



9

Description of Short List of Alternatives

9.1 Introduction

Each of the Short List Alternatives was further developed to include the following components which are described in this chapter:

- Conceptual Engineering
- Development of Service (Operating) Plans
- Demand Forecasting (including Revenue)
- Mobility Assessment (traffic impacts, connectivity to SunRail, efficient use of capacity, reduction in VMT)
- Capital Cost Estimation
- Operating Cost Estimation
- Assessment of Consistency with Adopted Local and Regional Plans
- Assessment of Potential Environmental Impacts
- Implementation Timeframe

As a result of the development of the service plans, it was determined that the zone express stopping pattern would result in the most efficient and effective provision of BRT service. Accordingly, the Short List Alternatives that included the “skip stop” stopping pattern were eliminated from further consideration. This development resulted in the following revised, renamed and consolidated Short List Alternatives:

- **No Build Alternative:** Make no improvements beyond those already committed;
- **Enhanced Bus Alternative:** Improve the existing bus system with transit signal priority, queue jumps and service modifications but make no additional capital investments;
- **Alternative 1:** BRT service and infrastructure with transit signal priority and queue jumps;
- **Alternative 2:** BRT service and infrastructure with transit signal priority, queue jumps and dedicated bus lanes for part of the US 192 alignment; and
- **Alternative 3:** BRT service and infrastructure with transit signal priority, queue jumps and dedicated bus lanes for the majority of the US 192 alignment.

Figures 9-1 through 9-5 show the five Short List Alternatives.



9.2 Conceptual Engineering

Conceptual engineering for Short List alternatives was completed for the stations and median busway locations. The engineering concepts were developed using CAD and overlaid on an aerial base at 1" = 80' scale.

Individual station layouts were developed for the curbside BRT stations using FDOT roadway design standards from the Plans Preparation Manual and the Guide for the Planning and Design of Transit Facilities. Median busway components were designed consistent with the FDOT Plans Preparation Manual. A design speed of 50 miles per hour was used for the median busway alignment.

Typical concept layouts for curbside stations, queue jumps and the median busway are shown in **Figures 9-6 and 9-7**. The complete plan set is included in Appendix C.

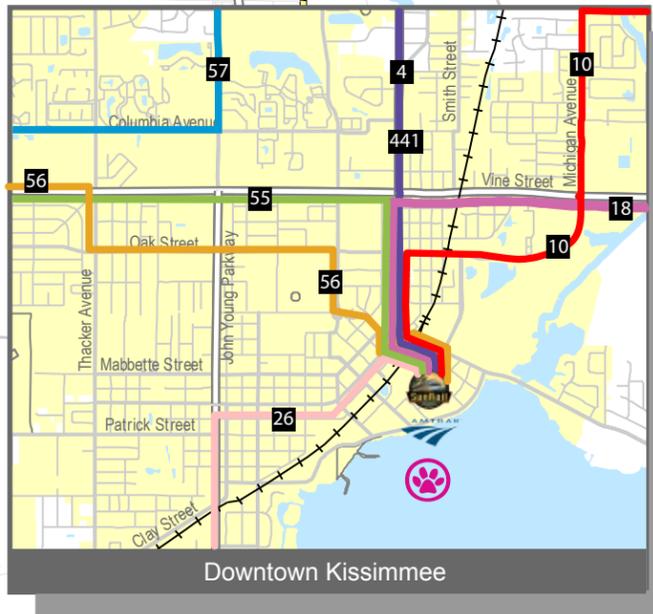
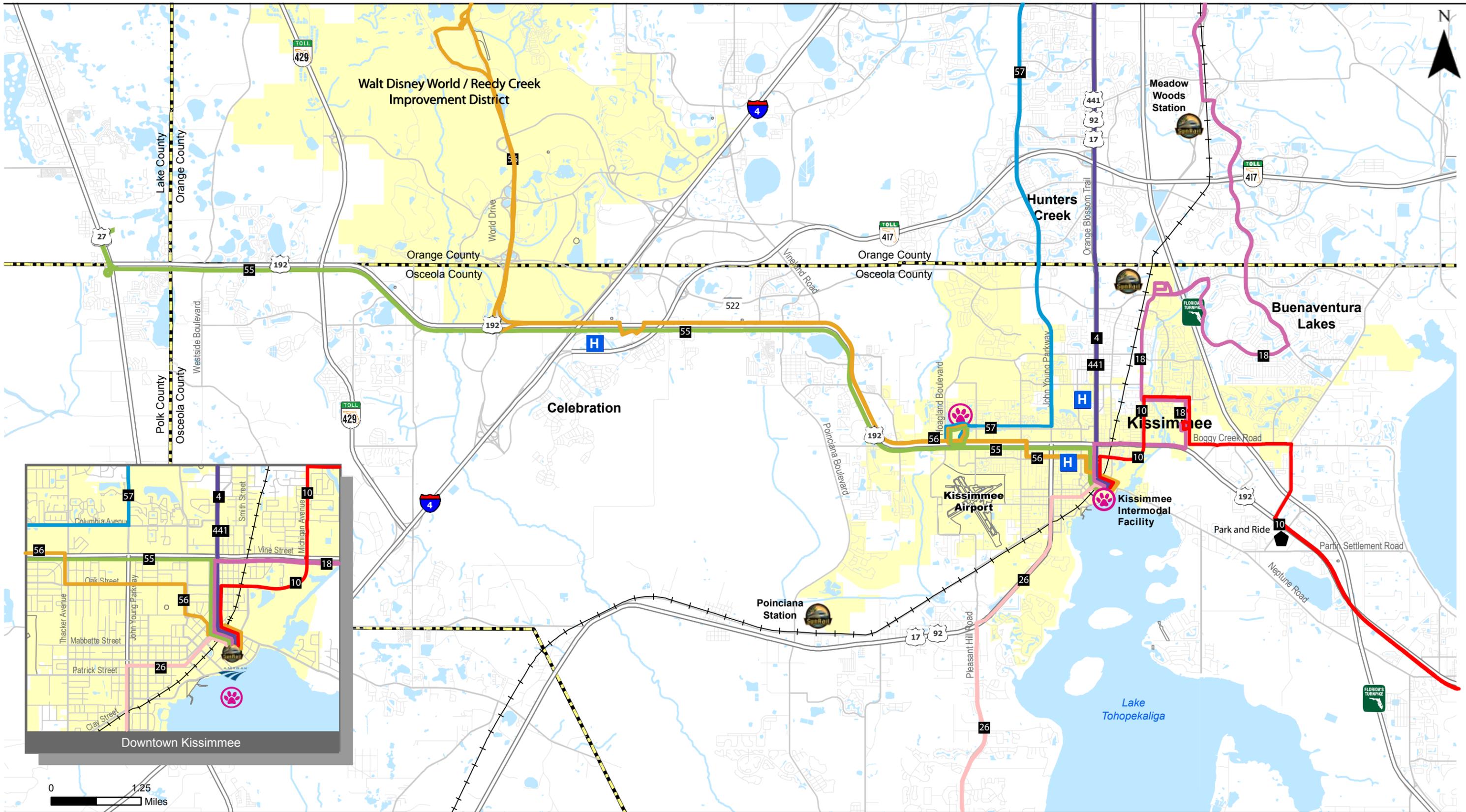
No Build Alternative

The No Build Alternative (Figure 9-1) represents the transportation conditions that would exist in the analysis year (2030). No changes to the infrastructure in the study area, other than those proposed by other projects and committed for implementation, will occur. (These projects include the six-lane widening of US 192 between Lake County and SR 429; Phase 2 of SunRail; and the rerouting of LYNX routes from Osceola Square to Kissimmee Intermodal Facility.) No conceptual engineering was required for the No Build Alternative.

Enhanced Bus Alternative

The Enhanced Bus Alternative would create improved bus service that would operate from Four Corners to the Kissimmee Intermodal Facility (KIF) and from Walt Disney World (WDW) to the Osceola Parkway SunRail Station (OPSR) – See Figure 9-2. The Enhanced Bus Alternative stops would be located adjacent to the curb travel lanes. The Enhanced Bus stops were located in the vicinity of high ridership Link 55 and Link 56 bus stops. Enhanced Bus stops would include only existing LYNX bus stop infrastructure and would be located at the following 18 locations:

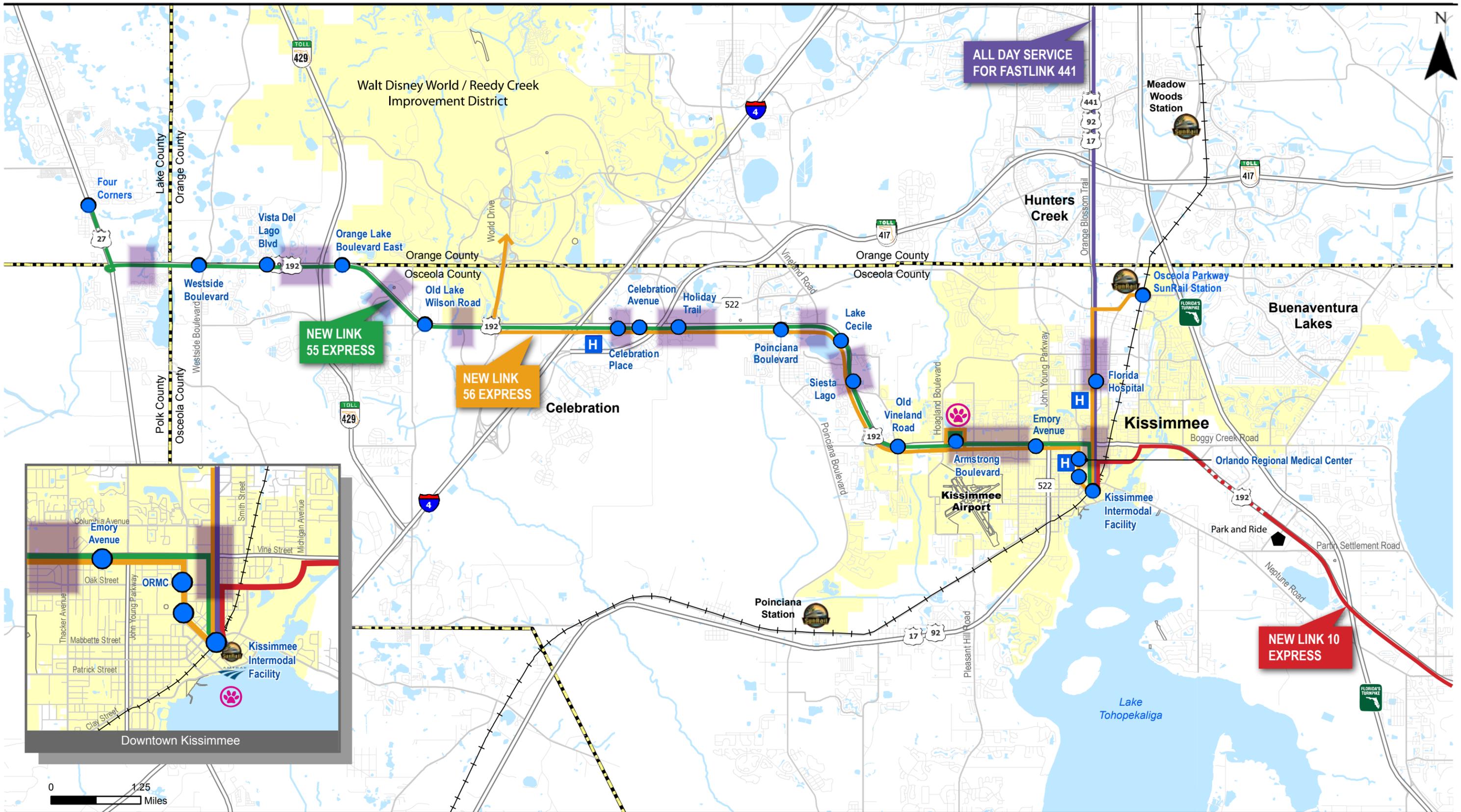
- Four Corners (Cagan Crossings Boulevard at the Wal-Mart)
- US 192 and West Side Boulevard
- US 192 and Orange Lake Boulevard East
- US 192 and Old Lake Wilson Road
- Walt Disney World
- US 192 and Celebration Place
- US 192 and Celebration Avenue
- US 192 and Holiday Trail
- US 192 and Poinciana Boulevard
- US 192 and Lake Cecile
- US 192 and Siesta Lago Drive
- US 192 and Old Vineland Road
- US 192 and Armstrong Boulevard
- US 192 and Emory Avenue



US 192 Alternatives Analysis

No Build Alternative

Figure 9-1



All routes are in addition to those for the No Build Alternative.

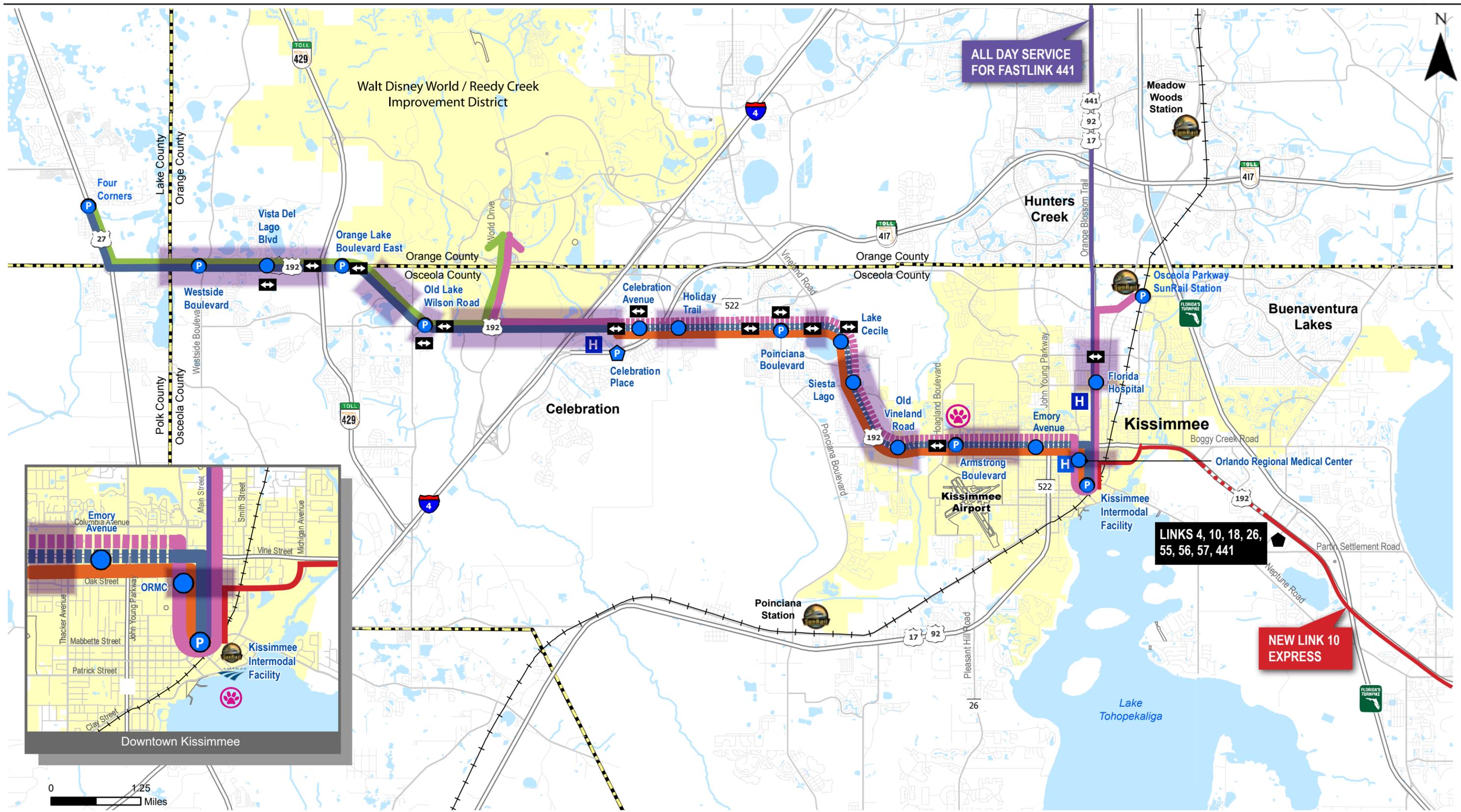
- LINK 10 Express
- LINK 56 Express
- LINK 55 Express
- FASTLINK 441
- Proposed Express Bus Stops
- Nonstop Segment
- SunRail
- Transit Signal Priority Areas
- Existing Park and Ride



US 192 Alternatives Analysis

Enhanced Bus Alternative

Figure 9-2



- BRT Stations
- LINK 10 Express
- FASTLINK 441
- SunRail
- ↔ Queue Jump
- Nonstop Segment
- P Existing Park and Ride
- P Station with Parking Available
- P Station with Park and Ride Facility
- Transit Signal Priority Area
- Stopping pattern is either zone express or skip stop through dashed area
- BRT Route A
- BRT Route B
- BRT Route C
- BRT Route D (only included with zone express)

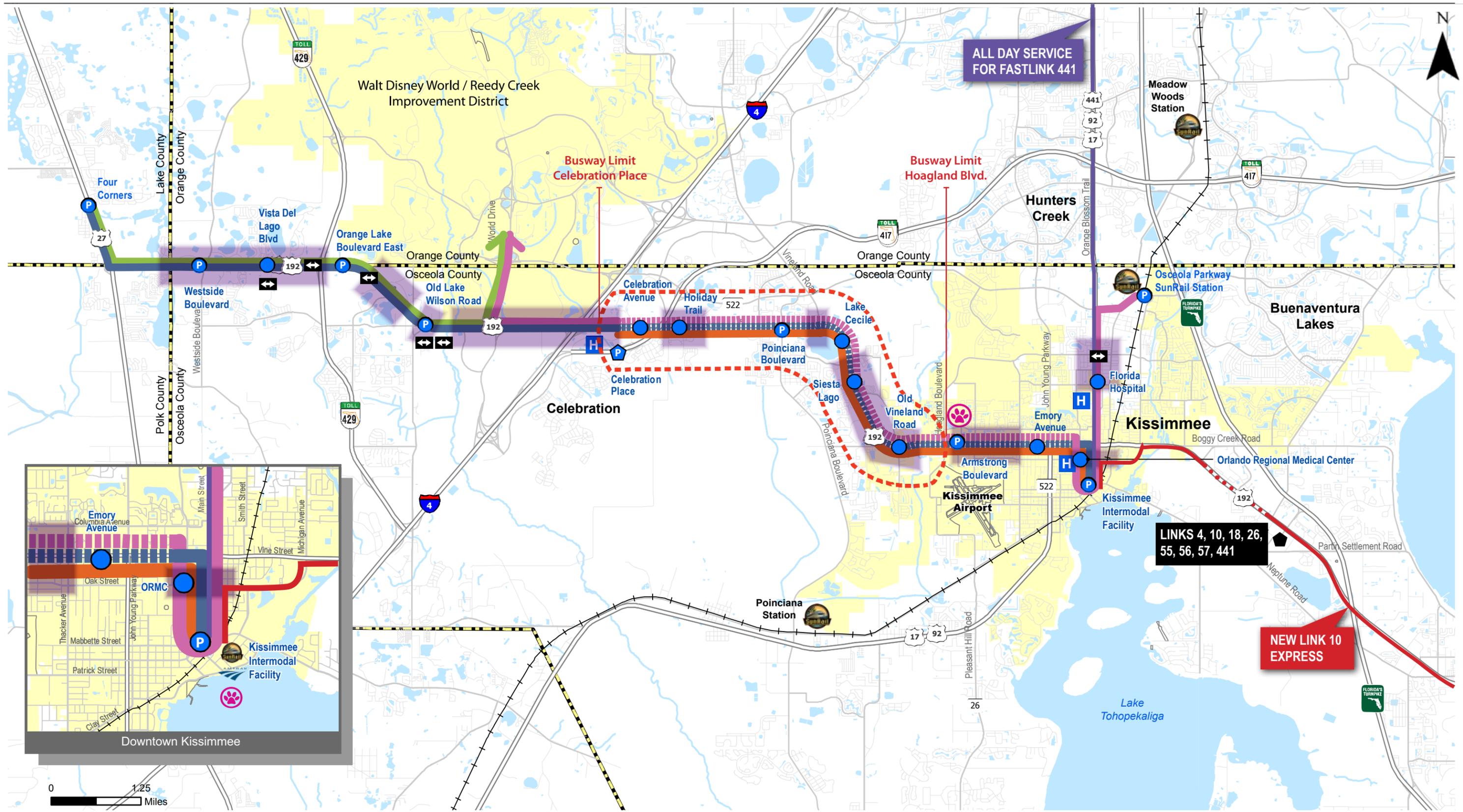


US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Build Alternative 1

Figure 9-3



ALL DAY SERVICE FOR FASTLINK 441

Busway Limit Hoagland Blvd.

