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Executive Summary

Construction on a new Intermodal Logistics Center (ILC) for CSX is underway near Winter Haven, Florida. The new freight hub is expected to lead to an increase in freight traffic between Polk County and the Tampa Bay area, with the primary truck routes being Interstate 4 and State Road 60 (SR 60). In addition, the Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to potentially widen SR 60 from Valrico Road to the Polk County line. In order to address potential freight pressures in the Brandon area, the Hillsborough County Metropolitan Planning Organization (MPO) has undertaken a compatibility study for the SR 60 Brandon Boulevard corridor, with study limits from I-75 to Valrico Road.

To analyze the relationship between freight trucks, automobiles, buses, pedestrians, and bicyclists on SR 60, data was collected on existing transportation facilities, traffic counts, crash rates, freight hot spots, and previous planning efforts. The data was then analyzed to identify trends and potential areas of concern. Issues identified included:

- Potential increase in freight traffic, due in part to CSX Intermodal Logistics Center
- High speed limits (areas around I-75 interchange and east of Bryan Road are 50 mph)
- Physical constraints on the six-lane segment between Kings Avenue and Bryan Road
- Lack of bicycle lanes on the six lane segment
- Lack of sidewalks west of Grand Regency Boulevard / Brandon Town Center Drive and limited crosswalks at the intersection with SR 60
- Increasing congestion on parallel facilities (Lumsden Road and Bloomingdale)
- High number of crashes at SR 60 intersection with Grand Regency Boulevard / Brandon Town Center Drive

The issue of future travel demand on SR 60 was also evaluated. While traffic volumes on the corridor have not grown over recent years, this trend is not expected to continue. Based on forecasts from the Tampa Bay Regional Planning Model, 2035 daily volumes on the corridor are projected to increase nearly 50% in some areas. As a result, additional alternatives to the SR 60 corridor for local trips will be needed.

The existing conditions and issues were developed with input from MPO staff, FDOT staff, MPO committees, and a stakeholders group that included businesses and citizens in the Brandon area. The information was also presented to the public at an open house in late August of 2013. A list of enhancement opportunities was developed for the corridor. The potential projects were categorized as safety enhancements, connectivity enhancements and other enhancements. The recommendations include the following:

Safety Enhancements

- Conduct speed study to evaluate potential for reducing the speed limit to 45mph on SR 60 through entire corridor
• Explore narrowing all travel lanes to 11 feet, allowing for more separation between bicycle lanes and motor vehicles
• Evaluate the feasibility of new traffic signals on SR 60 at Pauls Drive and Beverly Boulevard and conduct all necessary warrant studies.
• Modify the coordinated signal timing and/or explore potential for an adaptive signal system
• Enhance Traffic Signal Visibility
• Install Dynamic Message Signs

Connectivity Enhancements

• Extend existing parallel roads to provide alternatives to SR 60 for local trips
• Provide additional pedestrian connections on side roads
• Add bicycle and pedestrian facilities on SR 60 at the I-75 interchange
• Designate alternate bike corridors in the area, especially for the portion of SR 60 that doesn’t have bike lanes
• Modify configuration of Lithia-Pinecrest Road and Bryan Road to provide better circulation

Other Enhancements

• Develop a unified signage / wayfinding system for users of the SR 60 corridor and area
• Provide additional landscaping consistent with the adopted SR 60 Overlay District

The enhancement projects envisioned in this report are just concepts at this time. More detailed analyses, including environmental studies, design studies, and cost estimating will be necessary before any of the projects can be implemented. Furthermore, all projects will need to meet FDOT and/or local government standards. Some of the projects may also need to be included in the local comprehensive and transportation plans. The Hillsborough County City-County Planning Commission and the Hillsborough MPO are currently updating these plans, extending them out to the year 2040. Finally, additional community and agency engagement will also be necessary. Some of this will occur as part of the plan updates, but additional outreach should also be included as part of the more detailed analyses.
1.0 Introduction

Construction is underway on the Winter Haven Intermodal Logistics Center (ILC), and FDOT is currently engaged in a PD&E study to widen State Road 60 (SR 60) from Valrico Road to the Polk County line. However, there are no plans to add through lanes on SR 60 within the Brandon area. SR 60, also known as Brandon Boulevard, is often congested and there are safety concerns along the corridor and at several key intersections. SR 60 is identified as a freight corridor within Florida’s Strategic Intermodal System (SIS), but there are also increasing needs and desires for the roadway to function as a true multimodal corridor, with facilities for transit riders, bicyclists, and pedestrians. In response to these conditions, the Hillsborough County Metropolitan Planning Organization (MPO) has undertaken this compatibility study for the corridor, with study limits from I-75 to Valrico Road.

1.1 Corridor Overview

The study area contains a large number of commercial/retail uses, including the Westfield Brandon Mall, as well as residential neighborhoods, office buildings, and community facilities. A portion of the study area is often referred to as the “center of Brandon.” This study explores compatibility issues between freight trucks, automobiles, buses, pedestrians, and bicyclists on SR 60 from I-75 to Valrico Road.

1.2 Corridor Study Process

To analyze the relationship between freight trucks, automobiles, buses, pedestrians and bicyclists on SR 60, data was first collected in February and March of 2013 on existing transportation facilities, traffic counts, crash rates, freight hot spots, and previous planning efforts.

Following the data collection phase, much of the information was mapped and a summary presentation was developed. This information was presented at a stakeholders group meeting on May 1, 2013. Attendees included representatives from the MPO, Hillsborough County, FDOT, Publix Supermarkets, The Mosaic Company, and the United Citizens Action Network (U-CAN). Issues discussed at the meeting included the following:

- Potential increase in freight traffic, due in part to CSX Intermodal Logistics Center
- High speed limits (areas around I-75 interchange and east of Bryan Road are 50 mph)
- Physical constraints on the six-lane segment between Kings Avenue and Bryan Road
- Lack of bicycle lanes on the six lane segment
- Lack of sidewalks west of Grand Regency Boulevard / Brandon Town Center Drive and limited crosswalks at the intersection with SR 60
- Increasing congestion on parallel facilities (Lumsden Road and Bloomingdale Avenue)
- High number of crashes at SR 60 intersection with Grand Regency Boulevard / Brandon Town Center Drive

The initial study issues were also discussed with Hillsborough County staff on May 20, 2013. They provided information on recent development activity in the area, an update on the extension of Gornto Lake Road, and comments on the corridor issues identified at that time.

Following the May meetings, presentations were given to various Hillsborough MPO committees. Committees provided input on planned developments as well as funded transportation projects, and voiced support for balancing the needs of all users of the corridor. In addition, the project team met with FDOT District Seven staff in July to get their input on the study. FDOT provided the team with additional information on recent and current studies in the area and voiced support for enhancing the corridor for all users.

Finally, a Community Open House was held on August 29th at the Brandon Community Center. The purpose of the workshop was to present the data and analysis, and receive feedback on the corridor issues and opportunities identified. Approximately 20 people attended the workshop and the comments received at the workshop have been incorporated in the final list of potential corridor opportunities presented in Section 4 of this report.
2.0 Existing Corridor Conditions

The first task in the corridor study was to collect and analyze data on existing conditions, including roadway facilities, historical and current traffic counts, bicycle and pedestrian facilities, transit routes and facilities, and current land uses. In addition, previous studies conducted in the area were also reviewed.

2.1 Existing Roadway Facilities

The SR 60 corridor through Brandon is a signalized divided arterial that is included as a freight corridor on Florida’s statewide SIS. The roadway has eight travel lanes from I-75 to Kings Avenue and from Bryan Road/Kingsway Road to Valrico Road. The section in the middle, between Kings Avenue and Bryan Road/Kingsway Road has six travel lanes and is physically constrained. There are 15 signalized intersections along the corridor, including those at the I-75 ramps, and speed limits on the corridor range from 45 mph to 50 mph.

