not mitigated by previous levels of actions are 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 (i.e. growth management, activity centers, congestion pricing, and some transportation demand management measures).
- **Level Two**: Actions that place trips into transit or other non-auto modes (i.e. public transit capital and operating improvements, and parking management).
- **Level Three**: Actions that put as many trips as possible into HOVs.
- **Level Four**: Actions that optimize the highway system's operation for SOV trips, and for all other trips using highway facilities/modes (traffic signalization modification, intelligent transportation systems, etc.).
- **Level Five**: Actions that increase the capacity of the highway system for SOVs by adding general-purpose lanes.

5.0 Alternatives Development

Based on the results of the strategy screening analysis; input from the Study Advisory Group; and, information obtained through the public involvement process, seven major alternatives were developed to address needs and deficiencies along the CR 44 Corridor. Many different types of improvements resulted from the screening process; however, they are best characterized by the following seven alternatives.

Alternative #1 – No Build (Do Nothing)

This alternative assumed that no intersection, capacity, or multi-modal improvements would be made, other than the programmed improvements and routine maintenance.

Alternative #2 – Traffic Operations Enhancements

Traffic operations improvements were applied to the Corridor to address existing and future operational and safety deficiencies. Typical proposed traffic operations improvements include:

- Intersection geometric improvements;
- Intersection turn restrictions;
- Traffic signal improvements;
- Minor roadway widening; and,
- Truck restrictions.

Alternative #3 - Traffic System Management, Transportation Demand Management, Integrated Transportation – Land Use Decision Making

This alternative incorporates travel demand management and transportation system management techniques that increase the useful life of the CR 44 Corridor without substantial capital investment. Most of these strategies focus on trip reduction and management as opposed to capacity expansion for single occupant vehicles (SOV). Several transportation management techniques were identified for this improvement alternative, such as traffic system management, transportation demand management, and an integrated transportation and land use decision-making framework. Some of these transportation management techniques include:

- Intersection geometric improvements;
- Traffic signal improvements; and,
- Strategies developed for land use changes.

Alternative #4 – Widen CR 44 Along Existing Alignment

This improvement includes the widening of the CR 44 Corridor along its existing alignment. This widening alternative is generally expected to contain a four-lane divided typical section providing four, twelve-foot travel lanes separated by a raised median varying in width from fifteen to twenty-two feet. At selected, heavily developed locations with restricted right of way, the typical section will shift to provide a five-lane section including four, twelve-foot travel lanes and a twelve-foot two way left turn lane (TWLTL). The widening improvement is expected to improve intersection operations as well as link capacities along the CR 44 Corridor.

Alternative #5 – Widen CR 44 Along a New Alignment

This improvement includes the widening of the CR 44 Corridor along a new alignment. This widening alternative is generally expected to contain a four-lane, divided typical section providing four, twelve-foot travel lanes separated by a raised median varying in width from fifteen to twenty-two feet.

Alternative #6 – Widen CR 44 Along a Partial New and Partial Existing Alignment

This alternative is a variation of Alternative #4 and Alternative #5. This widening alternative is generally expected to contain a four-lane, divided typical section providing four, twelve-foot travel lanes separated by a raised median varying in width from fifteen to twenty-two feet. The typical section will vary throughout the length of the project to minimize impacts. At selected, heavily developed locations with restricted right of way, the typical section will shift to provide a five-lane section including four, twelve-foot travel lanes and a twelve-foot two way left turn lane (TWLTL). This widening improvement is expected to improve intersection operations as well as link capacities along the CR 44 Corridor.

Alternative #7 – Bicycle and Pedestrian Enhancements

Enhanced bicycle and pedestrian facilities can provide a safer community with better access to public and recreational facilities and connectivity between land uses. It is the intent of this study to enhance the bicycle and pedestrian facilities along the CR 44 Corridor. This alternative is an applicable component of the previous six alternatives and is included with the preferred alternative.

6.0 Evaluation of Alternatives

Eighteen performance measures were identified for evaluating the proposed improvement alternatives. The first four of these performance measures were identified as **critical** by the Study Advisory Group. An alternative failing to meet all four critical criteria was identified as "fatally flawed" and excluded from further consideration.

1. **Improves Link LOS**
2. **Improves Intersection LOS**
3. **Improves Safety**
4. **Accommodates Future Capacity**
5. Design Costs
6. Construction Costs
7. Right of Way
8. Environmental Impacts
9. Drainage Impacts
10. Utility Impacts
11. Social Impacts
12. Neighborhood Impacts
13. Improves Aesthetics
14. Accommodates Future Transit
15. Accommodates Future Land Use Plan
16. Available Existing Funding
17. Consistent with Transportation Plan
18. Stand Alone Project

Each alternative was qualitatively evaluated against each performance measure. If an alternative failed to satisfy one of these critical performance measures it was eliminated from consideration. The result of this analysis was documentation of the preferred improvement alternative.

Input from the Study Advisory Group and the public concluded that Alternative #7, Bicycle and Pedestrian Enhancements, was essential to any improvements proposed along the Corridor. As a result, this alternative will be included in conjunction with any other recommended improvements. It is not evaluated as part of the Alternative Evaluation Matrix presented in Table 6.1. Shaded areas in the table represent failure of an alternative to satisfy requirements of a critical performance measure.

