



SR 436 (Semoran Boulevard) Corridor Planning Study

From U.S. 17-92 to Wilshire Drive

ALTERNATIVES & STRATEGIES

MAY 2015



PREPARED FOR:



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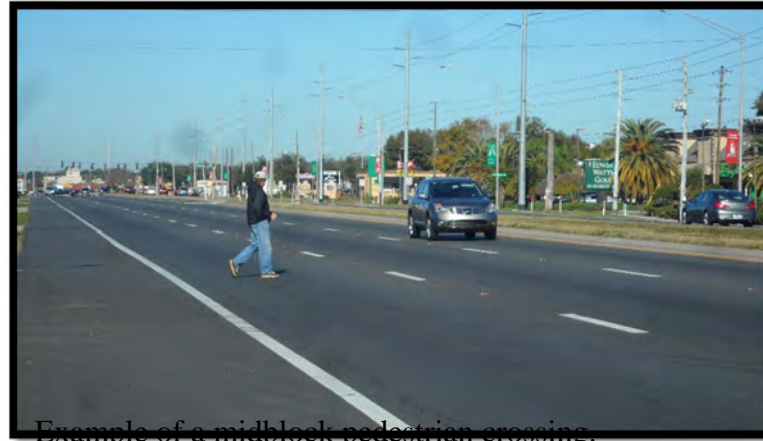
CHAPTER 1:

THE SEMORAN BOULEVARD CHALLENGE



1 THE STATE ROAD 436 STUDY

State Road 436 (SR 436), also known as Semoran Boulevard, is a northwest- southeast corridor in the Orlando area running from U.S. 441 in Apopka to the Beachline Expressway (SR 528) near the Orlando International Airport. The road passes through Seminole County, Florida and Orange County, Florida.



The purpose of this Corridor Planning Study (CPS) is to identify a series of context sensitive solutions along Semoran Boulevard that will promote a holistic approach to transportation projects identified to support the community defined vision for the future. The study limits are from U.S. 17-92 to Wilshire Boulevard (Figure 1).

The study included collaboration with the City of Casselberry, Seminole County, LYNX, MetroPlan Orlando, and local stakeholders such as public agency partners, local business owners, and local representatives, in an effort to gain consensus on the issues and opportunities facing the Semoran Boulevard corridor. The result of this coordination was the development of the following guiding principles to provide focus for this study:

1. Provide efficiency for regional traffic.
2. Enhance multi-modal mobility and access for a wide array of users (commuters, shopping/business patrons, employment centers).
3. Improve safety for all transportation modes.
4. Establish interagency support for a plan that allows for development and implementation of transportation solutions that leverage public and private investment and maximize return and minimize implementation timelines.

Based on identified issues and opportunities, established purpose and need, and developed guiding principles, a series of concepts were developed to improve the corridor. The concepts were designed to complement one another, with buildable features that include:

- Bike lanes from Oxford Road to Wilshire Avenue (on existing paved shoulder)
- Improved pedestrian facilities, such as: widened sidewalks and transit stop connectivity to sidewalks
- Increased vehicular throughput (with a median closure)
- Safety improvements for all modes through driveway modifications and recommended closures

As part of the recommendations of this study, alternative impacts and cost estimates have also been evaluated and presented. The potential alternative proposes a full concept that may be implemented separately based on available funding. These spot improvements consist of nine (9) driveway closures/modifications, bike lane striping, widened sidewalks, improved transit stop to sidewalk connectivity, and two (2) proposed bus bays.

Figure 1: Study Area



1.1 SR 436 / U.S. 17-92 Interchange Design Build Project

FDOT District Five is currently constructing new interchange at the existing intersection of SR 436 and U.S. 17-92 (SR 15/600). The new interchange is expected to increase roadway capacity and minimize driver delay at this heavily congested intersection. This design-build project started in September 2013, scheduled to be completed by October 2015, will be constructed as a Single Point Urban Interchange (SPUI) with fly-over bridges to elevate the through lanes of U.S. 17-92 over SR 436. The design was considered and incorporated in the future conditions analysis and the recommended alternatives. More information about the flyover is provided in the *Existing Conditions Report*.

1.2 Transit Service

Currently, LYNX route 41 serves SR 436, from U.S. 17-92 to Wilshire Drive. The route loops around the Shoppes at Fern Park in both the north and southbound directions, leaving SR 436 from Oxford Road to U.S. 17-92. Monday through Saturday service currently runs from approximately 4:30 AM to 12:00 AM, Sunday and holiday service runs from approximately 5:30 AM to 10:30 PM, all with 30 minute headway within the study area. Complete LYNX transit maps and schedules are provided in the *Existing Conditions Report*.



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CHAPTER 2:

A COLLABORATIVE EFFORT



2 A COLLABORATIVE EFFORT

Stakeholder outreach was a major part of defining the issues and opportunities present in the study area. The stakeholder outreach program included local residents, local business owners, and representatives from FDOT, City of Casselberry, Seminole County, LYNX, and MetroPlan Orlando. Through this outreach, the study team was able to gain insight on concerns along the corridor, specific uses, and opportunities that exist to better serve the various users. The stakeholders also played an important role of reviewing the concepts developed.

Throughout the study, the following events were held to encourage stakeholder input:

- Agency Kick-off Meeting
- Project Visioning Team Field Visit/Bus Tour
- Project Visioning Team Meetings
- Public Kick-off Meeting
- Alternatives Public Meeting
- Coordination with the City of Casselberry
- Coordination meetings with Seminole County



2.1 The Project Visioning Team

A Project Visioning Team (PVT) was created in an effort to gather feedback throughout the study process from the local users of the corridor. The following PVT meetings were held:

PVT Field Visit/Bus Tour – This bus tour and field review was held on December 19, 2013 and attended by the study team and representatives from FDOT, Seminole County, City of Casselberry, LYNX, and MetroPlan Orlando. The purpose of the tour was to better understand the existing conditions and true nature of the corridor, to interact with attendees on issues related to past and future planning within the roadway corridor, and to collaborate on the central issues surrounding the corridor needs and the future visioning for the corridor. Following the tour a survey was completed by all tour attendees regarding the priorities, key issues, desired elements, and identifying the main users of the corridor. A summary of the bus tour, including the survey results, is provided in Appendix A.



study area, to have interaction with the stakeholders on issues and opportunities within the roadway corridor, and to collaborate on the vision and surrounding corridor needs. The meeting began with a brief presentation on the purpose of the study, the planning study process, and an overview of the corridor

PVT Kick-off Meeting – This meeting was held on May 22, 2014. The purpose of the meeting was to introduce the SR 436 CPS, gather input from the stakeholders within the

existing conditions. During this presentation, participants were asked to answer three questions regarding the guiding principles and purpose and need of the study. The poll was conducted with real time polling devices to record the results of each question. Following the presentation and poll questions, a survey was distributed, completed, and collected. The PVT then broke up into two groups to take an in depth look at the corridor with roll plots of the existing conditions and have an open discussion on the suggested issues and experiences/observations on the corridor. A summary of this PVT meeting, including survey and poll results, is provided in Appendix A.

PVT Alternatives Development Meeting – As a follow-up to the kick-off meetings and in preparation for the alternatives public meeting, the purpose of this PVT meeting, held on October 27, 2014, was to provide a study update on existing and future conditions, present the up-to-date alternative concepts, receive comments and suggestions, and answer questions regarding the study. The meeting began with a presentation which included the planning process of defining the guiding principles, objectives, and alternatives, including a walkthrough of the three alternatives currently being considered. A question and answer segment was held during the presentation, and was recorded by the study team. Also during this presentation, participants were asked to select their preference of the three alternatives. Following the presentation and poll question, the PVT then broke up into small groups to take an in depth look at the corridor, as rollout plots of the three alternatives were provided by the study team. During this breakout session, the groups had an open discussion on the suggestions and observations of the three concepts. As comments were made by the attendees, notes were taken on the roll plots, as well as hand written by the study team. A summary of this PVT meeting, including poll results, is provided in Appendix A.



2.2 Coordination Meetings with Seminole County

Seminole County Oxford Road Meeting – A meeting with Seminole County was held to discuss future plans for Oxford Road and the County’s vision for the study corridor. Improvements are planned by Seminole County south of SR 436 and by the City of Casselberry north of SR 436 that will include bicycle lanes on Oxford Road in the area of SR 436. The County’s staff concluded that a capacity improvement on SR 436 is not necessary if traffic can be accommodated through the intersections at an acceptable level of service through 2040. The meeting also concluded that a pedestrian bridge is not reasonable or cost feasible at the Oxford Road and SR 436 intersection.

Seminole County Update Meeting – An update meeting with Seminole County was held to present the study findings and interim Concept findings for traffic improvements with the use of an auxiliary lane versus full corridor widening. The county expressed approval of the interim concept emphasizing that the County’s main goal is to efficiently move traffic through the intersections at an acceptable level of service through

2040. The County also concurred with bike paths ending at Oxford Road, to tie in with future Oxford Road improvement plans and to connect to local trails.

2.3 Coordination with the City of Casselberry

The study team coordinated with the City of Casselberry to discuss landscape, aesthetics, and other corridor vision suggestions for the study. Concepts were sent directly to the City, and addressed for suggestions. The City of Casselberry coordination emails are provided in Appendix A.