2.2 Traffic Counts

No new traffic counts were collected as part of this study. Instead, data from FDOT’s Florida Traffic Online system was compiled. This system includes traffic counts and other information for all state roadways in Florida as well as additional local roads. Within the study area, there are six count station locations along SR 60 and six others on intersecting and parallel roads. Table 2.1 summarizes average annual daily traffic (AADT) count histories for each of these count stations.

<table>
<thead>
<tr>
<th>Location</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 60 east of I-75</td>
<td>82,000</td>
<td>70,000</td>
<td>74,000</td>
<td>77,500</td>
<td>88,000</td>
<td>82,500</td>
<td>79,500</td>
<td>85,500</td>
</tr>
<tr>
<td>SR 60 west of Lakewood</td>
<td>85,000</td>
<td>86,500</td>
<td>85,500</td>
<td>83,000</td>
<td>82,000</td>
<td>83,500</td>
<td>85,000</td>
<td>80,500</td>
</tr>
<tr>
<td>SR 60 west of Kings</td>
<td>73,500</td>
<td>75,000</td>
<td>75,500</td>
<td>79,000</td>
<td>69,000</td>
<td>76,500</td>
<td>76,500</td>
<td>70,000</td>
</tr>
<tr>
<td>SR 60 west of Parsons</td>
<td>68,000</td>
<td>69,000</td>
<td>71,000</td>
<td>68,500</td>
<td>66,500</td>
<td>70,000</td>
<td>71,500</td>
<td>67,000</td>
</tr>
<tr>
<td>SR 60 west of Lithia-Pinecrest</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>59,000</td>
<td>66,500</td>
<td>62,000</td>
<td>61,500</td>
</tr>
<tr>
<td>SR 60 west of Valrico</td>
<td>55,500</td>
<td>55,500</td>
<td>57,000</td>
<td>57,000</td>
<td>52,500</td>
<td>54,000</td>
<td>50,500</td>
<td>54,000</td>
</tr>
<tr>
<td>Lakewood north of SR 60</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>6,900</td>
<td>6,900</td>
<td></td>
</tr>
<tr>
<td>Lakewood south of Oakfield</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>26,000</td>
</tr>
<tr>
<td>Oakfield east of Lakewood</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>10,900</td>
<td>10,900</td>
<td></td>
</tr>
<tr>
<td>Parsons north of SR 60</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>18,300</td>
<td>18,300</td>
<td></td>
</tr>
<tr>
<td>Lithia-Pinecrest South of SR 60</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>5,600</td>
<td>5,600</td>
</tr>
<tr>
<td>Valrico north of SR 60</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>6,800</td>
<td>6,800</td>
</tr>
</tbody>
</table>
As can be seen from the table, traffic volumes on the corridor have been relatively flat over the past eight years. This is consistent with many roads in Florida and may be due to the economic downturn, higher gas prices, or demographic changes affecting our driving needs.

2.3 Existing Level of Service

Traffic volumes are often measured to determine how well a corridor functions. Generalized capacities for state arterials are estimated by FDOT in their Quality/Level of Service Handbook. This document was recently updated with new capacities, which became effective in 2013. For Class I Signalized Arterials, the generalized maximum capacity is 80,100 vehicles per day for eight-lane facilities and 59,900 vehicles per day for six-lane facilities. The generalized tables provide maximum capacities at the LOS C and LOS D level, but other LOS levels (A, B, and E) cannot be achieved using the table’s default input values. Anything beyond the theoretical maximum capacity of a roadway is considered to be LOS F and represents a failing condition. Table 2.2 below summarizes the LOS for each of the locations on the SR 60 corridor.

<table>
<thead>
<tr>
<th>Location</th>
<th>2012 AADT</th>
<th>Maximum Capacity at LOS D</th>
<th>2012 LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 60 east of I-75</td>
<td>85,500</td>
<td>80,100</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Lakewood</td>
<td>80,500</td>
<td>80,100</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Kings</td>
<td>70,000</td>
<td>80,100</td>
<td>C</td>
</tr>
<tr>
<td>SR 60 west of Parsons</td>
<td>67,000</td>
<td>59,900</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Lithia-Pinecrest</td>
<td>61,500</td>
<td>59,900</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Valrico</td>
<td>54,000</td>
<td>80,100</td>
<td>C</td>
</tr>
</tbody>
</table>

It should be noted that Hillsborough County has adopted LOS D in its Comprehensive Plan as the acceptable standard for this portion of SR 60. As shown in Table 2.2, the majority of the traffic counts reveal a failing level of service for the SR 60 Corridor.

An examination of the level of service of parallel and perpendicular roadways around this section of SR 60 suggests that the surrounding roadways are also strained. As Table 2.3 below shows, many of these facilities have one or more segments for which the level of service is failing.
Table 2.3: 2011 LOS for Roadways Surrounding SR 60

<table>
<thead>
<tr>
<th>Roadway</th>
<th>2011 AADT</th>
<th>Volume to Capacity Ratio</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloomingdale Ave.- US 301 to Kings Ave.</td>
<td>41,300</td>
<td>1.09</td>
<td>F</td>
</tr>
<tr>
<td>Bloomingdale Ave.- Kings Ave. to Bell Shoals Rd.</td>
<td>56,400</td>
<td>2.42</td>
<td>F</td>
</tr>
<tr>
<td>Bloomingdale Ave.- Bell Shoals Rd. to Lithia Pinecrest</td>
<td>28,200</td>
<td>0.82</td>
<td>D</td>
</tr>
<tr>
<td>Lakewood Drive- M L King Blvd. to SR 60</td>
<td>14,600</td>
<td>1.02</td>
<td>F</td>
</tr>
<tr>
<td>Lakewood Dr. / Providence Rd.- SR 60 to Lumsden Road</td>
<td>18,900</td>
<td>0.73</td>
<td>C</td>
</tr>
<tr>
<td>Lithia Pinecrest Rd.- SR 60 to Lumsden Rd.</td>
<td>13,200</td>
<td>0.72</td>
<td>C</td>
</tr>
<tr>
<td>Lithia Pinecrest Rd.- Lumsden Rd. to Bloomingdale Ave.</td>
<td>19,300</td>
<td>1.10</td>
<td>F</td>
</tr>
<tr>
<td>Lithia Pinecrest Rd.- Bloomingdale Ave. to Fish Hawk</td>
<td>18,600</td>
<td>1.07</td>
<td>F</td>
</tr>
<tr>
<td>Lumsden Rd.- Providence Rd to Kings Ave.</td>
<td>40,600</td>
<td>0.68</td>
<td>B</td>
</tr>
<tr>
<td>Lumsden Rd.- Kings Ave. to Lithia Pinecrest Rd.</td>
<td>34,700</td>
<td>1.20</td>
<td>F</td>
</tr>
<tr>
<td>Lumsden Rd.- Lithia Pinecrest Rd. to Valrico Rd.</td>
<td>11,300</td>
<td>0.59</td>
<td>C</td>
</tr>
</tbody>
</table>

Source: Hillsborough County 2011 Automobile Level of Service Report

2.4 Freight Traffic

As mentioned above, SR 60 is part of Florida’s Strategic Intermodal System. The SIS comprises major transportation facilities in Florida that are used for intercity travel and as goods movement. Traffic count data revealed that heavy trucks range from 3% to 6% of the overall traffic volumes, which is fairly normal for a state arterial roadway. However, as the overall traffic volumes on the corridor are high, there are still a large number of trucks traversing the corridor.