Table 6.1
Alternative Evaluation Matrix

Study Performance Measure	Alternative #1	Alternative #2	Alternative #3	Alternative #4	Alternative #5	Alternative #6
Improves Intersection LOS	Likely to decline	Will improve as additional turn lanes are added in the intersection areas.	Will improve as additional turn lanes are added in the intersection areas.	Will improve as additional turn and through travel lanes are added in the intersection areas. Signal timing improvements will enhance capacity.	Will improve as additional turn and through travel lanes are added in the intersection areas. Signal timing improvements will enhance capacity.	Will improve as additional turn and through travel lanes are added in the intersection areas. Signal timing improvements will enhance capacity.
Improves Link LOS	Likely to decline	Will not improve as link capacity remains unchanged and traffic volumes increase	Minimal improvement	Likely to improve additional link capacity constructed.	Likely to improve additional link capacity constructed.	Likely to improve additional link capacity constructed.
Improves Safety	Crashes likely to increase as more queuing and delay occur along CR 44.	Minor decrease in crashes anticipated as queues should be reduced in intersection areas and turning vehicles are removed from through travel lanes in the intersection areas.	Minor decrease in crashes anticipated due to reduced traffic volumes and queues should be reduced in intersection areas and turning vehicles are removed from through travel lanes.	Decrease in crashes anticipated due to improved intersection and link geometry.	Maximum decrease in the number of crash occurrences.	Decrease in crashes anticipated due to improved intersection and link geometry.
Accommodates Future Capacity	Likely to decline	Adds minimal additional capacity.	Adds minimal additional capacity.	Four-lane widening will accommodate higher capacities.	Four-lane widening will accommodate higher capacities.	Four-lane widening will accommodate higher capacities.
Design Costs	None	Moderate Costs	Moderate Costs	High Costs	Highest Cost Alternative	High Costs
Construction Costs	None	Moderate Costs	Moderate Costs	High Costs	Highest Cost Alternative	High Costs

Study Performance Measure	Alternative #1	Alternative #2	Alternative #3	Alternative #4	Alternative #5	Alternative #6
Right of Way Impacts	None	Minor acquisition possible required in intersection areas.	Minor acquisition possibly required in intersection areas.	Acquisition required that will potentially impact the existing residential and commercial properties along the Corridor.	Major acquisition required that will significantly impact the existing residential and commercial properties along the Corridor.	Acquisition required that will potentially impact the existing residential and commercial properties along the Corridor.
Environmental Impacts	None	Low	Low	Moderate	High	Moderate
Drainage Impacts	None	Low	Low	Moderate	High	Moderate
Utility Impacts	None	Minimal	Minimal	Moderate - High	Moderate - High	Moderate - High
Social Impacts	None	None	None	Moderate - High	High	Moderate - High
Neighborhood Impacts	None	Minimal	Minimal	Moderate	Moderate - High	Moderate
Improves Aesthetics	No	No	No	Landscaped medians along a majority of the Corridor.	Landscaped medians along the entire length of the Corridor.	Landscaped medians along a majority of the Corridor.
Accommodates Future Transit	No	Yes	Yes with special transit provisions.	Yes, no special transit provisions	Yes, no special transit provisions	Yes, no special transit provisions
Accommodates Future Land Use Plan	No	Supports the intent of the land use plan.	Does supports the land use plan.	Does supports the land use plan.	Does supports the land use plan.	Does supports the land use plan.
Available Existing Funding	None required	Yes	Yes	No	No	No
Consistent with Transportation Plan	Not consistent with Transportation Plan	Yes	Yes	Yes	Yes	Yes
Stand Alone Project	Not Applicable	Yes	Yes	Yes	Yes	Yes

7.0 Preferred Alternative

The alternatives analysis resulted in a combination of several improvement alternatives as the most appropriate to satisfy travel demands along the CR 44 Corridor. The preferred alternative recommended for CR 44 is to widen along a partial new and partial existing alignment. In addition, it is recommended that several other improvement alternatives, or subsets of them be incorporated into the preferred improvement concept.

- Bicycle and pedestrian improvements;
- Traffic operations improvements; and,
- Transportation demand management components.

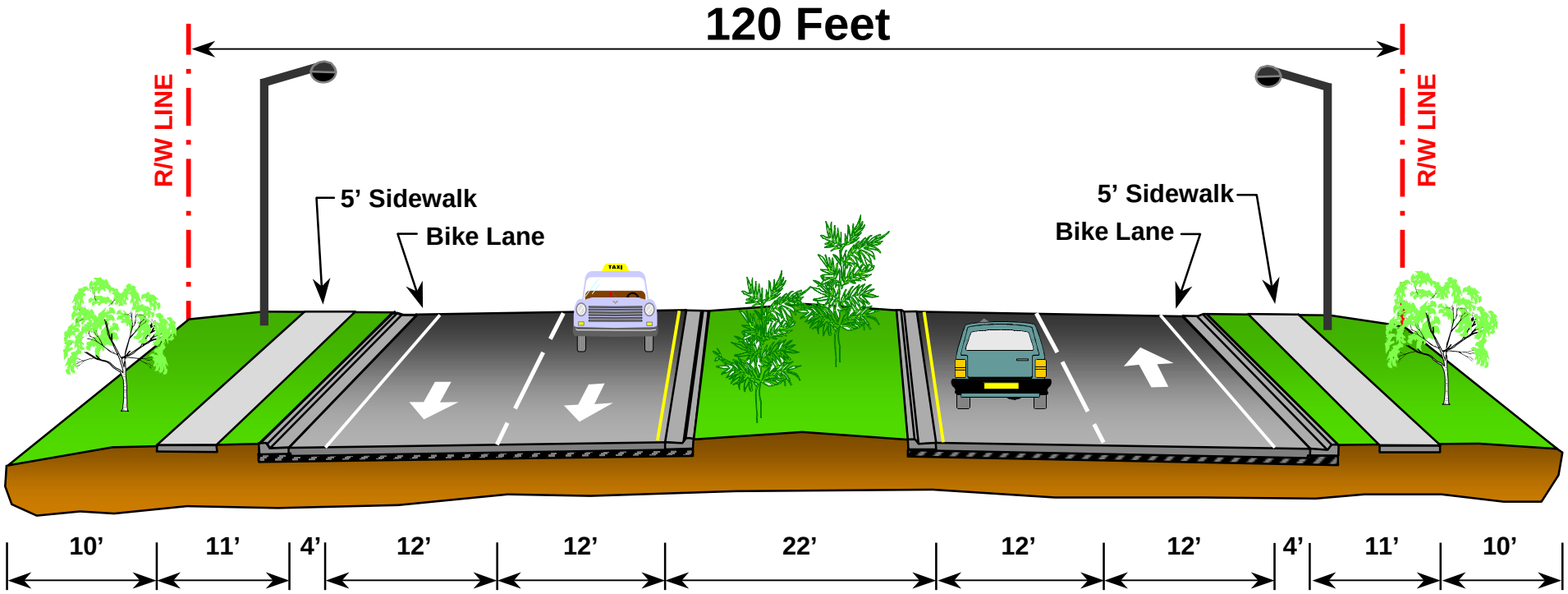
To establish a base for the impacts analysis, a 120-foot typical section was used along the preferred alignment. This typical section represents the standard for a four-lane divided road within an urban or transitioning area. The 120-foot typical section was used along a left, center, and right widening alignment and the impacts for these alignments were analyzed. In an attempt to reduce the impacts, a hybrid of these alignments was created with a varying typical section and became the preferred alignment.