2.4 Public Meetings

Public Kick-off Meeting – The public kick-off meeting was held on June 26, 2014 from 5:00 pm to 7:00 pm at the City of Casselberry City Hall Commission Chambers to present and explain the purpose of the project and study process, and to seek input from the public. The meeting was conducted in an open house format with a presentation at approximately 6:00 pm. Comments were taken at the meeting and through the comment period which ended on July 7, 2014. Details of the meeting, including presentation topics and comments received are given in the Public Kick-off Meeting summary provided in Appendix A.



Alternatives Public Meeting – The purpose of the alternatives public meeting, held on November 17, 2014 at the City of Casselberry City Hall Commission Chambers from 5:00 pm to 7:00 pm, was to present, discuss, and gather public input on the potential alternatives being considered. The meeting was conducted in an open house format with a presentation at approximately 6:00 pm. Comments were taken at the meeting and through the comment period which ended on December 8, 2014. The enhanced, interim, and ultimate alternatives were presented on screen during the presentation and on display boards for open discussion. Details of the meeting, including presentation topics and comments received are given in the alternatives public meeting summary provided in Appendix A.





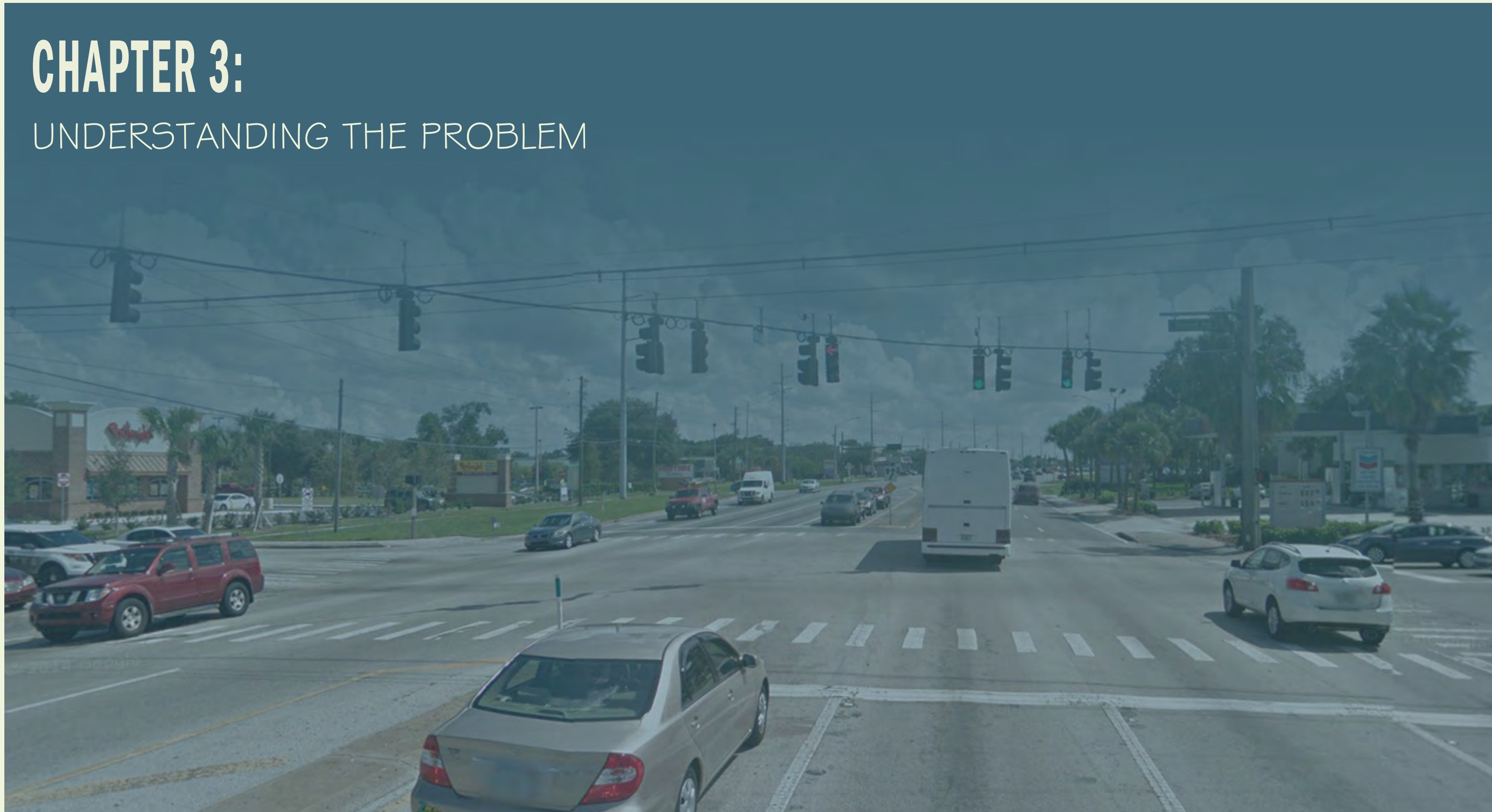
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CHAPTER 3:

UNDERSTANDING THE PROBLEM

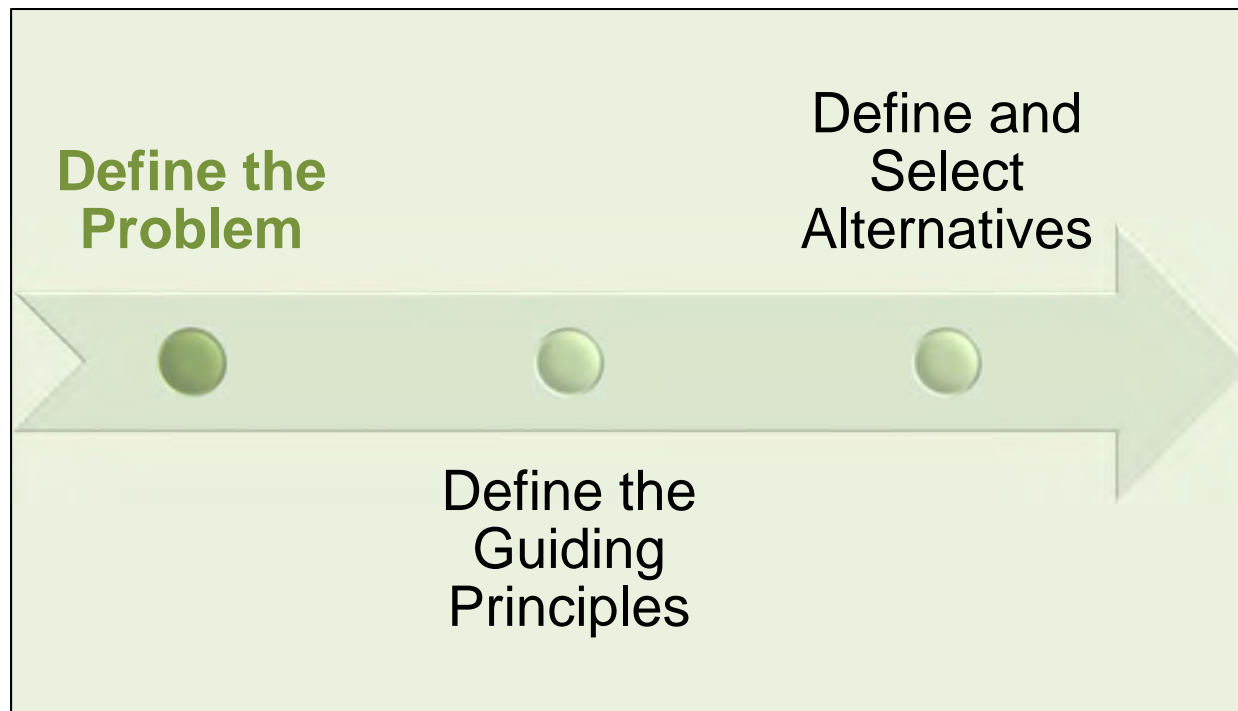


3 DEFINE THE PROBLEM

In order to effectively develop context sensitive solutions, it is essential to first define the purpose and need for the plan. The fundamentals in developing the purpose and need for the plan is well-defined issues and opportunities. The intent of this step in the CPS process is to clearly define the problem that is defined by the stakeholders supported by data collection.

3.1 Data Collection

An *Existing Conditions Report* was created to document the current condition and physical characteristics of the corridor, any proposed or in-process improvements/developments within the study area were included. The information collected and presented in the *Existing Conditions Report*, along with input gathered from initial stakeholder outreach program events, allowed the study team to define the issues and opportunities identified for improvement on the corridor.



