CHAPTER 2

ALTERNATIVES

2 ALTERNATIVES

This chapter provides a summary description of the alternatives that were developed to address the transportation purpose and need for the project identified in Chapter 1. This chapter summarizes:

- Alternatives Analysis (AA) conducted for this project
- Changes in Alternatives following the AA
- Definition of the Environmental Assessment (EA) Alternatives
- Ridership, Revenues, Costs, and Financial Requirements

A wide range of alternatives were identified and analyzed during the Alternatives Analysis completed in 2004, which provided the starting point of the alternatives definition in this EA. An intensive local government coordination effort and public outreach process during the EA resulted in modification and further definition of the alternatives to improve their ability to address project purpose and need. This chapter summarizes the development of the No-Build, Transportation System Management (TSM), and Build Alternatives. These alternatives are defined in conformance with the requirements of the National Environmental Policy Act (NEPA), and the Federal Transit Administration (FTA) New Starts process.

As outlined in Chapter 1, the Build Alternative includes the Full Build project from DeLand to Poinciana and a slightly smaller Locally Preferred Alternative (LPA). The LPA for this project is a portion of the Full Build, less the station in DeLand, and the segment of track between DeBary and DeLand. The LPA is further divided into two corridors to accommodate a phased approach. The North Corridor, from DeBary to the Orlando Amtrak/ORMC station is the Initial Operating Segment (IOS), which will be the first phase of the Full Build to be constructed and operated.

In order to assess the maximum impact of the proposed commuter rail project, the service plan for the Full Build Alternative was upgraded from 30 minute headways to 15 minute headways to present the “worst case” from the point of view of addressing project environmental impacts. This upgrade resulted in additional infrastructure (e.g. 2nd track) and more Diesel Multiple Units (DMU) equipment to support the increase in service. The “Full Build” in this report is defined as the Full Build alignment from DeLand to Poinciana with all 16 stations, and a service frequency of 15 minute headways. Preliminary Concept Plans for the Full Build Alignment are included in a separately bound Appendix K.

2.1 Alternatives Analysis

The Alternatives Analysis (AA) conducted in the study corridor between 2002 and 2004 resulted in the selection of commuter rail transit (CRT) within the CSXT A-line corridor as the preferred alternative for addressing the identified goals and objectives of the project. This section summarizes the background and results of the AA, which set the basic parameters of the alternatives considered in the EA.

2.1.1 Alternatives Analysis 2004 Report

The Central Florida North/South Commuter Corridor Alternatives Analysis Final Report[1] (AA) was completed in May 2004. The AA was completed in accordance with FTA requirements for program planning and evaluation.

The AA was the first major step in corridor planning in the project development process as defined by the FTA. A project purpose and need statement and the project goals and objectives were created to guide the decision on a potential transportation investment for the corridor. Evaluation Criteria were developed to evaluate alternatives against the purpose and need and the goals and objectives of the project. Previous studies for this corridor, including the 1992 Project Feasibility Report, 1994 LYNX Regional Systems Plan, and various feasibility studies and technical assessment studies conducted through 2000, provided general parameters for the AA alternatives. The AA scoping process conducted in 2002, further defined these parameters through a series of four public and one agency scoping meetings held in conformance with requirements of the National Environmental Policy Act (NEPA). The final result of the AA was a recommended LPA for the corridor consisting of commuter rail transit (CRT) service in the four county corridor extending from DeBary in Volusia County through Seminole and Orange Counties, terminating at Poinciana Boulevard in Osceola County.

The AA evaluated four alternative transportation improvements for the corridor under study for the year 2025. These included improvements to the highway and transit networks. The No-Build, TSM, and Build Alternatives developed for the AA study were evaluated.

The AA No-Build Alternative was defined from adopted highway and transit elements of the Regional Transportation Plans in effect within the corridor at the time, as established by the relevant Metropolitan Planning Organization (MPO). For Seminole, Orange and Osceola Counties, the corridor is within the jurisdiction of the METROPLAN ORLANDO (MPO), while the Volusia County portion of the corridor is in the Volusia County MPO. The AA No-Build included expanded system-wide bus service and the North-South Light Rail Transit project (then part of the METROPLAN ORLANDO 2020 Financially Constrained Network), as well as preferential transit treatments in the study corridor. This included transit service and operations intended to compete favorably with the private automobile for a share of the commuter trips.

The TSM Alternative in the AA included the No-Build plus enhanced bus facilities and services in the Poinciana to DeLand project corridor, except for the proposed commuter rail. The TSM Alternative reflected the addition of limited stop bus service along US 441 in the South Segment and along US 17-92 in the North Segment. It also included new limited stop/express bus service in West Volusia County. Transit stations were proposed at each limited bus stop to provide connections to adjacent land use activities, park-and-ride lots (at select locations), and local transit service. Intelligent Transportation Systems (ITS) measures, (i.e., passenger information systems) and minor physical improvements (i.e., queue jumper lanes) were anticipated to enhance transit travel times on the limited stop services.

[1] "Central Florida North/South Commuter Corridor Alternatives Analysis – Final Report," Central Florida Regional Transportation Authority (LYNX), Florida Department of Transportation, Volusia County MPO, METROPLAN ORLANDO, May 2004.

The AA Build Alternative reflected the addition of CRT service from DeLand to Poinciana Boulevard along the CSXT alignment and associated changes to the feeder bus network. The AA Build Alternative proposed the addition of CRT service within the existing CSXT right-of-way by modifying the existing rail infrastructure to handle the new service while continuing to accommodate existing freight and Amtrak operations that use the line. This option was appealing due to its relatively low initial capital cost and the potential to initiate service promptly. The AA recognized that further engineering and analysis would occur during the environmental phase to define the infrastructure improvements and operating plans necessary to implement the CRT service. A map of the commuter rail alignment and stations proposed in the AA is shown in Figure 2-1.

2.1.2 Alternatives Screening and Selection Process in the AA

An alternatives screening and selection process was used to identify and evaluate a wide range of alternatives for addressing corridor transportation problems, consistent with the project goals and objectives, and to evaluate and compare their costs and benefits. This screening and selection process was applied at progressive levels of detail leading up to and during the AA.

Screening Alternatives Considered in the AA

The three major categories of alternatives considered and screened were:

- TSM Bus
- Light Rail
- Commuter Rail

The TSM bus alternatives consisted of new and improved express and limited stop bus routes, generally in the I-4 north south corridor. The TSM bus alternatives were developed in coordination with the two transit operators in the corridor, which are VOTRAN in Volusia County, and LYNX in Seminole, Orange and Osceola Counties. The TSM route and technology options were narrowed and defined at a conceptual level during the AA and utilized as key inputs to the development of the TSM Alternative in the EA.

Light Rail Transit (LRT) alternative was identified during earlier studies prior to the AA for use in a shorter segment of the corridor, and was determined to be not cost effective for application in the much longer 60.8 mile commuter corridor extending from DeLand in the north to Poinciana Boulevard in the south. Thus, LRT was screened out at an early stage of the evaluation, and was not advanced as an alternative for this project.