Table 7.1 displays the results of impact analysis for the left, center, right, and preferred widening alignments.

Table 7.1
Preferred Widening Impacts

Potential Right of Way Impacts		Left	Center	Right	Preferred Alignment
Residential Displacements	(#)	**19**	**68**	**69**	**3**
Agriculture	(#)	**7**	**17**	**12**	**15**
Business Displacements	(#)	**10**	**10**	**5**	**1**
Other (Community) Displacements	(#)	**1**	**4**	**2**	0
Known Historical / Archaeological Sites	(#)	0	0	0	0
Utilities	(Yes/No)	Yes	Yes	Yes	**Yes**
Wetlands	(Yes/No)	Yes	Yes	Yes	**Yes**
Recreation / Parks	(Yes/No)	No	No	Yes	No

Figure 7.1 displays the typical sections recommended for the preferred alternative.



Desirable Urban Section

Design Speed = 50 mph

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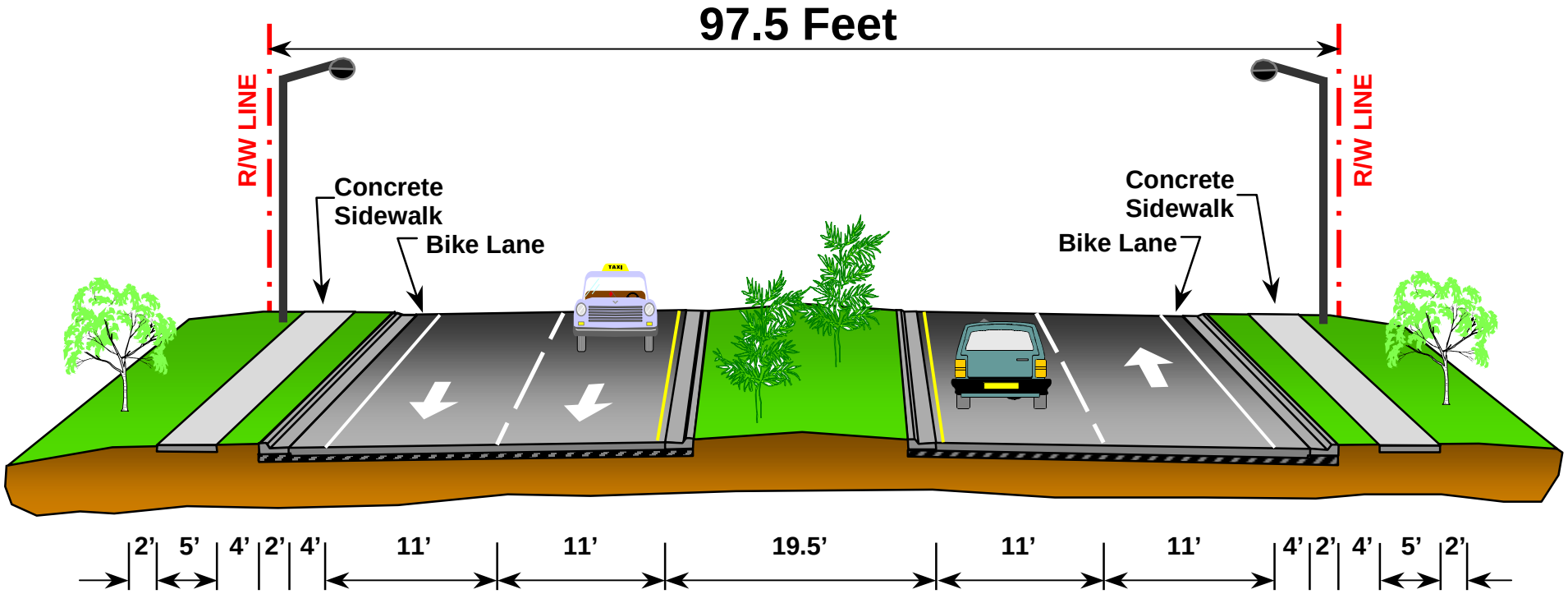
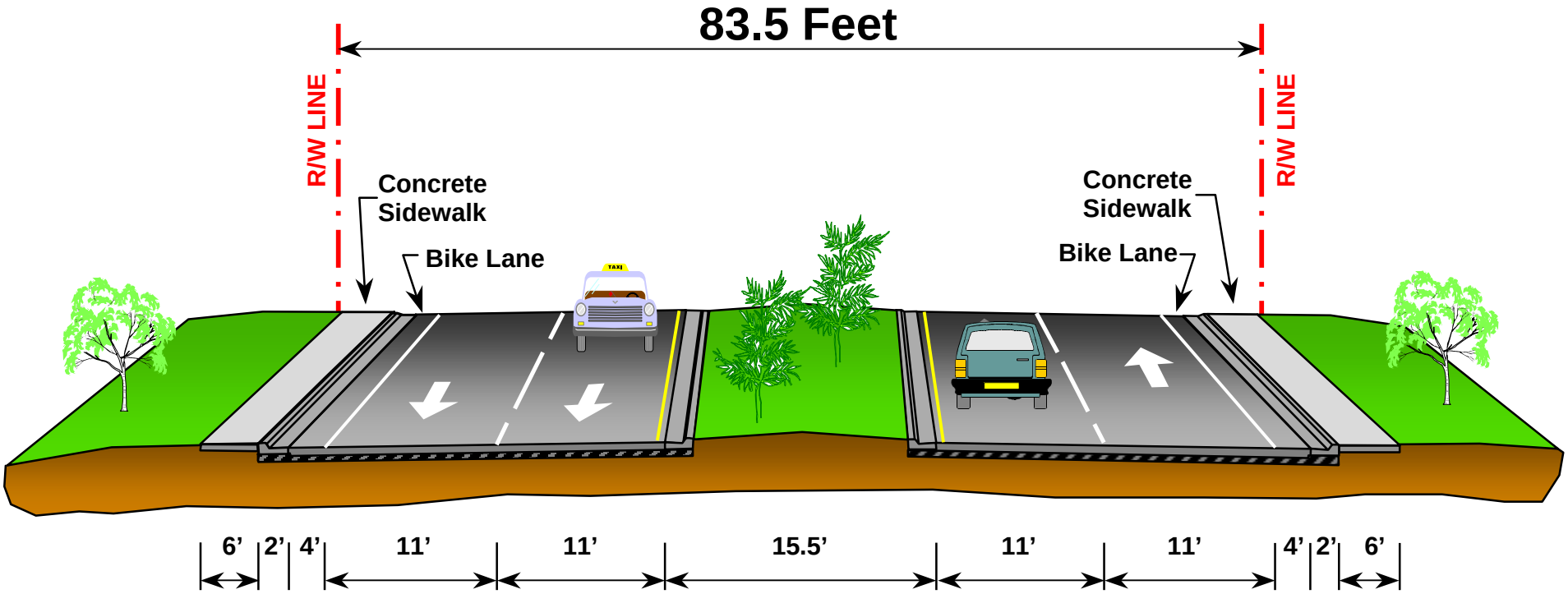
Figure No:	Page No:	
7.1	15	*120′ Typical Section*