3.2 Issues & Opportunities

SR 436 (Semoran Boulevard) is a unique and diverse corridor containing residential, commercial, and industrial characteristics within the study area. Based on information collected for the *Existing Conditions Report* and through stakeholder outreach, issues and opportunities were identified along the project corridor. The issues and opportunities are defined in Figure 2 (see next page for larger version).

| Issues and Opportunities | |
|---|---|
| STUDY AREA ISSUES | OPPORTUNITIES |
| Traffic Flow & Vehicle Safety   | <ul style="list-style-type: none"> Relocate school bus and transit vehicle stops from travel lanes Reduce driveway conflicts/collisions Separate decelerating right turning vehicles from travel lanes Improve facilities for heavy trucks |
| Pedestrian & Bicycle Safety     | <ul style="list-style-type: none"> Provide bicycle facilities Connect existing trails system to existing/potential future pedestrian/bicycle facilities along SR 436 Reduce the number of mid-block crossings Enhance sidewalks and crosswalks to be ADA consistent Evaluate sidewalk lighting and enhance when possible |
| Transit Connectivity   | <ul style="list-style-type: none"> Enhance bus stop facilities to comply with ADA requirements Consider bus pull-out lanes Evaluate frequency of service |
| Aesthetics    | <ul style="list-style-type: none"> Evaluate the potential to replace open swale drainage with curb and gutter east of Fern Park Blvd Enhance existing grass median with landscaping Encourage economic development with redevelopment/landscaping requirements Develop consistent corridor aesthetic |

Figure 2: Issues and Opportunities

| STUDY AREA ISSUES | OPPORTUNITIES |
|---|---|
| <p>Traffic Flow & Vehicle Safety</p>   | <ul style="list-style-type: none"> ✓ Relocate school bus and transit vehicle stops from travel lanes ✓ Reduce driveway conflicts/collisions ✓ Separate decelerating right turning vehicles from travel lanes ✓ Improve facilities for heavy trucks |
| <p>Pedestrian & Bicycle Safety</p>     | <ul style="list-style-type: none"> ✓ Provide bicycle facilities ✓ Connect existing trails system to existing/potential future pedestrian/bicycle facilities along SR 436 ✓ Reduce the number of mid-block crossings ✓ Enhance sidewalks and crosswalks to be ADA consistent ✓ Evaluate sidewalk lighting and enhance when possible |
| <p>Transit Connectivity</p>   | <ul style="list-style-type: none"> ✓ Enhance bus stop facilities to comply with ADA requirements ✓ Consider bus pull-out lanes ✓ Evaluate frequency of service |
| <p>Aesthetics</p>    | <ul style="list-style-type: none"> ✓ Evaluate the potential to replace open swale drainage with curb and gutter east of Fern Park Blvd ✓ Enhance existing grass median with landscaping ✓ Encourage economic development with redevelopment/landscaping requirements ✓ Develop consistent corridor aesthetic |



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CHAPTER 4:

THE GUIDING PRINCIPLES

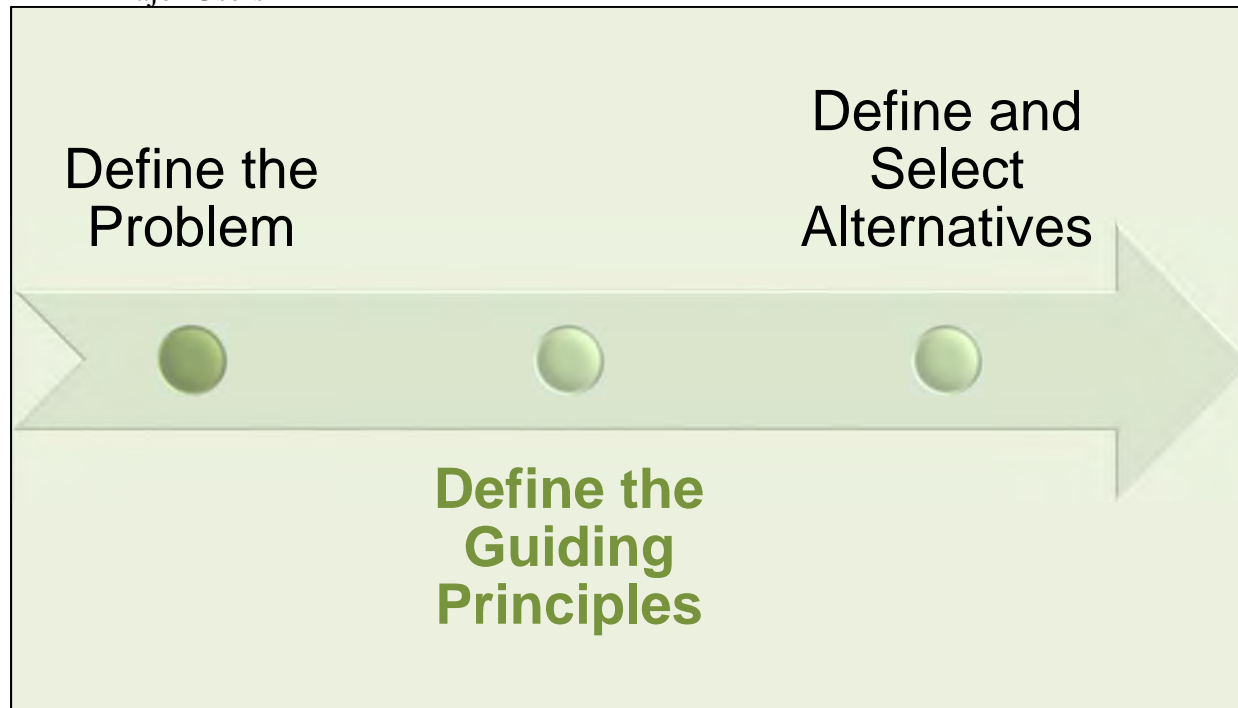


4 THE GUIDING PRINCIPLES

4.1 Guiding Principles Development

A set of guiding principles for the corridor were established based on the data collected, input from stakeholders, and observations in the field. These guiding principles address the following elements:

- Corridor Vision
- Desired Role
- Major Users



4.1.1 Corridor Vision and Role

Corridor Vision: To be an efficient urban arterial while remaining bike, pedestrian, and transit friendly.

Major users of the corridor:

- Commuters
- Business patrons
- Local residents
- Transit Users
- Freight
- Pedestrians/Bicyclists

Desired Role of Semoran Boulevard: To provide an efficient transportation facility that encourages alternate modalities and encompasses a corridor characteristic.

4.1.2 Guiding Principles

The following Guiding Principles were developed based on the corridor vision, desired role, and the major users, identified by the study team and the PVT members:

- Provide efficiency for regional traffic.
- Enhance multi-modal mobility and access for a wide array of users (commuters, shopping/business patrons, employment centers).
- Improve safety for all transportation modes.
- Establish interagency support for a plan that allows for development and implementation of transportation solutions that leverage public and private investment and maximize return and minimize implementation timelines.

4.2 Purpose and Need

Purpose Statement: To evaluate the needs of SR 436 to create a safe urban thoroughfare for all modes of travel, utilizing a context-sensitive approach.

Needs Statement: To improve mobility and safety while supporting the high volume of vehicle, transit, bicycle, and pedestrian users on SR 436 (Semoran Boulevard) as supported by the following data/observations:

- Large volumes of passenger and heavy truck, approximately 64,000 vehicles use SR 436 per day.
- Long delays at study area intersections have been observed in the morning and evening peak hours, which result in vehicle queuing back into neighboring intersections. It should be noted that the U.S. 17-92 flyover is currently under construction.
- High LYNX ridership volumes have been observed on SR 436 with multiple bus stops on the corridor within the study area. Not all the existing bus stops have shelters and are ADA concurrent compliant.
- There are high volumes of pedestrians and bicycle users at intersections and frequent mid-block crossings observed in front of Regency Oaks Apartment Complex.
- Based on the most current accident data available from FDOT (October 2008 to October 2013), there were a total of 389 reported crashes, resulting in 181 injuries and two pedestrian fatalities.

4.3 Measures of Success

The measures of success developed based on the guiding principles and the purpose and need are outlined below in Tables 1 - 4. These measures represent the evaluation criteria to compare alternative solutions proposed by the planning study.

Table 1 – Guiding Principle A: Measures of Success - Efficiency

| Provide efficiency for regional traffic. | |
|--|----------------------------------|
| Objectives | Measures of Success |
| Improve operational deficiencies | Reduced intersection delay (LOS) |
| | Reduced travel time |
| | Reduced queuing |
| | Increased system throughput |

Table 2 – Guiding Principle B: Measures of Success - Mobility

| Enhance multi-modal mobility and access for a wide array of users (commuters, shopping/business patrons, employment centers). | |
|---|---|
| Objectives | Measures of Success |
| Increase ease of transit use | Proximity of transit stops to land uses served |
| | Provided ADA compliant access from sidewalks to transit stops |
| | Close proximity to pedestrian cross-walks |
| Provide for bicycle/pedestrian use | Consistent sidewalks |
| | Consistent crosswalks |
| | Provided bike lanes |

Table 3 – Guiding Principle C: Measures of Success - Safety

| Improve safety for all modes of transportation. | |
|---|--|
| Objectives | Measures of Success |
| Target higher crash locations and identify opportunities to improve | Reduced number of crashes |
| Identify and improve factors contributing to safety (driveway spacing and locations, interconnected parking lots) | Reduced number of mid-block crashes |
| Eliminate bus/vehicle conflicts at bus stops | Reduction in crashes around bus stop locations |
| Identify midblock crossing locations | Reduction in pedestrian/bicycle related crashes in these locations |