LINKS 4, 10, 18, 26, 55, 56, 57, 441

NEW LINK 10 EXPRESS



US 192 Alternatives Analysis

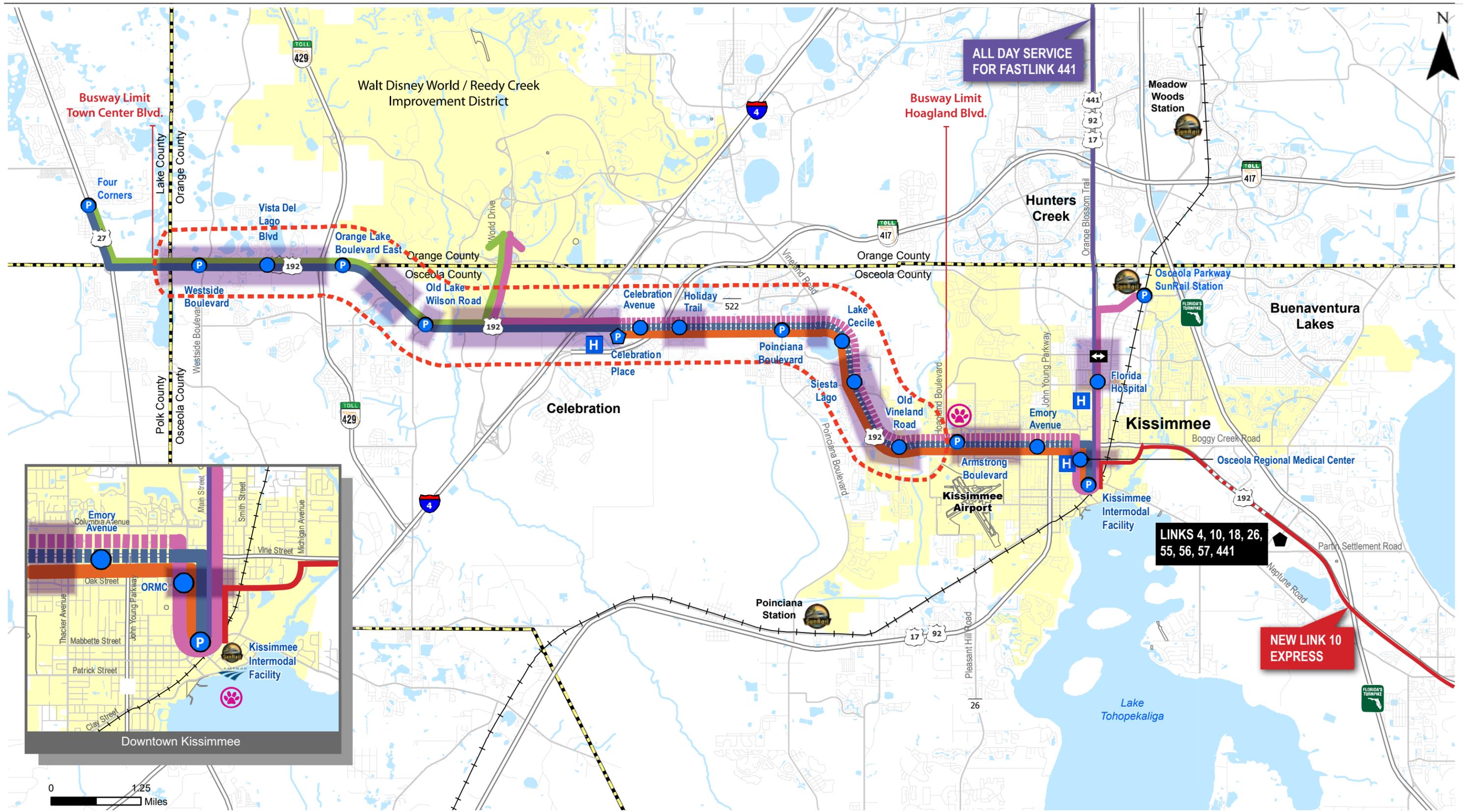
Bus Rapid Transit (BRT)

- BRT Stations
- LINK 10 Express
- FASTLINK 441
- SunRail
- ↔ Queue Jump
- Nonstop Segment
- P Existing Park and Ride
- P Station with Parking Available
- P Station with Park and Ride Facility
- Transit Signal Priority Area
- Stopping pattern is either zone express or skip stop through dashed area
- BRT Route A
- BRT Route B
- BRT Route C
- BRT Route D (only included with zone express)

 Dedicated Busway

Build Alternative 2

Figure 9-4



- BRT Stations
- LINK 10 Express
- FASTLINK 441
- SunRail
- Queue Jump
- Nonstop Segment
- Existing Park and Ride
- P Station with Parking Available
- P Station with Park and Ride Facility
- Transit Signal Priority Area
- ▨ Zone Express Service Area
- BRT Route A
- BRT Route B
- BRT Route C
- BRT Route D



US 192 Alternatives Analysis

Bus Rapid Transit (BRT)

Build Alternative 3

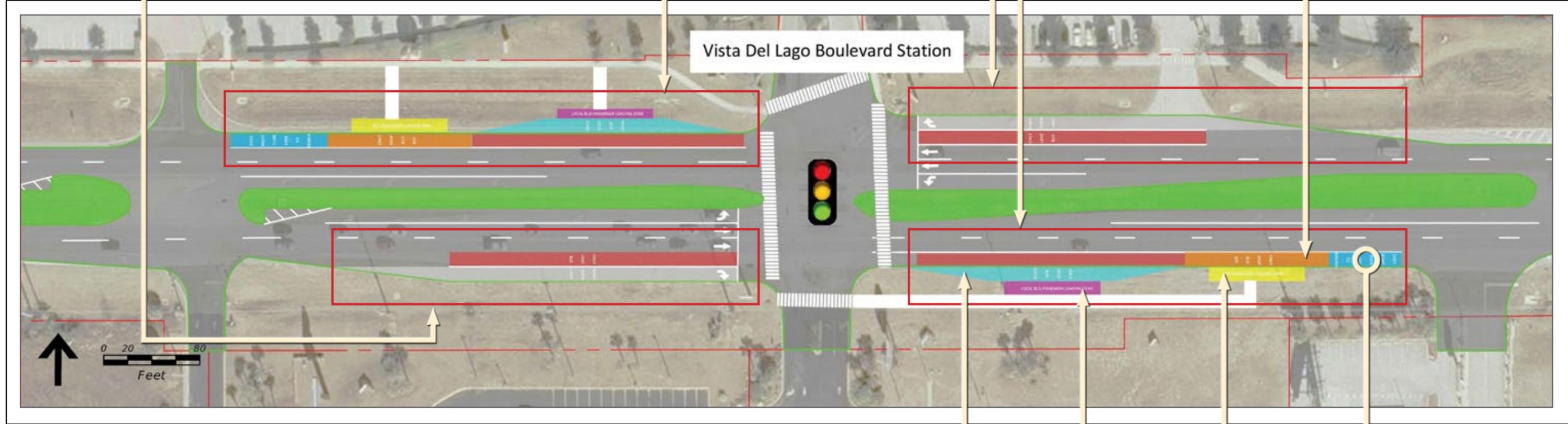
Figure 9-5

Dedicated Busway

At a "queue jump" before the signal, buses and BRT vehicles enter into the **bus only lane**. Right turners enter the right turn lane and other vehicles stay in the through lanes.

On the far end of the signal, buses and BRT vehicles enter another **bus only lane**. Local buses pull into **bus bays** to make stops. BRT vehicles access their stations at the **curb next to the BRT station**.

BRT vehicles stop here to pick up/drop off passengers.



Local buses pull into bus pull outs to pick up/drop off passengers, while allowing BRT vehicles to pass them to access the BRT Station.

Local Bus Stop

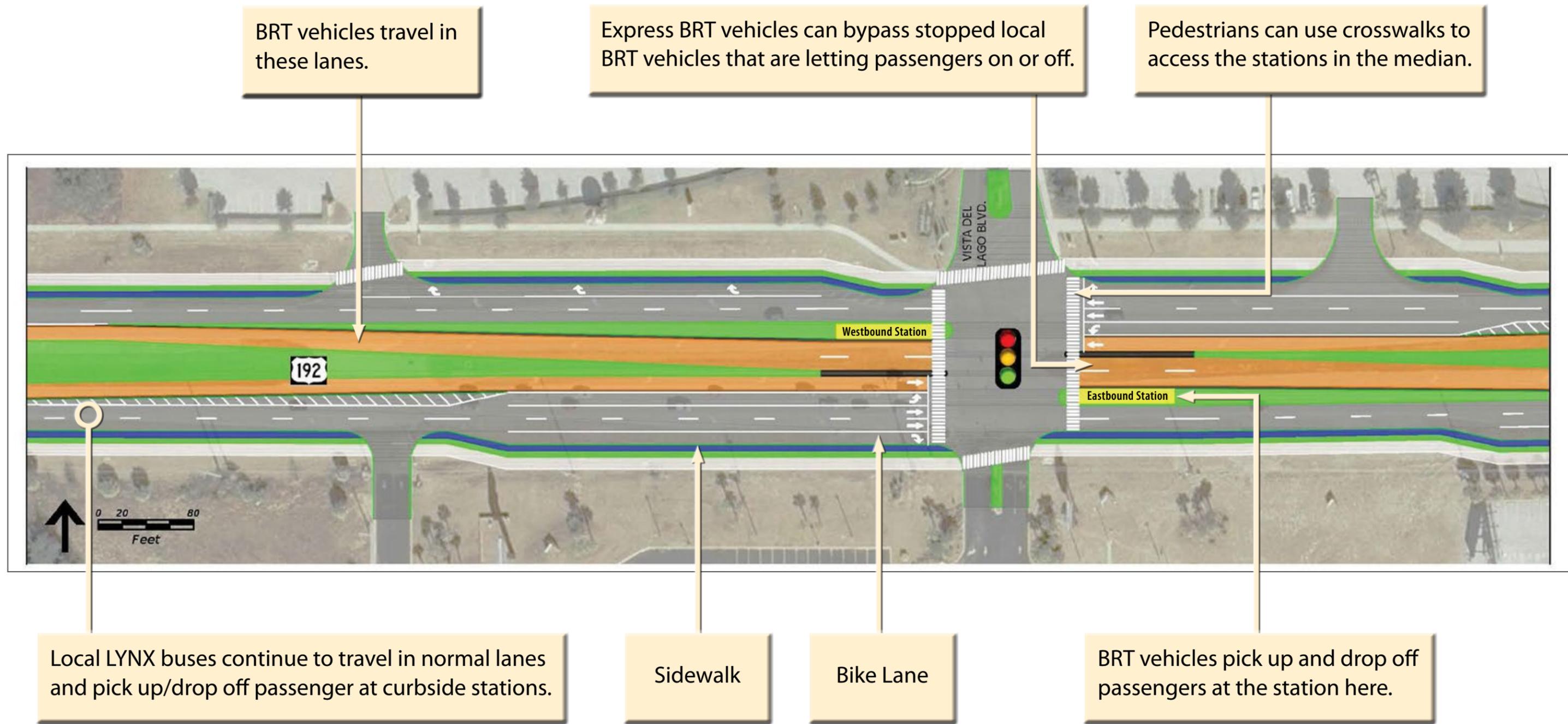
BRT Station

After exiting the station, buses and BRT vehicles re-enter through traffic transitioning back in the right lane.



- BRT Loading Zone
- BRT Station
- Landscaping
- Local Bus Loading Zone
- Local Bus Station
- Sidewalk
- General Use Lanes
- Queue Jump Lane
- ROW/Centerline







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- Kissimmee Intermodal Facility
- Osceola County Regional Medical Center
- Florida Hospital
- Osceola Parkway SunRail Station

Local buses would stop in these locations as well as at all other existing bus stop locations in the study area. No improvements would be made at those stops as part of this alternative other than those regularly programmed by LYNX.

The Enhanced Bus Alternative would also include Transit Signal Priority (TSP). Transit Signal Priority (TSP) is proposed to allow buses to receive extended green time when approaching an intersection. TSP was located at intersections where the bus would travel straight through the intersection (no left or right turns) and where the additional green time would not create additional failing movements on side streets. Based on this evaluation, the Enhanced Bus Alternative includes TSP at the following 21 intersections:

- US 192 and Town Center Boulevard
- US 192 and Orange Lake Boulevard W
- US 192 and SR 429 Westbound Ramps
- US 192 and SR 429 Eastbound Ramps
- US 192 and Formosa Gardens Blvd
- US 192 and Griffin Road
- US 192 and Arabian Nights Blvd
- US 192 and International Drive
- US 192 and Holiday Trail
- US 192 and Seralago Blvd
- US 192 and SR 535
- US 192 and Seven Dwarfs Lane
- US 192 and Siesta Lago Drive
- US 192 and Armstrong Blvd
- US 192 and Dyer Avenue
- US 192 and Thacker Avenue
- US 192 and Main Street
- US 441 and Carroll Street
- US 441 and Donegan Avenue
- Main Street and Oak Street

At these locations, five seconds of green time would be added to the end of the through phase along US 192. This additional green time would occur only when activated by a bus approaching the intersection near the end of the green phase.

Since the infrastructure improvements for the TSP are limited to signal equipment upgrades, no conceptual engineering layouts were completed for the Enhanced Bus Alternative. The signal equipment upgrade needs and associated costs are described as part of the capital cost summary in Section 9-5 and Appendix G.



Bus Rapid Transit Alternatives

The BRT alternatives were initially developed using information that was available on existing and future traffic congestion, land uses, and environmental constraints. The conceptual engineering of the BRT alternatives began with the definition of the following general features:

Station Locations

The BRT Alternative stations would be either located in the median (for dedicated busway alternatives) or adjacent to the curb travel lane (in non-dedicated busway sections). BRT stations were initially located in the vicinity of high ridership Link 55 and Link 56 bus stops. Specific station locations were then determined in a field visit which accounted for the bus station size, pedestrian infrastructure, traffic signals, and land use considerations. The BRT stations are identical for all of the BRT alternatives and their locations are identical to the stop locations for the Enhanced Bus Alternative. Stations would be branded to be identifiable as BRT line stations and would include station amenities such as trash cans, benches, covered shelters, bicycle parking, real-time next bus displays, and ticket vending machines for off-board fare collection. To allow for safe pedestrian access, all stations are located at signalized intersections. Pedestrian signals would be added for all four intersection quadrants where they do not currently exist. For bicycle access to stations, on-street bike lanes would be provided on US 192 as part of the proposed BRT cross section.

Bus Lanes

Bus lanes would be located in the vicinity of areas identified in the traffic analyses conducted for this project as high congestion segments along the routes of Links 55 and 56 on US 192. In most cases, construction of a bus lane could occur within the existing roadway right-of-way (ROW) however some areas were constrained by the availability of land or other geometric constraints. Bus lanes would be used exclusively by the BRT routes, with the potential for use by emergency vehicles. Local buses would still operate to existing curbside stops. In areas containing bus lanes, all un-signalized directional median openings would be closed, to prevent conflicts with vehicles turning left across the busway.

Queue Jumps

Queue jumps were located at intersections where the future Level of Service for general traffic is D or worse (operating at/near capacity or a breakdown of vehicular flow). Queue jumps would allow the bus to bypass the queue at a light and proceed uninterrupted. The evaluation of potential queue jump locations and the length of the queue jump lane were determined based on the 2030 No Build traffic analysis results. For locations with an existing right turn lane, the queue jump lane is located on the inside adjacent to the through lanes, and the right turn lane was lengthened to match the length of the queue jump. More detail about the queue jump configuration and evaluation process is included in Appendix F.

Transit Signal Priority

Transit signal priority (TSP) is the process of altering the signal timing to give a priority or advantage to transit operations. TSP modifies the normal roadway signal operation to better accommodate transit vehicles in a corridor-wide coordinated manner. TSP would be located at intersections where the bus would travel straight through the intersection. The TSP that would be implemented for the US 192 project would enable the bus to receive an extended green at each intersection.



Alternative 2-1 (No Busway Alternative)

Alternative 2-1 would create a BRT service that operates from Four Corners to the Kissimmee Intermodal Facility (KIF) and from Walt Disney World (WDW) to the Osceola Parkway SunRail Station (OPSR) as shown in Figure 9-3. The BRT vehicles would operate with the local buses in the existing lanes of US 192 and US 441. Stations would be located at the curb, near intersections and at the far side of the intersection (where possible) at the following 18 locations:

- Four Corners (Cagan Crossing Boulevard at the Wal-Mart)
- US 192 and West Side Boulevard
- US 192 and Orange Lake Boulevard East
- US 192 and Old Lake Wilson Road
- Walt Disney World
- US 192 and Celebration Place
- US 192 and Celebration Avenue
- US 192 and Holiday Trail
- US 192 and Poinciana Boulevard
- US 192 and Lake Cecile/Super Target
- US 192 and Siesta Lago Drive
- US 192 and Old Vineland Road
- US 192 and Armstrong Boulevard
- US 192 and Emory Avenue
- Kissimmee Intermodal Facility
- Osceola County Regional Medical Center
- Florida Hospital
- Osceola Parkway SunRail Station

Local buses would stop in these locations as well as at all other existing bus stop locations in the study area. No improvements would be made at those stations as part of this alternative other than those regularly programmed by LYNX.

Figure 9-6 shows the conceptual layout for the curbside BRT stations with queue jumps. All stations are located on the far side of the intersection, consistent with current LYNX practices. To facilitate safe pedestrian movement across US 192, all of the proposed station locations are at signalized intersections.

The curbside BRT stations are designed with separate loading areas for local bus and BRT service. The layout for the curbside stations assumes an envelope of 80'x 12' for the BRT station components. Included within this area are benches and fare collection equipment, along with secured bike parking, trash cans, and next bus signage. The curbside loading area for BRT vehicles is 100' long to accommodate two vehicles (one regular, one articulated). The BRT station will include branding components such as a distinct name, logo, color scheme, shelter design and signage to distinguish it from the regular LYNX system. For the BRT service, all fares will be collected off-board (i.e., not on the bus) through ticket machines located at each station. Including off-board fare collection decreases the dwell time for buses at each location, as passengers can board and disembark more quickly.



The local bus stop is located in advance of the BRT station and includes a pullout. This pullout allows the BRT vehicle to pass local buses that may be stopped to pick up passengers. Having BRT and local bus stations together also allows for transfers between the routes.

This BRT alternative, as well as the two others discussed later, assumes shared parking will be available at certain stations where intersecting north-south streets provide connections to areas outside the immediate Study Area. The shared parking arrangements would be in conjunction with existing commercial development at the station (for example, a shopping center) and would allow for limited park and ride usage. Shared parking locations are assumed at the following stations:

- Four Corners
- Orange Lake Boulevard E
- Old Lake Wilson Road
- Poinciana Boulevard
- Armstrong Boulevard

A dedicated park and ride facility is proposed at the Celebration Place station at the southeast corner of US 192 and Celebration Place. This location is located within the Celebration DRI and would include parking for approximately 250 vehicles, with the ability to expand to 400. At this location, all routes (both BRT and local LYNX bus) would leave the US 192 corridor and the station would be within the park and ride lot. As part of the implementation of SunRail, park and ride lots are already proposed at the Kissimmee Intermodal Facility and Osceola Parkway stations.

In Alternative 2-1 there would be no bus lanes. Queue Jumps would be located at the following locations:

- US 192 and Howard Johnson Entrance/Vista Del Lago Drive
- US 192 and Orange Lake Boulevard West
- US 192 and SR 429 SB Ramps
- US 192 and Black Lake Road
- US 192 and Old Lake Wilson Boulevard
- US 192 and Reedy Creek Boulevard
- US 192 and Celebration Avenue
- US 192 and Polynesian Isles Boulevard
- US 192 and Poinciana Blvd
- US 192 and SR 535
- US 192 and Super Target
- US 192 and Hoagland Boulevard
- US 441 and Carroll Street

The queue jumps for this alternative are identified for locations where the projected Year 2030 intersection Level of Service is "D" or worse. Additionally, queue jump locations were confined to areas of the corridor where adequate right-of-way exists. The length for each of the queue jumps is based on the 95th percentile queue length identified in the No Build traffic analysis.