CR 44: US 441 to CR 44B



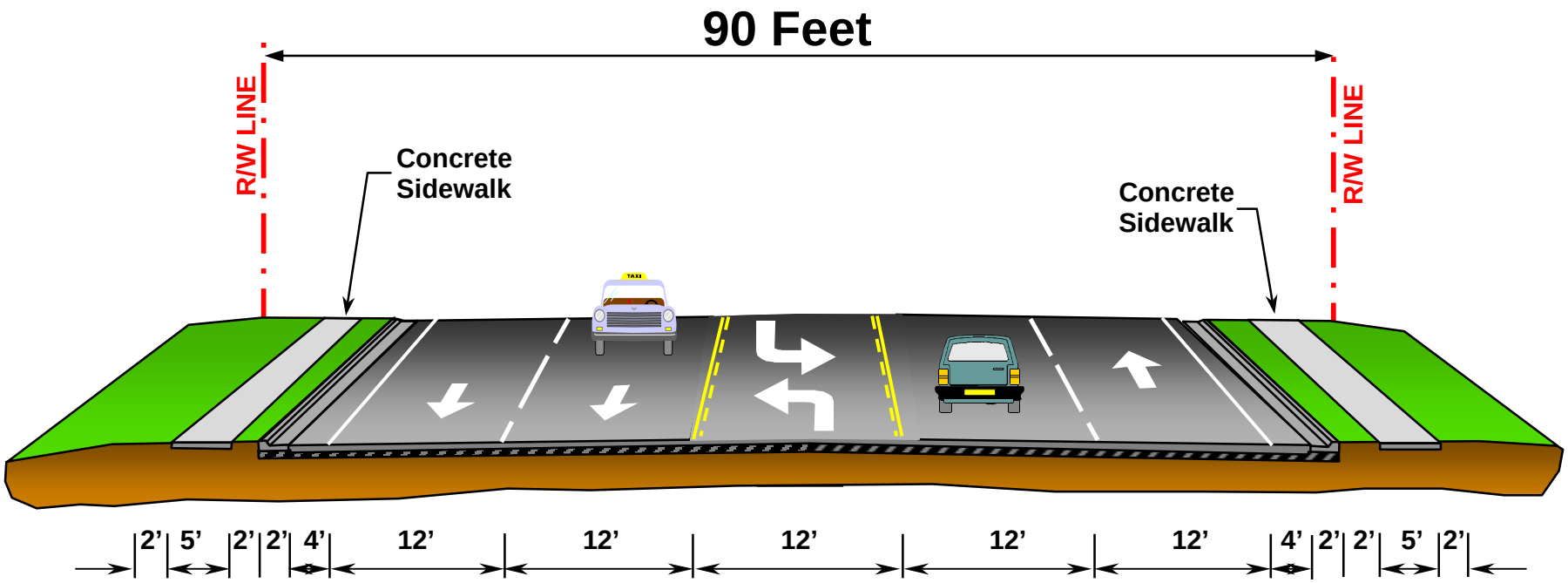
Minimum Urban Section

Design Speed = 50 mph



Constrained Urban Section

Design Speed = 45 mph



Desirable 5-Lane Section

Design Speed = 40 mph

Review of the No Build link deficiencies was used to establish which areas of the Corridor would require enhancements first. Three segments of the CR 44 Corridor are characterized by operating under unsatisfactory conditions by the mid-year, 2012. These segments include:

- CR 44: Treasure Island Avenue to Emeralda Avenue
- CR 44: Grand Island Shores Road to SR 19
- SR 44: CR 44 to CR 44B