Table 4 – Guiding Principle D: Measures of Success – Agency support

| Establish interagency support for a plan that allows for development and implementation of transportation solutions that leverage public and private investment and maximize return and minimize implementation timelines. | |
|--|--|
| Objectives | Measures of Success |
| Buy-in from agency partners | Letter of support/ endorsement of plan |
| FDOT acceptance/endorsement of plan | “Sign-off” from internal FDOT departments on details of the plan |
| Commitment from funding partners (public and private) | Committed dollars/partners advanced |
| | # of partners/participants |
| Leverage funding to maximize return on investment | Identified opportunities for FDOT-implemented elements |
| Prioritize improvements to minimize implementation timeline/maximize value | Identified high priority projects based on, lower cost and greatest impact |
| | List of projects from the recommended alternative/timeline/responsible party |

| | |
|--|--|
| | An implementation strategy (result of study) |
|--|--|



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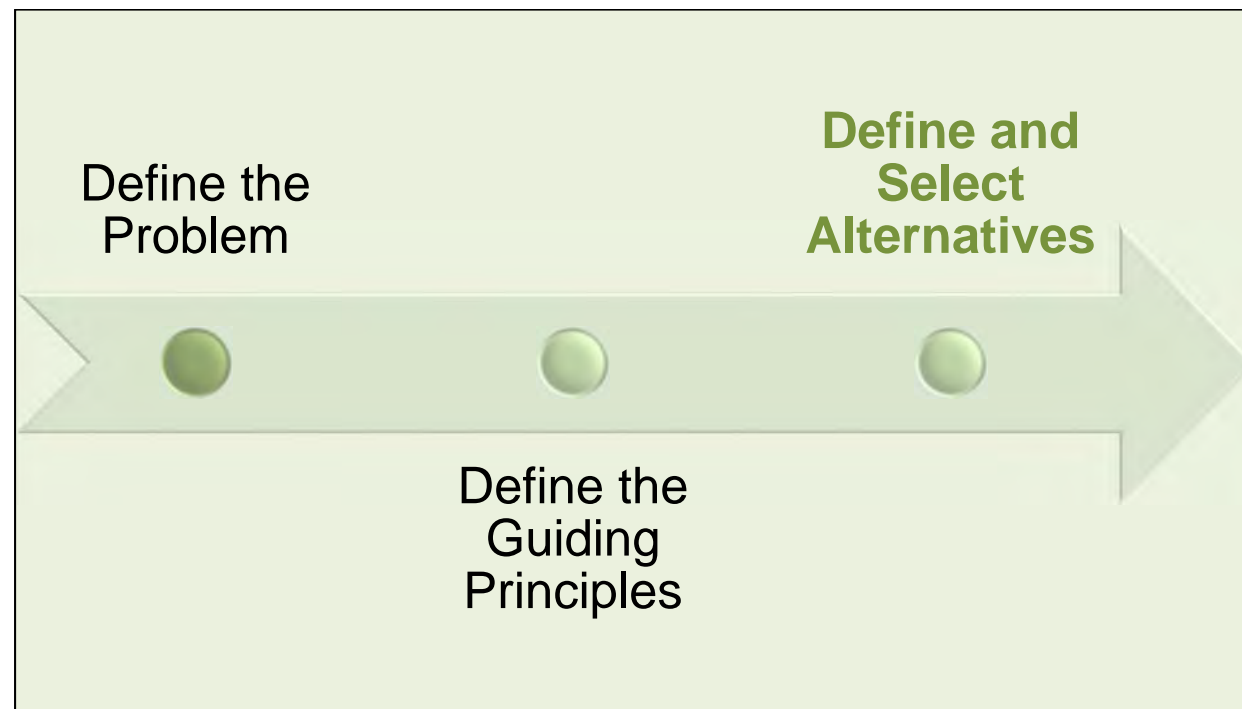
CHAPTER 5:

ALTERNATIVES DEVELOPMENT



5 ALTERNATIVES DEVELOPMENT

Once the problem and guiding principles for the Semoran Boulevard CPS were clearly defined, potential alternatives were evaluated to address the problems and principles.



5.1 Baseline Future Conditions Assessment

An assessment of future conditions was conducted for Semoran Boulevard and the intersections within the study area. Synchro 8 software was used to determine the 2020 and 2040 future intersection Volume to Capacity ratio (v/c), delay, and Level of Service (LOS) for both the AM and PM peak hours. Signal timing operations were optimized for future conditions. Background growth is general growth in traffic not related to specific projects. An annual growth rate of one percent (1%) was applied to the 2014 existing intersection volumes to develop the 2020 and 2040 future intersection volumes for both the AM and PM peak hours. Future year 2040 intersection volumes and level-of-service (LOS) are illustrated in Figure 3. LOS F was found at the Semoran Boulevard/U.S. 17-92 and Semoran/Oxford Road intersections. All other intersections are at LOS E or better. Details of the future traffic conditions is documented in the Future Conditions Technical Memorandum included in Appendix B.

5.2 Enhanced Alternative

The enhanced alternative was developed to address the identified basic problems for Semoran Boulevard and provide simple short term and less expensive solutions. Elements of this alternative included:

- Signal retiming based on projected future volumes
- Striped bike lanes on existing paved shoulder from Oxford Road to Wilshire Drive
- Recommended driveway closures
- Sidewalk and crosswalk improvements

- Improved connection to bus stops
- Recommended transit stop improvements
- Turn lane enhancements
- Enhanced lighting

5.3 Interim Alternative

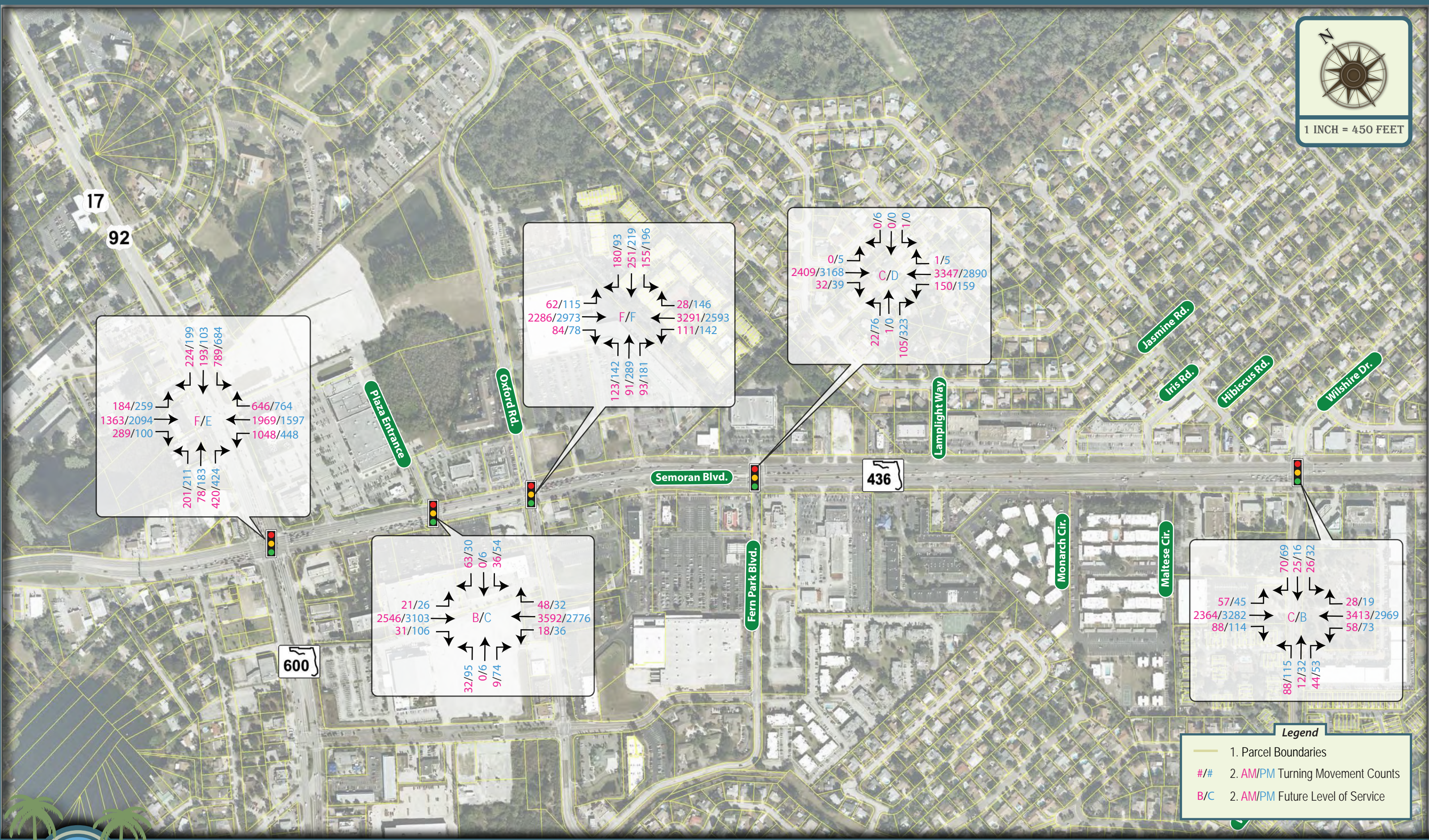
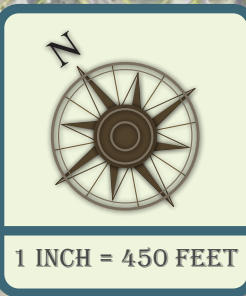
The interim alternative delivers all of the improvements proposed in the enhanced alternative and provides more efficiency for regional traffic without proposing a full widening of the corridor. Through traffic analysis, delay and LOS issues are present where SR 436 (Semoran Boulevard) intersects with Plaza Entrance and Oxford Road. The proposed eastbound auxiliary lane will continue the proposed eastbound right turn lane at Plaza Entrance (as part of the U.S. 17-92 flyover project currently under construction) as a shared through-right lane ending at the existing right turn lane at Fern Park Boulevard. This alternative includes the concepts developed in the enhanced alternative and the following additional concepts:

- Eastbound auxiliary lane from west of Plaza Entrance to Fern Park Boulevard
- Closed directional median opening at the Old Time Pottery/Sam’s Club plaza entrances
- Right-of-way acquisition for sidewalk and lane additions
- Increased storage for westbound left turn lane at SR 436 and Oxford Road

5.4 Ultimate Alternative

The ultimate alternative was developed to provide more involved improvement concepts that require additional engineering analysis, funds, and time to implement. This alternative would require a full reconstruction and the following concepts:

- Eight-lane urban typical section
- Bike lanes
- Curb & gutter
- New sidewalk separated from curb by utility strip
- Recommended driveway closures
- Closed median opening at Old Time Pottery/Sam’s Club
- Recommended stop improvements
- Enhanced lighting
- Right-of-way acquisition for lane additions and stormwater facilities





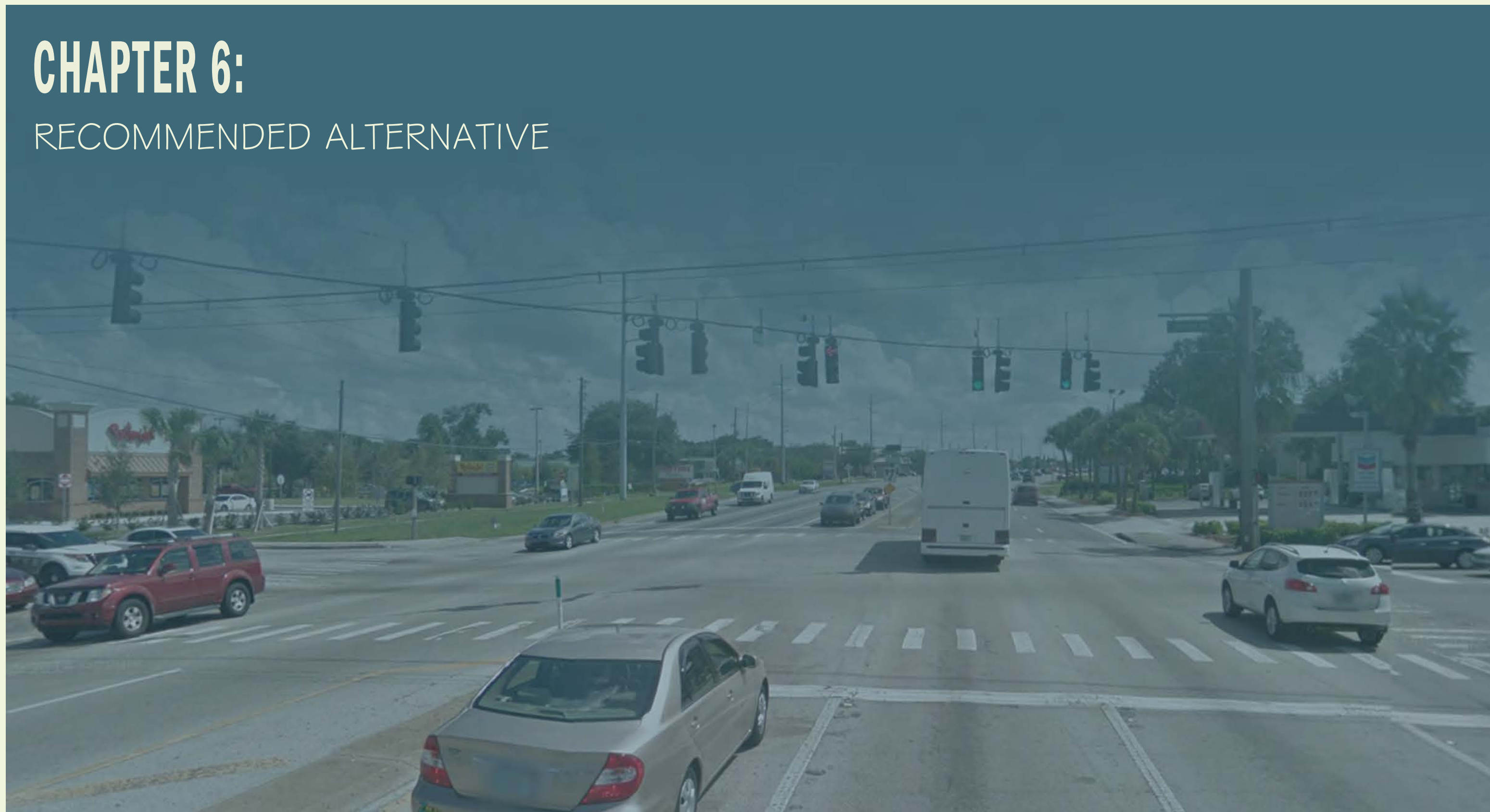
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CHAPTER 6:

RECOMMENDED ALTERNATIVE



6 THE RECOMMENDED ALTERNATIVE

The three (3) alternative concepts were presented to the public at the alternatives meeting on November 17, 2014 as previously stated. Established on responses from agency partners, the Project Visioning Team, and public meeting comments received, the enhanced alternative was considered unsatisfactory and more extensive improvements were desired. Based on traffic analysis, the interim alternative provides adequate improvement to delays and LOS, therefore the interim alternative has been selected as the recommended alternative.

The interim alternative is designed to satisfy future traffic demands by the addition of an auxiliary lane. The alternative also provides improvements for pedestrians, transit, and bicyclists on the corridor. The following presents the improvement strategies intended to address the issues and opportunities identified on the corridor.

6.1 Lane Adjustments

The interim alternative includes an eastbound auxiliary lane that will extend from the planned eastbound right turn lane at the Plaza Entrance intersection and end at the existing Fern Park Boulevard right turn only lane. This addition will improve the LOS and delay for the intersections at U.S. 17-92, Plaza Entrance, and Oxford Road.

Bike lanes are proposed from Oxford Road east towards the end of the study corridor, at Wilshire Boulevard. These bike lanes would require striping and pavement markings to the existing eight-foot shoulder, and would not require any additional pavement. This addition is proposed to connect to Seminole County’s plans to include bike lanes on Oxford Road. While also providing trail connectivity to the Kewannee Trail (south of SR 436), through Oxford Road and Wilshire Boulevard.

An eastbound bus bay is proposed on the east side of the Fern Park Boulevard and SR 436 intersection, shown in Figure 4, to allow a bus to cross over the intersection directly into a bus bay and avoid hindering through traffic.

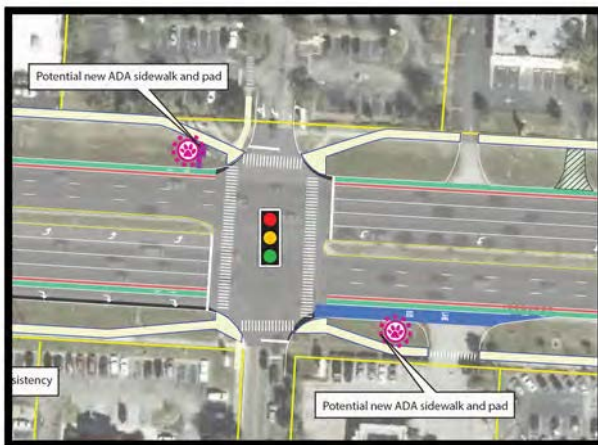


Figure 4: Bus bay, east of Fern Park Boulevard

6.2 Pedestrian Accommodations

The public and local government agencies showed strong interest in improving the pedestrian facilities along the corridor. The alternative proposes to widen the existing five-foot wide sidewalks to eight feet. In addition, ADA approved sidewalks and pads have been suggested throughout the study area to improve safety and promote transit use.

The proposed alternative includes additional pavement markings and improved sidewalk layouts to establish a clear idea of how to cross driveways and side streets in a safe manner. Pavement markings direct, guide, and alert drivers to their immediate surroundings and upcoming conditions of the road. Without these markings, drivers are reminded less frequently of how the corridor is designed to operate. The improved sidewalk design brings the pedestrians closer to the corridor traffic as they cross driveways and intersections. This allows drivers, who need to cross pedestrian traffic, to achieve a longer sight distance along the corridor from behind the stop bar so that pedestrians can cross without conflict.

6.3 Intersection Improvements

There are five signalized intersections within the study area on SR 436. Based on the projected volume growth and future intersection operations, spot improvement strategies such as, turn lane and signal timing modifications, are proposed as part of the recommended alternative. The intersections and the associated recommended improvements are described below:

6.3.1 Plaza Entrance and SR 436

An extension of the eastbound left turn lane and west bound left turn lane onto Plaza Entrance is proposed to meet the minimum required turn lane storage length at the intersection.

6.3.2 Oxford Road and SR 436

An extension of the westbound left turn lane onto southbound Oxford Road is proposed in an effort to allow more storage for Oxford Road commuters and preserve thru traffic.

The eastbound right turn movement onto Oxford Road does not provide enough room to safely negotiate the turn with large vehicles. The alternative proposes to modify the turning radius from the existing 30 feet to 45 feet. This radius allows for most large vehicles to turn freely onto Oxford Road without having to cut the curb and sidewalk. Figure 5 provides a detail of the potential improvement.



Figure 5: Oxford Road improvement

6.4 Access Management

Nine of the existing driveways are proposed to be removed as they are repeating the functions of adjacent driveways. Potential conflict points are created as a result of the unnecessary driveways and should be minimized throughout the corridor. Removing driveways also creates a more consistent pedestrian facility and increases pedestrian safety. A more detailed analysis will be needed to make recommended closures.