Transit Signal Priority would be implemented in the same manner described in the Enhanced Bus Alternative, at the following signalized intersections:



- US 192 and Avalon Road/Westside Boulevard (EB only)
- US 192 and Howard Johnson Entrance/Vista Del Lago Drive
- US 192 and Orange Lake Boulevard West
- US 192 and SR 429 SB Ramps
- US 192 and SR 429 NB Ramps
- US 192 and Black Lake Road
- US 192 and Formosa Gardens Boulevard (EB only)
- US 192 and Old Lake Wilson Boulevard
- US 192 and Griffin Road (WB only)
- US 192 and Celebration Place/Parkway Boulevard
- US 192 and Arabian Nights Boulevard (EB only)
- US 192 and International Drive
- US 192 and Holiday Trail (WB only)
- US 192 and Seralago Boulevard (WB only)
- US 192 and SR 535
- US 192 and Seven Dwarfs Lane (EB only)
- US 192 and Siesta Lago Drive (EB only)
- US 192 and Bass Road/Old Vineland Road
- US 192 and Armstrong Boulevard
- US 192 and Dyer Boulevard (EB only)
- US 192 and Orange Boulevard (EB only)
- US 192 and Thacker Avenue (WB only)
- US 441 and Carroll Street
- US 441 and Donegan Avenue
- Main Street and Oak Street

Alternative 2-2 (Partial Busway Alternative)

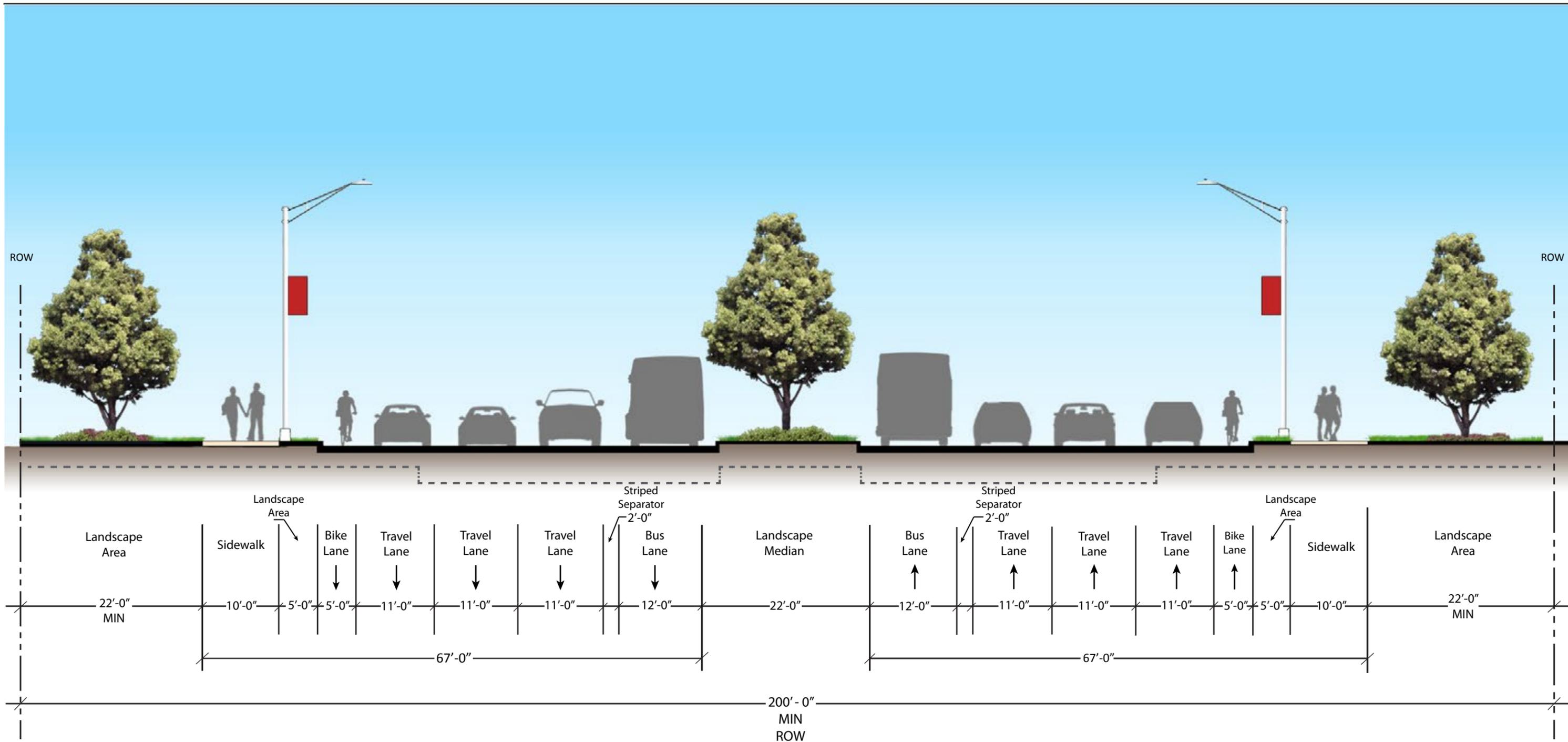
Alternative 2-2 would also create a BRT service that operates from Four Corners to the Kissimmee Intermodal Facility (KIF) and from Walt Disney World (WDW) to the Osceola Parkway SunRail Station (OPSR) as shown in **Figure 9-9**. Stations would be located at the same locations as in Alternative 2-1 and would contain the same features. This alternative also includes the Celebration Place Park and Ride that was described in Alternative 2-1 and the proposed shared parking locations.

In Alternative 2-2, bus lanes would be located from Celebration Place to Hoagland Boulevard. These limits were selected because 1) this section is projected to experience the highest levels of congestion in the year 2030; and 2) existing right of way is available along US 192. In the busway section, BRT stations would be located in the median. Stations would be located curbside in all other locations. The local buses would continue to stop at curbside stations even in the segment where the busway would exist.

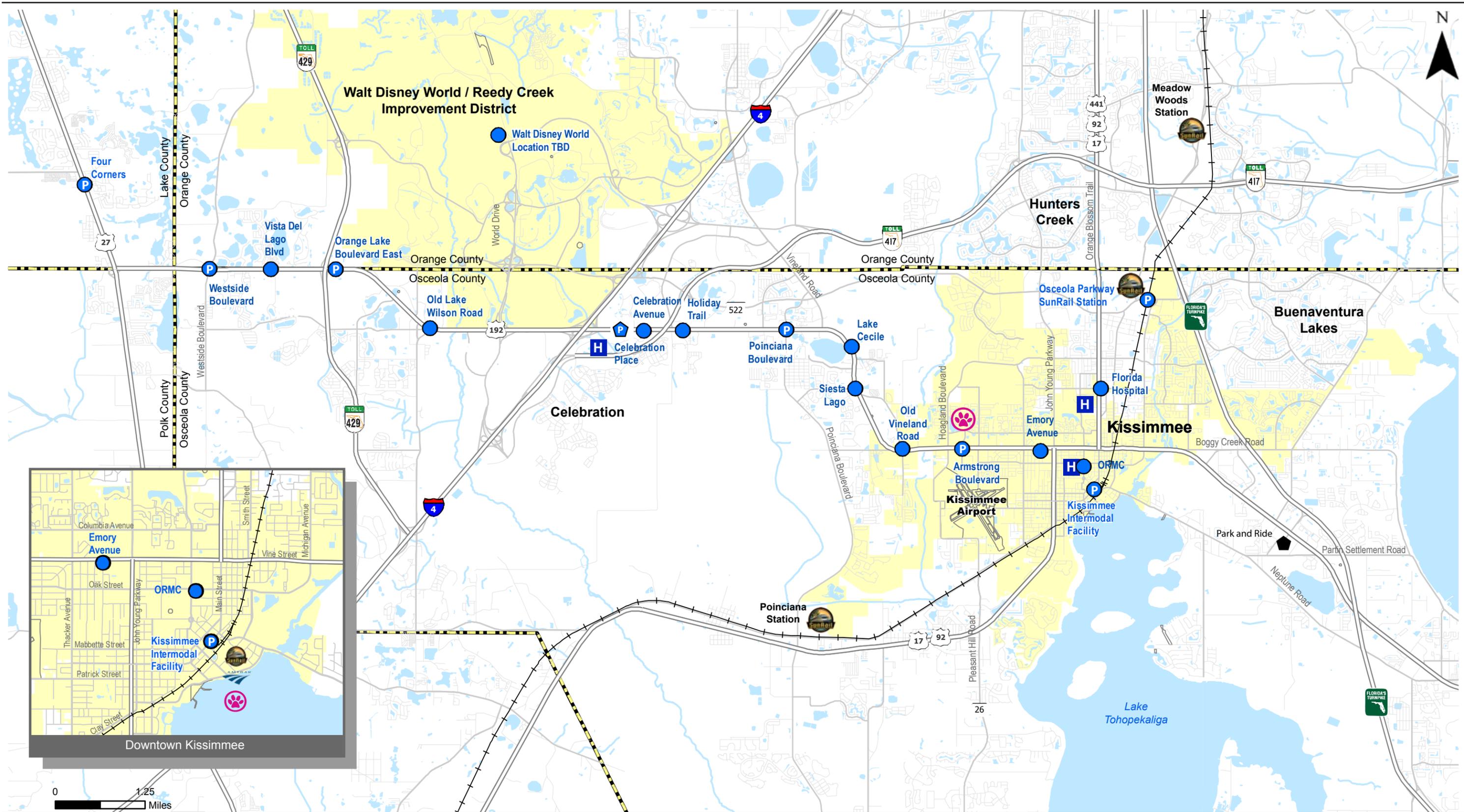
Figure 9-8 shows the typical mid-block cross section for US 192 with the median busway. In the development of the bus lanes, both median and curb bus lane configurations were evaluated. It was determined that a median configuration is preferable for the following reasons:



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Note: This section generally represents conditions between US 27 and Hoagland Blvd. Draft is conceptual in nature and does not reflect design specifications.



- BRT Stations
- P Station with Parking Available
- P H Station with Park and Ride Facility



US 192 Alternatives Analysis

Proposed Station Locations

Figure 9-9



- Avoids conflicts with driveways for adjacent properties
- Avoids busway conflicts between buses and right turning vehicles
- Allows for higher travel speeds for buses

However, the use of a median busway requires the closure of mid-block directional left turn openings not located at signalized intersections. This limits conflict points between left turning traffic and through buses. Instead, left turning traffic would only cross the busway at signalized intersections where the bus would then stop. At these locations, all left turn movements would be protected. BRT vehicles would move at the same time as the through traffic along US 192.

Figure 9-7 shows the conceptual layout for median BRT stations. Access to all median stations is limited to the signalized pedestrian crosswalks at intersections. A passing lane is included at stations. This allows BRT vehicles for express routes to pass those stopped at stations. Local LYNX bus routes would continue to use curbside stops and would not use the median busway.

The transition from median-running to curbside BRT service occurs at Celebration Place and at Hoagland Boulevard. At the Celebration Place transition, buses exit the US 192 corridor to stop at the Celebration Place park and ride. The routes then return onto US 192 using a dedicated northbound bus lane on Celebration Place. At this location, separate bus-only signal phases are proposed for buses entering and leaving the busway. For the Hoagland Boulevard transition, a separate signal phase is proposed to allow BRT vehicles to cross from the inside to the outside lanes.

Queue Jumps would be located at the following locations that would not be served by the partial busway:

- US 192 and Howard Johnson Entrance/Vista Del Lago Drive
- US 192 and Orange Lake Boulevard West
- US 192 and SR 429 SB Ramps
- US 192 and Black Lake Road
- US 192 and Old Lake Wilson Boulevard
- US 192 and Reedy Creek Boulevard
- US 441 and Carroll Street

Traffic Signal Priority would be implemented at the locations identified in Alternative 2-1. Alternative 2-2 would also include the off-board fare collection system and branding that was described in Alternative 2-1.

Alternative 2-3 (Full Busway Alternative)

Alternative 2-3 would also create a BRT service that operates from Four Corners to the Kissimmee Intermodal Facility (KIF) and from Walt Disney World (WDW) to the Osceola Parkway SunRail Station (OPSR) as shown in Figure 9-5. Stations would be located at the same locations as in Alternatives 2-1 and 2-2 and would contain the same features. This alternative also includes the Celebration Place Park and Ride that was described in Alternative 2-1 and the proposed shared parking locations.



In Alternative 2-3, bus lanes would be located from Town Center Boulevard to Hoagland Boulevard. (Town Center Boulevard was chosen as the western limit for the busway to avoid conflicts at the US 192/US 27 interchange. Busways were not considered east of Hoagland Boulevard due to the constrained right of way. In the busway section, stations would be located in the median. Stations would be located curbside in all other locations. The local buses would continue to stop at curbside stations even in the segment where the busway would exist.

The transition from median-running to curbside BRT service occurs at Town Center Boulevard and at Hoagland Boulevard. For the Town Center Boulevard transition, a separate signal phase is proposed to allow BRT vehicles to cross from the inside to the outside lanes. For the Hoagland Boulevard transition, a separate signal phase is proposed to allow BRT vehicles to cross from the inside to the outside lanes. At Celebration Place, buses would continue to exit the US 192 corridor to stop at the Celebration Place park and ride as described for Alternatives 2-1 and 2-2.

Queue Jumps would be located at the following location that would not be served by the busway:

- US 441 and Carroll Street

Transit Signal Priority would be implemented at those locations identified in Alternative 2-1. Alternative 2-3 would also include the off-board fare collection system and branding that was described in Alternative 2-1.

9.3 Operations Summary

Service plans were developed for the Short List Alternatives. Service on existing Links 4, 10, 26, 44 and 56 would be affected by these alternatives as shown in **Table 9-1**. The service plans for other Links in the study area would not be affected. In addition to modifications to existing Links, the Enhanced Bus and Build (BRT) alternatives would result in the creation of new routes. Service plans which detailed span of service, headways, stopping patterns, dwell times, speeds and running times for each of these changes and for the new routes were prepared. Details of the service planning effort can be found in Appendix D. A summary of this analysis is included in this section of the Alternatives Analysis report.

Table 9-1: Changes to Existing Routes

	No Build	Enhanced Bus	Build
Link 4	Re-route to KIF	Same as No Build	Same as No Build
Link 10	Re-route to KIF	Create Limited Stop Route (10X) which would overlay re-routed local	Same as No Build
Link 26	Re-route to KIF	Same as No Build	Same as No Build
Link 55	Re-route to KIF	Create Limited Stop Route (55X) which would overlay re-routed local route	Create BRT routes which would overlay re-routed local
Link 56	Re-route to KIF	Create Limited Stop Route (56X) which would overlay re-routed local	Create BRT routes which would overlay re-routed local
Link 441	Re-route to KIF	Re-route to KIF and increase frequency of service	Same as Enhanced Bus

Source: VHB



No Build Alternative

The No Build Alternative includes rerouting bus routes in the study area to serve the planned Kissimmee Intermodal Facility (KIF) in Downtown Kissimmee. Re-routing service to KIF would create better connectivity between routes and serve SunRail when Phase 2 is completed. The No Build route service plans were created for each of the existing services as described in Table 9-1. Additionally, the travel times for bus service in the No Build were increased based on travel time data generated as part of this project's No Build traffic analysis. Travel times were expanded based on the ratio of existing to future automobile travel time.

Enhanced Bus Alternative

The Enhanced Bus Alternative will provide a mix of route types (limited stop and local bus) that will serve as feeder services to SunRail in addition to the changes proposed in the No Build Alternative. This will include the following:

- Increased FastLink 441 service - to operate at 30 minute frequencies all day and on weekends.
- Implement limited stop bus service along US 192 from downtown Kissimmee to Lake County connecting at the Four Corners Wal-Mart (Link 55X).
- Implement limited stop bus service along US 192 providing connections from downtown Kissimmee to Disney at approximately 15 minute headways (Link 56X).
- Implement limited stop bus service along US 192 from downtown Kissimmee to St. Cloud (Link 810).
- Implement TSP at select intersection locations

Local buses would continue to operate to all existing curbside stations in addition to the above Enhanced Bus routes.

Build Alternatives

The Build Alternatives include the creation of a variety of limited and zone-express BRT routes, which would operate with improved infrastructure in the study area. The physical infrastructure is described in Section 9.2 of this report and it includes queue jumps, traffic signal priority, bus lanes, improved BRT stations, and off-board fare collection.

Buses used for the US 192 operation would be 40' standard, low floor vehicles. These buses would be "branded" using a different livery that conveys a higher class of service than regular buses. Every bus would be equipped with special transponders to activate the Transit Signal Priority (TSP). These buses would be used only for BRT service, and the US 192 project would require LYNX to increase the overall fleet size. These buses would need to be stored and maintained in a new facility in Osceola County. The existing operating base is a temporary facility, being leased from Osceola County. This project assumes that a new, dedicated facility would be constructed somewhere in the southern section of LYNX's operating area.

As is described above, the Build Alternatives include two BRT routes that would operate with a "zone-express" stopping pattern and two BRT routes that would serve all BRT stations along its alignment. Under this operation, two zone-express BRT routes would serve all BRT stations in the



outer part of the corridor (Celebration to Four Corners or Walt Disney World), and then operate non-stop (“express”) on US 192 between the Celebration and Kissimmee. In Kissimmee they would serve all the BRT stations. Another route would serve all BRT stations from KIF to Celebration and a fourth route would serve all BRT stations between Four Corners and Walt Disney World. **Table 9-2** describes these routes. They are also depicted in Figures 9-3 through 9-5.

Table 9-2: Build Alternatives BRT Stopping Pattern

Segment	Station Stop	Link 855	Link 856	Link 909	Link 899	
Four Corners Branch (Four Corners Wal-Mart to World Drive)	Cagan Crossing Blvd	X		X		
	Westside Rd/Avalon Rd	X		X		
	Vista Del Lago Blvd	X		X		
	Rolling Oaks Blvd	X		X		
	Old Lake Wilson Rd	X		X		
Walt Disney World Branch	Walt Disney World		X	X		
	Celebration P&R	X	X		X	
BRT Trunk (Celebration Place to KIF)	Celebration Avenue	X	X		X	
	5800 US 192				X	
	Poinciana Blvd				X	
	Lake Cecile				X	
	Siesta Lago				X	
	N Bass Rd				X	
	4002 Vine Street and Armstrong Blvd				X	
	Armstrong Blvd	X	X		X	
	Emory Ave	X	X		X	
	Central and Osceola Regional Med		X		X	
	Central and Drury/Mitchel				X	
	Kissimmee Intermodal Facility	X	X		X	
	Osceola Parkway SunRail Branch (KIF to Osceola Pkwy SunRail Station)	Florida Hospital		X		
		Osceola Parkway SunRail Station		X		

Source: VHB



Service Plans

The components of the Service Plans for the various alternatives are shown below. For more information, please refer to Appendix D.

Headways for each route in the corridor are shown below in **Table 9-3**. Except for Link 10, the headways for the non-project specific routes remained the same throughout all alternatives. The headway for Link 10 was increased due to changes in the LYNX system that were implemented during the course of this project.

Table 9-3: Future Bus Route Headways (mins)

Route	Existing (2012)	2030 No-Build	2030 Enhanced Bus	2030 Build 1	2030 Build 2	2030 Build 3
10	60	30	30	30	30	30
26	30	30	30	30	30	30
55	30	30	30	30	30	30
56	30	30	30	30	30	30
810			30	30	30	30
55X			15			
56X			15	N/A	N/A	N/A
855	N/A	N/A		15	15	15
856			N/A	15	15	15
899			15	15	15	15
909			15	15	15	15

Source: VHB

The number of limited/BRT stops for each route is shown in **Table 9-4**. The change in stops for the non-BRT routes (Link 10, 26, 55 and 56) is due primarily to the re-routing of service to the Kissimmee Intermodal Facility (KIF). While the Enhanced Bus Alternative and the Build Alternatives have the identical number of stations that would be served, the multiple routes provided by the Build Alternatives means that some of those stations are served more often by the Build BRT service than by the Enhanced Bus service. This is because stations in the Build Alternatives are served by more than one route to enable a transfer. Local buses would continue to operate to all additional existing curbside stations, in addition to these BRT routes.