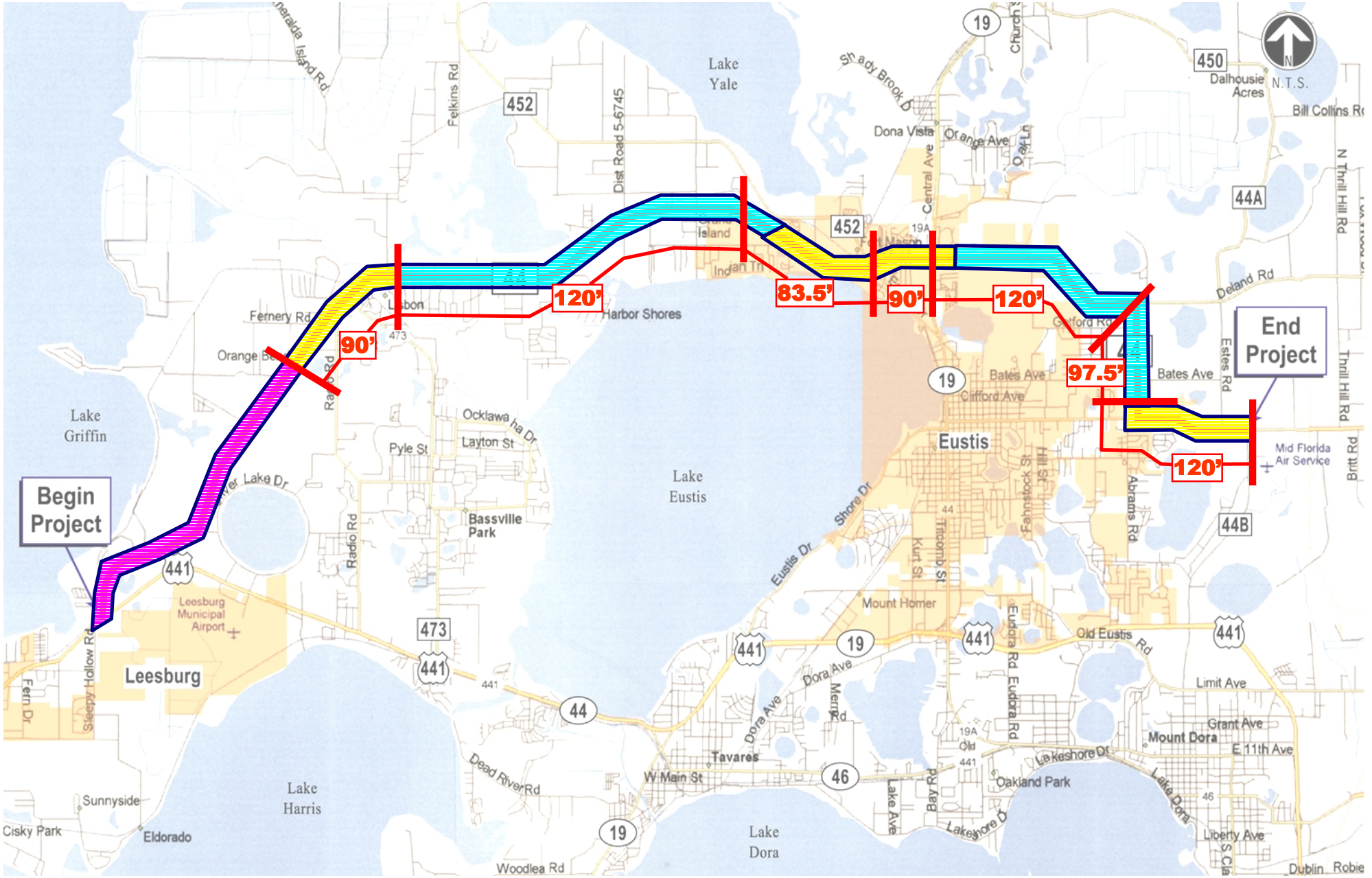
The remaining segments between Treasure Island Avenue and CR 44B are characterized by operating under unsatisfactory conditions by the horizon year, 2022. The segment between US 441 and Treasure Island Avenue is not expected to require roadway widening until after the horizon year, 2022.

Table 7.2 displays the results of impact analysis for the preferred alternative along the remainder of the Corridor, US 441 and Treasure Island Avenue.

Table 7.2
Preferred Widening Impacts - Beyond 2022

Potential Right of Way Impacts (120' ROW)		Preferred Alignment
Residential Displacements	(#)	**2**
Agriculture	(#)	**7**
Business Displacements	(#)	0
Other (Community) Displacements	(#)	0
Known Historical / Archaeological Sites	(#)	0
Utilities	(Yes/No)	**Yes**
Wetlands	(Yes/No)	**Yes**
Recreation / Parks	(Yes/No)	No

The phasing of these improvements and the recommended typical section can be found in Figure 7.2.



TEI Engineers & Planners	Figure No: 7.2	Page No: 20	*Preferred Alignment Implementation* **CR 44: US 441 to CR 44B**

8.0 Build Corridor Conditions

The results of the No Build analysis identified numerous operational and safety deficiencies along the CR 44 Corridor through the horizon year, 2022. The No Build analysis served as the basis for comparing the improvements associated with the preferred alternative.

In order to effectively evaluate the Build alternatives with the No Build alternatives, it was determined that the same traffic volumes develop for the 2012 and 2022 No Build analysis would be appropriate. This allows for comparative analysis between the two alternatives and distinguishes the enhancements presented by the Build alternative.

Table 8.1 and Table 8.2 document the 2012 and 2022 Build operating conditions compared to the 2012 and 2022 No Build operating conditions at the major study intersections along the Corridor.

Table 8.1
Build Operating Conditions
(Signalized Intersections)

Intersection with CR 44	2012 No Build		2012 Build		2022 No Build		2022 Build	
	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service
US 441	**108.7**	**F**	52.4	D	**169.2**	**F**	**97.7**	**F**
CR 473	**68.1**	**E**	18.1	B	**122.2**	**F**	22.0	C
CR 452	54.6	D	44.9	D	**102.4**	**F**	51.4	D
SR 19	**63.7**	**E**	46.2	D	**81.0**	**F**	**61.0**	**E**
SR 44	22.6	C	22.6	C	32.8	C	29.4	C
CR 44B	31.3	C	31.3	C	**66.0**	**E**	39.0	D

Table 8.2
Build Operating Conditions
(Unsignalized Intersections)