Commuter rail alternatives considered and eliminated during the AA screening process included fully electrified commuter rail, diesel push-pull commuter rail, and expansion of existing Amtrak service. As indicated below, the AA concluded that Diesel Multiple Unit (DMU) self propelled commuter rail technology should be used in the corridor for the proposed service.

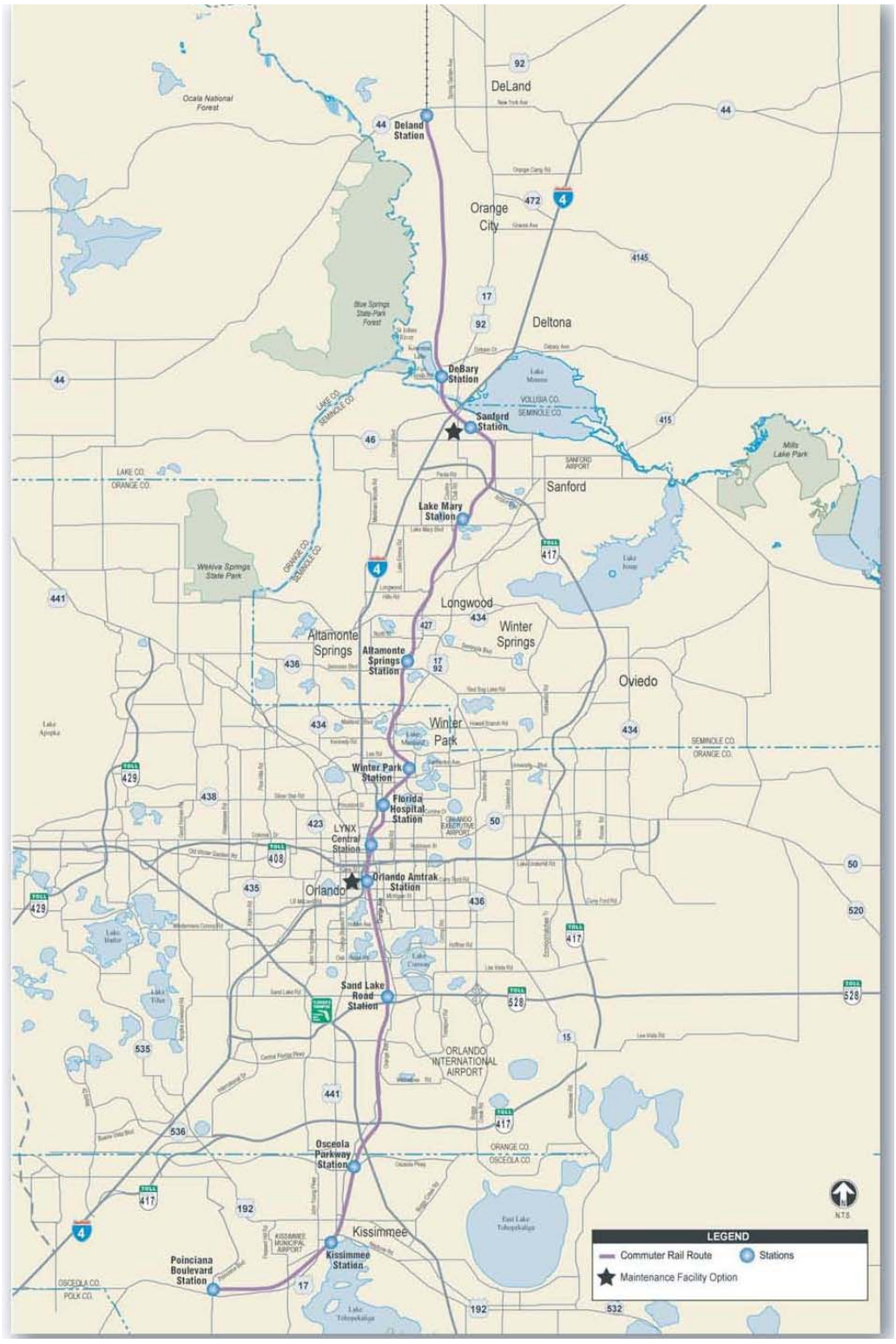

Figure 2-1 CRT Alternative Analysis Alignment and Stations

Screening Results and Recommendations

Preliminary alignment, station location, and operating plan alternatives were screened during the AA and the results are summarized in the AA Final Report (May, 2004) and supporting documentation. The recommended alternatives that emerged from the AA screening process were developed and evaluated against project goals and objectives. The AA recommendations on basic alignment and technology for the CRT Build Alternative were defined largely by the location of the existing CSXT rail corridor and the need to use rail passenger equipment that is compliant with Federal Railroad Administration (FRA) regulations[2]. As a point of clarification, the CRT rail passenger equipment must be FRA compliant because it would be operating on a rail line shared with Amtrak intercity passenger trains and freight trains. The AA identified 13 stations in the CRT Build Alternative (Figure 2-1)**,** with the LPA having one less station. It was recognized that the number and location of stations in the CRT Alternative would need to be examined in greater detail following the AA, along with the CRT operating plan.

The LPA from the AA project was segmented into two phases. The initial phase IOS was defined to be from Benson Junction in DeBary to LYNX Central Station (approximately 25 miles). The second Phase was from LYNX Central Station to Poinciana Boulevard in Osceola County. The Full Build was the extension of the LPA approximately 11.8 miles further north to DeLand Amtrak Station (Figure 2-1).

2.2 Changes in Alternatives Following the AA

In response to comments from the FTA following the AA regarding the development of a new TSM Alternative that meets the New Starts criteria, a Travel Market Analysis[3] was conducted to determine the magnitude, and patterns of trip productions and attractions in the corridor. This analysis was used to re-evaluate the number and location of stations in both the TSM and CRT Build Alternatives, as well as the frequency of service needed to effectively serve the markets identified. In addition to the Travel Market Analysis, preliminary alternatives were screened on the basis of potential ridership, cost, and overall consistency with project goals and objectives.

Government agencies at the federal, state, county, and municipal levels participated extensively in the alternatives development process following the AA and early in the EA. The FDOT continued this proactive approach to agency communication with issuance of the Advance Notification package (Appendix H) in January 2005 and through a series of follow-up meetings and forums. The multi-jurisdictional nature of the project corridor (four counties, multiple municipalities, as well as regional planning agencies are involved) required extensive outreach and information sharing efforts on the part of the FDOT and the project team to ensure adequate agency participation. Chapter 6 contains a summary of the meetings held with municipalities, agencies and the public.

As a result of this analysis and subsequent meetings with project stakeholders, the total number of stations in the Full Build was increased to 16, while the LPA was increased to 15. In addition, some of the station locations were shifted to better reflect the needs of the communities along the alignment. The 60.8 mile overall length of the corridor did not change, but the IOS segment defined originally in the AA recommendations was

[2] FRA 49 CFR Part 238 Structural Safety Requirements.
[3] Travel Market Analysis, January 28, 2005

redefined to extend south from the LYNX Central Station to the Orlando Amtrak/ORMC Station, and from the station at Benson Junction to a new DeBary station location at the Saxon Boulevard Extension. Thus, the IOS was extended from 25 miles to approximately 31 miles.