Table 9-4: Future Number of Limited/BRT Bus Stops

Route	Direction	Existing (2012)	2030 No-Build	2030 Enhanced Bus	2030 Build 1	2030 Build 2	2030 Build 3
10	EB		83	83	83	83	83
	WB		32	32	32	32	32
26	NB		32	32	32	32	32
	SB		30	30	30	30	30
55	EB		55	55	55	55	55
	WB		55	55	55	55	55
56	EB		43	43	43	43	43
	WB		41	41	41	41	41
810	EB			64	64	64	64
	WB			13	13	13	13
55X	EB			17			
	WB			15			
56X	EB			16	N/A	N/A	N/A
	WB			15			
855	EB	N/A	N/A		9	9	9
	WB				9	9	9
856	EB			N/A	8	8	8
	WB				8	8	8
899	EB				6	6	6
	WB			N/A	6	6	6
909	EB				15	15	15
	WB				13	13	13

Note: Does not include local bus service stops

Source: VHB

The end-to-end running time for each route is shown below in **Table 9-5**. The factored 2030 (2012) stop-to-stop running times for each bus route used in the No Build Alternative served as the base for the travel time estimates for the Build Alternatives. The future congested travel times were then reduced based on time-saving elements of the proposed BRT improvements including:

- Reduced Stop Spacing
- Off-board Fare Collection
- Transit Signal Priority
- Queue Jumps
- Bus Lanes





Table 9-5: Future End-to-End Running Time

Route	Time of Day and Direction	Existing (2012)	2030 No-Build	2030 Enhanced Bus	2030 Build 1	2030 Build 2	2030 Build 3
		End to End Running Time (Hr:Min:Sec)					
10	AM EB	1:19	1:15:11	1:15:11	1:15:11	1:15:11	1:15:11
	AM WB	0:35	35:09	35:09	35:09	35:09	35:09
	PM EB	1:19	1:15:11	1:15:11	1:15:11	1:15:11	1:15:11
	PM WB	0:35	35:09	35:09	35:09	35:09	35:09
26	AM NB	0:37	45:05	45:05	45:05	45:05	45:05
	AM SB	0:42	31:19	31:19	31:19	31:19	31:19
	PM NB	0:37	39:39	39:39	39:39	39:39	39:39
	PM SB	0:42	33:48	33:48	33:48	33:48	33:48
55	AM EB	1:00	1:17:55	1:16:35	1:12:17	1:13:37	1:14:27
	AM WB	1:00	1:17:03	1:16:35	1:12:54	1:14:24	1:14:34
	PM EB	1:00	1:23:12	1:22:41	1:18:38	1:19:58	1:20:48
	PM WB	1:00	1:24:23	1:23:55	1:20:14	1:21:44	1:21:53
56	AM EB	1:00	1:16:51	1:16:00	1:13:53	1:15:06	1:15:06
	AM WB	1:00	1:17:38	1:16:41	1:15:09	1:16:19	1:16:19
	PM EB	1:00	1:22:38	1:22:26	1:20:26	1:21:38	1:21:38
	PM WB	1:00	1:18:29	1:17:33	1:16:00	1:17:10	1:17:10
810	AM EB			0:55:45	0:55:45	0:55:45	0:55:45
	AM WB			0:14:37	0:14:37	0:14:37	0:14:37
	PM EB			0:50:54	0:50:54	0:50:54	0:50:54
	PM WB			0:14:37	0:14:37	0:14:37	0:14:37
55X	AM EB			1:10:45			
	AM WB			1:10:10			
	PM EB			1:18:08			
	PM WB			1:21:19			
56X	AM EB	N/A	N/A	1:06:31	N/A	N/A	N/A
	AM WB			0:58:20			
	PM EB			1:13:09			
	PM WB			0:58:34			
855	AM EB				1:00:04	0:44:48	0:33:10
	AM WB			N/A	1:01:00	0:51:01	0:38:40
	PM EB				1:02:18	0:44:21	0:32:56
	PM WB				1:11:05	1:01:06	0:40:15

**Table 9-5: Future End-to-End Running Time (continued)**

Route	Time of Day and Direction	Existing (2012)	2030 No-Build	2030 Enhanced Bus	2030 Build 1	2030 Build 2	2030 Build 3
		End to End Running Time (Hr:Min:Sec)					
856	AM EB				0:57:41	0:40:50	0:40:50
	AM WB				0:52:23	0:41:07	0:41:07
	PM EB				1:00:13	0:40:50	0:40:50
	PM WB				0:52:44	0:41:28	0:41:28
899	AM EB				0:30:38	0:30:38	0:30:38
	AM WB				0:36:04	0:36:04	0:36:04
	PM EB				0:30:07	0:30:07	0:30:07
	PM WB				0:45:32	0:45:32	0:45:32
909	AM EB				0:38:46	0:27:30	0:27:30
	AM WB				0:32:46	0:25:12	0:25:12
	PM EB				0:45:49	0:27:30	0:27:30
	PM WB				0:33:00	0:25:33	0:25:33

Source: VHB

Each Build Alternative would have the same number of bus routes. The travel times for each alternative would vary based on the physical improvements included in each alternative. While the number and location of queue jumps and TSP would vary slightly between alternatives, the primary differentiator would be the length of the busway. Build Alternative 1 would have the longest end-to-end running times due to the lack of a physically separated busway. Build Alternative 2 would have slightly shorter running time due to its short segment of busway and Build 3 would have the shortest running time due to its full-length busway.

The Build alternatives would provide more BRT routes in the study area than the Enhanced Bus alternative which results in an increased effective headway in the segments where the routes overlap. The most effective Enhanced Bus alternative's "limited" bus routes (55X and 56X) would stop at more BRT stops than their Build alternative counterparts (855 and 856). This is a distinguishing feature of the Build alternatives since they not only improve transit travel time through infrastructure improvements (TSP, queue jumps, busway) but also through skipping stops on express routes (overlain on limited BRT routes and local routes).

Local buses would benefit from the queue jumps and TSP improvements implemented in the corridor for the BRT service.

9.4 Ridership Analysis

The forecast method chosen for the US 192 AA was the Federal Transit Administration (FTA) "data-driven" approach and is described in detail in the US 192 Alternatives Analysis: Offline Ridership Forecasting Method report contained in Appendix J. This ridership forecasting process uses detailed data on current ridership patterns and service, projected future population and



employment, and alternative-specific future service plans to forecast how transit demand is likely to grow over time. These procedures also forecast how future transit customers will use the transit network and each of its constituent routes to travel. The methodology is designed to take full advantage of the database of existing travel patterns and service that are contained in large scale origin-destination surveys conducted by LYNX and representations of service obtained from automated timetable information. In many instances, including this project, FTA has strongly urged project sponsors to take advantage of the data driven approach so that forecasts have a firm basis in fact.

Using this methodology, ridership forecasts for each alternative described above were created. Several statistics are presented that, together, help to describe the ability of the project to attract customers. These statistics include:

Linked Corridor Transit Trips

For this project, a linked corridor transit trip is defined as a trip using one of the US 192 corridor routes (10, 55, 56, 810, 855, 856, 899, 909). For the build projects, this definition is similar to the FTA definition of trips on the project assuming that FTA agrees to include customers on Routes 10, 55, and 56 as project riders. **Table 9-6** presents the Linked Corridor Transit Trips for the US 192 Short List Alternatives. The data in this table represents the official ridership results for this project.

The high range numbers in the tables below should be treated with some caution since they present a level of usage that is much higher than any currently existing bus PNR facility in the corridor. The high range forecast is the outcome of dramatically improved levels of service which produce large increases in the number of estimated parked cars. This led the project team to create a "Moderate" forecast for each alternative that treats PNR usage as less attractive to travelers. The moderate forecasts are the official forecasts for the US 192 AA project.

Table 9-6: Comparison of Future Linked Transit Trips

Alternative:	2030 No Build		2030 Enhanced Bus		2030 Build 1		2030 Build 2		2030 Build 3	
	Mod.	High	Mod.	High	Mod.	High	Mod.	High	Mod.	High
PNR Growth (Moderate or High):										
Corridor Weekday Linked Transit Non-Dependent Trips	3,241	3,577	4,356	5,098	5,178	6,626	5,506	6,951	5,648	7,109
Corridor Weekday Linked Transit-Dependent Trips	3,101	3,101	4,436	4,436	4,507	4,508	4,745	4,745	4,830	4,830
Corridor Weekday Linked Transit Total Trips	6,342	6,678	8,792	9,534	9,686	11,134	10,251	11,695	10,478	11,939
Weighted Corridor Linked Transit Trips	9,442	9,779	13,229	13,971	14,193	15,641	14,995	16,440	15,307	16,768

Source: VHB

Travel Time Benefits

This statistic represents the total time savings (measured in person-minutes of travel) that will be generated by each alternative as compared to the No Build Alternative. All time categories are part of this calculation including time in the vehicle, time spent accessing the system, and waiting time. To account for the fact that many of these time categories are viewed as being more



onerous than others, time savings are weighted according to the relative perception of each component. **Table 9-7** presents the incremental travel time savings for each alternative.

Table 9-7: Comparison of Forecast Weekday Incremental Travel Time Savings

Alternative:	2030 No Build		2030 Enhanced Bus		2030 Build 1		2030 Build 2		2030 Build 3	
	Mod.	High	Mod.	High	Mod.	High	Mod.	High	Mod.	High
Travel Time Savings* Relative to No Build (hours)			2,300	2,700	3,100	4,700	3,700	5,300	3,900	5,600
Travel Time Savings per Corridor Linked Trip (min)			56.3	56.7	55.6	63.3	56.8	63.4	56.6	63.9

Source: VHB

In addition to Corridor Linked Transit Trips and Incremental Travel Time Savings, the following additional results were produced for the Short List Alternatives. Details can be found in the Ridership Results Report found in Appendix J.

Corridor Transit Boardings

This statistic measures the number of trips that board each bus route in the corridor and provides an indication of the utilization that each service is likely to attract. This measure indicates the degree to which buses associated with the project are used by travelers to make trips. In cases where customers transfer to make a complete journey, each boarding counts towards the total transit boarding statistic.

Incremental Linked Transit Trips

Another statistic that is useful for understanding how different alternatives affect transit ridership is known as incremental linked transit trips. Linked transit trips are defined as the number of trips traveling between an origin and destination independent of how many boardings (i.e., transfers) are required to make the trip. Incremental linked transit trips are calculated for each alternative and represent the change in this number as compared to the No-Build scenario. This statistic is most useful for understanding the degree to which transit will attract new market share under each alternative. Two numbers are provided:

- Change in corridor linked trips (an incremental version of the statistic reported in the previous section)
- Change in total regional linked transit trips.

Ridership Impacts on Connecting Routes

Ridership on connecting routes is provided to describe potential impacts (or lack of impact) on lines which have substantial transfer activities with corridor routes. One service of particular interest is SunRail but other connecting bus routes are also important since large changes in demand could affect how these services are scheduled.



Utilization of Park and Ride Facilities

The number of boarding passengers traveling to each facility by car helps to indicate the number of parking spaces that will be required to serve this demand.

Impacts on Vehicle Miles of Travel

The transit alternatives attract new customers from automobile to transit leading to a reduction in daily vehicle miles of travel. Some transit customers will elect to drive to transit and these vehicle miles must also be included to determine the degree to which the alternatives can benefit the environment by reducing automobile usage.

Transit Farebox Revenue

Additional annual fare revenues from each action alternative relative to the No-Build alternative were computed from incremental linked transit trips and an estimated revenue per linked trip computed from the LYNX year 2012 Financial Summary.²⁸ This estimate is based on annual fare revenue and total system boardings between 2007 and 2012 converted to linked trips using a 1.523 transfer rate calculated from the expanded base year OD Survey. The analysis also accounted for the increase in the base fare from \$1.75 to \$2.00 that occurred in January 2008. Together, these data result in an estimate of daily revenue per linked trip equal to \$1.33 (versus a base fare of \$2.00). This number is annualized by using 314.71—based on 2012 National Transit Database ratio of annual to average weekday unlinked trips.

Off-Model Tourist Market Estimate

The Study Area currently contains a large and active tourist market traveling to Walt Disney World and other attractions in the Kissimmee and Orlando areas. While the origin-destination survey on which the ridership forecast was built contains some representation of this market, robust quantitative data describing the bulk of the existing tourist travel behavior is largely unavailable since little of this travel occurs on existing transit services.

It is an intended consequence of the US 192 program to attract a portion of the users who currently utilize private cars and private shuttle buses to access Walt Disney World to LYNX services in the corridor.

This new market will require a significant change in current visitor travel behavior that may require many years to accomplish. As new corridor services become established, the ability of LYNX to attract visitors may be limited but as the market matures, a higher proportion of visitors may begin to realize the advantage of using public transportation to reach area attractions.

Given the lack of existing observations concerning this market, it is not possible to generate an estimate of ridership with the same precision as that for other corridor markets. Nevertheless, it is important to generate an estimate of the market potential to confirm that corridor facilities

²⁸ LYNX. 2012 Financial Summary.



are adequately sized to accommodate the demand. This section discusses an off-model technique that was used to establish the potential tourist market that might be attracted to new US 192 services to support analysis of system size.

The analysis is based on a database hotel rooms in the corridor for each zip code²⁹ (see Figure 3-1) and the following assumptions for a typical day:

- Between 40% and 60% of rooms in each zip code are candidates for US 192 transit usage given the zip code geography relative to the transit services and the general distribution of rooms within each zip code
- 80% of rooms are occupied on a given day
- Occupied rooms hold an average of 3 persons per day
- Each person in a room generates two theme park (or other attractions) person-trips per day (one to the park, the other from the park back to the hotel)
- 50% of trips per day from occupied rooms are bound for Walt Disney World and the other 50% are bound for other activities
- Up to 10% of the trips bound for Disney will take the new US 192 BRT service

These assumptions result in a per-hotel-room trip generation rate of 0.096 to 0.144 LYNX trips per day per room. Applying this figure to the hotel room quantities by zip code area illustrated in Figure 2 produces *potential* tourist ridership in addition to forecast ridership described the in previous sections. **Table 9-8** shows this potential additional daily ridership by route.

Table 9-8: Year 2030 Potential Additional Daily Trips on US 192 Services from New Transit Market

Route:	810	855	856	899	909
Potential Daily Boardings*	207	836	986	112	105

* Based on 2011 inventory of hotel rooms located in zip codes 34741, 34744, 34746, 34747, and 34769:
 Between 40% and 60% of rooms in each zip have access to public transit
 Room occupancy rate=0.8
 Proportion of occupants traveling to Disney=0.5
 Persons per room=3
 Disney trips per day=2
 Proportion of Disney travelers boarding public transit=10%

Source: VHB

²⁹ Provided by the Kissimmee Visitors and Convention Bureau, 2013



9.5 Capital Cost Summary

Capital costs were developed for each of the short list of alternatives using a methodology consistent with the FTA's guidance on capital cost estimating. The guidelines call for cost estimates to be prepared and reported using the latest revision of the FTA Standard Cost Categories (SCC). These standard cost categories include:

- Guideway and Track Elements
- Stations, Stops, Terminals, Intermodal
- Support Facilities: Yards, Shops, Administration Buildings
- Site work and Special Conditions
- Systems
- Right-of-Way, Land, Existing Improvements
- Vehicles

In the estimates, cost components for the various alternatives are developed and summarized by each SCC category. These cost categories form the basis for the format and structure that is used for the capital cost detail and summary sheets developed for this project. Sources for unit prices are provided in Appendix G; sources include FDOT Long Range Estimate (LRE) System and recent procurement cost data from LYNX.

The general assumptions used in developing the following costs are as follows:

- Construction will be staged to maintain existing traffic operations and LYNX bus service.
- All unit costs will be expressed in 2013 dollars.
- Budgeted costs will be escalated to the anticipated year of expenditure to account for inflation
- Quantities will be estimated for the major items along the corridor. Minor items will be covered by 35% contingency.
- Existing facilities and structures, such as bridges or retaining walls not required to be modified or relocated to accommodate the proposed project, will not be reconstructed simply based on condition. It is assumed that the existing structures will be maintained as needed by the current owner in their current configuration.
- The cost of major upgrades/relocations of existing utilities will be borne by the utility owner.
- The project will be constructed using the traditional Design-Bid-Build procedure by a general contractor employing a number of sub-contractors.

The capital costs for each alternative are shown below in **Table 9-9**.

**Table 9-9: Alternative Capital Costs (2013)**

FTA Standard Cost Category	Description	Alternative				
		No Build	Enhanced Bus	Build 1	Build 2	Build 3
10 - Guideway and Track Elements	Queue Jumps			\$9,110,000	\$6,002,000	\$1,020,000
	Roadway/BRT Improvements				\$37,116,710	\$74,486,943
	Bridges				\$250,000	\$24,330,960
20 - Stations, Stops and Terminals	Stations			\$8,928,000	\$8,928,000	\$8,928,000
	Park and Ride Lot			\$1,976,000	\$1,976,000	\$1,976,000
30 - Support Facilities: Yards, Shops, Administration Buildings	Maintenance Facilities		\$15,000,000	\$15,000,000	\$15,000,000	\$15,000,000
40 – Site-work and Special Conditions	Median Improvements				\$200,000	\$300,000
	Landscape				\$6,806,000	\$15,060,000
	Storm-water Pond				\$305,000	\$667,500
50 - Systems	Opticom		\$485,000	\$485,000	\$485,000	\$485,000
	Signal Mast Arm Upgrades				\$2,553,000	\$4,950,000
60 - Right-of-Way, Land, Existing Improvements	Right-of-Way Acquisition				\$1,408,299	\$2,960,640
70 – Vehicles	Vehicles	\$1,750,000	\$10,500,000	\$17,045,000	\$14,630,000	\$14,227,500
	Unknowns/ Contingency*			\$7,174,650	\$22,617,599	\$46,271,541
	Total	\$1,750,000	\$25,985,000	\$59,718,650	\$118,277,608	\$210,644,084

* Unknowns and contingency (35%) were applied to all costs except for right-of-way acquisition

Source: VHB



9.6 O&M Cost Summary

In order to further evaluate the alternatives, incremental operating and maintenance (O&M) costs were estimated for each alternative. An FTA-compliant, three factor model was developed as part of this project for LYNX. The modeling methodology and results are included in Appendix E. Keeping with current FTA practice; the resource build-up approach was used to develop O&M costs. This approach applies the projected unit costs for labor and materials to the amount of labor and materials necessary to perform the level of service. The output from the model is the total amount of labor and materials and the estimated cost.

Using information from the National Transit Database, corroborated by five years of annual financial statements from LYNX, costs were allocated to one of the five O&M model line item categories.

- Vehicle Operations - Transportation operating and supervision personnel and materials
- Vehicle Maintenance - Mechanical and cleaning personnel and materials
- Non-Vehicle Maintenance – Maintenance of vehicles used for general operations but not for passenger transport
- General Administration – Non operations related costs (payroll, other administrative tasks)

Costs were escalated using a variety of growth rates provided by LYNX. These growth rates vary by year and range from 1.4 – 7 percent for variable expenses to 1.4568 for fixed expenses.

Other Costs

Busway Maintenance - This cost was developed based on Florida Department of Transportation’s unit cost for maintaining a lane mile of roadway. In 2012, this cost factor was approximately \$15,000 per lane mile.³⁰

For the purposes of this analysis, other costs such as station maintenance of station and off-board fare collection costs were not included in this analysis as they would remain the same across all alternatives.

The total O&M cost for each alternative is shown below in **Table 9-10**.

Table 9-10: Alternative O&M Costs (2030)

	No Build	Enhanced Bus	Build 1	Build 2	Build 3
Total System Costs	\$187 M	\$207 M	\$223 M	\$217 M	\$218 M
BRT Service Costs			\$33 M	\$27 M	\$26 M
Busway Maintenance Costs				\$0.18 M	\$0.60M
Total	\$187 M	\$207 M	\$253 M	\$244.18 M	\$244.6 M
Increment over the No-Build		\$20 M	\$66 M	\$57.18 M	\$57.6 M

Source: VHB

³⁰ FDOT guidance provided for lane maintenance costs



9.7 Land Use Impact Analysis

The land use and redevelopment analysis included the assessment of several factors to identify the effects of each of the Short List Alternatives on land use, growth and redevelopment. The assessment factors include the following:

- Station locations and development centers
- Transit frequency and reliability
- Ridership
- Multimodal transportation connections

Station Locations and Development Centers

According to a 2008 study completed for the City of Denver, an investment in transit can redistribute anticipated growth to station areas.³¹ Further, depending on the quality and frequency of the transit, new, unanticipated growth may also occur at station areas. From a land use perspective, this station area development phenomenon is quite important.

Figure 9-9 shows the proposed station locations for the three BRT alternatives; these locations were identified based on a combination of land use and transportation considerations. From a transportation standpoint, BRT stations were identified for locations connecting the four logical termini that are the basis for the BRT system (i.e., Four Corners, Walt Disney World, Kissimmee Intermodal Facility and Osceola Parkway SunRail). Station locations are at least one mile apart where possible to decrease the number of stops and improve BRT travel time. Stations are also located at signalized intersections to allow for safe pedestrian crossings of US 192.

The following land use considerations were made in identifying station locations; more background data on these issues is provided in Chapter 2:

Major employers and business districts – Several employment concentrations were identified as priority locations to serve. These locations were Walt Disney World, Downtown Kissimmee, Florida Hospital Kissimmee, Osceola Regional Medical Center, Celebration Health and Valencia College. Additionally, retail and tourism related employment is found throughout the US 192 corridor, but is concentrated in the area between SR 429 and SR 535.

Tourist or cultural attractions – In addition to Walt Disney World, which is by far the largest tourist location within the Study Area, other attractions exist along the US 192 corridor, as discussed in Chapter 2. These include Arabian Nights, Gaylord Palms Resort, Old Town, Medieval Times and Osceola Heritage Park.

Developments of Regional Impact (DRIs) – DRIs are large-scale development that generally contain a mix of uses and are master planned. Most of the DRIs within the Study Area are located west of the City of Kissimmee. The level of development activity varies, with several DRIs approved for development that remains built.

³¹ "Transit Oriented Development Economic Analysis and Market Study," Basile Baumann Prost for the City and County of Denver, 2008.