Regional Freight Traffic

In November of 2012, construction of the Winter Haven Intermodal Logistics Center (ILC) began. The ILC will include a rail terminal to serve CSX’s intermodal business and reach customers throughout Florida. Adjacent to the rail terminal are 930 acres that are expected to be developed with distribution centers, warehouses, and manufacturing facilities. Depending on the utilization of the ILC and adjacent land as well as the subsequent routing of trucks, this could lead to a substantial increase in freight traffic on I-4 and SR 60.
In addition to the Winter Haven ILC, there are several other regionally-significant transportation improvements that are planned or underway that may affect the SR 60 Corridor including the Bartow Northern Connector, the proposed Central Polk Parkway, and the I-4 Crosstown Connector. The locations of these facilities within the region are shown on Figure 2-1. The Bartow Northern Connector is planned to connect US 98 with SR 60. The first segment of the project, now known as Ernest Smith Boulevard, opened to traffic earlier this year and connects US 98 to US 17. Construction funds have not yet been identified for the second phase of the project, connecting US 17 to SR 60. The proposed Central Polk Parkway, shown on Figure 2-2 below, will be in close proximity to the Winter Haven ILC and will provide direct connections to Polk Parkway and I-4. Finally, the I-4 Crosstown Connector, scheduled to be partially open in late 2013, allows for enhanced connectivity between the Port of Tampa and I-4.

Figure 2-2: Proposed Central Polk Parkway Alignment

Local Freight Generators
Based on a review of the traffic count information and general knowledge of the area, it does not appear that many heavy trucks travel through Brandon on SR 60. Instead, most of the trucks have either a trip origin or destination in the area. This would include trucks that make deliveries on SR 60 to various retail establishments on the corridor. As a result of this observation, large retail stores and other freight generators were identified. These freight generators are shown on the Issues and Opportunities figures described in Sections 3 and 4.
2.5 Bicycle and Pedestrian Facilities

Sidewalks on both sides of the road are included on the majority of SR 60 from Grand Regency Boulevard / Brandon Town Center Drive to Valrico Road. The only exceptions are on the north side near the intersection of Lithia-Pinecrest Road, where the Brandon Family Cemetery is located and from the intersection of SR 60 and the Westfield Brandon Mall west to I-75. FDOT is currently working on plans to install a sidewalk on the cemetery location and is seeking an easement from the property owner that would allow for construction to commence. Bicycle lanes are present on both of the eight lane segments of SR 60, but not in the approximately one-mile long six lane segment between Kings Avenue and Bryan Road/Kingsway Road.

2.6 Transit Routes and Facilities

Transit services in the area are provided by Hillsborough Area Regional Transit (HART). HART has several bus routes serving the SR 60 corridor, including the Route 37 local bus, the Route 22X express bus, and the HARTFlex Brandon community shuttle. Route 37 operates on 30 minute headways during the week and 60 minute headways on Saturday. The HARTFlex Brandon route operates hourly service on weekdays. Figure 2-3 depicts the route map for both Route 37 and HARTFlex Brandon. As shown on the map, the two routes only serve the western portion of the SR 60 corridor, from the mall east to Parsons Avenue. HART also operates the Route 22X commuter express route, which has two westbound buses from Dover to downtown Tampa in the early morning and two eastbound buses making the reverse trip in the late afternoon.
In addition to the three existing routes in the area, HART is currently evaluating a potential modification to Route 46 which would extend that service east along the SR 60 corridor from the Westfield Brandon Mall to the Dover Road Park & Ride lot. This route, as shown on Figure 2-4, would extend HART's regular service area four miles east from Brandon Hospital out to Dover. HART is proposing to operate the service on weekdays, with 60 minute headways.
2.7 Surrounding Land Use / Land Use Compatibility

**Existing Land Use**

A review of the May 2012 Hillsborough County Existing Land Use Map, which is derived from Property Appraiser parcels and Department of Revenue Codes, shows the area immediately adjacent to the SR 60 Corridor is mostly comprised currently of light commercial uses. Surrounding the light commercial uses, the area is predominately residential (Single-family / Mobile Home land use category) with some public institutions and educational facilities.

**Future Land Use**

A Future Land Use Map (FLUM) created by Hillsborough County for the Brandon Community Plan Area is shown below in Figure 2-5. This FLUM shows mixed-use and residential land uses surrounding SR 60 between I-75 and Lakewood Drive. From Lakewood Drive to Valrico Road, the dominant future land use adjacent to SR 60 is Office Commercial.
What the FLUM shows in comparison to the Existing Land Use Map is that mixed-use development is encouraged in the areas surrounding SR 60. This aligns with the previously-completed planning efforts for Brandon, which is discussed in the Community Planning Studies section below.

2.8 Community Planning Studies

A number of community planning studies that have implications for development and redevelopment of areas around the SR 60 corridor have been undertaken. A brief description of these studies, listed in chronological order of completion, is provided below.

Brandon Main Street Community Plan

The Brandon Main Street Community Plan (BMSCP), effective September of 2001, identified Oakfield Drive as the physical and social heart for the Brandon community. The BMSCP recognized the effect that infrastructure improvements (including SR 60, Brandon Parkway, and the County Regional Service Facility) would have on the area, and so the plan was crafted to
link land use with transportation improvements by promoting a more urban form through mixed-use development. While ultimate construction of the town center will occur through private ventures, Hillsborough County adopted an implementation program for the plan that includes regulatory mechanisms and construction of capital projects. Completed projects include the Brandon Regional Service Center, which houses several government offices and the Greater Brandon Chamber of Commerce. Figure 2-6 depicts the illustrative exhibit for the Brandon Main Street Plan.

![Brandon Main Street Illustrative Master Plan](image)

**Figure 2-6: Brandon Main Street Illustrative Master Plan**

SR 60 Overlay District

A SR 60 Overlay Zoning District was adopted in June of 2004 to regulate SR 60 from I-75 to Dover Road. The intent of the overlay district is to improve the appearance of new and existing development by enhancing landscaping, building, and sign requirements. Two distinct sectors are created in the overlay district: an Urban Sector between Lakewood Drive and Kingsway Road, flanked on both ends by Suburban Sectors. The Urban Sector regulations will provide for the placement of new buildings near the highway; the Suburban Sector regulations require a broad landscaped buffer along the highway. This Overlay Zoning District, shown on Figure 2-7, is adopted into the Special Districts section of the Hillsborough County Land Development Code.
Brandon Community Plan

The Brandon Community Plan, effective December 30, 2010, was written to create goals and implementation strategies for the unincorporated area of Brandon. This plan produced eight goals for the area as well as a Multi-Modal Transportation District and Character District Maps. The community plan area is shown on Figure 2-8. The following goals for future development were prioritized by citizens in the following order:

Goal 1: Establish a balanced transportation system by prioritizing options to serve local and regional needs and facilitating multi-modal choices.
Goal 2: Protect and enhance Brandon’s natural environments and rural character including existing natural resources and environmentally sensitive areas.

Goal 3: Revitalize (protect, reinvest, maintain) Brandon’s older infrastructure and ensure that concurrency requirements are met on new development.

Goal 4: Preserve Brandon’s family-friendly small town qualities by promoting and enhancing the sense of place and community.

Goal 5: Recreational and cultural resources need to be provided to support our family friendly community.
Goal 6: Re-establish Brandon’s historical, hospitable, and family-oriented character through thoughtful planning and forward-thinking development practices by concentrating density in certain areas to preserve the semi-rural lifestyle of other areas. Attempt to buffer and transition uses in concentric circles where possible with most intense uses in an area at a node (intersection) and proceed from there. Create a plan for how areas could be developed and redeveloped for the future. Each of these areas would have potential for different building heights, parking configurations, fencing, buffering, landscape requirements, special use limitations, and design standards. These standards apply to new construction on infill property, redevelopment of undesirable areas, and renovation of existing buildings. The primary consideration of all changes should be compatibility with existing structures to ensure neighborhood preservation.

Goal 7: Advance Brandon’s economic competitiveness in the region through a diversified economy and broader employment base.

Goal 8: Strengthen and empower community and business associations.

2.9 Major Proposed Developments

Development in the area is ongoing with several large scale projects proposed for the SR 60 vicinity. Two of these are the Estuary and the expansion of the Westfield Brandon mall. Both will generate additional trips in the vicinity of the SR 60 / I-75 interchange.