Due to the activities of the AA, as well as the subsequent activities included as part of the development of the EA materials, the Central Florida Commuter Rail Transit Project has broad based support in the community, as evidenced by:

- Inclusion in the current Florida State Transportation Improvement Program (STIP)
- Inclusion in the Long Range Cost Feasible Networks of both MPO's within the project corridor (METROPLAN ORLANDO 2025 and the Volusia County MPO 2025)
- Endorsement by all four county governments of Volusia, Seminole, Orange, and Osceola counties
- Endorsement at the local level by municipalities all along the corridor.

The above MPO endorsements have enabled the project to move forward in the NEPA process to detailed environmental analysis under an EA process. Since the proposed CRT service would operate within an existing active rail corridor, and the extent of potential impacts identified in the AA were relatively minor, FTA concurred with the Class of Action, which determined that the EA process should be used to address NEPA requirements.

The following sections list the major categories of meetings and activities with agencies that occurred at the federal, state, and municipal levels that further shaped the alternatives following the AA and early in the EA process.

2.2.1 Federal Agency Coordination

Federal agencies with interest or potential jurisdiction over the types of transportation improvements considered by the project were involved through project coordination meetings following completion of the AA, prior to the start of the EA, and throughout development of the EA. FDOT met with members of the FTA regional office and Washington, D.C. head office on a regular basis to discuss program issues and project status. Coordination included review of the project Purpose and Need Statement, and the definition and approval of the TSM (New Starts Baseline) Alternative.

2.2.2 State and Regional Agency Coordination

FDOT met with representatives of a variety of state and regional agencies for project status reports and to resolve site-specific interface issues between their facilities and/or services. In addition to the Advance Notification process, FDOT communicated with other state agencies and the Metropolitan Planning Organizations in the corridor to inform them of project progress and to obtain comments and other input on the definition of the alternatives. The project is included in the current Florida State Transportation Improvement Program (STIP).

2.2.3 County and Municipal Agency Coordination

FDOT met regularly with county and municipal government staffs along the corridor, particularly in regard to station locations, parking, land use coordination, and project funding. In addition, county and municipal agency staff were invited to workshops and public meetings. The project is in the Long Range Cost Feasible Networks of both MPO's, endorsed by all four county governments, and endorsed by every city along the corridor in which stations are located.

Following is a list of the counties and municipalities with which FDOT and the project team coordinated during development of the EA:

- Counties: Volusia, Seminole, Orange, and Osceola
- Municipalities: DeLand, Orange City, DeBary, Sanford, Casselberry, Lake Mary, Longwood, Altamonte Springs, Eatonville, Maitland, Winter Park, Orlando, Edgewood, Belle Isle, and Kissimmee.

2.2.4 CSX Transportation Coordination

At the beginning of the EA Phase, in December 2004, CSXT presented to the FDOT Executive Committee their strategic plan for Florida in which the A-Line was designated as primarily a passenger corridor. The S-line, located to the west of central Florida and in the middle of the state, was designated primarily as a freight line. CSXT intends to complement this shift with the strategic location of "intermodal rail villages" in south Florida, central Florida (Lakeland/Auburndale), and north Florida (Jacksonville area). These were followed by regular meetings and the sharing of information in support of refining the Full Build Alternative for the proposed CRT Project.

During 2005, CSXT allowed FDOT consultants access to the CSXT right-of-way to collect environmental field data, and conduct inspections. They supplied existing freight operations data, track charts, railway signal drawings, right-of-way, utilities, bridge plans, etc. and fully participated in the development of an enhanced combined CRT and freight operating plan for the corridor.

FDOT is currently negotiating with CSXT for perpetual track access rights to a portion of the CSXT A-line in central Florida for passenger rail use, consistent with the CSXT Strategic Plan. While this negotiation is nearing its conclusion during this EA process, it was not complete at the time of the EA publication. Consistent with the FTA's request, Appendix J of this report presents a Memorandum of Understanding (MOU) between CSXT and FDOT regarding the permission to conduct an EA on CSXT owned property, CSXT support of the EA process, CSXT general support of the CRT project, and the current status of negotiations.

2.3 Definition of EA Alternatives

FTA's New Starts Planning and Project Development Guidelines describes the definition of alternatives to be considered in the alternatives analysis process. As described above, the AA process completed in 2004 resulted in the recommendation for the commuter rail service Build Alternative to be advanced through the federal and state environmental processes. The initial activities of the corridor analysis were focused on narrowing the

range of alternatives to a more manageable number that were carried forward into the EA. The FTA specifies that each project must have a No-Build Alternative, TSM Alternative(s), and Build Alternative(s). The FTA Section 5309 New Starts Planning Process was followed through the screening and evaluation of the EA alternatives. This section provides an overview of the alternative technologies considered, and describes each of the three major categories of alternatives developed for the EA.

2.3.1 Technologies Considered

The vehicle technologies in the No-Build Alternative are set by the planned highway and transit networks in the region. The No-Build vehicle technologies include conventional buses, existing and planned BRT routes such as the Orlando LYMMO BRT and the Altamonte Flex Bus project. Due to the Flex Bus project, the No-Build Alternative introduces new technology into the regional transit network.

The TSM Alternative expands upon the transit technology of the No-Build Alternative with use of additional ITS features, express bus transfer stations and special bus-only ramps on I-4.

A variety of rail technologies were considered and eliminated for the CRT Build Alternative during the AA screening process, including electrified equipment, push-pull equipment, and expansion of existing Amtrak service in the corridor. Full electrification of the corridor would significantly increase the cost of the project without a commensurate increase in ridership. Push-pull diesel commuter rail operation, while feasible, would require longer train consists to accommodate separate locomotives and passenger cars, and is better suited to applications where headways are longer and station spacing further apart than what is planned. Use of the existing Amtrak intercity service in the corridor to serve the commuter market was also eliminated.

The Amtrak service in the corridor today is structured around a long-haul interstate rail market with schedules driven by terminus points outside the corridor, and with fare structures and capacity not suited to commuter service. The existing Amtrak service is not capable of being scaled up to meet corridor commuting needs due to institutional, infrastructure, and operating constraints.

Current DMU technology provides the ability to serve the corridor without electrification and provides significantly greater flexibility in matching train capacity to passenger demand. For example, DMUs can be operated as a single unit during off-peak periods with significantly lower fuel costs than conventional diesel locomotive in push-pull operation with conventional rail passenger cars. The CRT Full Build Alternatives in the EA are based upon use of DMU technology.

2.3.2 No-Build Alternative

The No-Build Alternative is a requirement of the NEPA regulations and serves as the future build year baseline for establishing the environmental impacts of the alternatives, the financial condition of implementing and operating agencies, and the cost-effectiveness of the TSM Alternative.

The No-Build Alternative includes the current and planned roadway and transit projects that are committed and funded. It provides a baseline for comparison to all of the other

alternatives. The No-Build Alternative reflects significant future transit service and highway network expansion included in the LYNX Transportation Development Plan for Fiscal Years 2005-2009 (TDP) and selected other projects that are included in the Orlando Urban Area Transportation Study (OUATS) Year 2025 Plan Update. Unlike the No-Build Alternative developed for the AA, the EA No-Build Alternative does not include the proposed 22-mile North-South LRT system (from Altamonte Springs to Sea World). This key difference between the AA and EA No-Build Alternatives reflects the projected phasing of the LRT and CRT projects and policy direction provided by FTA. Furthermore, the LRT is not in the METROPLAN ORLANDO 2025 Financially Constrained Network.