Community Redevelopment Agencies (CRAs) – As mentioned in Chapter 2, there are four existing and one planned CRAs within the Study Area, with the two primary CRAs (in terms of land area) being the W192 and Vine Street CRAs. The W192 CRA covers the majority of the Study Area and is served by multiple stations coinciding with existing or planned activity centers. As part of the Vine Street CRA Master Plan, activity centers are identified at Osceola Square Mall, the Bronson property (at Emory Avenue and US 192) and Osceola Regional Medical Center.

Residential Centers – The majority of the permanent population within the Study Area is located in the City of Kissimmee in communities located on either side of US 192 (Vine Street). Residential areas within the Town of Celebration are located away from US 192, but the Celebration Place Park and Ride is proposed to provide additional access to this residential activity center. As discussed in Chapter 2, additional short-term housing exists within timeshare and short-term rentals west of Interstate 4, as well in hotels that are used for temporary housing.

Table 9-11 summarizes the station locations and the major activity centers that are served.

Table 9-11: Summary of Major Land Uses by Station

Station	Employers / Business Districts	Tourist / Cultural Attractions	Land Uses Served		
			Developments of Regional Impact (DRIs)	Community Redevelopment Agencies (CRAs)	Residential Centers
Four Corners			Cagan Crossings, Summer Bay		
Westside Boulevard			Westside	W192	
Vista del Lago Boulevard			Orange Lake Resort	W192	
Orange Lake Boulevard E			Orange Lake Resort, Rolling Oaks	W192	
Old Lake Wilson Rd			Westgate	W192	
Walt Disney World	Walt Disney World	Walt Disney World			
Celebration Place	Celebration Health		Celebration, The Parkway, Landmark Sun Resort	W192	Celebration
Celebration Avenue		Arabian Nights	Celebration	W192	
Holiday Trail		Old Town		W192	
Poinciana Boulevard			Resort World/ Star Island	W192	
Lake Cecile				W192	
Siesta Lago				W192	
Old Vineland Road		Medieval Times		W192	

**Table 9-11: Summary of Major Land Uses by Station (continued)**

Station	Employers / Business Districts	Tourist / Cultural Attractions	Land Uses Served		
			Developments of Regional Impact (DRIs)	Community Redevelopment Agencies (CRAs)	Residential Centers
Armstrong Boulevard			Osceola Square	Vine Street	Kissimmee
Emory Avenue				Vine Street	Kissimmee
Osceola Regional Medical Center	Osceola Regional Medical Center			Vine Street	Kissimmee
Kissimmee Intermodal Facility	Downtown Kissimmee			Downtown Kissimmee CRA	Kissimmee
Florida Hospital	Florida Hospital		Fountainhead	North US 441 (proposed)	Kissimmee
Osceola Parkway SunRail			Osceola Corporate Ctr, Gateway Commons		

Source: VHB

Most primary activity centers within the Study Area would be served by one or more stations. Key locations that would not be served directly by the BRT alignment include Valencia College and Osceola Heritage Park, as these locations are outside the paths/routes connecting the four termini. For the Enhanced Bus and three BRT alternatives, a Link 10 express route is proposed that would serve these uses and connect to the Kissimmee Intermodal Facility.

Since the same station locations are used for each of the three BRT alternatives, the land use benefits of the three BRT alternatives do not differ in this respect. The fact that these centers are served increases the potential that the transit investment will be successful and that the land use will positively respond to the transit investment. Additionally, the transit infrastructure investment in these redevelopment areas and growth centers is consistent with the Livability Principles discussed earlier in the report. The proposed, pedestrian-friendly stations in each of the BRT alternatives will encourage land uses patterns that are more compact than current development.

While the bus stop locations for the Enhanced Bus alternative generally match the BRT station locations, this alternative would not include a visible investment in transit infrastructure through the branded BRT stations. Without this element, the Enhanced Bus alternative is considered to be less likely to promote long-term changes in land use patterns.



Transit Frequency and Reliability

The relationship between transit frequency and land use is well documented, with minimum levels of transit service needed to establish transit-supportive land use patterns at various densities.³² The future land use plans for Osceola County, the City of Kissimmee, and their associated CRAs all propose increased development density along the US 192 corridor. To achieve these densities in a transit-supportive pattern, however, adequate transit service is required. Similarly, adequate development densities are required to make transit service financially viable and provide a ridership base.

The No Build alternative would maintain existing transit headways along US 192 (generally four buses an hour for Links 55 and 56 combined), therefore providing no additional incentive for development. The Enhanced Bus and three BRT Build alternatives would all provide a significant increase in service frequency over the No Build alternative, with four additional routes each operating at 15 minute headways. The increased transit frequency associated with these alternatives provides greater potential for transit-supportive development at station areas.

Build Alternatives 2 and 3 would include a dedicated busway to improve the travel time and reliability for transit service. This infrastructure also provides a visual sense of permanence regarding the transit investment in the corridor, increasing the attractiveness of transit-oriented redevelopment within the Study Area.

Ridership

Another strong correlation between transit and land use is found in the total number of riders and the ability to attract serve both transit dependent and choice riders. While a mix of land uses to support both type riders is important, choice riders have higher spending habits and are more influential to redevelopment.

For all alternatives, both the total ridership and the number of choice riders would increase in comparison to existing conditions. The three BRT alternatives would have the highest total ridership and also attract the highest number of choice riders. These alternatives would also provide the greatest potential for capturing the additional tourist market discussed earlier.

Multimodal Transportation Connections

Multimodal transportation hubs are a key component in achieving the positive land use impacts that would be provided by the Short List Alternatives, as they provide the strongest opportunities for compact transit-oriented development. The Kissimmee Intermodal Facility (KIF) would be the primary transportation hub within the Study Area, with connections to SunRail, Amtrak, Greyhound, and LYNX local bus and BRT services. All five alternatives would strengthen this transportation hub by including the relocation of LYNX routes from the Osceola Square Super Stop to this location. The additional transit service provided through the Enhanced Bus and three BRT alternatives will further strengthen the development potential at KIF. This intermodal

³² "Public Transportation and Land Use Policy." Pushkarev and Zupan, 1977.



connectivity, coupled with the City's redevelopment activities through the Downtown Kissimmee CRA, will help direct growth to this station.

In addition to KIF, the three BRT Build alternatives would create a new multimodal transportation center at the proposed Celebration Place Park and Ride. This station would serve as the transfer point for local bus and BRT routes to and from Walt Disney World. This location could also serve as a corridor transportation hub for taxi and shuttle services. A park and ride lot is proposed at this location to capture potential riders from the residential areas within Celebration that are not within walking distance of US 192. The combination of a public parking facility and multimodal transportation center would also create the potential for transit-oriented development beyond what is reflected in adopted plans. The park and ride lot would also create the potential for transit joint development in conjunction with the build-out of the Celebration DRI.

Livability Principles

As discussed in Chapter 1, the six Livability Principles developed by FDOT/EPA/HUD serve as a cornerstone of this study, as the need for transit improvements in the Study Area is driven by communities' desires to improve livability for residents and employees. Consistency with the Livability Principles was an important consideration in the development and refinement of the Short List Alternatives. **Table 9-12** summarizes the degree to which the alternatives improve conditions within the Study Area relative to the six principles.

Other Issues

In addition to these four land use affects, several engineering aspects of the alternatives are expected to cause land use impacts. These are as follows:

Right of way impacts – In developing the BRT alternatives and the limits of the busway, the improvements were limited to the existing right of way where possible. By minimizing the construction footprint, potential impacts to existing land uses would also reduced.

Driveway conflicts – For the curbside BRT stations, some driveways that are close to the intersection would be impacted and may require closure or relocation. However, most of these parcels are at corners (since all stations would be at signalized intersections) and therefore would have possible access from side streets. The majority of the areas with potential driveway conflicts would be within the limits of the W192 and Vine Street CRAs. As part of the long term redevelopment of these areas, driveway consolidation and cross access between parcels would be implemented to support the BRT alternatives.

Directional left turn closures – for areas with a median busway (Celebration Place to Hoagland Boulevard for BRT Build 2 and Town Center Boulevard to Hoagland Boulevard for BRT Build 3); it is proposed that directional left turns be removed between signalized intersections. This would prevent uncontrolled conflicts between turning vehicles as they cross the busway. These closures would create indirect access to some parcels, as they would require an increase in U-turn movements along US 192.



Table 9-12: Livability Principles and Short List Alternatives

Livability Principle	No Build	Enhanced Bus	BRT Alternatives
Provide more transportation choices	Bus routes in the corridor would be rerouted to the Kissimmee Intermodal Facility to enable access to SunRail Commuter Rail Service	Minor improvement. Increased bus service will increase transportation options. A small reduction in automobile vehicle miles traveled (VMT) is projected.	Significant improvement. BRT will offer a distinctly different transportation option. The use of a median busway in Alternatives 2 and 3 will increase the reliability of transit service. A larger reduction in automobile VMT is projected.
Promote equitable, affordable housing	No change	No change	Minor improvement. The BRT service will promote housing along the corridor as part of the Vine Street CRA; housing options adjacent to the corridor will also be enhanced. However, residential uses are not currently allowed along US 192 within the W192 CRA.
Enhance economic competitiveness	No change	Minor improvement. Increased bus service will provide improved access to jobs and services for transit dependent riders.	Significant improvement. The introduction of BRT will improve the travel speed and reliability for transit service to employment destinations.
Support existing communities	No change	No change.	Significant improvement. BRT is consistent with the CRA plans within the Study Area and supports the redevelopment of existing communities.
Coordinate and leverage Federal policies and investment	No change	Improved bus service will support Federal investment in SunRail.	Significant improvement. BRT improvements address local and regional objectives for transportation and land use. A variety of funding options are available at the local and state levels to supplement Federal investments. BRT service will support Federal investment in SunRail.
Value communities and neighborhoods	No change	No change	Significant improvement. BRT service would improve connectivity between existing neighborhoods. Pedestrian improvements are proposed along US 192 and US 441 as part of the implementation of BRT infrastructure.

Source: VHB





9.8 Environmental Impact Summary

This section summarizes the environmental review of the US 192 Alternatives Analysis alternatives, which evaluates and addresses potential impacts of the No Build, Enhanced Bus and the various Build alternatives on the surrounding community. The analysis ensures that community values and concerns receive adequate attention during transportation development. Each alternative was ranked on a scale of Low, Medium and High, based on the alternative's ability to minimize potential impacts on air quality, noise, wetlands and protected species. The analysis is summarized below.

Air Quality

MetroPlan Orlando's Fifth Annual Report and Contingency Plan for Air Emissions Reduction in Central Florida identifies ozone as the primary air pollutant of concern in Central Florida. Vehicle exhaust is one of the primary contributors of the air pollutants that contribute to ozone. Carbon monoxide from vehicle exhaust is also an air pollutant of concern, as is particulate matter (dust) frequently associated with construction. The Contingency Plan indicates that the project area does not exceed the US Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS).

The evaluation of the No Build, Enhanced Bus and the various Build alternatives considered how each alternative would serve to minimize impacts to air quality. Alternatives that do not minimize impacts would be considered Low and indicate a greater impact on air quality.

As most of the air quality pollutants are associated with vehicle emissions, alternatives that reduce the number of vehicles on the road and/or the number of vehicle miles travelled (VMT) would serve to improve air quality. Construction has a temporary impact of suspending particulate matter; as such, the larger the construction area and/or the longer the duration of construction, the greater air quality impacts.

Table 9-13 summarizes the expected reduction in weekday VMT for each alternative.

The Enhanced Bus Alternative would provide limited VMT reduction when compared to the No Build; both alternatives were considered Low in minimizing air quality impacts. Conversely, the three BRT build alternatives provided substantial VMT reduction offset by some temporary construction related impacts associated with traffic congestion; and are considered to be medium in minimizing air quality impacts.



Table 9-13: Year 2030 Weekday VMT Reduction

Alternative	Weekday VMT Reduction (Compared to No Build)
No Build	0
Enhanced Bus	20,400
BRT Build 1	30,800
BRT Build 2	38,300
BRT Build 3	42,100

Source: VHB

Noise

Noise is an unwanted or undesirable sound that affects human subjective response due to its intensity, frequency, and variation with time. Certain land use types, such as schools, churches and health care facilities, are more sensitive to noise levels.

The evaluation of the alternatives considered how each alternative minimizes the level of potential noise impact. Alternatives that do not minimize potential impacts would be considered Low and indicate a greater impact on noise level.

The potential noise impacts would likely be caused by construction and the number and types of different vehicles driven. Construction has a temporary impact of noise that would vary based upon the size of the construction area and the duration of the construction timeframe.

Both the No Build and Enhanced Bus alternatives were ranked High (less impact) in that there would be little to no associated construction. The three build alternatives all require some degree of construction, and were therefore are considered to be medium in their ability to minimize potential noise.

Wetlands

Wetlands are protected ecosystems that are saturated with water and have characteristic vegetation. Impacts to these systems are highly regulated. The approximate location and type of wetlands along the project corridor were identified from various data sources and through the Efficient Transportation Decision Making (ETDM) screening process. The results of the data searches and ETDM screening are provided in Appendix K.

Wetlands are located along the entire corridor, and are primarily adjacent to the existing ROW with the occasional stream crossing or wetland edge within the ROW. The evaluation considered how each alternative minimizes wetland impacts. Alternatives that avoid potential impacts would be considered High and indicate a lower impact to wetlands.

Wetland impacts can be considered both direct and indirect. Direct impacts result from the physical alteration of the wetland through excavation or fill placement. Indirect impacts are also known as secondary impacts, and occur when there is little to no adjacent upland buffer – which reduces wildlife habitat and increases the potential for human ingress and egress, trash/ debris



deposition, sedimentation and/or the transport of untreated stormwater runoff into the wetland. Wetland impact evaluation for these alternatives was based upon the amount and location of construction, and its potential direct and secondary impacts.

The No Build, Enhanced Bus and Build #1 alternatives would have little to no construction or potential for wetland impact.

The Build #2 and Build #3 alternatives both require construction of additional travel lanes within the existing ROW. Direct impacts from the construction appear relatively small and would be expected as the roadway slopes are pushed outward. Secondary impacts from reduced upland buffers in areas of roadway expansion are also expected.

Protected Species

Several sources of information, including ETDM screening, were obtained and reviewed to identify protected wildlife, which includes those species listed as Threatened (T) or Endangered (E) by the Federal government, and wildlife listed as a Species of Special Concern (SSC), T or E by the State. A total of 28 species were listed for the SR 500 PD&E project area and this species list is applicable to this project area as well, as the PD&E project area is within the US 192 Study Area. The US Fish and Wildlife Service (FWS) has identified “Consultation Areas” for several of the applicable species. The consultation process requires FWS and other Federal agencies to collaboratively work together to resolve impacts to these species.

The consultation areas that fall within the limits of the entire US 192 Alternatives Analysis Study Area include the Audubon’s crested caracara, Everglades snail kite, Florida scrub jay and red-cockaded woodpecker. The sand and blue tailed mole skinks consultation area, wood stork core foraging areas and bald eagle nests territories also occur within the Study Area.

The approximate location of documented protected species, protected habitats and consultation areas along the project corridor were graphically depicted. These maps, the results of the data searches, and the ETDM screening are provided in Appendix K.

Protected species and habitats are located along the entire corridor. The presence of protected species would be primarily adjacent to the existing ROW, with the occasional individual located on the edge within the ROW. The evaluation considered how each alternative minimizes protected species impacts, so alternatives that avoid potential impacts would be considered High and indicate a lower impact to protected species.

Protected species impacts could result from a “taking” of an individual or its nest/den; the results of a direct loss of the individual animal or the destruction of its nest/den. Impacts can also be caused by habitat loss or fragmentation, disruption of nesting success or the increased potential for vehicular collisions. These other forms of impacts are indirect, and occur through habitat loss or alteration. The protected species impact evaluation for the alternatives was based upon the amount and location of construction, and its potential for “taking” or indirect impacts. The No Build, Enhanced Bus and Build #1 alternatives would have a construction impact, or the potential for protected species impact.

The Build #2 and Build #3 alternatives both require construction of additional travel lanes within the existing ROW. Direct impacts from the construction appear relatively small and would be expected as the roadway slopes are pushed outward. The potential for protected species “takes”



is limited. Indirect impacts from reduced buffers adjacent to native habitat areas from roadway expansion are expected.

9.9 Traffic Impact Summary

Five different scenarios were analyzed in the Traffic Impact Summary Analysis. These scenarios were consistent with the alternatives described above and the summary of the results is listed below.

No Build

The year 2030 future conditions analysis was completed in SYNCHRO for the No Build alternative to establish baseline traffic conditions for comparison among alternatives. The No Build traffic analysis incorporates traffic growth based on a combination of regional model (OUATS) forecasts, historical traffic growth rates, and population forecasts. The annual traffic growth rates assumed for the Study Area range from 1.5 to 1.7 percent for the Osceola Corridor and 1.0 to 2.4 percent for the Kissimmee Corridor. Additional information regarding the growth rates is included in Appendix H.

The year 2030 SYNCHRO analysis was completed for the AM and PM peak hours. The analysis results were reviewed to assess projected levels of service for both individual signalized intersections and the overall corridor travel time and speed.

Of the 61 intersections included in the analysis, 24 are projected to operate at or over capacity (LOS E or F) for the year 2030. **Table 9-14** summarizes the results for the intersection analysis. The complete No Build analysis is included in Appendix H. **Table 9-15** summarizes the results for the arterial analysis. The corridor travel time and speed were evaluated along US 192 from Four Corners to Kissimmee Intermodal Facility; for the year 2030 No Build Alternative, travel times range from 48.8 minutes (PM peak, westbound) to 52.1 minutes (AM peak, eastbound). These travel times are longer than existing conditions due to the growth in traffic volumes and increased congestion at intersections.

Enhanced Bus

The Enhanced Bus Alternative includes Transit Signal Priority (TSP) for select intersections along US 192. TSP would allow buses to receive extended green time when approaching a signalized intersection. TSP would be located at intersections where the bus would travel straight through the intersection (no left or right turns) and where the additional green time would not create additional failing movements on side streets.

The feasibility of TSP at individual intersections was evaluated based on the year 2030 No Build LOS and the impacts the signal modifications may have on automobile traffic. As a first step, potential locations for TSP were limited to intersections with a LOS D or lower (for intersections with a LOS C or better, the level of congestion is not significant enough to necessitate TSP.)



Table 9-14: Year 2030 Intersections with LOS E or F by Alternative and Time of Day

Osceola Corridor	Enhanced				
	No Build	Bus	BRT Build 1 (1)	BRT Build 2	BRT Build 3
US 192 and Avalon Rd/Westside Blvd	AM	AM	AM	AM	AM
US 192 and Entry Point Blvd/Sherberth Rd	AM and PM	AM and PM	AM and PM	AM and PM	AM and PM
US 192 and Old Lake Wilson Rd	PM	PM	PM	PM	PM
US 192 and Celebration Pl				AM and PM	AM and PM
US 192 and Celebration Ave	PM	PM	PM	PM	PM
US 192 and Poinciana Blvd	PM	PM	PM	PM	PM
US 192 and SR 535	PM	PM	PM	PM	PM
US 192 and Bass Rd	PM	PM	PM	PM	PM
US 192 and Hoagland Blvd	AM and PM	AM and PM	AM and PM	AM and PM	AM and PM
US 192 and Dyer Blvd	PM			PM	PM
US 192 and Thacker Ave	AM and PM	AM and PM	AM and PM	AM and PM	AM and PM
US 192 and John Young Pkwy	AM and PM	AM and PM	AM and PM	AM and PM	AM and PM
US 192 and US 441/Main Street	PM	PM	PM	PM	PM
US 192 and Oak St/Michigan Ave	AM and PM	AM and PM	AM and PM	AM and PM	AM and PM
US 192 and Boggy Creek Rd	AM	AM	AM	AM	AM
US 192 and Simpson Rd	AM	AM	AM	AM	AM
US 192 and Shady Lane/FL Turnpike	AM and PM	AM and PM	AM and PM	AM and PM	AM and PM
Kissimmee Corridor	No Build	Enhanced Bus	BRT Build 1 (1)	BRT Build 2	BRT Build 3
Osceola Parkway and Orange Ave	PM	PM	PM	PM	PM
US 441 and Osceola Parkway	AM and PM	AM and PM	AM and PM	AM and PM	AM and PM
Main Street/Broadway and Neptune Rd	PM	PM	PM	PM	PM
John Young Parkway and Oak Street	PM	PM	PM	PM	PM
John Young Parkway and MLK Blvd	PM	PM	PM	PM	PM
John Young Parkway and Emmett Street	PM	PM	PM	PM	PM
John Young Parkway and Osceola Park Dr	AM	AM	AM	AM	AM
John Young Parkway and Pleasant Hill Road	AM and PM	AM and PM	AM and PM	AM and PM	AM and PM

Source: VHB

Notes:

“AM” and “PM” notations indicate peak periods.

Results are for automobile (general traffic) LOS only.

Intersections not listed are projected to operate at LOS D or better for the year 2030.