The Estuary

The Estuary is a planned mixed-use development on Falkenburg Road west of I-75 and north of the Lee Roy Selmon Expressway that is planned to have more than 500,000 square feet of commercial uses. Included in this project is expected to be a Bass Pro Shops store, which will be a regional draw.

Westfield Brandon Mall Expansion

In March 2012, the Hillsborough County Commission approved the Westfield Brandon Mall’s proposed expansion of 180,000 square feet. The uses to be included in the expansion have not yet been determined, but can include retail stores, offices, and hotels. Based on information reported, the additional uses may be located on vacant parcels and / or attached to the mall. The uses could also be constructed on existing surface parking lots, which would then be replaced by structured parking.
2.10 Other SR 60 Studies

SR 60 Corridor Mobility Study

In March 2012, the FDOT completed the **SR 60 Corridor Mobility Study from Valrico Road to Dover Road**. The purpose of the study was to examine existing and future conditions along SR 60 from Valrico Road to Dover Road, a distance of approximately 2 miles, and to determine the long-term improvements needed to maintain mobility throughout the project corridor. The study examined four alternatives to maintain an acceptable level of service on this portion of SR 60 through 2030. The recommended alternative is to widen SR 60 with cross street improvements. This alternative matches the SR 60 geometry to the west of Valrico Road (6 lane) and provides for cross street improvements that are needed to provide an acceptable LOS at each intersection along the study corridor.

I-75 / SR 60 Interchange Studies

Over the past few years, FDOT has been studying the future needs of the I-75 corridor from Naples all the way up through Ocala. As part of these studies, they have closely examined the I-75 / SR 60 interchange to determine what short-term and long-term configurations of the interchange might look like. Over the long-term, FDOT envisions six general use lanes and six special use lanes on I-75 in the vicinity of SR 60. The interchange itself would remain as a partial cloverleaf, but additional storage and turn lanes would be provided on the off-ramps.

Short-term improvements at the interchange will be made in two phases. The first phase, under construction now, includes extending the southbound off-ramp to SR 60 to provide more storage as well as the addition of variable message signs on SR 60 near the interchange. This project is expected to be completed in 2014. The second phase, which is currently funded for design in 2016, includes construction of a collector-distributor lane adjacent to eastbound SR 60 under I-75. This lane would facilitate access to the southbound and northbound on-ramps, while keeping that traffic off of the SR 60 general use lanes. The improvements would also include slight adjustments to the northbound and southbound on-ramps to I-75 from westbound SR 60.
3.0 Corridor Issues

Based on the data collected and analyzed, a list of key corridor issues was developed. This list was first discussed with MPO staff and then with the stakeholders group in early May of 2013. The issues were continually refined as the study progressed and more information was obtained from Hillsborough County and FDOT staff. As stated earlier, input on the corridor issues was also provided by the MPO committees and the general public at the August 2013 open house workshop. The identified issues are presented below.

3.1 Future Travel Demand

While the information presented in Table 2.1 shows that traffic counts on SR 60 generally did not increase between 2005 and 2012, this trend is not expected to continue. According to the 2035 Tampa Bay Regional Planning Model (TBRPM), population and employment in eastern Hillsborough County are expected to grow significantly. As a result, traffic volumes are expected to increase in the area, including on already congested segments of SR 60. Table 3.1 reveals that Average Annual Daily Traffic (AADT) volumes are projected to increase by nearly 50% in the vicinity of the SR 60 / Lithia-Pinecrest intersection, with other segments growing less. Moreover, all segments west of the Bryan Road / Kingsway Road intersection are projected to have failing LOS, with volume-to-capacity ratios between 1.04 and 1.53.

<table>
<thead>
<tr>
<th>Location</th>
<th>2012 AADT</th>
<th>2035 AADT</th>
<th>Percentage Increase</th>
<th>Max. Capacity @ LOS D</th>
<th>Volume to Capacity Ratio</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 60 east of I-75</td>
<td>85,500</td>
<td>110,900</td>
<td>30%</td>
<td>80,100</td>
<td>1.38</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Lakewood</td>
<td>80,500</td>
<td>98,300</td>
<td>22%</td>
<td>80,100</td>
<td>1.23</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Kings</td>
<td>70,000</td>
<td>83,500</td>
<td>19%</td>
<td>80,100</td>
<td>1.04</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Parsons</td>
<td>67,000</td>
<td>75,700</td>
<td>13%</td>
<td>59,900</td>
<td>1.26</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Lithia-Pinecrest</td>
<td>61,500</td>
<td>91,600</td>
<td>49%</td>
<td>59,900</td>
<td>1.53</td>
<td>F</td>
</tr>
<tr>
<td>SR 60 west of Valrico</td>
<td>54,000</td>
<td>60,200</td>
<td>11%</td>
<td>80,100</td>
<td>0.75</td>
<td>C</td>
</tr>
</tbody>
</table>

Source: TBRPM Version 7.2, 2035 Cost Affordable Model

It should be noted that the volumes presented in Table 3.1 are based on the adopted Hillsborough MPO Cost Affordable Plan, which does not include additional lanes on SR 60. If the current widening being studied by FDOT east of Valrico Road were to be constructed, it is likely demand on the Brandon portion of SR 60 would increase even more. Furthermore, congestion on SR 60 will lead drivers to look for
alternative routes, and traffic will grow on parallel corridors such as MLK Boulevard, Lumsden Road and Bloomingdale Avenue.

3.2 Roadway Configuration

The majority of SR 60 through the Brandon area is eight lanes. Specifically, the roadway has eight travel lanes from I-75 to Kings Avenue and from Bryan Road/Kingsway Road to Valrico Road. However, the middle section, between Kings Avenue and Bryan Road/Kingsway Road has six travel lanes and is physically constrained from being further widened. This is problematic as there is significant travel demand in the section between Parsons Avenue and Lithia-Pinecrest Road, and that will only increase as southeastern Hillsborough County continues to grow. Also, as discussed further below, there are no bike lanes on this segment. The gap in the network forces bicyclists to either use the narrow sidewalks or ride in the travel lanes.

3.3 Varying Speed Limits

The speed limit on this portion of SR 60 varies between 45 and 50 miles per hour (mph). Starting west of I-75, the speed limit is 50 mph from Falkenburg Road through the interchange and east to Providence Road. Between Providence Road and Bryan Road/Kingsway Road, the speed limit is posted at 45 mph. This includes the six-lane section described above. East of the Bryan Road/Kingsway Road intersection, the roadway was recently expanded to eight lanes and the speed limit goes back up to 50 mph. This area used to be less developed, but has seen recent growth with the addition of Wal-Mart, Home Depot, and Lowe’s. East of Valrico Road, the roadways transitions to a four-lane rural highway, and the speed limit increases again to 55 mph.

3.4 Crash Hot Spots

As part of its Congestion Management/Crash Mitigation Process, the Hillsborough County MPO published the Crash Severity Reduction Report in January 2013. The report documented that several segments of SR 60 were considered to be High Frequency “Severe Injury” Crash Corridors. These include the following segments:

- SR 60 from US 301 to Falkenburg Road (west of study area)
- SR 60 from I-75 to Grand Regency Boulevard
- SR 60 from Lakewood Drive to Kings Avenue
- SR 60 from Ridgewood Avenue to Valrico Road
• SR 60 from Valrico Road to Dover Road (east of study area)

In addition, the intersection of SR 60 at Grand Regency Boulevard / Brandon Town Center Drive was considered to be a Top “Severe Injury” Crash Location, with 193 injury-related crashes between 2006 and 2010. The top crash corridors and intersections are shown on Figure 3-1.