The highway network includes the cost feasible improvements for the highway network from the OUATS Year 2025 Plan Update, including high-occupancy vehicle (HOV) lanes and access ramps on I-4 from Kirkman Road to Maitland Boulevard.

A summary of the major roadway in the No-Build Alternative is contained in Chapter 4, Table 4-1. The 2025 No-Build Alternative is depicted in Figure 2-2.

2.3.3 TSM/Baseline Alternative

The TSM/Baseline Alternative is defined as “the best that can be done” to address the identified transportation deficiencies in the corridor without constructing a new transit guideway. The key factor in designing the TSM/Baseline is that it must serve the same travel markets and provide a comparable level of service as the Build Alternatives under study, absent a corresponding level of capital investment.

The TSM/Baseline Alternative includes all transit services provided in the No-Build Alternative plus the addition of several express and limited stop bus routes operating in the CRT north and south corridors. These express and limited stop bus routes were designed to satisfy the travel markets in the CRT study area. Additional discussion of these travel markets is provided in the Travel Market Analysis conducted in January 2005.

Three versions of the TSM/Baseline Alternative were developed for use in comparison to the corresponding phasing of the CRT Full Build Alternative: 1) an IOS TSM/Baseline corresponding to the proposed 31-mile Initial Operating Segment, 2) an LPA TSM/Baseline corresponding to the 53.5-mile commuter rail project from Saxon Boulevard (DeBary) to Poinciana Boulevard, and 3) a Full TSM/Baseline corresponding to the 60.8-mile commuter rail project from DeLand to Poinciana Boulevard. The LPA TSM/Baseline is described below for informational purposes only, as this EA is based on analysis of the Full Build project from DeLand to Poinciana Boulevard. The Full TSM Baseline is the Alternative that is subsequently compared to the No-Build and Full Build Commuter rail Alternatives for NEPA purposes.

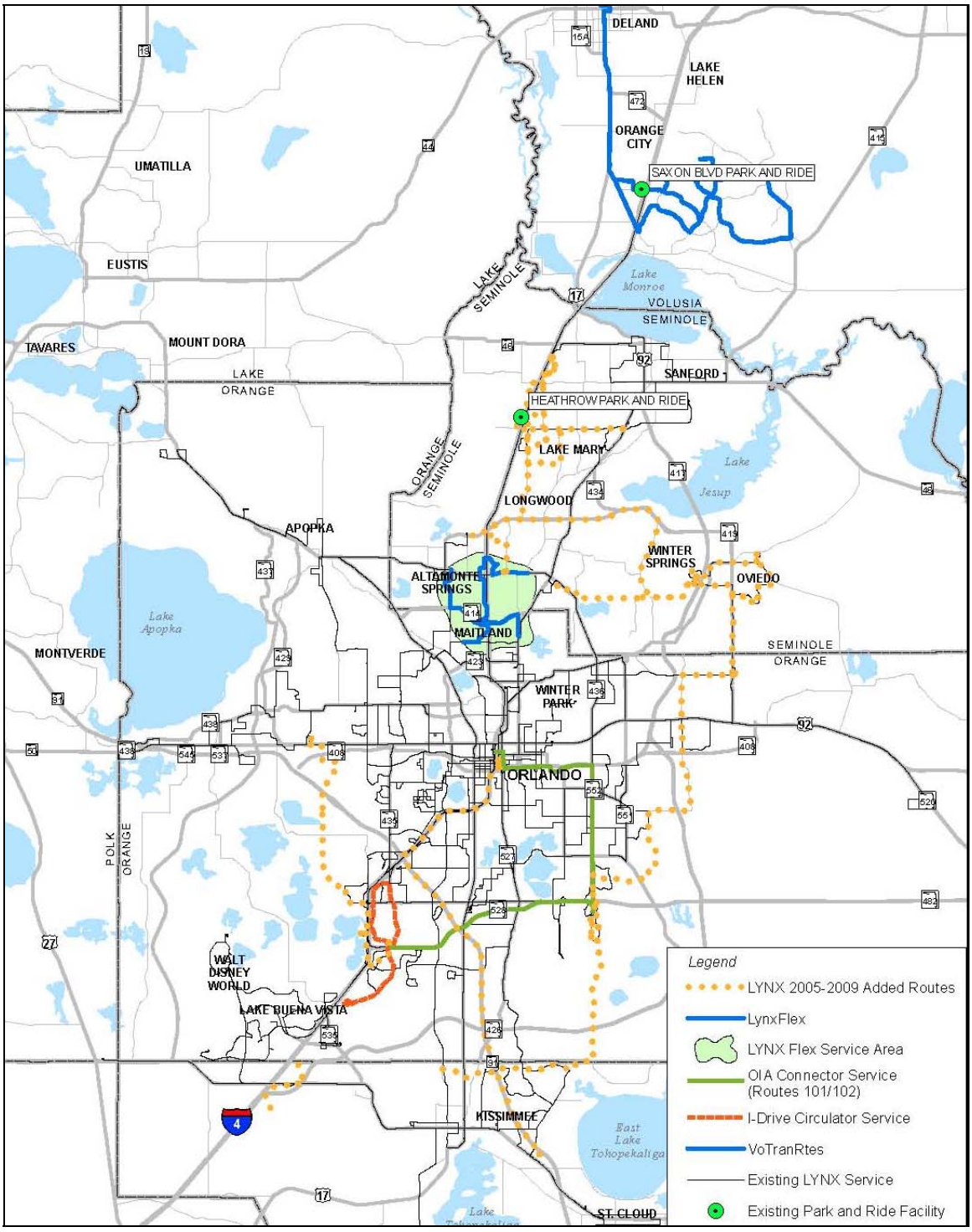

Figure 2-2 2025 EA No-Build Alternative

LPA TSM Baseline Alternative

The LPA TSM/Baseline Alternative includes all transit services provided in the No-Build and IOS TSM/Baseline Alternatives plus a number of express and limited stop bus routes operating in the CRT south corridor. Express buses operating on I-4 (north of Kirkman Road) will use special HOV lanes and special bus-HOV access and egress ramps (e.g. South Street). Limited stop buses running every 30 minutes during peak periods and every 120 minutes in the midday (e.g. U.S. 17/92), South Orange Blossom Trail, and South Orange Avenue) will use bus pull-off lanes and signal priority treatment, where applicable. With these facility and service enhancements, the LPA TSM/Baseline express and limited stop services will have similar functionality as the LPA Build Alternative.

Full TSM Baseline Alternative

The Full TSM/Baseline Alternative includes all transit services provided in the No-Build and IOS TSM/Baseline Alternatives plus a number of express and limited stop bus routes operating in the CRT south corridor. Express buses operating on I-4 (north of Kirkman Road) will use special HOV lanes and special bus-HOV access and egress ramps (e.g., South Street). Limited stop buses running every 15 minutes during peak periods and every 60 minutes during the midday (e.g., operating on U.S. 17/92, South Orange Blossom Trail, and South Orange Avenue) will use bus pull-off lanes and signal priority treatment, where applicable. With these facility and service enhancements, the "Full" TSM/Baseline express and limited stop services will have similar functionality as the Full Build Alternative. The concepts and details developed for this TSM/Baseline have been submitted, discussed and accepted by the FTA HQ.