Intersection with CR 44	2012 No Build		2012 Build		2022 No Build		2022 Build	
	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service	Delay (Seconds)	Level of Service
Lake Griffin Harbor	12.8	B	12.8	B	15.0	C	15.0	C
CR 44 (Leg A)/Shady Acres Rd	24.8/13.7	D/B	19.1/13.7	C/B	**56.7/16.4**	**F/C**	30.8/16.4	D/C
Silver Lake Rd	20.3	C	20.3	C	29.7	D	29.7	D
Treasure Island Rd	28.4	D	28.4	D	**43.2**	**E**	**43.2**	**E**
Poe St	22.9	C	22.9	C	33.7	D	33.7	D
Radio Rd	**69.7**	**F**	17.4	C	**262.9**	**F**	28.5	D
Emeralda Ave	**45.2**	**E**	13.2	B	**199.6**	**F**	17.0	C
Mid-Florida Lakes/Dura Stress	**48.7/38.0**	**E/E**	**43.4/33.7**	**E/D**	**247.2/88.3**	**F/F**	19.6/14.7	C/B
Goose Creek Rd	22.4	C	22.4	C	32.2	D	13.6	B
Harbor Shores Rd	**48.1**	**E**	**48.1**	**E**	**353.8**	**F**	18.8	C
Wedgefield Dr	19.3	C	19.3	C	34.7	D	12.4	B
Apiary Rd	**39.7**	**E**	**39.7**	**E**	**156.3**	**F**	15.3	C
Chain O' Lakes Rd	**48.1/12.6**	**E/B**	**48.1/12.6**	**E/B**	**237.0/14.8**	**F/B**	18.4/10.7	C/B
Fish Camp Rd	**90.7/44.1**	**F/E**	**90.7/44.1**	**F/E**	**859.0/302.3**	**F/F**	24.0/20.7	C/C
Grand Island Shores Rd	12.1	B	12.1	B	14.7	B	14.7	B
CR 19A	13.5/10.7	B/B	13.5/10.7	B/B	16.4/11.8	C/B	16.4/11.8	C/B
Hicks Ditch Rd	26.7	D	25.7	D	**65.2**	**F**	15.4	C
CR 44A*	**89.6**	**F**	12.4	B	**416.3**	**F**	17.5	B
Bates Ave	23.4/13.5	C/B	23.4/13.5	C/B	**104.1/19.3**	**F/C**	30.5/18.1	D/C

* Intersection is signalized under Build conditions

The results of this analysis show that the Build alternatives enhance the operations of nearly all of the deficient intersections. A few of the unsignalized intersections are approaching an unacceptable level of service may be candidates for signalization and should be monitored.

Table 8.3 documents the 2012 and 2022 Build operating conditions compared to the 2012 and 2022 No Build operating conditions along the roadway links.

Table 8.3
Build Link Operations

	Count Station	2012 No Build		2012 Build		2022 No Build		2022 Build	
		Link Volume	LOS	Link Volume	LOS	Link Volume	LOS	Link Volume	LOS
Segment 1	0031	11,600	C	11,600	C	13,800	D	13,800	D
	0029	11,800	C	11,800	C	14,600	D	14,600	D
Segment 2	0119	**20,600**	**F**	20,600	B	**25,100**	**F**	25,100	B
Segment 3	0045	14,700	D	14,700	D	**17,300**	**F**	17,300	B
	0048	**19,500**	**F**	19,500	B	**26,300**	**F**	26,300	B
Segment 4	0047	**15,800**	**E**	15,800	B	**21,400**	**F**	21,400	B
	0080	13,800	D	13,800	C	**18,400**	**F**	18,400	B
	0082	10,300	C	10,300	C	13,300	D	13,300	B

The results of this analysis show that all of the roadway links operate at an acceptable level of service for the Build alternatives through the horizon year, 2022.

9.0 Summary of Improvements

The preferred alternative is generally expected to contain a four-lane, divided typical section providing four, twelve-foot travel lanes separated by a raised median varying in width from fifteen to twenty-two feet. The typical section will vary throughout the length of the project to minimize impacts. At selected, heavily developed locations with restricted right of way, the typical section will shift to provide a five-lane section including four, twelve-foot travel lanes and a twelve-foot two way left turn lane (TWLTL). This widening improvement is expected to improve intersection operations as well as link capacities along the CR 44 Corridor while addressing access management issues.

Table 9.1 presents the sections recommended for widening as well as the anticipated year of implementation.

Table 9.1
Widening Program

From	To	Year of Implementation
US 441	Treasure Island Avenue	Beyond 2022
Treasure Island Avenue	Emeralda Avenue	2012
Emeralda Avenue	Grand Island Shores Road	2022
Grand Island Shores Road	SR19	2012
SR19	SR44	2022
SR44	CR 44B	2012

The proposed new alignment locations were identified based on two key factors: the need to address capacity deficiencies at key congested locations; and, input from the public involvement process identifying several curves with perceived geometric or operational deficiencies. The following locations were determined appropriate locations for roadway widening along a new alignment:

- Area in the vicinity of CR 44 and CR 452;
- Intersection of CR 44 and CR 452;
- Intersection of CR 44 and CR 44A; and,
- Intersection of CR 44 and SR 44.

To address the critical operational and safety issues, and extend the useful life of CR 44, it is recommended that the traffic operations improvements be included as part of the preferred alternative. These intermediate improvements are recommended within the 2007 time frame.

Table 9.2 below documents proposed traffic operations improvements and their locations.

Table 9.2
Traffic Operations Improvement Locations

Intersection	Improvement Type and Location	Anticipated Benefit
Segment #1		
CR 44 & US 441	Construct EB dual left turn lanes Remove WB free flow right turn lane	Reduce EB left turn delay Reduce driver confusion Reduce conflict points/crash reduction
US 441 & CR 44 (Leg A)	Convert full median opening to an EB left turn directional median opening Eliminate SB left turn	Reduction in left turn and rear end crashes along CR 44 (Leg A) as well as US 441.
CR 44 & CR 44 (Leg A)	Lengthen WB left turn lane Realign intersection with Shady Acres Road	Remove left turn vehicles from through lanes Reduce conflict points Improve intersection operations
CR 44 & Silver Lake Road[1]	Construct WB left turn lane	Remove left turn vehicles from through lanes Reduce conflict points Improve intersection operations
Segment #2		
CR 44 & Radio Road	Construct concrete separator from Radio Road to CR 473	Reduce conflict points Improve intersection operations
CR 44 & CR 473[2]	Lengthen WB left turn lane Realign Hickory Hollow Road with CR 473	Increase storage capacity Improve intersection operations
CR 44 & Dura Stress/Mid-Florida Lakes	Align Dura Stress driveway with Mid-Florida Lakes Construct EB left turn lane Construct WB right turn lane Construct concrete separator along EB approach	Reduce driver confusion Reduce delay Reduce conflict points Improve safety conditions
Segment #3		
CR 44 & Service Trucking, Inc.	Construct EB left turn lane Construct WB right turn lane	Remove turning vehicles from through travel lanes Reduce delay
CR 44 & Florida Food Products, Inc.	Construct EB left turn lane Construct WB right turn lane	Remove trucks from through travel lanes Reduce delay
CR 44 & CR 452	Construct right turn acceleration lanes	Reduce intersection delay