*Figure 3-1: High Frequency Crash Corridors and Intersections*

Source: Hillsborough MPO

### 3.5 Congested Intersections

The Hillsborough MPO evaluated congested corridors and intersections throughout Hillsborough County. Data showed that eight intersections in the study area were among the Top 50 most congested in unincorporated Hillsborough County. They include:

- SR 60 at Brandon Town Center Drive
- Lumsden Road at Kings Avenue
- Lumsden Road at Parsons Avenue
- Lumsden Road at Bryan Road
- Lumsden Road at Lithia-Pinecrest Road
- Lithia-Pinecrest Road at Bryan Road
- SR 60 at Kings Avenue
- Valencia Street at Kings Avenue

Figure 3-2 depicts the locations for all 50 intersections.

**Figure 3-2: Top 50 Congested Intersections**

3.6 Freight Mobility

The Tampa Bay Regional Goods Movement Study, first produced by FDOT District 7 in 2005, identified the I-75/SR 60 interchange as a freight hot spot. It was noted in the report that the interchange ramps were not ideal for large trucks, but this issue has since been rectified and FDOT recommended removing the location from the hot spots list in 2007. As part of the ongoing Regional Goods Movement Study, FDOT also produced a white paper that examined future implications to freight and goods
movements in the Tampa Bay region resulting from development of the Winter Haven ILC. This report estimated that roughly 25% of the truck trips originating from the ILC would be destined for the Tampa Bay area, including Bradenton and Sarasota. This amounts to approximately 600 vehicles traveling daily back and forth on I-4 and/or SR 60. In addition, 930 acres adjacent to the ILC will be marketed for distribution centers, warehouses, and manufacturing facilities which would further increase the traffic on these connecting corridors. However, as noted by the stakeholders group, it is expected that most of the truck trips will utilize I-4, and that trucks on SR 60 would primarily be limited to those with pick-ups and/or deliveries in the Brandon area.

3.7 Pedestrian and Bicycle Connectivity

As discussed in the Current Conditions section, there are several sections of the SR 60 Corridor where bicycle and pedestrian facilities do not exist. Sidewalks are missing from the north side of SR 60 near the intersection of Lithia-Pinecrest Road, where the Brandon Family Cemetery is located. FDOT is currently working on plans to install a sidewalk at the cemetery location and is seeking an easement from the property owner.

Sidewalks are also missing from the intersection of SR 60 and the Westfield Brandon Mall west to I-75. Further, the intersection of SR 60 with Brandon Town Center Drive lacks crosswalk facilities for three of the four of the intersection legs. This current configuration, combined with high traffic volumes and high number of severe injury crashes at this location, make for a very dangerous scenario for bicycle and pedestrians who need to traverse this area of the corridor.

Bicycle lanes are present on both of the eight lane segments of SR 60, but not in the approximately one-mile long segment between Kings Avenue and Bryan Road/Kingsway Road.

3.8 Adjacent Street Connectivity

Figure 4-1 (in the next section) shows the street network adjacent to the SR 60 Corridor. While some connectivity exists between these adjacent facilities, the lack of a grid network of parallel facilities to SR 60 is a problem. When parallel facilities are not available, drivers are forced to use SR 60 for local trips. It is important to create additional parallel facilities that provide roadway users with more travel options. Figure 4-1 also shows additional corridor connectivity options for roadway facilities and for connecting bicycle and pedestrian facilities. One example of increasing street connectivity is the new Gornto Lake Road Extension, connecting SR 60 with Town Center Boulevard. The four-lane roadway, which opened in September of 2013, provides additional access to the Westfield Brandon Mall. This may help alleviate some of the congestion, and improve safety, at the SR 60 / Brandon Town Center Drive intersection.
4.0 Corridor Opportunities

Throughout the study, corridor issues were identified and potential enhancement opportunities to address those issues were explored. Potential enhancements generally dealt with corridor safety, signalization, and connectivity. Viewed as a holistic set of recommendations, implementation of the potential projects would yield improved circulation throughout the Brandon area for motorists, transit riders, bicyclists, and pedestrians. Furthermore, these projects could facilitate better community cohesion and improved land use integration of the area. This section of the report provides an overview of the various opportunities identified, as well as additional details for some of the key projects.

4.1 Open House Workshop and Public Comments

Prior to finalizing the list of corridor enhancements, a public Open House workshop was held in late August. As noted earlier in the report, approximately 20 citizens attended the meeting and many provided comments and suggestions on the analysis completed at that time. MPO staff developed questionnaires, which asked attendees their thoughts on topics such as reduced speed limits, adding/connecting parallel roadways, and adding bicycle and pedestrian improvements. In addition, attendees were afforded an opportunity to view the issues and opportunities board and weigh in on the various projects using yellow (for positive) and blue (for negative) dots.

Results from the meeting were that people generally liked many of the concepts presented, including the concept of providing alternate routes for local traffic, enhancing accessibility in the area, and adjusting signal timings. A few of the ideas presented did get mixed reviews, with some people favoring the ideas strongly and others opposed. These included several of the proposed roadway extensions, proposed modifications to Lithia-Pinecrest Road and Bryan Road, and the potential of reducing speed limits on SR 60. Some specific comments received at the meeting included the following:

- Consider extension of Grand Regency Boulevard northward to connect with Williams Road / Broadway Center Boulevard
- Explore widening Parsons Avenue from SR 60 to Oakfield Drive for better access to the hospital
- Consider widening Lakewood Drive if extending Victoria Street, to better connect Victoria Street with SR 60
- Emphasize bicycle and pedestrian facilities along parallel and connecting roads, instead of SR 60, to link neighborhoods
- Consider designating Robertson Street as a parallel bicycle corridor instead of Oakfield Drive, as it is closer to SR 60
- Consider a tunnel for bicyclists and pedestrians on eastbound SR 60 at the I-75 on-ramps
- Explore pedestrian refuges in the median of SR 60
- Consider installing fencing in the SR 60 median around the Westfield Brandon Mall area to force pedestrians to use crosswalks.

In addition to holding a public open house workshop, the Hillsborough MPO website included a page dedicated to the study. The website included information on study scope, a PowerPoint used for the May 1, 2013 stakeholders group meeting and MPO committee meetings, and graphics depicting the corridor issues and enhancement ideas being studied. A contact phone number and email address were provided and some members of the public chose to voice their ideas and concerns this way.

As a result of comments received from the public at both the workshop and via email, a few changes were made to the list of potential corridor enhancements, shown on Figures 4-1 (a), 4-1 (b), and 4-1 (c). The extension of Grand Regency Boulevard northward, while not shown due to being off the map extents, was added and is mentioned later in this section of the report. The potential of building a tunnel for pedestrians and bicycles on eastbound SR 60 crossing the I-75 on-ramp instead of an at-grade crossing has been added. It is recommended that this concept be studied further and possibly implemented as part of FDOT’s planned future interchange modification project. One idea that was included initially but was removed based on public comment was the potential for a pedestrian overpass across I-75, connecting the Westfield Brandon Mall with the future Estuary development. One issue raised was that the bridge would likely be nearly 1000 feet long, leading to safety concerns. Other issues mentioned included the likely high cost of the project, and that few people would likely use it as it didn’t connect with other trails.

4.2 Potential Safety Enhancements

A review of the current corridor conditions and the corridor safety issues and problem areas reveal three major problems for this portion of SR 60: congestion (as shown by failing level of service standards and congested intersections); a lack of safety (demonstrated by a high number of crashes along the corridor and the number of crashes that result in severe injuries); and a lack of connectivity for both adjacent roadway facilities and bicycle and pedestrian facilities. To make the corridor function more efficiently, the following are opportunities that can be implemented:

Speed Limit Modifications

From Falkenburg Road to Providence Road and from Bryan Rd / Kingsway Road to Valrico Road, the speed limit on SR 60 is 50 mph. The section in the middle is 45 mph. Given the heavy traffic volumes and increasing urbanization of the Brandon area, it may be appropriate to reduce the speed limit to 45 mph through the entire corridor. Prior to making any changes, a speed study will need to be conducted and close coordination with FDOT will be necessary to ensure that state standards are met.
Narrowing Travel Lanes

Narrowing the travel lanes on SR 60 could be coupled with reducing speed limits as suggested above and should be considered in conjunction with resurfacing. Narrowing all travel lanes to 11 feet would allow for the installation of buffered bike lanes, increasing the separation between automobiles and cyclists. Based on site observations, many cyclists on the corridor use the sidewalks, which can be dangerous given the number of driveways and presence of turning vehicles. Buffered bike lanes may help cyclists feel safer using the roadway, would provide drivers with more comfort when passing cyclists, and would also facilitate wider right turn radii for trucks. All lane widths will still need to meet FDOT standards for SIS roadways. Table 4.1 details the existing and proposed SR 60 lane widths and the corresponding buffer width that can be achieved.