Closing the median access of Casselberry Plaza from the westbound direction and Old Time Pottery from the east bound direction has been incorporated into the interim alternative to increase mobility and safety

along the corridor at the cost of vehicular access from this mid-intersection point. The westbound traffic can access the same parking lot it would access from the median by turning left onto Fern Park Boulevard and then turning right at one of the two driveways. The eastbound traffic could access Old Time Pottery and the Oxford Square Shopping Center by turning left onto N. Oxford Road and then turning right at either parking lot entrance. Furthermore, turning at signaled intersections promotes thru-traffic mobility, safety, and does not limit access to these destinations.

The eastbound and westbound left turn lane of the directional medians at Iris Road and Lamplight Way has been redesigned to have a raised buffer to separate the left turn lane from the thru traffic and restrict vehicles exiting nearby driveways from negotiating crossing three lanes of traffic, merging into the turn lane, and potentially blocking the thru traffic. This modification also provides better sight distance for vehicles in the turn lane negotiating the left turn. The concepts are shown in Figures 6 and 7. Vehicles exiting Maltese Circle headed west can make the same u-turn at the Wilshire Boulevard signalized intersection.

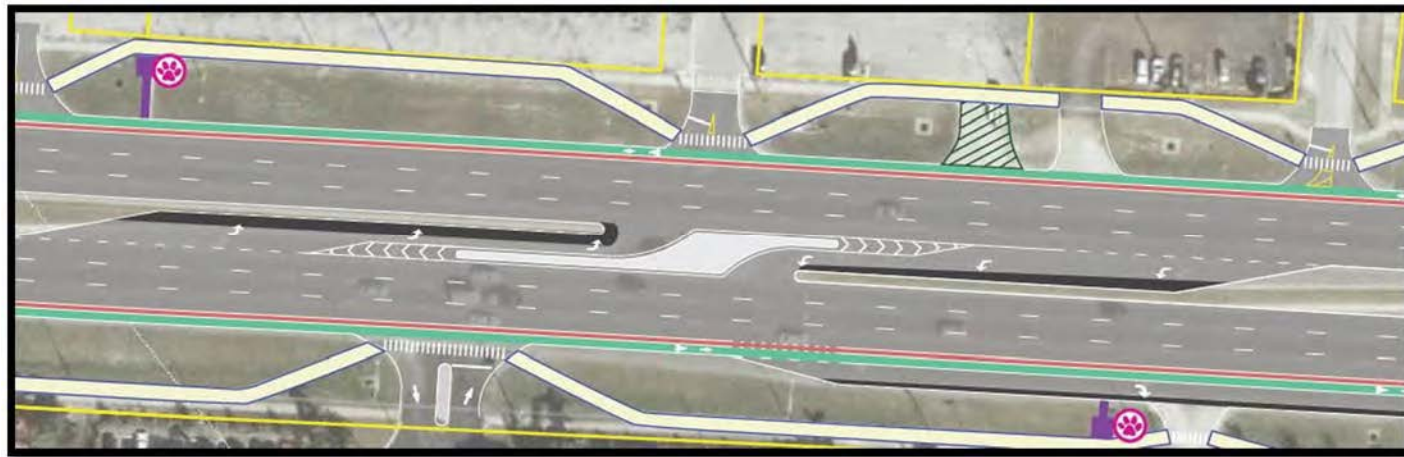


Figure 6: Modified median opening at Iris Road

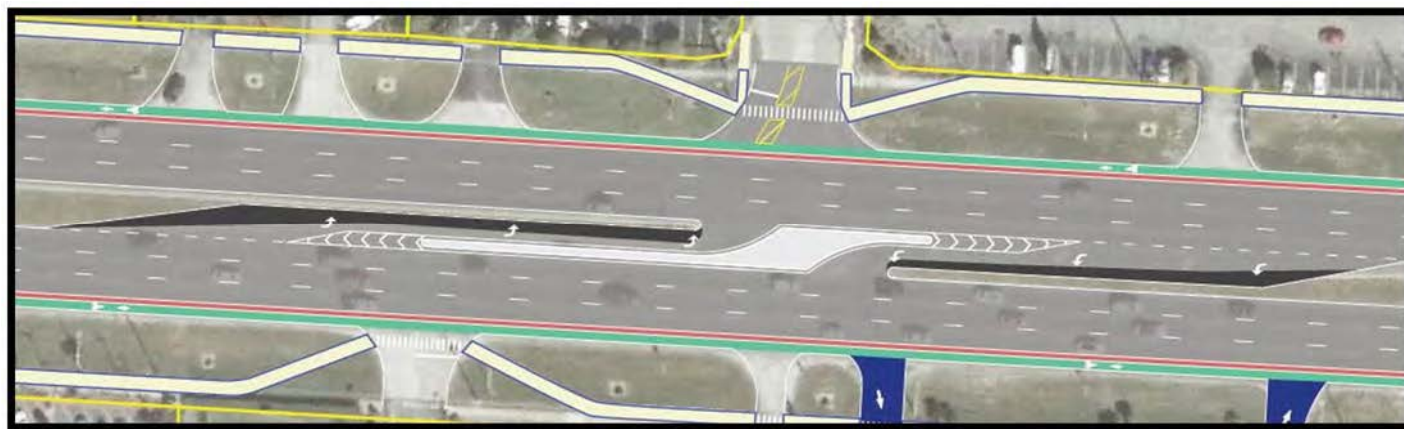


Figure 7: Modified median opening at Lamplight Way

6.5 Lighting

Photometric values were obtained as part of the roadway lighting analysis. A program was used to generate an illuminance summary based on the contribution of a set of luminaires. The lighting analysis incorporated the lighting design plans from the U.S. 17-92 Flyover Project, which meets current standards with no further recommendations needed.

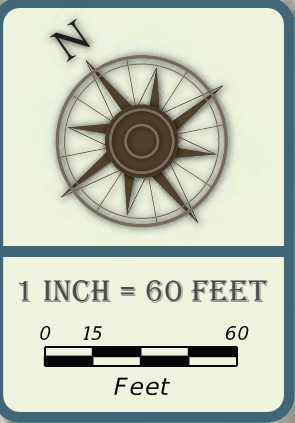
Based on the analysis results, existing roadway lighting system does not meet FDOT lighting requirements for the eastbound and westbound sidewalks in some areas. To meet roadway lighting criteria between Oxford Road and Wilshire Drive, it is recommended to replace all light poles with back to back light poles. This pole type provides lighting for roadway, with an additional back light for the sidewalks. Additional analysis on pole height and arm length will need to be further evaluated during the design phase. It is recommended to move all light poles closer to the roadway to provide added lighting in the area of high midblock crossings, specifically between Lamplight Way and Wilshire Drive. This will provide more illumination area of the roadway and median of SR 436. For more details, refer to the *Lighting Analysis Memorandum* provided in Appendix C.

6.6 Transit Facility Enhancements

As presented by the Existing Conditions Report, this corridor experiences a high volume of daily transit users and is being serviced by one bus route. Transit modifications identified along the corridor include the previously mentioned bus bay, ADA sidewalk connectivity, and bus stop pads. It has also been communicated to LYNX representatives that the bus often runs full, with the occasional occurrence of buses alighting without boarding due to overcrowding. Transit stop shelters and benches have been recommended as part of the alternative, but must be evaluated and implemented by LYNX.

The recommended improvements are shown in Figures 8a -8f.

Casselberry Exchange



1 INCH = 60 FEET

0 15 60
Feet

Plaza Entrance



Modified left turn lanes

Semoran Boulevard



Sidewalk widened to 8 feet
As part of US 17-92 improvements

Sidewalk widened to 8 feet
As part of this study
(potential Right-of-Way needed)

Figure 8

Oxford improvements proposed by the City of Casselberry to include bike lanes

Oxford Road

Bojangles'