Each version of the TSM/Baseline Alternative features similar station locations (where practical), parking assumptions, fares, span of service, and service frequency as the comparable Build Alternative. The Full 2025 TSM (New Starts Baseline) Alternative is depicted in Figure 2-3.

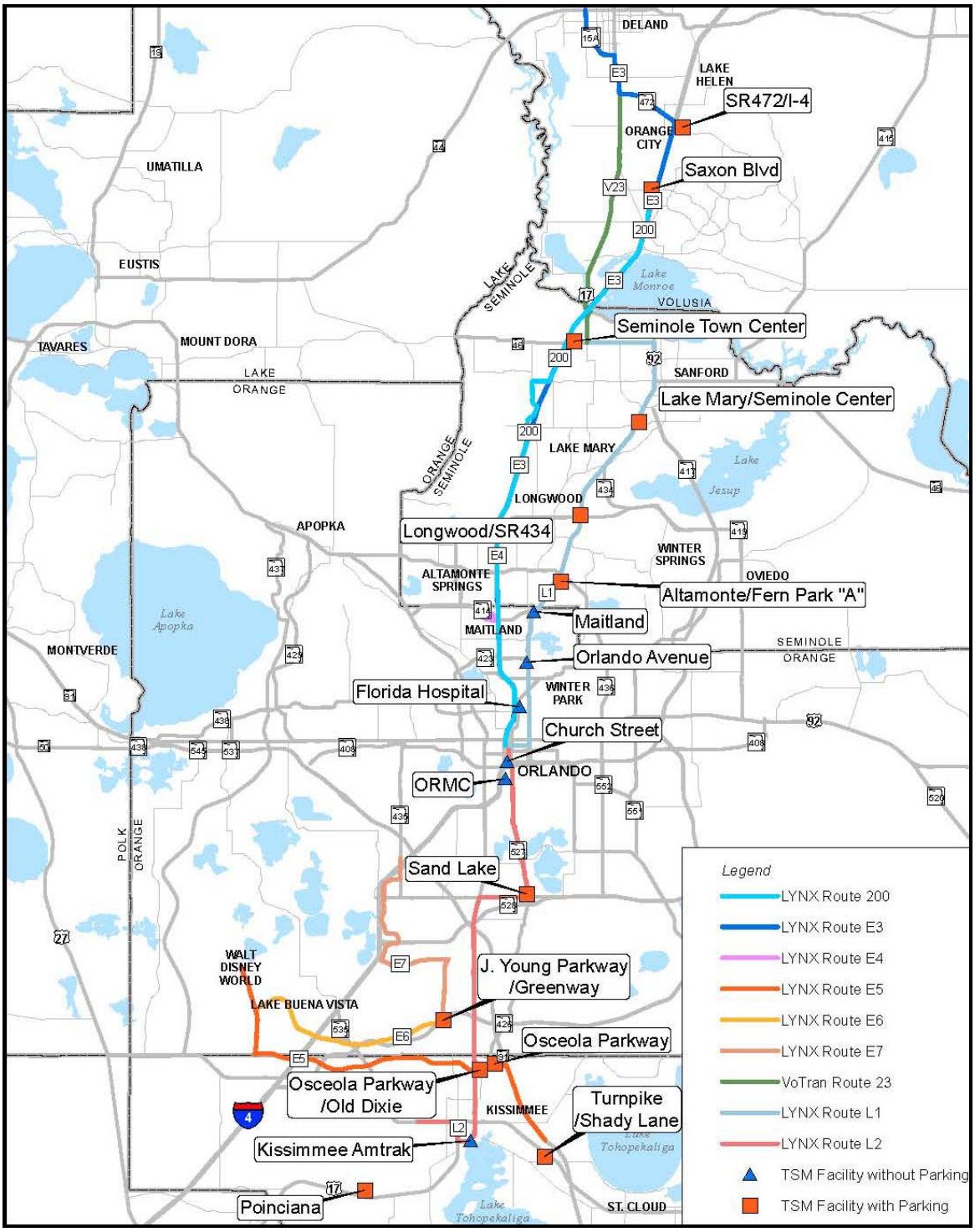

Figure 2-3 2025 EA TSM (New Starts Baseline)

Table 2-1 identifies the station stop locations, facility type, number of parking spaces, bus routes served, and number of bus bays proposed for the TSM/Baseline Alternative.

Table 2-1: TSM/Baseline Stations/Stop Locations and Facilities

STATION/STOP	FACILITY TYPE	PARKING SPACES	BUS ROUTES	BUS BAYS
DeLand Northgate Plaza	P&R/SS	140	V20, V24, V60, E3	4
SR 472 & I-4	P&R	300	E3	2
Saxon Boulevard (DeBary)	P&R/SS	200	V20, 200	3
Seminole Town Center	P&R/TC	400	L1, 46, 65, E4, V23	6
Downtown Sanford	SS	0	L1, 46	(a)
Lake Mary/Seminole Center	P&R/TC	300	33,34,39,45,46, 63, L1	3
Longwood/SR 434	P&R/SS	160	39,61,65, L1	4
Altamonte/Fern Park	P&R/TC	300	39,41,71,F1, L1	6
Maitland Boulevard	SS	0	39, F2, L1	4
Winter Park	SS	0	1,9,39,L1	4
Florida Hospital	SS	0	1,9,14,39,L1	4
LYNX Central Station	TC	0	n/a	(b)
Church Street	SS	0	L2,3,7,11,13,18,51	(a)
ORMC/Orlando Amtrak	SS	0	L2,7,11,18,40	5
South Orange Ave. & Hoffner Avenue	SS	0	L2,7,11,18,52	(a)
South Orange Avenue & Sand Lake Road	P&R/SS	400	L2, 7,11,18,42,E2	5
Florida Mall	TC	0	2,4,18,E2,7,37,42,43,52,64	(b)
South Orange Blossom Trail & Central Florida Parkway	P&R/SS	0	L2,4,43	(a)
Kissimmee Amtrak	SS	0	L2,4	3
Poinciana	P&R	150	26	2
Old Dixie Hwy. & Osceola Parkway	P&R/SS	150	E5,4,70	4
Osceola Square Mall	P&R/TC	100	L2,4,10,18,26,55,56,57,70	(b)
Shady Lane & FL Turnpike	P&R	300	10,12,141	2
J. Young Parkway & Central Florida Greenway	P&R	250	E6,E7	2

Source: Transit Operating Plans Report, December 2005. P&R is Park and Ride; SS is Superstop; and TC is Transit Center. V indicates a VOTRAN Route, while L designates a Limited route and Express route.
(a) TSM and local buses use existing on-street bus stops.
(b) TSM and local buses use existing Transit Center bus bays.