<table>
<thead>
<tr>
<th>SR 60 Segment</th>
<th>Existing Eastbound</th>
<th>Existing Westbound</th>
<th>Proposed Eastbound</th>
<th>Proposed Westbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-75 to Pauls Drive</td>
<td>3-12' + 1-11'</td>
<td>3-12' + 1-11'</td>
<td>4-11' + 3' buffer</td>
<td>4-11' + 3' buffer</td>
</tr>
<tr>
<td>Pauls Drive to west of Kings Ave</td>
<td>4-12'</td>
<td>2-11' + 2-12'</td>
<td>4-11' + 4' buffer</td>
<td>4-11' + 2' buffer</td>
</tr>
<tr>
<td>West of Kings Ave to Kings Ave</td>
<td>2-11' + 2-12'</td>
<td>2-11' + 2-12'</td>
<td>4-11' + 2' buffer</td>
<td>4-11' + 2' buffer</td>
</tr>
<tr>
<td>Kings Ave to Knights Ave</td>
<td>3-12'</td>
<td>4-12'</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Knights Ave to Moon Ave</td>
<td>1-11' + 2-12'</td>
<td>3-11'</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Moon Ave to Kingsway/Bryan</td>
<td>3-11'</td>
<td>3-11'</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Kingsway/Bryan to Valrico Rd</td>
<td>2-11' + 2-12'</td>
<td>2-11' + 2-12'</td>
<td>4-11' + 2' buffer</td>
<td>4-11' + 2' buffer</td>
</tr>
</tbody>
</table>

4.3 Potential Signal Enhancements

Several signal enhancement opportunities were identified throughout the study, including the addition of signals at several intersections, modifications to existing signals, and enhanced visibility of signals. These concepts are described in detail below.

Install New Traffic Signals

As traffic in the area increases, the addition of new traffic signals at key cross streets with SR 60 should be studied. Two potential locations are at Pauls Drive and Beverly Boulevard. Pauls Drive serves the Brandon Main Street (Oakfield Drive) area and connects with the Selmon Expressway via Brandon Parkway. Beverly Boulevard connects residential developments south of SR 60 with the Wal-Mart shopping center, and may be extended to connect with Seffner Valrico Road in the future as shown on Map 25 of Hillsborough County’s Comprehensive Plan Transportation Element. This extension would
provide important connectivity and reduce safety issues at the Mount Caramel Road / Valrico Road intersection. Signals at both locations would facilitate pedestrians crossing SR 60, and as shown on Figure 4-1, would provide consistent spacing of signals on the corridor. Furthermore, installing a signal at Beverly Boulevard and extending the road to connect to the north would also enhance freight access to and from Wal-Mart, alleviating the need for their delivery trucks to use Mt. Carmel Road. It is important to note that warrant studies would be needed at both locations, and that SIS spacing guidelines would not be met. As such, close coordination with FDOT will be necessary.

**Coordinated Signal Systems**

Corridors with higher signal density (multiple signals with less than 2640 feet between each signal) usually benefit from some sort of coordinated timing plans. Coordinated signal systems can range from simply operating signals without detection on a pre-timed plan, to operating actuated signals with time based coordination, to installing advanced detection systems and running an adaptive signal system.

Coordinated signal systems using pre-timed cycle lengths are often found in downtown areas where the grid roadway network necessitates coordination of both the main street and side streets. These systems provide a fixed amount of time for each movement at an intersection regardless of vehicular demand. Green signals are coordinated such that driver delay is minimized, and the time difference in green intervals between intersections is known as an offset. The signal cycle lengths and operational patterns can vary throughout the day based on a predetermined plan. This type of system does not have the ability to actively adapt to changing traffic conditions. With some care and proper maintenance, a coordinated signal timing plan can be implanted without extensive upgrades to existing equipment. This type of system works well when traffic patterns are predictable.

Coordination using actuated traffic signals works on similar principles. The main difference is that the green time allocated to the side street, and in some cases main street left turn movements, can be reduced based on the vehicular demand. Two types of systems can fall into this category, traffic responsive and time of day. In both cases, the intersection will continue to operate at a set cycle length but the time saved by shortening the minor movements at the intersection is added back to the main street through movements. As with pre-timed signals, the offsets between intersections must be programmed and the cycle lengths and operational patterns can vary by time of day based on predetermined intervals or in the case of traffic responsive, predetermined roadway parameters. A responsive system, is more complex than a time of day system, and can change to accommodate some degree of change in the traffic flow, but is limited to a predefined set of options. The SR 60 corridor already employs two separate coordinated systems; however, the addition of new traffic signals would require some system modification. In fact, more even spacing between signals may make it possible to combine the two systems into one system from west of I-75 through Valrico Road.

**Adaptive Signal Systems**

Adaptive Control systems are the most advanced, complex, and costly control systems available. By using detection to provide information to a central computer, new signal timing data can be developed for each
signal cycle. The costs associated with implementing an adaptive system are significantly higher than a traditional signal system, primarily due to the amount of additional infrastructure required, including traffic sensors, network and communications servers, and system software. These systems can be calibrated continually, but that often requires more staff time as well as additional training. Traffic adaptive systems can also adjust to unexpected events, such as crashes. Data from the FHWA shows that adaptive signal control systems can reduce travel time by more than 10% and crashes by up to 15%. A FDOT study is necessary to support coordination using activated traffic signals.

**Left Turn Signal Head Modifications**

An effective way to help increase traffic flow along an arterial is to allow protected and permitted lefts. This allows left turns to occur under their own protected signal phase as well as when acceptable gaps occur in the opposing traffic stream. Traditionally this movement was controlled by a five-section or dog house signal head similar to the one shown here on the right. The indications and associated driver actions with this signal are as follows:

- Circular Red Indication (R) – All movements viewing this indication stop
- Yellow Arrow – Left turn prepare to stop
- Circular Yellow Indication – Through movement and left turn movement prepare to stop
- Green Arrow – Left turns allowed with no need to yield to oncoming traffic
- Circular Green Indication – Through traffic allowed, left turns also allowed but must first yield to oncoming traffic and pedestrians

More recently there has been a movement to incorporate the four-section protected-permissive flashing yellow arrow signal head. This signal head has shown in studies to be more intuitive for motorists. Replacing the circular green indication with a flashing yellow arrow, drivers were less apt to assume they had the right-of-way during the permitted left-turn interval. In addition it minimized the potential for the “Yellow Trap” that occurs when a protected/permissive left turn is allowed using lead/lag phasing. The image at the right shows the four-section protected-permissive flashing yellow arrow signal head. The indications and associated driver actions with this are:

- Solid Red Arrow – No turns are allowed
- Solid Yellow Arrow – Left turn prepare to stop
- Flashing Yellow – Left turns permitted, but first must yield to oncoming traffic and pedestrians
- Solid Green Arrow – Left turns allowed with no need to yield to oncoming traffic

FDOT now permits flashing yellow left turn signals, and has begun installing them throughout the state. Consideration should be given when replacing a five-section head with a four-section protected-permissive flashing yellow arrow signal head. In order to provide the appropriate number of indicators to motorists, replacing a five-section head often requires the maintaining agency to install a three-section...
head with circular indicators and the four-section protected-permissive flashing yellow arrow signal head. This may require analysis of the signal structure in some locations to ensure it is capable of supporting the additional load.