1 INCH = 60 FEET
0 15 60
Feet

Waffle House

Modified left turn lanes



436

Semoran Boulevard

Modified left turn lanes

Wider turn radius

Potential relocation of parking light poles

Oxford improvements proposed by Seminole County to include bike lanes

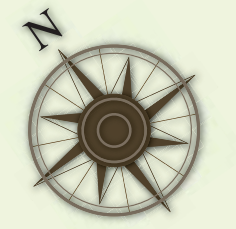
Shoppes at Fern Park

Figure 8

1 INCH = 60 FEET

0 15 60
Feet





1 INCH = 60 FEET
0 15 60
Feet

Greater Mall

Lamplight Way

Semoran Boulevard

436

Extend left turn lane

Extend left turn lane

AUTOSPORTS
Fine Luxury Automobiles and Sportscars

Regency Oaks

Figure 8



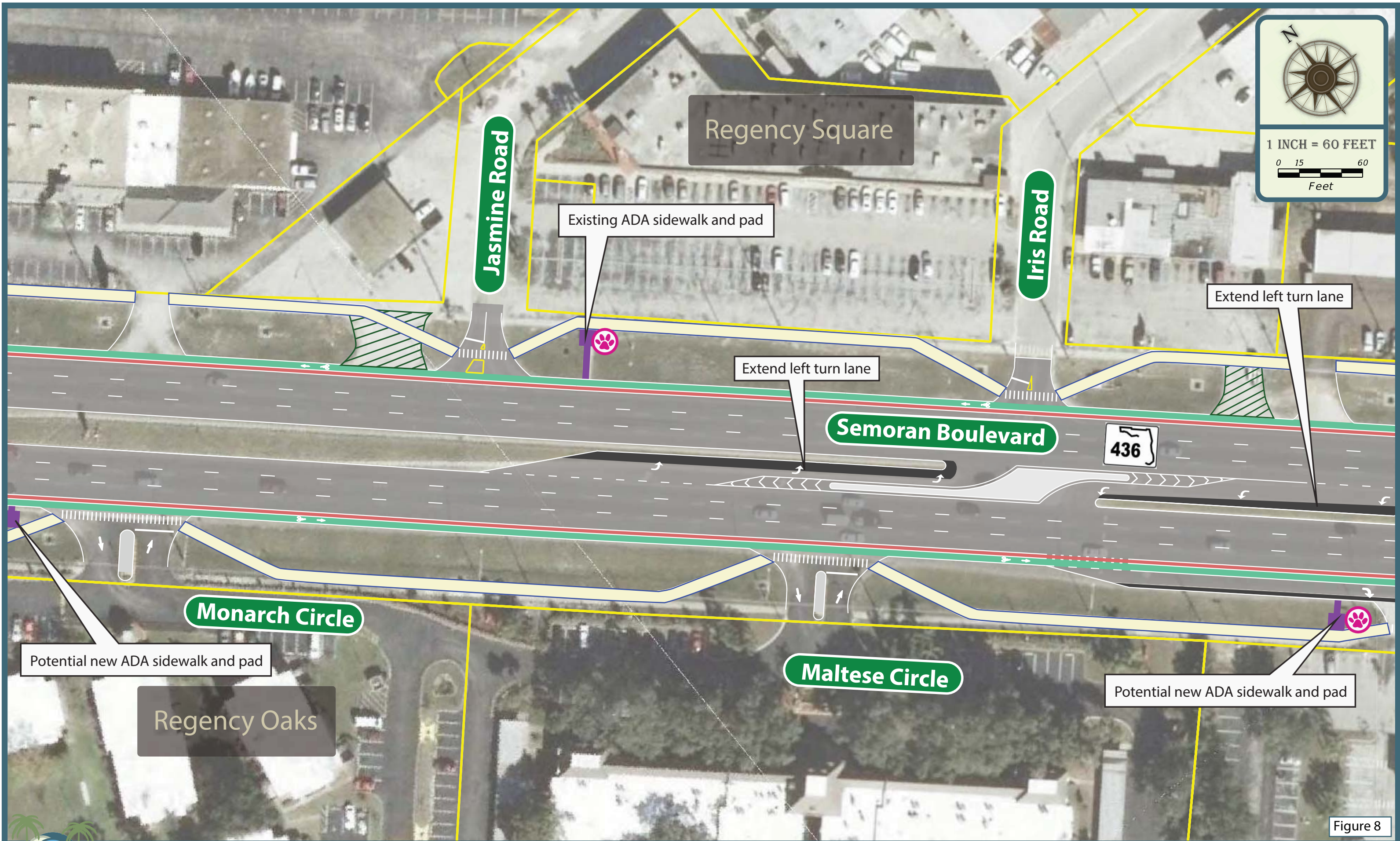
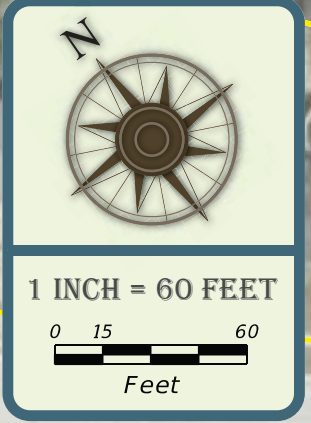


Figure 8



1 INCH = 60 FEET

0 15 60
Feet



End of study

Wilshire Boulevard Trail

Potential new ADA sidewalk and pad

Figure 8

6.7 Landscape

As part of a corridor beautification effort desired by the City of Casselberry, a landscape plan has been created. Figure 9 illustrates the landscape plan developed for the corridor. Within the plan are three designations assigned to potential landscaping areas. Areas shown as brown are within at least one of the many windows of sight and have to be limited to ground cover elements to preserve visibility. Possibilities of generously spaced trunked plants exist, but are not recommended. Regions shown in orange represent areas that are not within the sight lines, but are still within the clear zone. The clear zone, a recovery zone for errant vehicles, must be free of obstructions that could cause vehicles serious damage. The orange area is limited to landscaping elements that are frangible. The outer most region, shaded dark green, is free of landscaping restrictions.

6.8 Utility and Right-of-Way Impacts

A total of three parcels are anticipated to be impacted for the interim alternative. Table 5 gives a list of properties and square feet required for acquisition. The required right-of-way lines are provided in Figure 10.

Table 5 – Right-of-Way Acquisition

| Property | Acquisition (sq ft) |
|----------------------|---------------------|
| Shoppes at Fern Park | 2,500 |
| Chick-Fil-A | 2,250 |
| Texaco Food Mart | 2,750 |

A Sunshine One Ticket was created to locate utilities existing within the study area, and the facility owners were contacted to provide location and approximate cost information on the facilities. More research will be required to determine the exact location of any existing facilities on the parcels south of SR 436 from Plaza Entrance to east of Oxford Road and the utilities along the sidewalks on both sides of the corridor.

6.9 Cost Estimates

Cost Estimates associated with the interim alternative were developed using the Long Range Estimation (LRE) System and rounded to the nearest \$10,000 for a planning level estimate. The total cost for the interim alternative is estimated to be \$6.66 million.

The estimated construction cost for the interim alternative is \$1.12 million. Elements of the alternative include:

- Construction of auxiliary lane
- Widened sidewalk
- Construction of bus bay
- Transit stop sidewalk connections

The final design component includes all of the elements required to develop a set of contract design plans, permits and bid documents to be utilized by a contractor to construct the recommended improvements. Design costs are typically estimated at approximately 20% of the construction cost. Right-of-way acquisition cost estimates were prepared by FDOT for the locations indicated. The total anticipated right-of-way cost is \$5.10 million.

Other cost components that have been included in this estimate are construction engineering & inspection and a contingency calculated as 20% and 25%, respectively, of the construction cost. Table 7 presents the cost estimate by component. Cost estimate sheets are provided in Appendix D.

Table 6 – Planning Level Cost Estimates

| Cost Component | Cost |
|---------------------------------------|--------------------|
| Final Design | \$220,000 |
| Right-of-Way Acquisition | \$5,100,000 |
| Construction | \$1,120,000 |
| Construction Engineering & Inspection | \$220,000 |
| Total Cost | \$6,660,000 |

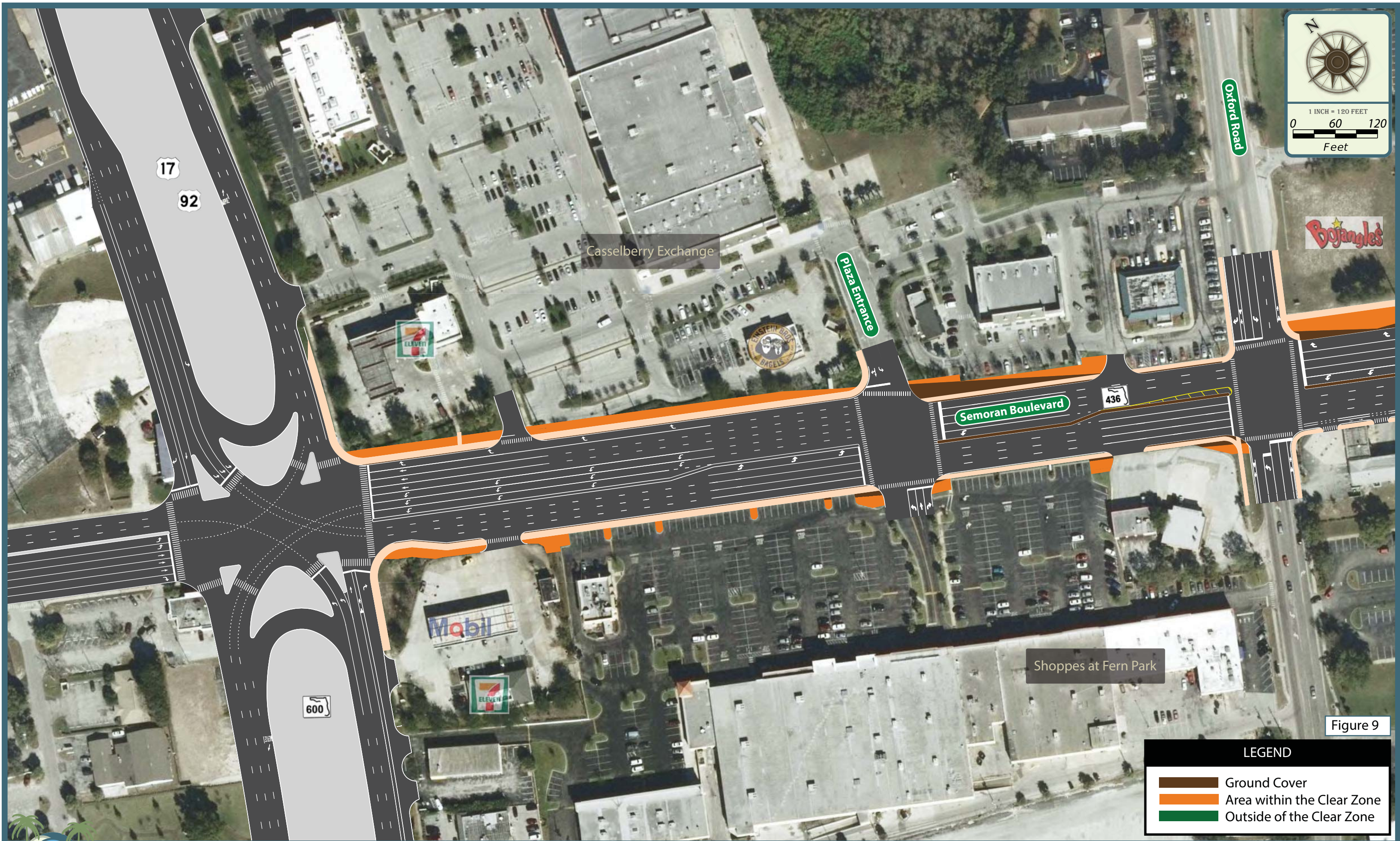





Figure 9

LEGEND

| | |
|---|----------------------------|
|  | Ground Cover |
|  | Area within the Clear Zone |
|  | Outside of the Clear Zone |