2.3.4 CRT Build Alternative

The Build Alternative features all of the transit services and projects included in the No-Build Alternative with the addition of commuter rail services along the CSXT A-Line. The Full Build version of the CRT, which is the subject of the EA document, extends from DeLand (in west Volusia County) to Poinciana Industrial Park (in Osceola County). A complete set of conceptual engineering drawings of the Full Build Alternative alignment can be found in a separately bound Appendix K.

Commuter rail service would be operated with DMU cars, which provide commuter rail capacity that combines necessary performance with greater operational flexibility than is generally possible with conventional diesel commuter rail equipment. During the course of this EA, a number of commuter rail scenarios were tested by varying the route termini, service frequency, span of service (e.g., with and without midday service), and number/location of passenger stations and park and ride facilities.

For informational purposes only, two versions of the Build Alternative are described in the following sections: 1) Full Build, and the 2) Locally Preferred Alternative (LPA).

The LPA and IOS are simply shorter segments along the Full Build Alternative alignment. Both the LPA and IOS have been discussed with the local communities regarding potential implementation strategies. However, for an assessment of the maximum impact, the Full Build is the Alternative that is the subject of this EA analysis.

Full Build CRT Alternative

The Full Build Alternative would extend from the DeLand Amtrak station to Poinciana Industrial Park, a distance of 60.8 miles, via the CSXT A-Line. A total of sixteen (16) stations are in the Full Build Alternative and they would be located at: DeLand, Saxon Boulevard Extension (DeBary), Sanford, Lake Mary, Longwood, Altamonte Springs, Winter Park, Florida Hospital, LYNX Central Station, Church Street (in downtown Orlando), Orlando Amtrak/ORMC, Sand Lake Road, Meadow Woods, Osceola Parkway, Kissimmee Amtrak, and Poinciana Industrial Park. Figure 2-4 shows the station locations on the existing track alignment and the existing double track sections.

For the purposes of this EA analysis and in order to assess the maximum impact, the proposed service plan would provide 15-minute bi-directional service during morning and evening peak periods and 60-minute service in the midday, Monday through Friday (approximately 260 days per year). The primary infrastructure improvements include a new signal system and 42 miles of new 2nd track bringing the total double track to approximately 59 miles in the 60.8 mile corridor. Please note the 15 minute headway is an upgrade to provide a more conservative case and the focus for the EA analysis which required the increase to 42 new miles of 2nd track and additional DMU vehicles. The 2025 CRT Full Build Double Track Alternative is depicted in Figure 2-5.

LPA CRT Alternative

The LPA would be virtually the same as the “Full” Build Alternative, except the north terminus of the line would be the Saxon Boulevard Extension station (DeBary) instead of DeLand. A total of fifteen (15) stations are in the LPA. The route length would be about 53.5 miles with 28 new miles of 2nd track and a new railway signal system. The proposed service plan would provide 30-minute bi-directional service during the morning and

afternoon peak periods and 120-minute service during the midday, Monday through Friday (approximately 260 days/year). Figure 2-6 depicts the LPA Alternative.

Phasing of LPA

The LPA is proposed to be built in two phases the north corridor (IOS) and the south corridor. The IOS would extend approximately 31 miles from the Saxon Boulevard Extension station (DeBary) to Orlando Amtrak/ORMC station (Figure 2-7). Ten stations would be located at Saxon Boulevard Extension (DeBary), Sanford, Lake Mary, Longwood, Altamonte Springs, Winter Park, Florida Hospital, LYNX Central Station, Church Street (downtown Orlando), and Orlando Amtrak/ORMC. The south corridor would extend the IOS from Orlando Amtrak/ORMC to Poinciana Industrial Park.

Existing and programmed local and circulator bus routes in the CRT north and south corridors have been modified to feed commuter rail stations, with headway and span of service changes that are compatible with the proposed commuter rail service. New local and circulator bus routes have been proposed where appropriate to provide improved connections between the commuter rail line and nearby activity centers and/or residential neighborhoods. Duplicate local and/or express route service has been reduced or eliminated.