**Signal Backplates**

Backplates are added to a traffic signal indication in order to improve the visibility of the illuminated face of the signal by introducing a controlled-contrast background. The improved visibility of a signal head with a backplate is then made more conspicuous by framing the backplate with a retro-reflective border. Taken together, a signal head equipped with a backplate with retro-reflective border is made more visible and conspicuous in both daytime and nighttime conditions, which is intended to reduce unintentional red-light running crashes.

**Background**

A project initiated in 1998 by the Insurance Corporation of British Columbia and the Canadian National Committee on Uniform Traffic Control investigated the effectiveness of applying retro-reflective tape around the borders of traffic signal backplates. A small number of signalized intersections were treated and followed up with a simple before/after study, which concluded that the enhancement was effective at reducing crashes. A subsequent statistical study was performed with additional locations tested.

Since their initial introduction in Canada, transportation departments in several U.S. states have adopted practices and policies concerning this countermeasure. Additionally, the FHWA has encouraged this treatment as a human factors enhancement of traffic signal visibility and conspicuity for older and colorblind drivers. Adding retro-reflective borders is also advantageous during periods of power outages when the signals would otherwise be dark. The retro-reflective sheeting continues to provide a visible cue for travelers to take note of the dark signal and adjust their actions accordingly. Per the study included in the Crash Modification Factor Clearinghouse, the use of backplates with retro-reflective borders may result in a 15 percent reduction in all crashes at urban, signalized intersections.

**Guidance**

Backplates with retro-reflective borders should be considered as part of efforts to systemically improve safety performance at signalized intersections. Adding a retro-reflective border to an existing signal backplate can be a very low-cost safety treatment, as the materials are simple strips of retro-reflective sheeting. For existing traffic signals that lack even standard backplates, the addition of backplates with a retro-reflective border can often be accommodated on existing mast arm and span wire assemblies, but the structural capacity of the supports must be properly evaluated. The most effective means of implementing this proven safety countermeasure is to adopt it as a standard treatment for signalized
intersections across a jurisdiction so that it is consistently included with all new construction and modernization projects, as well as being a worthy retrofit project for existing signals at intersections with red-light running crash histories. It is important to note that the Manual on Uniform Traffic Control Devices (MUTCD) specifically allows this treatment as an option that is discussed in Part 4. In terms of color and size, implementation of backplates and retro-reflective borders must be consistent with the latest edition of the MUTCD. It should be noted that recent changes to FDOT policies now require retro-reflective backplates on all newly installed signals.

**Signal Enforcement Lights**

Red-Signal Enforcement Lights enhance safety at signalized intersections by improving red-light compliance, resulting in a reduction of red-light running violations. They are auxiliary lights connected to a traffic signal to help law enforcement officers more efficiently and safely issue citations for drivers who violate the red lights at a traffic signal. These devices go by several names including red light indicator lights, red light indicators, signal indicator lights, enforcement lights, and tattletale lights.

The Red-Signal Enforcement Light activates simultaneously with the red signal phase, providing an enforcement officer located downstream from an intersection with a visible indication of the upstream red signal so they can determine when a vehicle has violated a red light. Relatively small, low-cost lights are mounted on the top, bottom, or rear of a traffic signal and are wired into the signal controller for accurate red-signal indication. Red-Signal Enforcement Lights should not be colored red, yellow, or green, in order to avoid confusion with traffic signal control indications. A blue LED indicator is used in many Florida communities, with white signals also being used. While these are meant for signal enforcement, they can help with visibility for drivers who have trouble seeing red or green lights (red-green deficiency) in bright sunlight.

Red-Signal Enforcement Lights can provide safety, efficiency and/or cost benefits, compared to other enforcement methods. These benefits include:

- Allowing red-light running monitoring from any leg of an intersection, particularly downstream from the intersection;
- Eliminating the need for unsafe pursuit by single upstream officer across the intersection during the red phase;
- Allowing one patrol officer instead of two (downstream) to enforce a traffic-control signal, thus increasing enforcement resource efficiency and versatility;
• Having lower installation and maintenance costs than automated enforcement systems, potentially allowing more numerous installations.

Here in Florida, the FDOT conducted a study in 2008 that determined, with aggressive enforcement, the red-signal enforcement lights reduced red light violations by 25% ("A Study of the Effectiveness of White Enforcement Lights," FDOT, 2008). Similar results were reported by the city of Clearwater, Florida. Considerations that should be given to the implementation of these devices include:

• Lights are only effective when coupled with enforcement by police.
• Positioning is critical. The lights need to be easily visible to law enforcement while being minimally distractive to other motorists.
• Public awareness campaigns in conjunction with the lights may also increase their effectiveness. This could include signs reminding of red light violation fines.

Dynamic Message Signs

In addition to signalization improvements on SR 60, enhancements to better inform drivers of congestion, crashes, and other delays should also be considered. Dynamic Message Signs (DMS), are commonly found on interstate highways, but FDOT has recently expanded its SunGuide system to include arterial roadways. As shown on the image, arterial DMS are usually smaller than the ones on interstate highways, as average speeds are not as high. FDOT is working on plans to install DMS on SR 60 near the I-75 interchange. Coordination with Hillsborough County could lead to expanding DMS throughout the corridor, along with installing cameras to monitor traffic flow and upgrading signals.

4.4 Connectivity Enhancements

The proposed connectivity enhancements shown on Figure 4-1 include roadway extensions, additional sidewalks and pedestrian crossings, designated bicycle corridors, and reconfiguration of two existing roadways. The various projects are outlined below.

Extend existing roads

Figure 4-1 depicts several potential roadway extension projects. The purpose of these is to better connect neighborhoods and provide alternatives to SR 60 for local trips. Additional roadway connections are also consistent with Goal
1 of the Brandon Community Plan. The first of these connectivity opportunities, the Gornto Lake Road Extension, has been under construction for the past year and recently opened to traffic. As discussed earlier in the report, the four-lane divided roadway provides additional access to the Westfield Brandon Mall and the Selmon Expressway via Brandon Parkway.

Additional roadway extensions envisioned in the study include:

- Extend Victoria Street from Hilltop Road to Lakewood Drive
- Extend Oakfield Drive from Parsons Avenue to Westbrook Avenue at Lithia-Pinecrest Road
  - Realign Westbrook Avenue at Lithia-Pinecrest Road for enhanced access to Bryan Road
- Extend East Robertson Street from Lithia-Pinecrest Road to Wilbur Street at Montclair Avenue
  - Improve Wilbur Street from Montclair Avenue to Bryan Road
- Extend Beverly Boulevard across SR 60 and over CSX tracks to connect with Seffner Valrico Road
  - This is included as a future roadway in the Hillsborough County Comprehensive Plan on Map 25.
- Connect Dew Bloom Road at Beverly Boulevard with eastern portion of Dew Bloom Road
- Provide connection behind Home Depot from Wal-Mart to Mt. Carmel Road
- Connect western portion of Washington Road with eastern portion across CSX tracks

As noted earlier, members of the public also suggested that Grand Regency Boulevard should be extended northward to connect with Williams Road / Broadway Center Boulevard. This project is included in the final list, but is not shown on Figure 4-1 as it is beyond the extent of the map.

Provide additional pedestrian connections

While much of the SR 60 corridor has sidewalks and all signalized intersections have at least one crosswalk, additional enhancements for pedestrians can be made. One of the biggest challenges for pedestrians in the area is finding safe places to cross SR 60, which by law can only occur at designated crosswalks. The possible addition of traffic signals at Pauls Drive and Beverly Boulevard will shorten the distance between signals, which may reduce the number of pedestrians that cross SR 60 illegally. These intersections should include pedestrian signals and crosswalks on all four approaches. In addition, installing a traffic signal at Pauls Drive would enhance pedestrian access to Brandon High School via sidewalks on the north side of SR 60 and Limona Road.