Intersection	Improvement Type and Location	Anticipated Benefit
CR 44 & CR 19A	Convert CR 19A to right in/right out access only	Reduce conflict points
Segment #4		
CR 44 & Trout Lake Nature Center	Construct WB left turn lane Construct EB right turn lane	Increase safety for school buses Reduce delay
CR 44 & Hicks Ditch Road	Construct EB right turn lane Clear vegetation within the maintained right of way	Reduce conflict points Enhance sight distance
CR 44 & CR 44A	Upgrade pavement markings Install traffic signal Improve right turn radius Install intersection area lighting	Reduce intersection delay Reduce conflict points
CR 44 & Bates Avenue	Construct SB left turn lane Construct WB left turn lane Construct sidewalk on north side of Bates Avenue Provide pedestrian crossing	Reduce intersection delay Reduce conflict points Enhance pedestrian safety
CR 44 & SR 44	Extend WB left turn lane and traffic separator Extend EB right turn lane Install intersection area lighting Install advance warning for Bypass	Reduce delay Reduce conflict points Encourage use of Bypass
SR 44 & CR 44B	Resurface and upgrade intersection markings Install intersection lighting	Improve intersection operations Reduce nighttime crashes

1 - CR 44 & Silver Lake Road Improvement is not included in the *Preliminary Short Term Improvements,* dated December 2002.

2 - The proposed realignment of Hickory Hollow Road was changed from Radio Road to CR 473

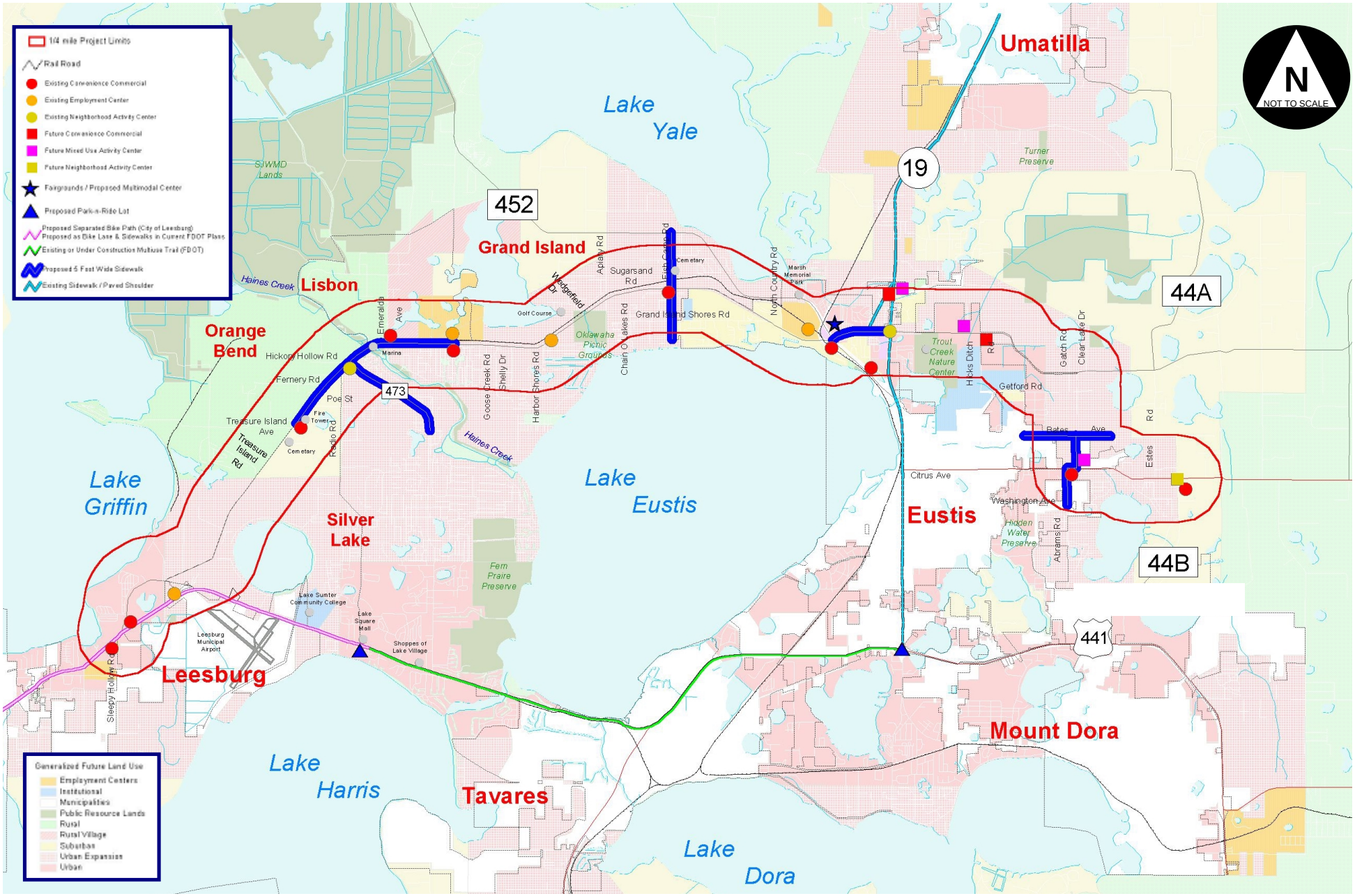
Transportation demand management components represent cost effective, practical approaches to addressing congestion along CR 44 while at the same time increasing the useful life of the existing geometry and increasing the quality of life. It is recommended that as appropriate population, employment and development thresholds are reached along the CR 44 Corridor, the appropriate TDM measure or measures be implemented in conjunction with preferred widening alternative.