- (1) Build 1 was not analyzed separately in SYNCHRO since the differences between this alternative and Enhanced Bus (i.e., queue jumps) do not affect automobile travel time.





Table 9-15: Year 2030 Automobile Travel Time by Alternative

Four Corners to Osceola Parkway SunRail Station		AM Peak	
Alternative	Eastbound (Minutes)	Westbound (Minutes)	
No Build	52.1	50.1	
Enhanced Bus	51.4	49.6	
Build 1 (1)	51.4	49.6	
Alternative 2	53.2	50.9	
Alternative 3	53.3	51.1	

Four Corners to Kissimmee Intermodal Facility		PM Peak	
Alternative	Eastbound (Minutes)	Westbound (Minutes)	
No Build	50.0	48.8	
Enhanced Bus	49.5	48.3	
Build 1 (1)	49.5	48.3	
Alternative 2	51.2	49.5	
Alternative 3	51.3	49.7	

Source: VHB

(1) Build 1 was not analyzed separately in SYNCHRO since the differences between this alternative and Enhanced Bus (i.e., queue jumps) do not affect automobile travel time.

For these intersections, further analyses were completed using SYNCHRO to evaluate the impact of extending the green time for through movements along US 192. Intersections where TSP negatively impacted side street traffic and the overall intersection LOS were removed from the list of intersections recommended for TSP. The final list of intersections for Transit Signal Priority as part of the Enhanced Bus Alternative is as follows:

- US 192 and Town Center Boulevard
- US 192 and Orange Lake Boulevard W
- US 192 and SR 429 SB Ramps
- US 192 and SR 429 NB Ramps
- US 192 and Formosa Gardens Boulevard
- US 192 and Griffin Road
- US 192 and Arabian Nights Boulevard
- US 192 and International Drive
- US 192 and Holiday Trail
- US 192 and Seralago Boulevard
- US 192 and SR 535
- US 192 and Seven Dwarfs Lane
- US 192 and Siesta Lago Drive
- US 192 and Armstrong Boulevard
- US 192 and Dyer Boulevard
- US 192 and Orange Boulevard
- US 192 and Thacker Avenue
- US 192 and Main Street



- US 441 and Carroll Street
- US 441 and Donegan Avenue
- Main Street and Oak Street

No physical traffic changes (for example, queue jumps or exclusive bus lanes) are proposed as part of the Enhanced Bus Alternative. For this alternative, the extended green times associated with TSP would also benefit through traffic along US 192 and US 441. As a result, this alternative has improved traffic times when compared to the No Build Alternative. Year 2030 travel times between Four Corners and Kissimmee Intermodal Facility range from 48.3 minutes (PM peak, westbound) to 51.4 minutes (AM peak, westbound). This alternative has similar intersection LOS conditions when compared to the No Build, with an improvement in LOS at one intersection (US 192 and Dyer Blvd). The LOS at all other intersections is the same as those for the No Build. Table 9-14 summarizes the results for the intersection analysis. Table 9-15 summarizes the results for the arterial analysis.

The SYNCHRO analysis results for this alternative represent a worst-case assumption, as the traffic volumes do not account for the reduction in automobile traffic resulting from the increased transit service and transit ridership. (The ridership results by alternative are summarized in Section 9.4 and Appendix J.)

BRT Build 1

The BRT Build 1 alternative includes queue jumps for transit vehicles in addition to TSP. The evaluation methodology for locating queue jumps addressed the following factors:

Right of way availability – No queue jumps are proposed in areas of the corridor with limited right of way (Vine Street and downtown Kissimmee), as to avoid right-of-way impacts associated with the extra lane. For these areas, TSP alone is assumed to provide travel time savings for transit vehicles.

Queue lengths for through movements – The Year 2030 95th percentile queues were evaluated for through movements at signalized intersections along US 192 and US 441 where BRT service would be operating. For intersections where the 95th percentile queue for through movements is 500 feet or less, no queue jumps were implemented. This is because at these locations, traffic congestion was not considered significant enough to generate significant delay for transit vehicles. Additionally, it is assumed that the TSP system can detect transit vehicles up to 500 feet away from the signal, allowing for extensions of green time as needed.

Presence of right-turn lanes – The existing intersection geometry was reviewed to identify whether a right turn lane currently exists. The lengths of the existing lanes were compared to the 95th percentile queue length that would be used for implementing the queue jump lane. For locations where the right turn lane would be shorter than the 95th percentile queue length (and thus the proposed queue jump lane), the right turn lane would be extended. This would allow right-turning traffic to access the right-turn lane without crossing the queue jump lane. For queue jump locations without a right turn lane, both a queue jump lane and a right turn lane would be added.



Queue Jumps were assumed at the following locations:

- US 192 and Vista Del Lago Boulevard
- US 192 and Orange Lake Boulevard W
- US 192 and SR 429 SB Ramps
- US 192 and Black Lake Road
- US 192 and Old Lake Wilson Road
- US 192 and Reedy Creek Boulevard
- US 192 and Celebration Avenue
- US 192 and Polynesian Isles Boulevard
- US 192 and Poinciana Boulevard
- US 192 and SR 535
- US 192 and Super Target
- US 192 and Hoagland Boulevard
- US 441 and Carroll Street

The Build 1 alternative was not analyzed in SYNCHRO, as no changes to signal timings are proposed as part of the implementation of queue jump lanes. (SYNCHRO analyzes only automobile traffic conditions and does not model transit travel patterns.) Therefore for comparison purposes, the intersection LOS and automobile travel times for BRT Build 1 are assumed to be the same as those for the Enhanced Bus Alternative. Similar to the Enhanced Bus Alternative, the additional green time along US 192 through TSP will reduce automobile travel time in comparison to the No Build Alternative.

The SYNCHRO analysis results for this alternative represent a worst-case assumption, as the traffic volumes do not account for the reduction in automobile traffic resulting from the increased transit service and transit ridership. (The ridership results by alternative are summarized in Section 9.4 and Appendix J.)

BRT Build 2

The BRT Build 2 alternative includes median bus lanes on US 192 from Celebration Place to Hoagland Boulevard. As previously discussed, these limits were selected because the section east of Interstate 4 is projected to experience the greatest congestion for future conditions. No bus lanes are proposed for the section east of Hoagland Boulevard due to limited right of way availability.

As part of the development of alternatives, the potential to convert an existing travel lane from general use to transit only was evaluated. A summary of this analysis is included in Appendix H. Based on the person trip analysis, a lane conversion was not pursued as part of this study, as the required transit service and ridership levels (to replace a lane full of automobiles with an equivalent transit capacity) were beyond what is reasonably expected for the year 2030 horizon of this analysis. Additionally, the lack of continuous parallel routes throughout the Study Area limited the options available for shifting traffic away from US 192. As a result of this evaluation, the areas with an exclusive busway assume two new lanes in addition to the six lanes for automobile traffic.



For signalized intersections between Celebration Place and Hoagland Boulevard, the buses in the busway would receive a TSP enabled extended green signal if the signal is already green upon the bus' approach. All left turn movements at signalized intersections would be through protected signal phases only; this will prevent conflicts where left turning vehicles cross the busway. For this section, all directional (un-signalized) left turn median openings would be closed and these left turns would be made at the next signalized intersection. This increase in left turns at signalized intersections was accounted for as part of the VISSIM analysis discussed later in this section.

At US 192 and Celebration Place, BRT vehicles would leave the US 192 corridor to access the proposed park and ride lot; this would require buses to enter and exit the median busway. As part of the SYNCHRO analysis, separate signal phases were provided for these bus movements (westbound left turn onto Celebration Place, northbound right turn onto US 192, and northbound left turn onto US 192). At the intersection of US 192 and Hoagland Boulevard, a bus-only phase is added to allow BRT vehicles to transition to and from the median busway. Outside of the section between Celebration Place and Hoagland Boulevard, the Build 2 Alternative includes TSP and queue jumps similar to the Build 1 alternative.

Table 9-14 summarizes the results of the SYNCHRO intersection analysis for the Build 2 alternative. With the addition of the median busway, the US 192/Celebration Place intersection would experience a reduction in LOS. This is due to the additional bus-only phases required to allow buses to enter and exit the median busway. The LOS at all other intersections is the same as those for the No Build. Table 9-15 summarizes the results for the SYNCHRO arterial analysis. In comparison to the No Build, automobile travel times for Build 2 increase due to the bus-only phases at the busway transition points (Hoagland Boulevard and Celebration Place). Corridor travel times for automobiles would be 1 to 2 minutes longer than for the No Build alternative, ranging from 49.6 minutes (PM peak, westbound) to 53.2 minutes (AM peak, eastbound).

The SYNCHRO analysis results for this alternative represent a worst-case assumption, as the traffic volumes do not account for the reduction in automobile traffic resulting from the increased transit service and transit ridership. (The ridership results by alternative are summarized in Section 9.4 and Appendix J.)

BRT Build 3

The BRT Build 3 alternative is similar to Build 2 with the exception of the median busway, which would extend from Town Center Boulevard to Hoagland Boulevard in this alternative. This alternative includes the separate bus signal phases at the US 192/Celebration Place intersection as described for Build 2, as all buses would serve the park and ride lot located there. Outside of the section between Town Center Boulevard and Hoagland Boulevard, the Build 3 Alternative would include TSP and queue jumps similar to the Enhanced Bus, Build 1 and Build 2 alternatives. At the US 192/Hoagland Boulevard and US 192/Town Center Boulevard, a bus-only phase would be added to allow BRT vehicles to transition to and from the median busway. At the intersection of US 192 and Hoagland Boulevard, a bus-only phase would be added to allow BRT vehicles to transition to and from the median busway.

Table 9-14: Year 2030 Intersections with LOS E or F by Alternative and Time of Day summarizes the results of the SYNCHRO analysis for the Build 3 alternative. With the addition of the median



busway, the US 192/Celebration Place intersection would experience a reduction in LOS, similar to the Build 2 alternative. The LOS at all other intersections is the same as those for the No Build. Table 9-15: Year 2030 Automobile Travel Time by Alternative summarizes the results for the SYNCHRO arterial analysis. In comparison to the No Build, automobile travel times for Build 3 increase due to the bus-only phases at the busway transition points (Hoagland Boulevard and Town Center Boulevard) and at Celebration Place. This alternative would experience minor increases in corridor travel time (6 to 12 seconds) in comparison to Build 2, due to the bus only phases required at Town Center Boulevard. Corridor travel times for automobiles would range from 49.7 minutes (PM peak, westbound) to 53.3 minutes (AM peak, eastbound).

The SYNCHRO analysis results for this alternative represent a worst-case assumption, as the traffic volumes do not account for the reduction in automobile traffic resulting from the increased transit service and transit ridership. (The ridership results by alternative are summarized in Section 9.4 and Appendix J.)

VISSIM Analysis

A VISSIM traffic simulation model was completed to understand the interaction of transit vehicles and general traffic. As mentioned previously, the SYNCHRO software is only able to model automobile traffic conditions. In comparison, VISSIM is a multimodal traffic simulation software that can analyze transit vehicles and automobile traffic simultaneously. Using the VISSIM model, the exact transit service schedule for the Short List Alternatives was modeled, including individual local bus and BRT routes, headways, station/bus stop locations and bus dwell times. (The transit service planning assumptions and route running times are described in more detail in Section 9.3 and Appendix D.) The VISSIM model also allows the transit-related traffic elements (TSP, queue jumps and the dedicated busway) to be analyzed.

A Year 2030 VISSIM model was constructed for a test segment of the corridor, as well as for one complete alternative (BRT Build 2). (No existing year VISSIM validation model was constructed, as the analysis results are intended to provide relative comparisons between the alternatives' features.) The test segment was completed from Celebration Place to Poinciana Boulevard. This segment was used to gauge the sensitivity of the VISSIM model to the TSP, queue jump and busway elements included in the alternatives. The transit elements for this segment, by alternative, are as follows:

- No Build – local bus service
- BRT Build 1 – local and BRT service, transit signal priority and queue jumps
- BRT Build 2/3 – local and BRT service, and dedicated busway (The Build 2 and Build 3 alternatives are the same for the limits of the test segment.)

Table 9-16 analysis results for this test segment; the analysis period used was the Year 2030 PM peak, as this represents worst case conditions in the Study Area. The BRT travel times shown in **Table 9-17** are an aggregate of both local and express BRT services.

**Table 9-16: Year 2030 Intersection Delay – VISSIM Test Segment**

Intersection	Average Intersection Delay (seconds per vehicle)		
	No Build	BRT Build 1	BRT Build 2/3
US 192 and Celebration Place	31.7	32.2	35.8
US 192 and Arabian Nights	6.4	6.1	6.3
US 192 and Celebration Avenue	36.2	35.5	34.5
US 192 and International Drive	24.2	24.3	24.7
US 192 and Holiday Trail	12.2	12.6	11.8
US 192 and Seralago Boulevard	22.0	20.6	21.7
US 192 and Polynesian Isle Blvd	32.8	33.4	31.0
US 192 and Poinciana Blvd	79.6	82.7	87.5

Source: VHB

Table 9-17: Year 2030 Travel Times from Celebration Place to Poinciana Blvd. – VISSIM Test Segment

Mode	PM Peak Travel Time (Minutes)		
	No Build	BRT Build 1	BRT Build 2 and Build 3
Automobile	7.9	8.1	8.0
Local Bus	16.6	16.6	16.7
BRT	N/A	14.3	11.6

Source: VHB

The analysis for the test segment was used to address the following issues:

VISSIM versus SYNCHRO – The analysis results for the test segment showed consistent results between the automobile travel times and delays produced by VISSIM versus SYNCHRO. Since VISSIM models were not completed for the entirety of all five alternatives, this comparison confirmed that SYNCHRO is an appropriate tool for comparing corridor-wide automobile travel times across alternatives.

Transit signal priority and queue jumps – The VISSIM analysis results confirmed that the implementation of TSP would not have adverse impacts on automobile traffic for the selected intersections. Similarly, the VISSIM analysis results confirmed that the queue jumps would not result in adverse impacts on automobile traffic. For transit operations, the VISSIM analysis showed that the use of TSP, queue jumps and the dedicated busway reduced intersection delays for transit vehicles, resulting in shorter travel times.

Signal preemption – As part of the test segment analysis, signal preemption was evaluated at the intersection of US 192 and Celebration Place. At this location, BRT vehicles would exit the busway to access the proposed Celebration Place park and ride lot. Signal preemption would provide travel time savings for transit vehicles making turning movements to and from US 192. However, the use of signal preemption was found to create significant increases in delay for through movements along US 192. The use of signal preemption would also disrupt the



coordination of traffic signals for east-west through movements along the corridor. Based on this evaluation, signal preemption is not recommended as part of the Short List Alternatives and was not assumed as part of the traffic analysis results.

Similar to the SYNCHRO results, the VISSIM analysis results for the test segment represent relative and not absolute values, as the models were not calibrated based on existing conditions and travel times. The VISSIM results for the test segment also represent a worst-case assumption, as the traffic volumes do not account for the reduction in automobile traffic resulting from the increased transit service and transit ridership. (The ridership results by alternative are summarized in Section 9.4 and Appendix J.)

For the Build Alternative 2, a VISSIM model was constructed for the limits of the proposed BRT service (from Four Corners east to Kissimmee Intermodal Facility and the Osceola Parkway SunRail station). This analysis was completed for the Year 2030 PM peak period. The VISSIM model for this alternative included the following refinements based on the results of the conceptual engineering and ridership analyses:

- Left turn volumes – for the limits of the median busway (Celebration Place to Hoagland Boulevard), all un-signalized left turn movements will be removed. This will result in additional U-turning vehicles at the existing signals for this section. To estimate this traffic increase, intersection counts were completed for representative locations along the US 192 corridor. A summary of this volume adjustment is included in Appendix H.
- Transit mode shift – for the complete VISSIM model, traffic volumes were reduced to account for the shift from automobile to transit associated with the BRT Build 2 alternative. As discussed in Section 9-4, the Year 2030 weekday transit ridership for this alternative is approximately 10,500 trips. This represents an increase of 4,000 transit trips over the No Build alternative.

Table 9-18 summarizes the results of the VISSIM analysis for the Build Alternative 2. The BRT results shown in the table are an aggregate of both local and express BRT service. Similar to the analysis for the test segment, the travel times shown are relative and not absolute values, as the VISSIM model was not calibrated for existing conditions.

Table 9-18: Year 2030 VISSIM Travel Time Summary, Build Alternative 2

Four Corners to Kissimmee Intermodal Facility	PM Peak Travel Time (Minutes)	
	Eastbound	Westbound
Automobile	40	41
Local Bus	80	81
BRT	51	47

Source: VHB



Consistent with the analysis completed for the test segment, the VISSIM analysis results show that transit travel times would be slower than those for the automobile due to the presence of bus stops. While the busway provides travel time savings for some of the corridor, the majority of the BRT service for the Build Alternative 2 would operate in mixed traffic. Since this VISSIM analysis reflects the reduction in automobile traffic due to the transit mode shift, automobile travel times are lower than those for the SYNCHRO analyses described earlier (due to reduced congestion).

The analysis results for Build Alternative 2 show a significant improvement in travel time compared to local bus service. This would be due in part to the transit signal priority and queue jumps that reduce traffic-related delay in the mixed traffic segments and the busway travel time savings in the busway segment of US 192. Relative to local bus service, additional travel time savings for Build Alternative 2 are associated with the features of the BRT service that reduce operational delay (fewer stops and off-board fare collection).



10

Tier Three Screening

10.1 Tier Three Screening

The goal of the Tier Three screening is to qualitatively evaluate the Short List Alternatives and select the alternative that best meets the project's purpose and need. The determination of which alternative best satisfies this goal was made by evaluating each of the Short List Alternatives against the Tier Three Screening criteria, which are based upon the project's goals and objectives.

Each of the Short List Alternatives was further developed to include the following components:

- Conceptual Engineering
 - See Appendix C for representative plans
- Development of Service (Operating) Plans
 - See Appendix D for service summary
- Demand Forecasting (including Revenue)
 - See Appendix J for presentation to PAWG-Ridership Technical Subcommittee (5/9/13)
- Mobility Assessment (traffic impacts, connectivity to SunRail, efficient use of capacity, reduction in VMT)
- Capital Cost Estimation
 - See Appendix G for summary for major elements
- Operating Cost Estimation
- Assessment of Consistency with Adopted Local and Regional Plans
- Assessment of Potential Environmental Impacts
- Implementation Timeframe

The Short List Alternatives are listed below:

- **No Build Alternative:** Make no improvements beyond those already committed;
- **Enhanced Bus Alternative:** Improve the existing bus system with transit signal priority, queue jumps and service modifications but make no additional capital investments;
- **Alternative 1:** BRT service and infrastructure with transit signal priority and queue jumps;
- **Alternative 2:** BRT service and infrastructure with transit signal priority, queue jumps and dedicated bus lanes for part of the US 192 alignment; and
- **Alternative 3:** BRT service and infrastructure with transit signal priority, queue jumps and dedicated bus lanes for the majority of the US 192 alignment.



Table 10- provides details for each of the Short List Alternatives as related to the Tier 3 Screening Criteria.