Furthermore, crosswalks should be installed on the western side of the SR 60 intersections with Providence Road and Lithia-Pinecrest Road. The former should be included with a project to add sidewalks to the western side of Providence Road, and the latter should occur in conjunction with the FDOT project to add a sidewalk on the north side of SR 60 adjacent to the Brandon Family Cemetery.

Bicycle/Pedestrian Enhancements at I-75

The projects detailed above would be relatively low cost improvements. However, a major needed project is the addition of pedestrian facilities on SR 60 west of Town Center Drive and through the interchange with I-75. This portion of the corridor is designed for high travel speeds with several free-flow on-ramps to the interstate, and currently does not have sidewalks or bike lanes. Three hotels have
recently been built west of the interstate off Falkenburg Road, and additional development is expected with the Estuary project.

In order to safely facilitate pedestrian and bicycle circulation through the interchange area, it is recommended that a two-way multi-use path trail be constructed on the south side of SR 60 between Falkenburg Road and Town Center Drive. As shown on Figure 4-2, this trail could be constructed as part of the realignment of the eastbound on-ramp to northbound I-75 being planned by FDOT. The trail would include at-grade crossings of the combined on-ramp to I-75 as well as the northbound off-ramp from I-75. There is some concern regarding the crossing of the on-ramps, as they are free-flow and vehicles may be traveling at relatively high speeds. As such, a tunnel should be considered during design.

In order to construct the trail, the eastbound right turn lane from SR 60 to Town Center Boulevard will need to be adjusted. In addition, crosswalks should be added to the eastbound, northbound, and southbound sides of the SR 60 intersection with Town Center Drive / Grand Regency Boulevard. This will facilitate enhanced pedestrian movements between the various shopping centers in the area and allow for cyclists to move between the bike lanes east of the intersection and the multi-use path. As shown on Figure 4-2, the sidewalk on the northeast corner will need to be adjusted slightly.

Designate alternate bike corridors

With the addition of the multi-use trail described above, the only area of the SR 60 corridor without bicycle facilities will be the section between Kings Avenue and Bryan Road / Kingsway Road. As noted in Section 3, the roadway corridor in this area is physically constrained, and has only six travel lanes. Furthermore, it would be difficult to widen the sidewalks significantly to accommodate bicycles and pedestrians. As such, it is recommended that alternate bike corridors be designated both north and south of SR 60 in this vicinity. As shown on Figure 4-1, these corridors could be Sadie Street north of SR 60 and Oakfield Drive south of SR 60. Another option south of SR 60 is Robertson Street / Wilbur Street.

Sadie Street extends the full length between Kings Avenue and Kingsway Road, while Oakfield Drive currently does not go east of Parsons Avenue. Sadie Street is a neighborhood street with low traffic volumes and low speeds, so it could easily accommodate bicyclists. Oakfield Drive is more heavily traveled so shared-use markings, also known as sharrows, would likely be needed. Extending Oakfield Drive east to align with Westbrook Avenue, as discussed above, would allow for the alternate bike corridor to extend east to Bryan Road. Furthermore, bicycle facilities would need to be provided on Kings Avenue, Bryan Road, and Kingsway Road to lead bicyclists to/from SR 60 and the alternate corridors. On Kings Avenue and Kingsway Road, this may be best accomplished with sharrows; however, modifications to Bryan Road discussed below may afford the opportunity to install bike lanes.
SR 60 at I-75
Shared-Use Path
Recommendation

Brandon Boulevard
Compatibility Study

Figure 4-2
Modify Lithia-Pinecrest Road and Bryan Road

One of the major bottlenecks in the Brandon area is the Lithia-Pinecrest Road corridor. The intersection with SR 60 is physically constrained, which limits the number of and length of turn lanes that can be provided. Furthermore, projected future traffic volumes on Lithia-Pinecrest suggest the need for the roadway to be widened to four lanes. The Hillsborough County Comprehensive Corridor Preservation Plan map shows four lanes on the corridor, and the 2035 Hillsborough MPO Cost Affordable Plan shows four lanes south of Bloomingdale Avenue. Hillsborough County recently conducted a Project Development and Environment (PD&E) study for the corridor, which also showed the need for four lanes. During the PD&E process, opposition to widening Lithia-Pinecrest Road between Lumsden Road and Bloomingdale Avenue was expressed, and the idea has been shelved for now.

Part of the reason there are traffic issues on Lithia-Pinecrest Road is due to its diagonal path, which leads to atypical intersections with cross streets. In order to address both capacity and safety issues on the corridor in the SR 60 vicinity, a concept was developed that converts Lithia-Pinecrest Road and Bryan Road into a one-way pair. As depicted on Figure 4-3, the roads would be reconfigured from SR 60 to the intersection of Lithia Pinecrest Road with Bryan Road. Lithia-Pinecrest Road would have two lanes southbound and Bryan Road would have two lanes northbound. This configuration would facilitate fewer movements where these roads intersect with SR 60, which would allow for turn lane adjustments and better vehicle progression through the corridor.

In addition, there would be several connecting streets between Lithia-Pinecrest Road and Bryan Road to afford circulation. These include the extensions of Wilbur Street and Westbrook Avenue listed above. Finally, the intersection of Lithia-Pinecrest Road and Bryan Road would be replaced by a roundabout, which would calm traffic but still allow for continuous flow. The green space in the middle of the roundabout could also be used for community beautification.

4.5 Other Enhancements

Finally, the SR 60 corridor could be enhanced aesthetically. Ideas include developing a cohesive signage and wayfinding scheme for the corridor, providing additional landscaping, and implementing the standards for monument signs adjacent to the roadway.

In addition to improving the appearance of the corridor, these changes can serve to slow traffic down and enhance the experience for all users of the roadway. Many of these ideas complement strategies identified in the Brandon Community Plan and the State Road 60 (Brandon Boulevard) Overlay District, both of which have been adopted into the Hillsborough County Comprehensive Plan. The only one not covered by either of these plans is the concept of a unified wayfinding system. As such, more information on how a wayfinding program could be implemented is discussed below.

Unified Wayfinding System

Wayfinding is what the word itself suggests — a means of finding one’s way. Wayfinding is often associated with the branding of a particular district or area in a city. Wayfinding has most often come to be associated with a coordinated signage system to help people navigate in and through an area. While
Figure 4-3
there are numerous directional signs along SR 60, there is not a unified system that conveys locational information, but also a sense of a cohesive, connected place. One way that a wayfinding system does this is by offering a consistent look for signs, be it shape, style, color, etc. This conveys both written information as well as an unwritten message that you’re in a specific area or district.

One possibility for the Brandon area is to develop one unified wayfinding scheme, but then identify distinct districts within the area. Signs in each district might have similar styles, but with different colors. An issue that will need to be considered is that wayfinding systems are often designed for pedestrian-oriented districts, like downtowns, and the SR 60 corridor is primarily automobile-oriented. This will necessitate a design that addresses the differences in scale as well as travel speeds. Sign types could include district identity / gateway signs as well as directional signs. The signage scheme could also be carried over to vehicular regulatory signs (such as stop signs, yield signs, etc.). All wayfinding signs will need to be consistent with the Manual of Uniform Traffic Control Devices (MUTCD), local and state standards, and those on SR 60 will likely need FDOT approval.

4.6 Implementation

The enhancement projects envisioned in this report are just concepts at this time. More detailed analyses, including environmental studies, design studies, and cost estimating will be necessary before any of the projects can be implemented. Furthermore, all projects will need to meet FDOT and/or local government standards. Some of the projects may also need to be included in the local comprehensive and transportation plans. The Hillsborough County City-County Planning Commission and the Hillsborough MPO are currently updating these plans, extending them out to the year 2040. Finally, additional community and agency engagement will also be necessary. Some of this will occur as part of the plan updates, but additional outreach should also be included as part of the more detailed analyses.