1 INCH = 120 FEET
0 60 120
Feet

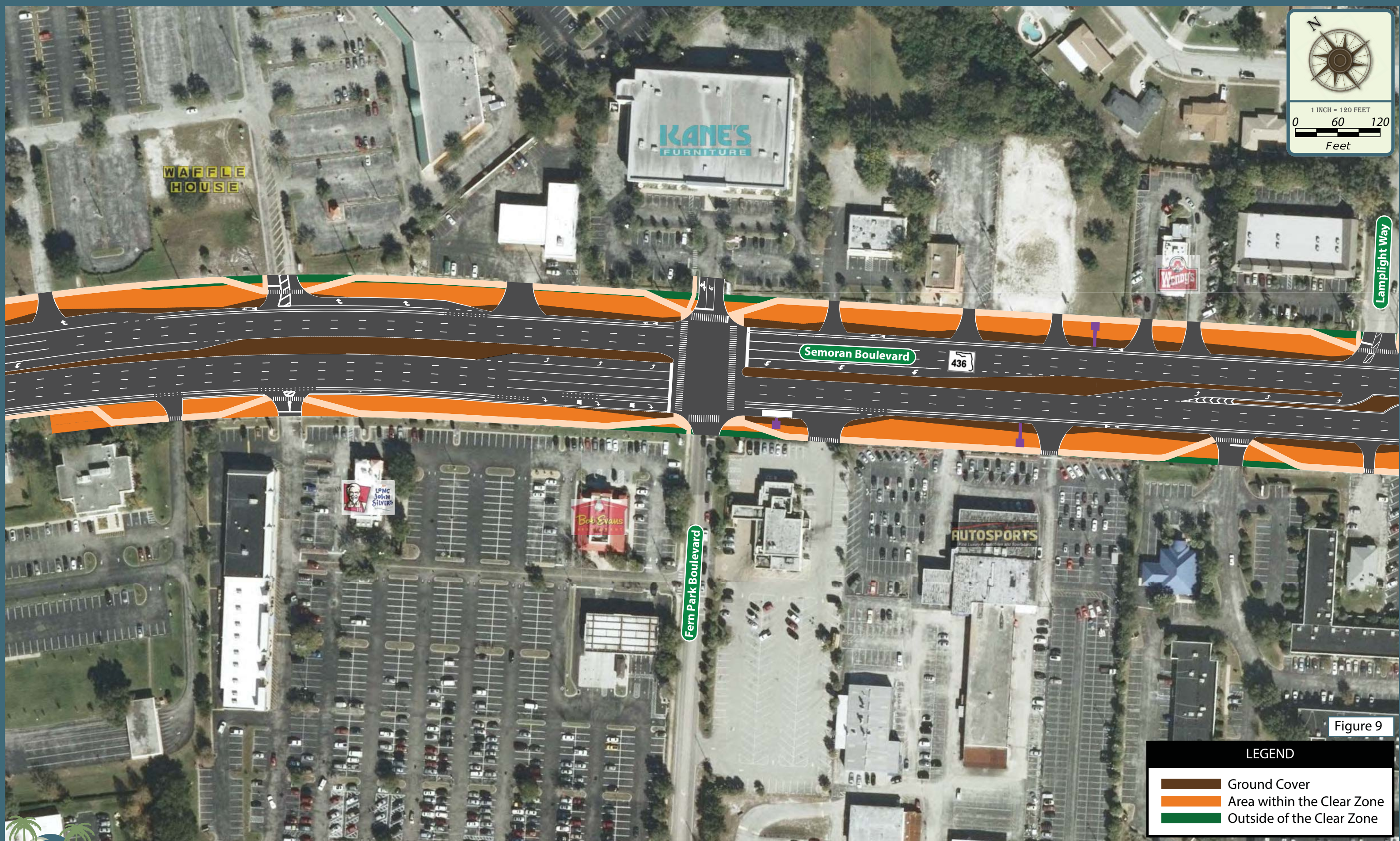


Figure 9

LEGEND

- Ground Cover
- Area within the Clear Zone
- Outside of the Clear Zone

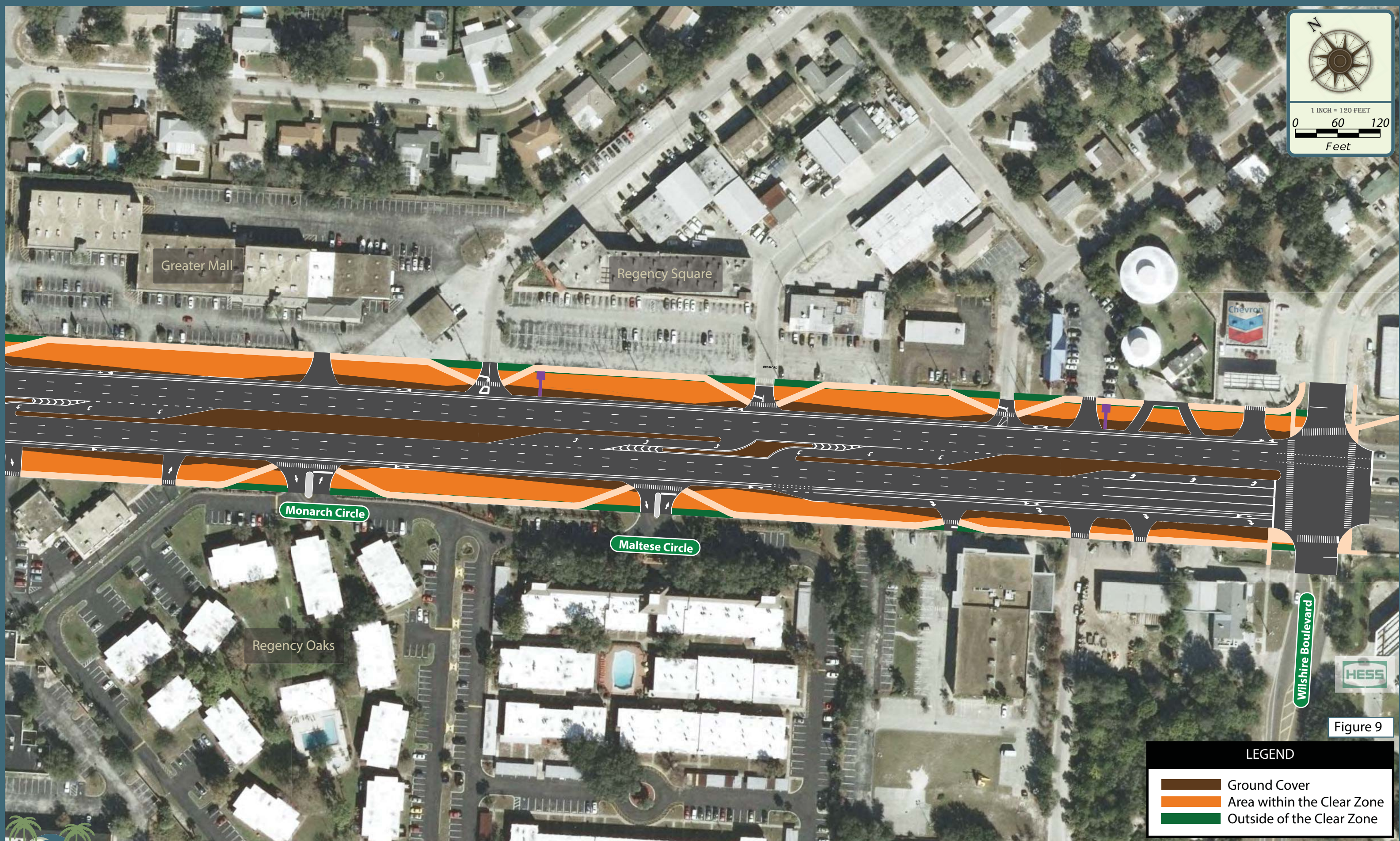
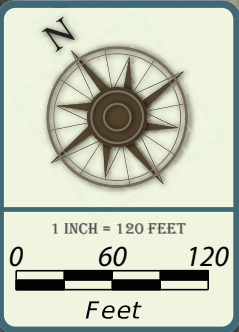





Figure 9

| LEGEND | |
|---|----------------------------|
|  | Ground Cover |
|  | Area within the Clear Zone |
|  | Outside of the Clear Zone |