When reviewing the quantitative and qualitative data presented in the matrix, not only the Purpose and Need and five project goals should be considered. Since the project is intended to serve transportation and economic needs, the following alternative elements beyond transportation, ridership and cost should be considered as critical to the evaluation process:

- The need for a transformative project that serves as a foundation for overall improvement of the corridor
- Maximizes the benefits for transit dependent citizens
- Maximizes the ability to attract choice riders
- Consistent with the adopted plans of LYNX (2030 Vision and TDP), Osceola County (Long Range Transit Plan; Transportation Funding Study, etc.) and Kissimmee
- The ability to leverage economic development

With consideration of these elements, **Table 10-2** presents the Tier Three scoring of the SLA



Table 10-1: Short List Alternatives Data Summary

GOAL	Screen 3 Criteria	Unit	Enhanced					
			No Build	Bus	Build #1	Build #2	Build #3	
Improve Mobility and Transportation Access	Transit travel time savings	Hours per weekday	0	2,300	3,200	3,800	4,100	
	Miles of exclusive guideway	Number of miles (per direction)	0	0	0	6	20	
	Reduction in number of transfers between major O/D pairs							
		<i>4C/WDW</i>	Yes/No	No	No	Yes	Yes	Yes
		<i>4C/OP</i>		No	No	No	No	No
		<i>4C/KIF</i>		YES	Yes	Yes	Yes	Yes
		<i>WDW/OP</i>		No	Yes	Yes	Yes	Yes
		<i>WDW/KIF</i>		Yes	Yes	Yes	Yes	Yes
		<i>OP/KIF</i>		No	No	No	No	No
	Number of stations with consistent and multi-modal amenities	Stations	4	4	19	19	19	
	Number of proposed routes with headways of 15 minutes or less							
		<i>OP to KIF</i>		No	Yes (15)	Yes (15)	Yes (15)	Yes (15)
		<i>KIF to 4C</i>	Yes/No (headway in min for new routes in parentheses)	No	No	No	No	No
		<i>KIF to WDW</i>		No	Yes (10)	Yes (10)	Yes (10)	Yes (10)
		<i>WDW to 4C</i>		No	Yes (15)	Yes (15)	Yes (15)	Yes (15)
	Routes structured to serve traditional and tourism-based trips	Yes/No	Yes	Yes	Yes	Yes	Yes	
	Change in transit ridership	Percent above 2010 baseline	64%	137%	169%	188%	196%	
	Number of total linked transit trips	2030 weekday trips	6,342	8,792	9,686	10,251	10,478	
	Number of trips made by transit-dependents	2030 weekday trips	3,101	4,436	4,507	4,745	4,830	
	Number of trips made by choice riders	2030 weekday trips	3,241	4,356	5,179	5,506	5,648	
Number of stations with sidewalk, bike-path and/or park and ride connections	Stations	N/A	19	19	19	19		



Table 10-1: Short List Alternatives Data Summary (Continued)

GOAL	Screen 3 Criteria	Unit	No Build	Enhanced Bus	Build #1	Build #2	Build #3
Improve Mobility and Transportation Access	Number of stations primarily accessed by walking	Stations	N/A	19	19	19	19
	Ability to serve riders effectively during maintenance and other outages	High/Med/Low	Low	Low	Low	Med	High
	Number of stations located at signalized intersections with sufficient pedestrian phases	Stations	N/A	19	19	19	19
	Change in person trip capacity of each corridor	Person trips per hour	0	0	0	1,620	1,620
	Number of TSP-connected traffic signals resulting from project	Number	0	21	26	26	26
	Potential change in highway LOS (number of miles or locations improved)	Intersections	0	1	0	-1	-1
Enhance the Livability and Economic Competitiveness of the Study Area through an Improved Transportation System	Percent of alignment on new right-of-way	Percent	0	0	0	0	0
	Number of major residential (within ¼ mile) and employment (within 1,000 feet) centers directly served by stations	Number of centers	N/A	1 residential center/ 6 employment centers			
	Ability to capture DRI transportation benefits	Adjacent DRIs with commitments to fund station-related infrastructure	N/A	9 DRIs	9 DRIs	9 DRIs	9 DRIs
	Maintains or improves service to transit-dependent populations	High/Med/Low	N/A	Med	Med	High	High
	Capital Cost	Year 2013 Dollars	\$1.8M	\$26M	\$60M	\$117M	\$208M
	Annual Systemwide O&M Cost (O&M Cost vs. No Build)	Year 2030 Dollars	\$187M(\$0)	\$232M(+\$45M)	\$246M(+\$59M)	\$241M(+\$54M)	\$235M(+\$48M)
Develop the Most Efficient Transportation System, Which Maximizes Limited Resources for the Greatest Public Benefit	Annual O&M Cost on Corridor Routes vs. No Build	Year 2030 Dollars	\$0	\$20M	\$36M	\$30M	\$31M
	Cost-effectiveness: New Starts (Small Starts)	Ratio	N/A	N/A	17.86(\$9.50)	16.07(\$16.40)	15.19(\$19.60)
	Acreage of private property to be acquired	Acres	0	0	7.5	12.2	17.3
	Incremental Revenue vs. No Build	Year 2030 Dollars	N/A	\$784,000	\$1,118,000	\$1,328,000	\$1,423,000
	Potential to qualify for Small or New Starts Funding	High/Med/Low	N/A	Not Eligible	Med-Low	Med-Low	Med-Low





Table 10-1: Short List Alternatives Data Summary (Continued)

GOAL	Screen 3 Criteria	Unit	No Build	Enhanced Bus	Build #1	Build #2	Build #3
Develop the Most Efficient Transportation System, Which Maximizes Limited Resources for the Greatest Public Benefit	Potential for public/private funding opportunities	High/Med/Low	N/A	Low	Low	Med	Med
	Direct, quality connection to SunRail (less than ¼ mile walk)	High/Med/Low	Low	Med	High	High	High
	Serves SunRail with consistent feeder and distributor headways	High/Med/Low	Low	Med	High	High	High
	Number of new support facilities required	Facilities	0	1	1	1	1
	Ease of (physical) expandability of proposed project	High/Med/Low	High	High	Low	Med	Low
	Implementation timeframe	Range of Years	N/A	1-2 years	4-5 years	5-6 years	6-7 years
Develop a Transit System Consistent With Adopted Local and Regional Plans and Policies	Consistency with adopted local transportation plans	High/Med/Low	Low	Low	Med	High	High
	Consistency with adopted regional transportation plans	High/Med/Low	Low	Low	Med	High	High
	Consistency with adopted local land use plans	High/Med/Low	Low	Low	Med	High	High
	Consistency with adopted local economic development plans	High/Med/Low	Low	Low	Med	High	High
	Builds upon previous/current LYNX planning efforts	High/Med/Low	Low	Low	Med	High	High
	Consistency with CRA objectives	High/Med/Low	Low	Low	Med	High	High
	Potential to support compact development	High/Med/Low	Low	Low	Low	Med	Med
	Connectivity to other planned, funded transportation improvements	High/Med/Low	Med	Med	Med	Med	Med
Preserve and Enhance the Environment, Natural Resources and Open Space	Use of low-emission fleet	High/Med/Low	Low	Med	High	High	High
	Weekday VMT reduction	Vehicle miles per weekday	0	20,400	30,800	38,300	42,100
	Minimizes level of potential Noise impact (low = greater impact)	High/Med/Low	High	High	Med	Med	Med
	Minimizes level of potential Parklands/4f impact	High/Med/Low	High	High	High	High	High
	Minimizes level of potential hazardous materials impact	High/Med/Low	High	High	High	High	High
	Minimizes water quality impact	High/Med/Low	Med	Med	Med	Med	Med
	Minimizes cultural resources impact	High/Med/Low	High	High	High	High	High
	Minimizes air quality impact	High/Med/Low	Low	Low	Med	Med	Med
	Minimizes wetland impacts	High/Med/Low	High	High	High	Med	Med
	Minimizes protected species impact	High/Med/Low	High	High	High	Med	Med
Minimizes visual quality impact	High/Med/Low	Low	Low	Low	Med	Med	

Source: VHB





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Table 10-2: Tier Three Evaluation Summary by Goal

Project Goal	Final Short List Alternatives				
	No Build	Enhanced Bus	Build 1	Build 2	Build 3
GOAL 1: Improve Mobility and Transportation Access	Low	Low	Medium	High	High
GOAL 2: Enhance the Livability and Economic Competitiveness of the Study Area through an Improved Transportation System	Low	Low	Medium	High	High
GOAL 3: Develop the Most Efficient Transportation System, Which Maximizes Limited Resources for the Greatest Public Benefit	Low	Medium	Medium	High	Low
GOAL 4: Develop a Transit System Consistent With Adopted Local and Regional Plans and Policies	Low	Low	Medium	High	High
GOAL 5: Preserve and Enhance the Environment, Natural Resources and Open Space	Low	Medium	Medium	Medium	Medium
Overall Evaluation	Low	Medium-Low	Medium	High	Medium-High
Select as Recommended Alternative?	No	No	No	Yes	No

Source: VHB

The No Build Alternative represents no changes to the existing transit system within the study area. The study area’s significant, projected demographic growth is reflected in the No Build Alternative’s ridership. However, this alternative scored low on all of the project goals because it would fail to meet the study area needs and would not provide sufficient transit capacity to meet the projected growth.

The Enhanced Bus Alternative would provide an incremental change in the corridor’s transit capacity by providing more frequent bus service. However, the reliability of that service could not be assured since only easily implemented infrastructure improvements were included. In addition, the Enhanced Bus Alternative was not supportive of the stakeholders’ vision of a transformative corridor, would not attract choice riders and would not be in compliance with adopted plans and policies.

All three Build alternatives provided improved transportation infrastructure, service (identical for all three alternatives) and overall system capacity with an improved potential for reliability. While Build Alternative 1 provided for BRT improvements including branded buses, BRT stations, queue jumps and traffic signal improvements, the BRT would mostly operate in mixed traffic and would be subject to the increasing congestion in the corridor. Therefore, of the three build alternatives, *Build 1 was likely to provide the least reliable transit service*. The lack of dedicated lanes in the most congested segments of the corridor also would impact the ability of Build Alternative 1 to achieve a transformative change. Build Alternative 3 provided the greatest change in corridor infrastructure by providing a dedicated busway, BRT buses and BRT stations for the majority of the alignment. As a result, *Build Alternative 3 would attract the highest ridership*. However, this level of infrastructure modification would be expensive (relative to Build Alternative 2) and would result in a diminishing return on the potential investment in the western portion of the study area. In other words, a busway west of Celebration was simply not necessary to meet the projected demand and it was therefore not cost-effective.

Build Alternative 2 provided for a significant change in corridor infrastructure by providing a dedicated busway for part of the corridor, queue jumps in the remainder of the corridor, and BRT buses with BRT stations throughout the corridor. The infrastructure investment of the partial busway combined with the targeted queue jumps enabled a precise investment in infrastructure and resulted in adding capacity where it would have the greatest impact on mobility. *The results showed that this investment would attract 98% of the ridership of Build Alternative 3 but with only 53% of the capital cost of Build*



Alternative 3. In addition, Build Alternative 2 would result in the transformative corridor envisioned by stakeholders and as documented by previous planning efforts. Overall, transit would be elevated to a high level of visibility and permanence that would result from the investment which would attract choice customers, would greatly improve service and reliability of transit service for transit-dependents and would support further economic investment in the study area.

In consideration of the information represented in this technical memorandum and in particular for the reasons outlined above, Build Alternative 2 was recommended for advancement as the Locally Preferred Alternative (LPA). Until adopted as the LPA, Build Alternative 2 was known as the Recommended Alternative.



11

Public Outreach

11.1 Introduction

A range of community outreach activities were completed and integrated into the technical work elements of the US 192 Alternatives Analysis (AA) study. The intent of the outreach program was to share project information with the area stakeholders and interested parties, while creating a comfortable environment for the exchange of ideas and public input. At the onset of the study, the following outreach objectives were identified:

- Coordinate with transit agencies, local governments, and corridor stakeholders;
- Solicit public input from study area stakeholders;
- Provide opportunities for interested individuals and the general public to share input;
- Create a variety of communication tools that are easily accessible so that everyone has the opportunity to participate and comment on the study; and
- Comply with the FHWA/FTA Title VI program.

These objectives were met by using a range of techniques, which included: study mailing list, Public Involvement Plan, Project Advisory Working Groups (PAWGs), study website (and website links), newsletters, open houses, local briefings, and community events. Each technique is described in the following sections. In addition, related digital files are located on the CD provided in Appendix L.

11.2 Study Mailing List

The study mailing list was developed to ensure that area stakeholders, groups, and interested individuals were notified of the study's progress. Email addresses made up most of this contact list; mailing addresses were collected (and used) when email addresses were not available. The following area stakeholder groups were included in the study mailing list: elected officials, appointed boards, agency staff, PAWGs, neighborhoods, Kissimmee/Osceola Chamber of Commerce, major employers, community and civic organizations, and project managers for area studies (consistency from a local and regional perspective). Individuals who provided contact information (through the study website, mail, comment forms, or sign-in sheets at meetings) also were included. The project mailing list was used for newsletter distributions, open house notifications, and announcements for PAWG meetings. The digital version of the final study mailing list is provided in Appendix L.



11.3 Public Involvement Plan

The Public Involvement Plan (PIP) was prepared at the beginning of the US 192 AA study. It describes the overall approach to community outreach throughout the study, which included: project background (foundation for completing the AA); a project description (the setting); the outreach activities (PAWGs, public information meetings, local board briefings, small group meetings, and other outreach activities); schedule for public outreach activities; team responsibilities; communication protocols; and documentation. A digital version of the PIP is included in Appendix L.

11.4 Project Advisory Working Groups

The study team relied on the input from a group of technical and community advisors, known as the Project Advisory Working Groups (PAWGs). The PAWGs consisted of two primary groups, a Steering Group and a Community Liaison Group. For more targeted discussions, additional technical groups were created, including the ROW Technical Subcommittee and the Ridership Technical Subcommittee. The following text and **Table 11-1** is a summary of each PAWG group. The roster for each PAWG group and meeting minutes are provided in Appendix L.

Steering Group

The Steering Group was established so that local agencies could review and provide input at key milestone steps throughout the study. The agencies represented on the Steering Group are: LYNX, Osceola County, Federal Transit Administration, Florida Department of Transportation – District Five, MetroPlan Orlando, City of Kissimmee, City of St. Cloud, and the Lake-Sumter Metropolitan Planning Organization. Each agency designated a primary representative along with an alternate so that there would be continuity in participation throughout the AA study. The Steering Group met six times during the study and provided input for key decisions such as the Purpose and Need; the Tier One and Tier Two screenings; the refinement of the Short List Alternatives; and the Tier Three screening that led to the selection of the Recommended Alternative.

Community Liaison Group

The Community Liaison Group (CLG) was created so that a range of local stakeholders could provide their perspectives with the study team at key milestones throughout the study. The following groups were represented on the CLG:

- Local Jurisdictions (Osceola County, City of Kissimmee, Reedy Creek Improvement District, Orange County, Lake County, Polk County);
- Agencies (LYNX, Polk Transportation Planning Organization, Florida Department of Transportation – District One, East Central Florida Regional Planning Council, Central Florida Regional Planning Council);
- Employers and Key Destinations (Walt Disney World, Florida Hospital – Kissimmee and Celebration Health, Osceola Regional Medical Center, Valencia College, Osceola Heritage Park);
- Civic Groups and Boards (Osceola Tourist Development Council, Kissimmee Convention and Visitors Bureau, Kissimmee Main Street, US West 192 Economic Advisory Committee, W192 Development Authority, West 192 Redevelopment Advisory Board); and
- Kissimmee/Osceola Chamber of Commerce (Growth Management Task Force, Celebration Area Council, Four Corners Area Council, Gateway Area Council, Osceola Resort Area Council).



Steering Group members were invited to each CLG meeting; however the CLG members had priority in speaking at these meetings. The CLG met four times during the study. The group provided input on issues such as the role of the tourist market and the need to attract choice riders; and the importance of a transit investment to spur economic development in the Study Area. The group also provided input on outreach activities to hoteliers (the hotel shuttle survey discussed earlier in the report was completed based on CLG input).

Right-of-Way (ROW) Technical Subcommittee

The ROW Technical Subcommittee was created so that technical professionals could provide their perspectives and guidance throughout the study as they relate to right-of-way issues. This group provided input on the design of the busway (curb versus median) and US 192 cross section for the Short List Alternatives.

Ridership Technical Subcommittee

The Ridership Technical Subcommittee was created so that technical professionals could provide their perspectives and guidance with transit modeling throughout the study. This group met three times during the study and provided input on the ridership methodology; the ridership results for the 2030 No Build alternative; and the overall ridership results for the Short List Alternatives.

Table 11-1 Project Advisory Working Group (PAWG) Meetings

Meeting Date	Topics Discussed	PAWG
March 29, 2012	Study introduction and overview; data collection; Public Involvement Plan	Steering Group
May 14, 2012	Ridership Forecasting Methodology	Ridership Technical Sub-Committee
May 23, 2012	Existing Conditions Report; Purpose and Need Report; ridership methodology	Steering Group
June 13, 2012	Study introduction and overview; CLG members shared perspectives; Open House Materials	Community Liaison Group
August 16, 2012	Purpose and need; goals and objectives; evaluation screening methodology; technology screening (Tier 1); Long List of Alternatives (Tier 2);	Steering Group
September 20, 2012	Alternatives (Tier 2 screening and results); Long List of Alternatives; Open House materials	Community Liaison Group
November 6, 2012	Tier 2 screening	Steering Group
November 6, 2012	Curb versus median busway location	ROW Technical Sub-Committee
November 30, 2012	Curb versus median busway location evaluation	ROW Technical Sub-Committee
November 30, 2012	Ridership forecasting methodology	Ridership Technical Sub-Committee



Table 11-1: Project Advisory Working Group (PAWG) Meetings (continued)

Meeting Date	Topics Discussed	PAWG
February 5, 2013	Tier 2 screening; busway location; hotel survey results; Open House materials	Community Liaison Group
March 12, 2013	Tier 2 screening results; median busway cross section; operating approach; hotel survey results; ridership analysis	Steering Group
May 9, 2013	Ridership forecasting	Ridership Technical Sub-Committee
June 13, 2013	Short list of Alternatives; median busway cross section; ridership analysis; capital costs; operating and maintenance costs; Tier 3 screening results (including recommended alternative)	Steering Group
July 31, 2013	Recommended alternative; Open House materials	Community Liaison Group

Source: VHB

11.5 Study Website

A US 192 AA study website (www.US192study.com) was created as a “living” documentation of the study’s outreach activities and technical work. The site includes: the study overview and schedule; public meetings (notices and summaries); comment form (visitors were able to leave contact information and feedback while visiting the site); and project reports. Using Google Translate, the website content is available in several different languages. As key outreach and technical activities were completed, the related documents were posted to the website for easy public access. Project website updates occurred throughout the study. The site also contains links to Steering Group agency websites. A snapshot of the site is provided in Appendix L.

11.6 Newsletters

LYNX was responsible for publishing and distributing the project newsletter during the AA Study. Newsletters were developed in English and Spanish and were issued in June 2012 and February 2013. Most of the newsletters were emailed; when only mailing addresses were provided, the newsletters were mailed. The newsletters are posted on the study’s website, and additional copies were left at key community gathering spots located within the study area. Digital copies of each newsletter are included in Appendix L.

11.7 Open Houses

Four sets of community open houses were held in order to share study information and to receive input from the general public as the study progressed. Due to the size of the study area, each of the first three open houses was held at two locations. Each set of open houses was held on the same day (one at lunch time and one in early evening), with the same information shared at each location. The different meeting times allowed a wider group of stakeholders (e.g., shift workers and business owners) to participate. Each meeting was held in an informal, open house setting so that individuals could review study displays at their own pace. Study team members were available to hold “one-on-one” conversations and to respond to individual questions. The fourth open house was held at the Osceola





County Administration Building on the evening of August 27, 2013. Digital files for each open house are included in Appendix L.

Error! Reference source not found. lists the location and topic of each Community Open House. Feedback received at the Open Houses was positive and focused on the need for transit investments and the needs of the tourist population (increased investment to spur hotel and tourist-oriented retail activity) and permanent residents (more frequent and reliable service to improve access to jobs and services). Community participants also emphasized the high level of LYNX ridership and the importance of US 192 in connecting to other areas of the county such as Poinciana, Buenaventura Lakes, and St. Cloud.

Table 11-2 Open Houses

Date	Location	Time	Info Displayed	Number of Attendees
June 21, 2012	Carrabba's Restaurant	11 AM - 1 PM	Location map, livability principles, existing land use map, schedule, transportation context map, slides showing transit modes	25
	Osceola Commission Chambers	5 PM - 7 PM		
October 2, 2012	Osceola Commission Chambers	11 AM - 1 PM	Location map, displays with 16 alternatives	16
	Osceola Square Mall	5 PM - 7 PM		
April 3, 2013	Osceola Welcome Center	11 AM - 1 PM	Location map, summary of five alternatives, curbside BRT plan, median BRT plan, potential station locations map	39
	Osceola Square Mall	5 PM - 7 PM		
August 27, 2013	Osceola Commission Chambers	5 PM - 7 PM	Location map, summary of five alternatives, curbside BRT, median BRT plan, potential station locations, evaluation summary, recommended alternative map	8

Source: VHB

11.8 Local Briefings

Throughout this study, the LYNX Project Manager (or an alternate LYNX representative) and the Osceola County Project Manager (or an alternate County representative) were available for briefings before local county commissions, the Kissimmee City Commission, and MPO Boards (and related committees). In addition, the study team was available to meet with small groups in order to focus on individual concerns and issues. These meetings were in addition to the PAWG meetings, the open houses, and the local board briefings. These meetings were used to obtain a variety of input on technical, strategic and outreach-related issues. These meetings were also used to update community and agency stakeholders on the project's activities. Digital versions of the meeting minutes are provided in Appendix L.



Table 11-3 lists the local briefings and presentations.