Table 9.3 presents appropriate TDM strategies for the CR 44 Corridor.

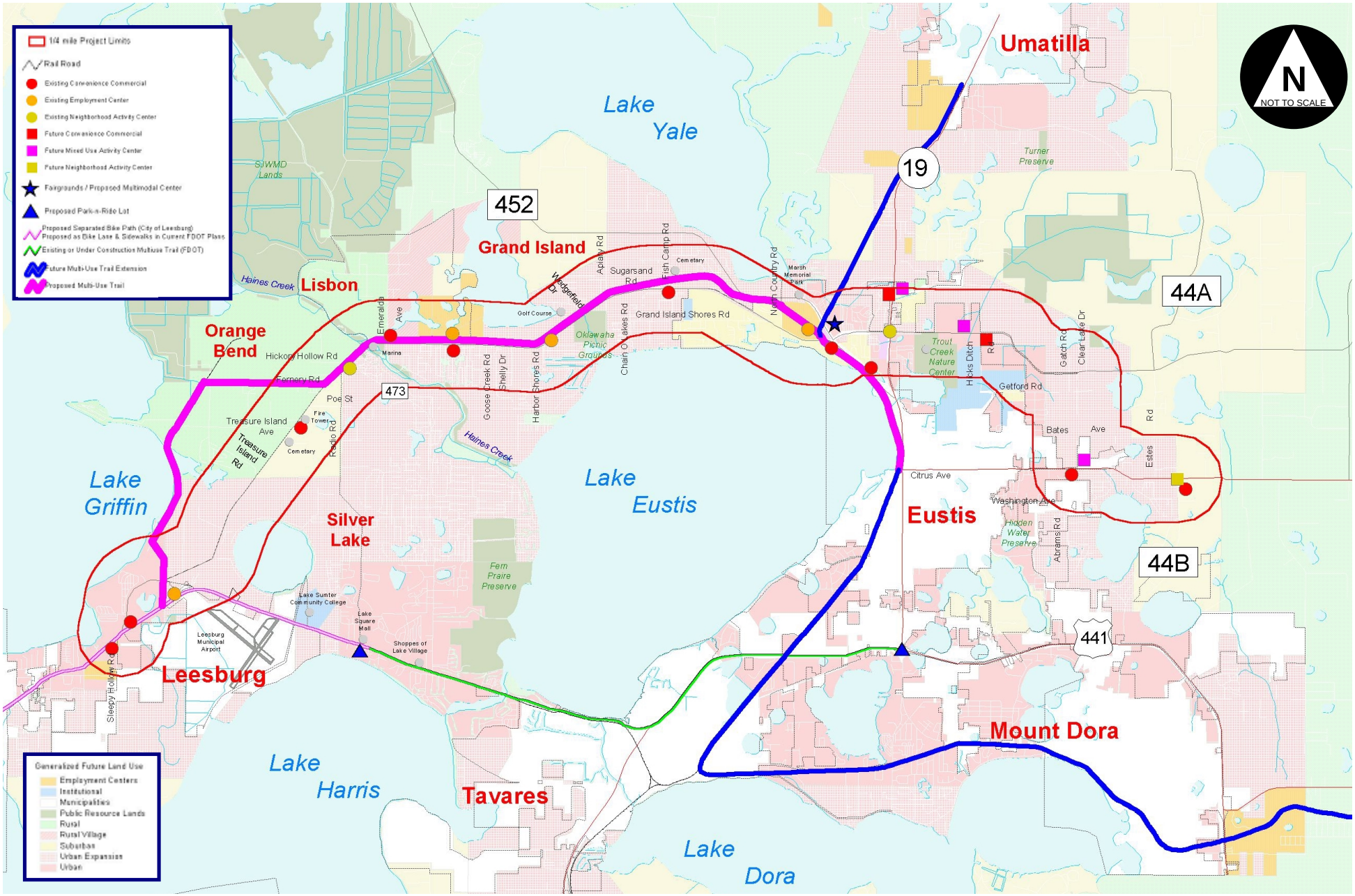
Table 9.3
TDM Strategies

TDM Strategy	Action	Implementation Time Frame
Minor Operations and Geometric Improvements	At select locations along the Corridor enhance intersection and link capacity with minor improvements within the existing right of way including: intersection widening, channelization, intersection turn restrictions, signalization improvements, and driveway control.	Immediate
Land Use Policies	Encourage nodal development to reduce need for trip making	Immediate
Design Standards	Develop standards to ensure that as development occurs adequate provision is made for: bike-ped facilities, shared parking, access management and buildings patterns and form consistent with the long range vision for the CR 44 Corridor.	Immediate/Mid-Term
Bicycle Facilities	Identify appropriate locations for bicycle and pedestrian facilities – linking major origins and destinations	Immediate
Ride Share Matching Services	Develop a rideshare database to facilitate carpooling and reduce single occupant vehicles trips along the Corridor.	Immediate/Mid-Term
Vanpooling Programs	Create a vanpool program to service older and aging driver population; reduce single occupant vehicles trips and link key Corridor origins and destinations.	Mid-Term/Long Term
Access Management	This strategy includes driveway control, median control and frontage roads.	Immediate/Mid-Term and Long-Term
Provision of Transit Amenities	Provide bus shelters, electronic/digital transit information, and transit service coordination.	Long-Term

Bicycle and pedestrian improvements were identified as critical enhancement to the CR 44 Corridor. The bicycle and pedestrian enhancements included strategies such as providing sidewalks at select locations and constructing a multi-use trail. Figure 9.1 shows the proposed select locations strategy while Figure 9.2 depicts the proposed multi-use trail.



Engineers & Planners	Figure No: 9.1	Page No: 28	***Bicycle and Pedestrian Facilities at Select Locations*** **CR 44: US 441 to CR 44B**



Engineers & Planners	Figure No: 9.2	Page No: 29	*Multi –Use Trail* **CR 44: US 441 to CR 44B**