Table 11-3: Agency Briefings and Presentations

Meeting Date	Agency or Group
June 26, 2012	Disney
August 1, 2012	Kissimmee
August 3, 2012	Disney
August 8, 2012	W192 Development Authority
September 28, 2012	George Chen
October 3, 2012	Kissimmee
October 3, 2012	Randy Dillard
October 10, 2012	MetroPlan
November 2, 2012	Four Corners Summit
January 8, 2013	Kissimmee City Council
January 17, 2013	Osceola County Board of County Commissioners
January 17, 2013	W192 Development Authority
February 4, 2013	Osceola County Board of County Commissioners
February 4, 2013	FDOT District 5 Urban Office
February 8, 2013	W192 Development Authority
February 22, 2013	Disney
March 13, 2013	FDOT District 5
April 24, 2013	Kissimmee
May 15, 2013	MetroPlan
July 30, 2013	FDOT District 5
August 1, 2013	W192 Development Authority
August 6, 2013	Kissimmee City Council – at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative
August 29, 2013	LYNX Funding Partners
September 4, 2013	W192 Development Authority– at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative
September 16, 2013	Osceola County Board of County Commissioners– at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative
September 19, 2013	LYNX Board– at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative
September 25, 2013	MetroPlan Orlando – Citizens Advisory Committee– at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative
September 25, 2013	MetroPlan Orlando – Bicycle/Pedestrian Advisory Committee– at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative



Table 11-3: Agency Briefings and Presentations (continued)

Meeting Date	Agency or Group
September 27, 2013	MetroPlan Orlando Transportation Technical Committee– at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative
October 3, 2013	MetroPlan Orlando – Municipal Advisory Group– at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative
October 9, 2013	MetroPlan Orlando Board– at which the Recommended Alternative (Build Alternative 2) was adopted as the Locally Preferred Alternative

Source: VHB

11.9 Community Events

In order to reach different stakeholders in a more relaxed atmosphere, the study team was available to host a project information booth at several community events. Table 11-4 lists the highlights of those events. Digital summaries are included in Appendix L. Feedback received at these events was generally positive, with public support for increased transit service in the Study Area to provide access to jobs and services.

Table 11-4: Community Events and Displays

Date	Location	Time	Info Displayed	Number of Attendees
December 14, 2012	Cagan Crossings Winter Celebration - Town Center	4:00 PM to 6:00 PM	Location map; BRT graphic; cities with existing BRT systems	35
January 19, 2013	Sunshine Regional Chili Cook Off	11:00 AM to 5:00 PM	Location map; BRT graphic; cities with existing BRT systems	62
May 20, 2013 to June 15, 2013	Display at Cagan Crossing Library		Location map; BRT graphic; cities with existing BRT systems	9,304 library visitors
May 20, 2013 to June 15, 2013	Display at Celebration Library		One display board (Location map; BRT graphic; cities with existing BRT systems), 3 PowerPoint slides on LED screen	12,269 library visitors
May 20, 2013 to June 15, 2013	Display at Downtown Kissimmee Library		Location map; BRT graphic; cities with existing BRT systems	29,558 library visitors

Source: VHB



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12

Locally Preferred Alternative Summary

12.1 Adoption of the Recommended Alternative as the Locally Preferred Alternative

US192, between Lake County and St. Cloud in Osceola County, is a corridor of regional significance for Central Florida. However, it is plagued with an increasing array of challenges and problems, consisting of, but not limited to:

- Growing congestion due to:
 - continuous growth in population and employment
 - increased land use densities
 - exceptional and consistent tourist travel
- A bus system that currently struggles to deliver both a service that transit dependent riders desire and a service that choice riders would use due to:
 - corridor congestion
 - deficiencies in both the transit infrastructure and transit service (coverage, frequency, access and performance)
 - increasing demand
 - a lack of transit visibility
 - lack of transportation options for all ages, incomes and abilities
 - need for transit-supportive land uses
- Exceptional forecast population and employment growth
- A need to serve SunRail
- A lack of transportation options for all ages, incomes and abilities
- A lack of transit-supportive land uses
- A corridor that is need of investment and rebranding to attract economic development
- A lack of sufficient access to employment opportunities and basic services
- A lack of infrastructure that serves all modes including autos, transit, pedestrians and bicyclists

Recognizing the challenges and problems with the US 192 Corridor, a data driven, detailed and well-vetted project was conducted. The project was focused on the development of alternative solutions to address the Purpose and Need and the resultant Goals as stated by the collaboration of Corridor’s stakeholders (legislative bodies, transportation agencies, community groups, business community and the public), significant partnerships (community leaders, businesses, Disney, W192 Development Authority) and the general public. The project efforts incorporated national Best Practices and Lessons



Learned. As a result of these analyses and collaborative efforts, overwhelming support was provided for the Recommended Alternative - Bus Rapid Transit (BRT) Build Alternative 2.

The Build Alternative 2 would best address the Project’s Goals. As described in the Tier 3 Screening process (Chapter 10), Build Alternative 2 would significantly improve mobility and transportation access (ridership, travel times savings) throughout the study area in the most cost- effective manner (capital costs and operations and maintenance costs). It would enhance the livability and economic competitiveness of residents, employees and businesses in the study area. It would introduce a transformational premium transit infrastructure and service throughout the study area in a manner consistent with the adopted plans of Kissimmee, the CRAs, Osceola County and LYNX. And, the recommended BRT system does so in a manner that would have little to no impact on the environment, natural resources or open space throughout the study area.

In an act of regional solidarity, the region’s leaders demonstrated their support of the Recommended Alternative by adopting the Recommended Alternative as the **Locally Preferred Alternative (LPA)**. Each of the following organizations formally adopted the Recommended Alternative as the Locally Preferred Alternative:

- Project Advisory Work Group: *Steering Group*
- Project Advisory Work Group: *Community Liaison Group*
- City of Kissimmee
- W192 Development Authority
- Osceola Board of County Commissioners
- LYNX Board of Directors
- MetroPlan Orlando (Committees and Board of Directors)

Table 12-1 presents the LPA adoption briefing dates for each organization.

Table 12-1: LPA Adoption Briefings

Meeting Date	Agency or Group
August 6, 2013	Kissimmee City Council
September 4, 2013	W192 Development Authority
September 16, 2013	Osceola County Board of County Commissioners
September 19, 2013	LYNX Board
September 25, 2013	MetroPlan Orlando – Citizens Advisory Committee
September 25, 2013	MetroPlan Orlando – Bicycle/Pedestrian Advisory Committee
September 27, 2013	MetroPlan Orlando Transportation Technical Committee
October 3, 2013	MetroPlan Orlando – Municipal Advisory Group
October 9, 2013	MetroPlan Orlando Board

Source: VHB



Each of these stakeholders was resolute in their recognition that the Locally Preferred Alternative would create the opportunity for the region to:

- Leverage federal, state and the County's investment in SunRail
- Build on the West 192 Redevelopment Authority's goal to transform the US 192 Corridor
- Help transform US 192 into a more tourist attractive corridor, as described by the Corridor's stakeholders
- Build on the County's efforts to introduce premium/BRT transit service to the US 192 Corridor
- Introduce an attractive alternative – BRT – to US 192's existing transportation options
- Require minimal acquisition of property and would be minimally invasive to the natural environment
- Introduce Central Florida's 1st long-distance BRT Corridor

In summary, the LPA would provide a significant change in corridor infrastructure by providing a dedicated busway for part of the corridor, queue jumps in the remainder of the corridor, and BRT buses with BRT stations throughout the corridor. The infrastructure investment of the partial busway combined with the targeted queue jumps and transit signal priority would enable a precise investment in infrastructure and result in added capacity where it would have the greatest impact on mobility. *The results showed that this investment would attract 98% of the ridership of Build Alternative 3 but with only 53% of the capital cost of Build Alternative 3.* In addition, the LPA would result in the transformative corridor envisioned by stakeholders and as documented by previous planning efforts. Overall, transit would be elevated to a higher level of visibility and permanence that would result from the investment that would attract choice customers, would greatly improve service and reliability of transit service for transit-dependents and would support further economic investment in the study area.

12.2 Description of the Locally Preferred Alternative

The Locally Preferred Alternative includes improvements to transit service and infrastructure along the US 192 corridor. Transit Signal Priority (TSP) would be installed along major streets the BRT vehicles would use. Select intersections would also be upgraded to include queue jumps. Exclusive bus lanes for BRT operations would be included between Celebration Place and Hoagland Boulevard within the existing right-of-way. **Figure 12-1** shows the Locally Preferred Alternative.

The service plan for this alternative includes four BRT routes that would operate between the following termini:

- Four Corners Wal-Mart
- Osceola Parkway SunRail Station
- Walt Disney World
- Kissimmee Intermodal Facility (SunRail Station)

Roadway Alignments

The Locally Preferred Alternative would use US 192 as the primary route for east-west travel. To access the Four Corners Station, this alternative would use a portion of US 27. To circulate around Kissimmee and access the Kissimmee SunRail Station, the alternative would use portions of Central Avenue, Drury Avenue, Neptune Road, Sproule Street and Broadway Avenue. To access the Osceola Parkway SunRail Station, the alternative would use a portion of Osceola Parkway and Orange Avenue.



Figure 12-1 depicts a rendering of the Locally Preferred Alternative in the vicinity of Celebration Avenue.



Infrastructure

The Recommend Alternative would include targeted BRT treatments along the Osceola and Kissimmee Corridors. It proposes introducing Transit Signal Priority (TSP) along the Osceola and Kissimmee Corridors. Select intersections would be improved to include queue jumps that provide buses with a “head-start” over general traffic. BRT and local buses would benefit from this infrastructure.

Exclusive bus lanes would be included along US 192 from approximately Celebration Place to Hoagland Boulevard. The exclusive bus lanes (one in each direction with a passing lane at stations) would be located on the inside of the roadway adjacent to the existing median. Within this section, stations would be located within the median. Outside this section, stations would be located along the curb.

Stations Overview

BRT stations would be proposed at or near areas that have existing high bus ridership. Stations would be spaced approximately every mile apart, which is further apart than the stops for the existing bus service. All stations would be located at signalized intersections to allow for safe pedestrian crossings.

BRT Stations would include the following amenities:

- 5) A sheltered waiting area
- 6) A slightly higher curb that enables level boarding with the vehicle
- 7) Fare payment machinery
- 8) Next-Bus displays, or other customer information

The following stations are proposed, as shown on the Figure 12-1:

Four Corners – located within the Cagan Crossings Shopping Center on US 27. Shared parking/park-and-ride opportunities would be available with the commercial parcel at this location. This station would serve as one of the termini for routes within the BRT system.

Westside Boulevard – located at the intersection of US 192 and Westside Boulevard. Shared parking/park-and-ride opportunities would be available with the commercial parcel at this location. This station would be located along the outside curb of US 192.

Vista Del Lago Boulevard – located at the intersection of US 192 and Vista Del Lago Boulevard. This station would be located along the outside curb of US 192.

Orange Lake Boulevard East – located at the intersection of US 192 and Orange Lake Boulevard East. Shared parking/park-and-ride opportunities would be available with the commercial parcel at this location. This station would be located along the outside curb of US 192.

Old Lake Wilson Road – located at the intersection of US 192 and Old Lake Wilson Road. Shared parking/park-and-ride opportunities would be available with the commercial parcel at this location. This station would be located along the outside curb of US 192.

Walt Disney World – located within Walt Disney World at a site that would provide convenient transfers to on-site transit services. This station would serve as one of the termini for routes within the BRT system.



Celebration Place – located at the intersection of Celebration Place and Celebration Place. This station would be located off US 192 and includes a dedicated park-and-ride lot.

Holiday Trail – located at the intersection of US 192 and Holiday Trail. This station would be located adjacent to Old Town. This station would be located in the median of US 192.

Poinciana Boulevard – located at the intersection of US 192 and Poinciana Boulevard. Shared parking/park-and-ride opportunities would be available with the commercial parcel at this location. This station would be located in the median of US 192.

Lake Cecile – located at the intersection of US 192 and the Super Target shopping center entrance. This station would be located in the median of US 192.

Siesta Lago – located at the intersection of US 192 and Siesta Lago Road. This station would be located in the median of US 192.

Old Vineland Road – located at the intersection of US 192 and Old Vineland Road/Bass Road. This station would be located in the median of US 192.

Armstrong Boulevard – located at the intersection of US 192 (Vine Street) and Armstrong Boulevard. This station would be located in front of Osceola Square Mall. Shared parking/park-and-ride opportunities would be available with the commercial parcel at this location. This station would be located along the outside curb of US 192.

Emory Avenue – located at the intersection of US 192 (Vine Street) and Emory Avenue. This station would be located along the outside curb of US 192.

ORMC – located at the intersection of Central Avenue and Oak Street. This station would be located in front of Osceola Regional Medical Center. This station would be located along the outside curb of Central Avenue.

Kissimmee Intermodal Facility – located at the Kissimmee Intermodal Facility. Park-and-ride opportunities would be available with the SunRail parking lot at this location. This would station serve as one of the termini for routes within the BRT system.

Florida Hospital – located at the intersection of Orange Blossom Trail and Ridgewood Avenue. This station would be located in front of Florida Hospital. This station would be located along the outside curb of Orange Blossom Trail.

Osceola Parkway – located at the Osceola Parkway SunRail Station. Park-and-ride opportunities would be available with the SunRail parking lot at this location. This station would serve as one of the termini for routes within the BRT system.



Routes/Headways/Stopping Pattern

The Locally Preferred Alternative would provide a mix of local and express routes to serve as feeder services as to SunRail. Four new BRT routes would be operated in the alternative, and each route would operate approximately every 15 minutes:

- 1) Route 855: Four Corners to Kissimmee Intermodal Facility
- 2) Route 856: Walt Disney World to the Osceola Parkway SunRail Station (via Kissimmee Intermodal Facility)
- 3) Route 909: Four Corners to Walt Disney World
- 4) Route 899: Celebration to Kissimmee Intermodal Facility

LYNX local bus service along US 192 (Links 55 and 56) would be maintained.

A new Route 810 would provide limited-stop bus service along US 192 from downtown Kissimmee to St. Cloud.

Bus routes and stopping patterns are shown in Figure 12-1.

Transit Ridership

The Locally Preferred Alternative is projected to capture approximately 10,300 riders in the 2030, the study's horizon year.

- Total Riders – approximately 10,300
 - Transit Dependent Riders – approximately 5,600
 - Choice Riders – approximately 4,700
- Note: Based on coordination with the corridor's hoteliers and an initial evaluation of available trips between the hotels and surrounding tourist destinations, careful coordination and development of the project with the tourist hotels along US 192 may create the opportunity to capture up to 2,000-3,000 additional trips per day.

Capital Costs

Estimated capital costs for the Locally Preferred Alternative are in the range of \$120 million in Year 2013 dollars. This estimate does not include soft costs.

Operating and Maintenance Costs

Estimated incremental operating and maintenance costs beyond the No Build Alternative for Locally Preferred Alternative service are \$30 million in Year 2030 dollars.



12.3 Implementation of the Locally Preferred Alternative

This section describes the next steps that would be required to implement the Locally Preferred Alternative.

As a first step in conveying the region's support for the project, the new Federal Transportation bill, *Moving Ahead for Progress in the 21st Century (MAP-21)*, requires that the adoption of the Locally Preferred Alternative as the Locally Preferred Alternative by MetroPlan Orlando, the local Metropolitan Planning Organization (MPO). Subsequently, the process for pursuing federal funding for a portion of the project's financing plan would require the specific actions as required by MAP-21. The key elements required prior to progressing the project towards implementation by virtue of gaining entry into the FTA's Engineering Phase include:

- Prepare NEPA documentation, incorporating Alternatives Analysis and resulting LPA
- Prepare FTA Letter for Entry into Project Development Phase
- Prepare Preliminary Financial Plan
- Prepare Project Rating Package
- Prepare FTA Letter for Entry into Engineering Phase

Note: The above elements would not necessarily be sequential, but would require an integrated strategy to comply with MAP-21 timelines governing the activities.

Beyond FTA funding support for the project, there would be numerous opportunities for project funding at the local, regional and state level. A discussion of these potential funding sources is documented in Appendix M.

It is important to note that this transit project would require a significant amount of roadway modifications and adaptations of Florida Department of Transportation highways (US 192 and US 441), as well as City of Kissimmee streets. Therefore, at the state level, the next important step towards implementation would be the execution of FDOT Project Development and Environmental Study, as documented in the Department's Project Development and Environmental Manual.



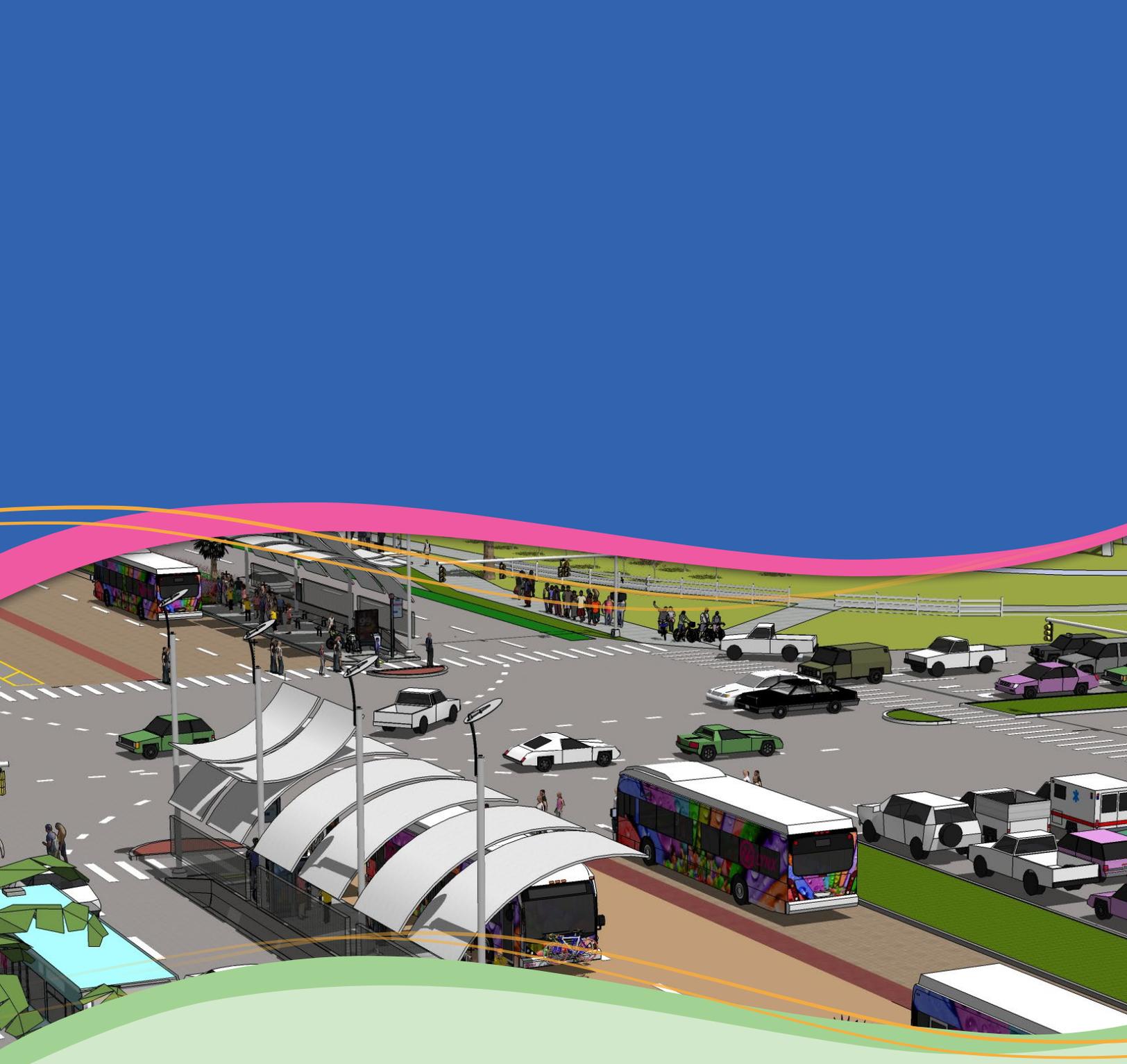
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List of Acronyms and Abbreviations

CLG	<i>Community Liaison Group</i>
CRA	<i>Community Redevelopment Agency</i>
DRI	<i>Development of Regional Impact</i>
EPA	<i>Environmental Protection Agency</i>
ETDM	<i>Efficient Transportation Decision Making</i>
FDOT	<i>Florida Department of Transportation</i>
FTA	<i>Federal Transit Administration</i>
FWS	<i>Fish and Wildlife Service</i>
KIF	<i>Kissimmee Intermodal Facility</i>
LOS	<i>Level of Service</i>
LPA	<i>Locally Preferred Alternative</i>
LRE	<i>Long Range Estimate</i>
MAP-21	<i>Moving Ahead for Progress in the 21st Century (the current Federal Transportation Funding Bill)</i>
MMTD	<i>Multi-Modal Transportation District</i>
MPO	<i>Metropolitan Planning Organization</i>
NAAQS	<i>National Ambient Air Quality Standards</i>
O&M	<i>Operating and Maintenance</i>
OUATS	<i>Orlando Urban Area Transportation Study</i>
PAWG	<i>Project Advisory Working Group</i>
ROW	<i>Right-of-Way</i>
SCC	<i>Standard Cost Category</i>
SIS	<i>Strategic Intermodal System</i>
TIF	<i>Tax Increment Finance</i>
TSP	<i>Transit Signal Priority</i>
VMT	<i>Vehicle Miles Traveled</i>



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