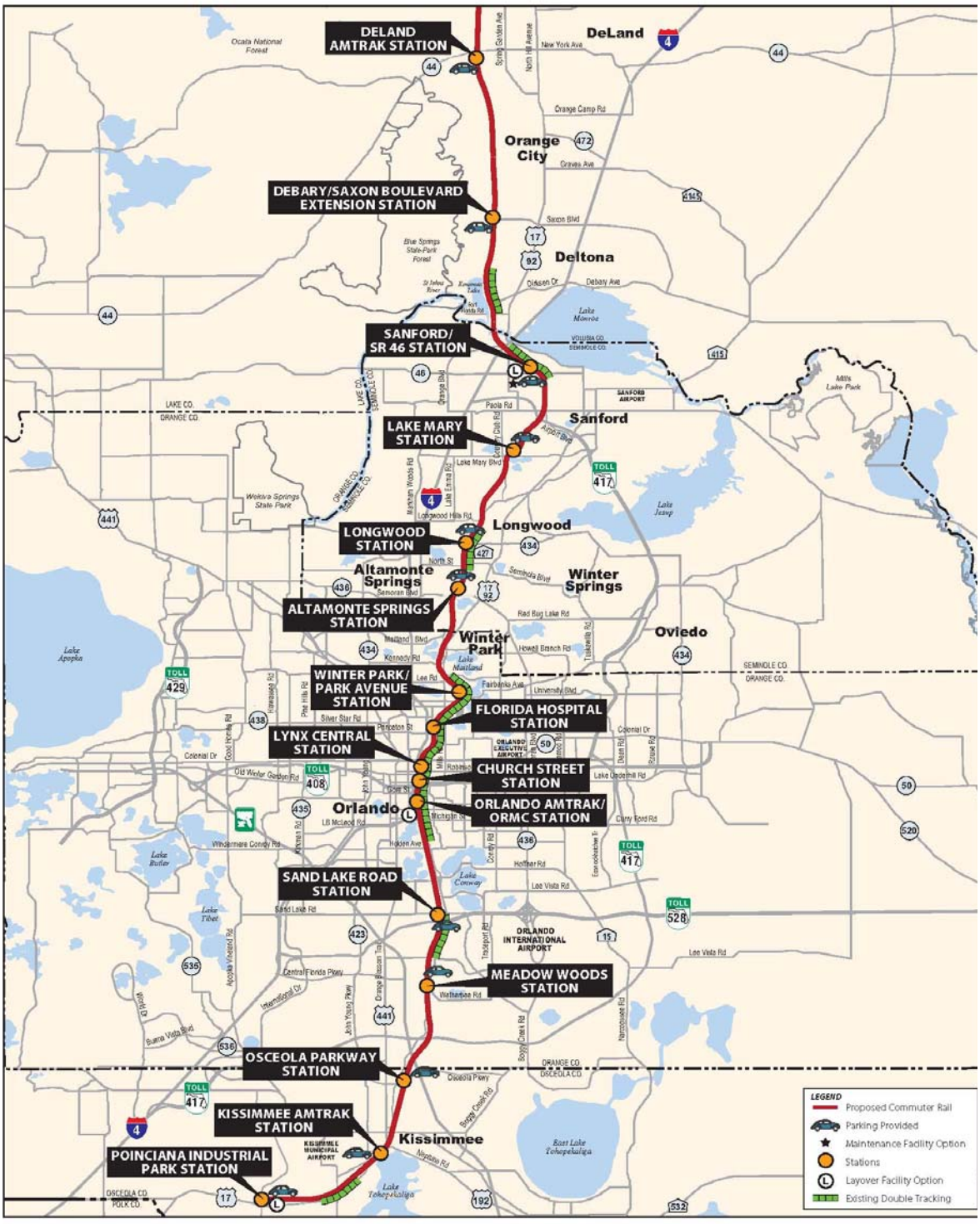

Figure 2-4 Proposed CRT Station and Existing - Double Track Sections

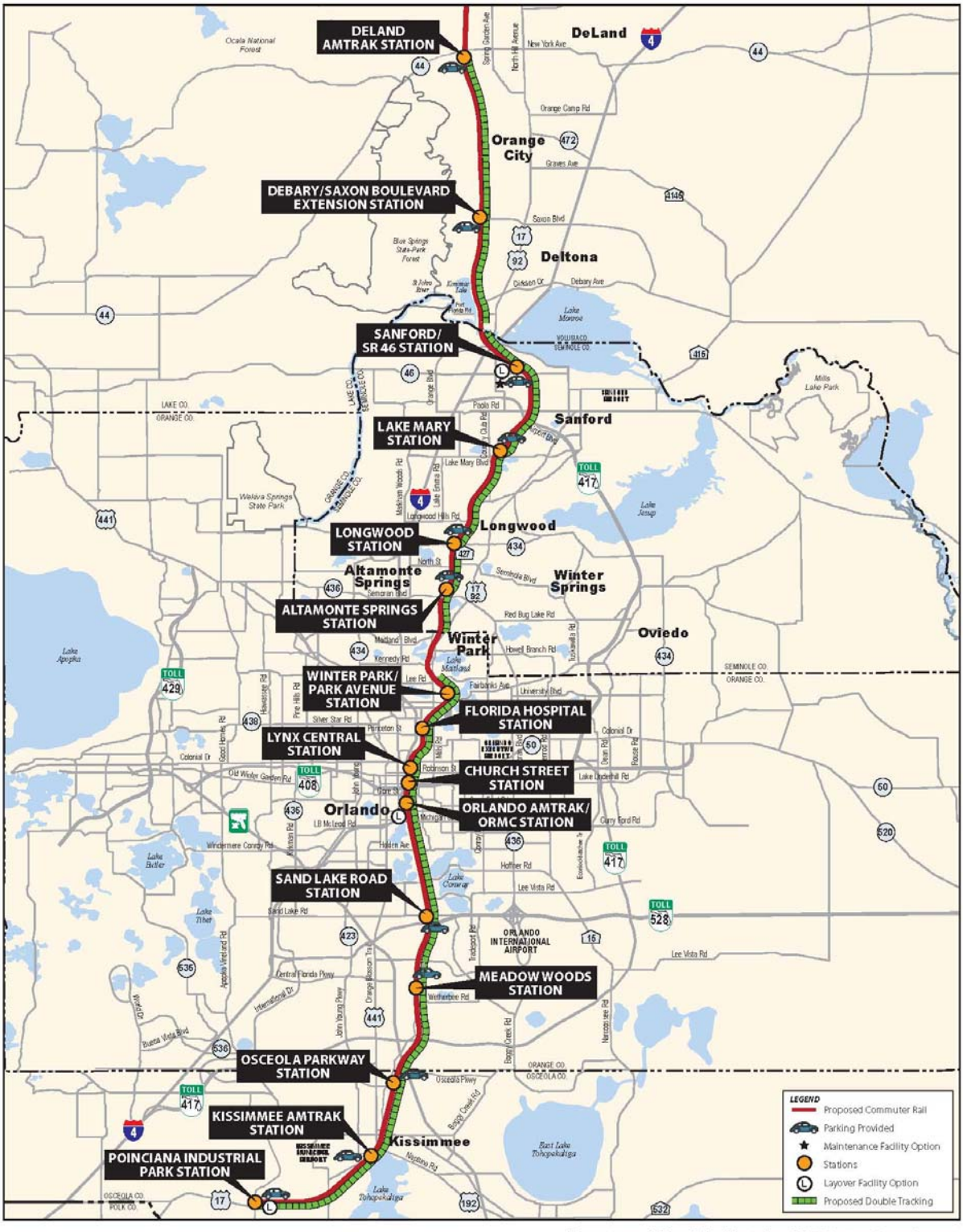

Figure 2-5 2025 CRT Full Build and Proposed Double Track

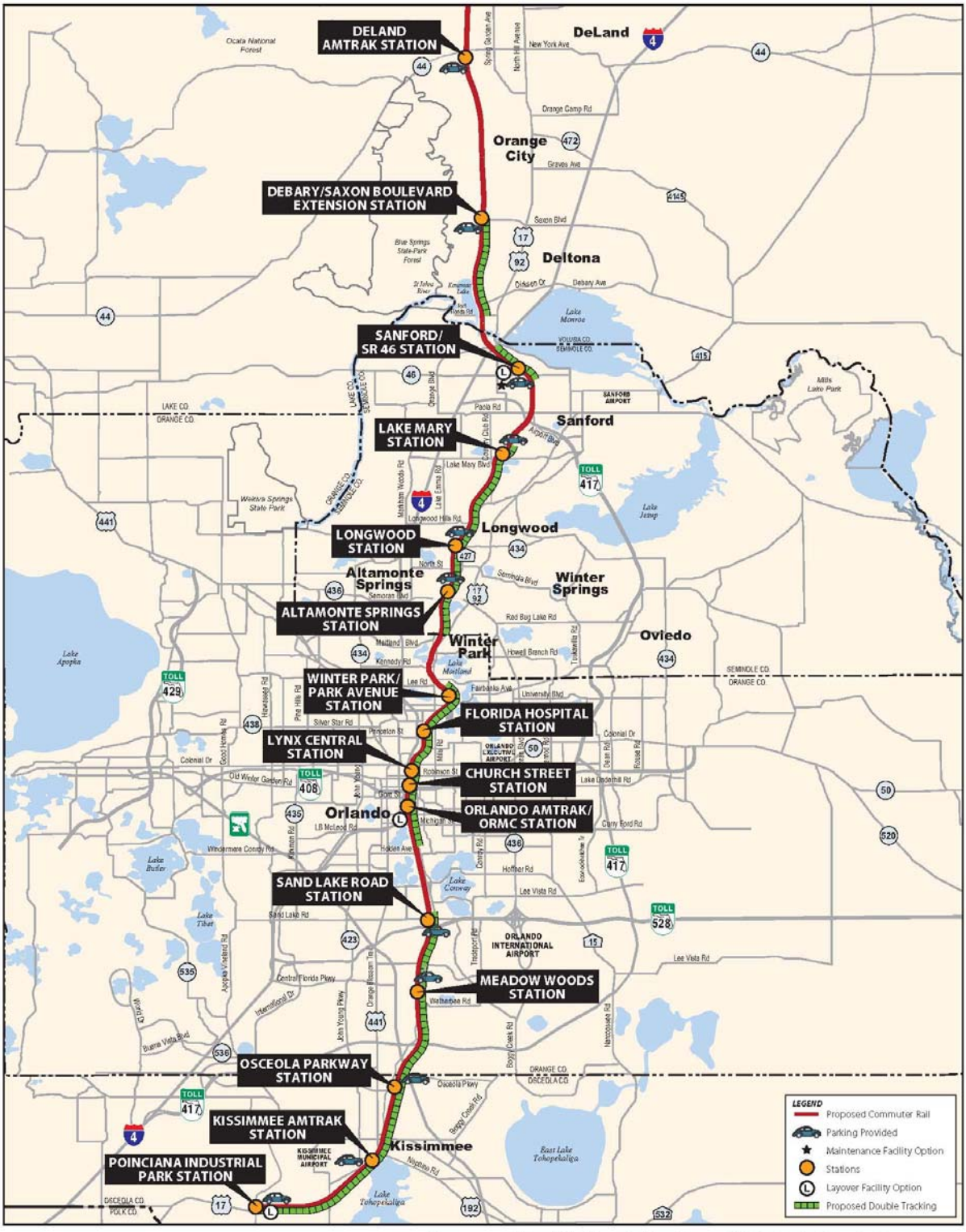

Figure 2-6 Locally Preferred Alternative (LPA) with Proposed Double Track

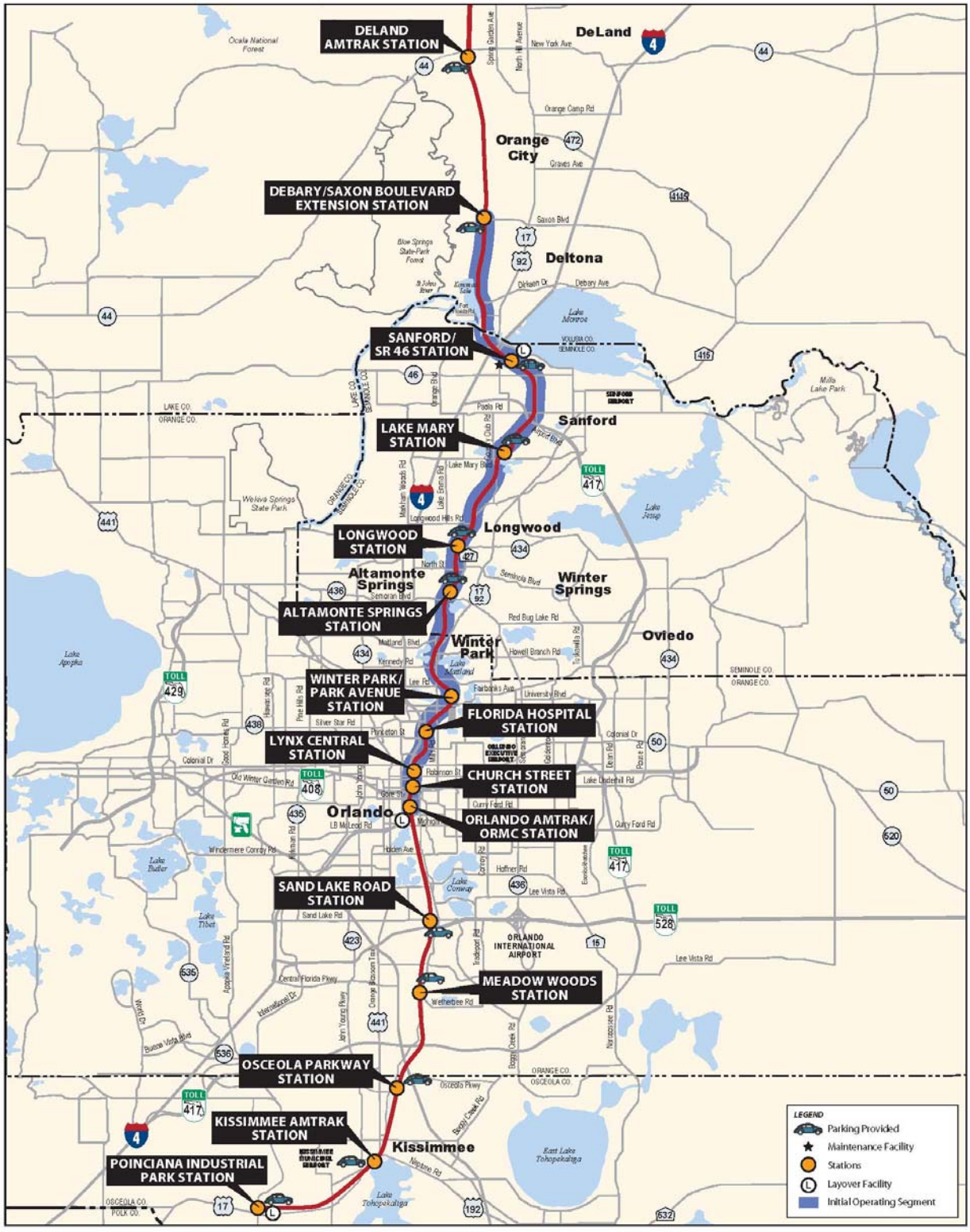

Figure 2-7 LPA Phase 1 – North Corridor Initial Operating Segment (IOS)

Full Build Operating Requirements

Table 2-2 presents preliminary train schedules for the Full Build Alternative. Fourteen (14) trainsets would be required to operate the service plan. All trains would be dispatched from the control center, which would be located along the alignment and possibly at the proposed Vehicle Storage and Maintenance Facility (VSMF) location (defined in section 2.3.7) or the LYNX Central Station in downtown Orlando. Although the majority of the trains would be stored overnight at the VSMF, a few would be stored overnight at the end of line station layover yards. Limited midday train layover would be available at the end-of-line stations. The peak period schedules would require 21 bi-level DMUs and seven single-level DMUs. The total fleet, including maintenance spares, would be 34 DMUs – 26 bi-level and eight single-level DMUs. Operating requirements for the Full Build Alternative are summarized in Table 2-2.

Table 2-2: Operating Requirements for Full Build Alternative

PARAMETER	VALUE
Peak Passenger Cars	28
Peak Trainsets	14
Annual Revenue Train-Hours	25,480
Annual Revenue Car-Hours	50,960
Annual Revenue Train-Miles	880,298
Annual Revenue Car-Miles	1,760,595
Directional Route Miles	120.9
Stations	16
Maintenance Yards	1
Daily Revenue Train Trips	56

Source: Operating Plans Report, December 2005

Full Build Feeder Bus Operations

The CRT Study Area is generally well served by fixed route bus transit operated by LYNX and VOTRAN. The background and feeder bus network for the Full Build Alternative is very similar to the TSM Alternative, except that four express and limited stop routes would be eliminated (e.g., L1, L2, 141, E3) and the bus network would be modified to provide transfer connections to nearby commuter rail stations. In most cases this involved minor route deviations or short route extensions to serve the proposed stations. No new fixed bus routes have been proposed for the Full Build Alternative.

Table 2-3 presents the LYNX and VOTRAN bus routes that would serve the proposed commuter rail stations and the optimum number of bus bays required.

Table 2-3: Feeder Bus Routes for Full Build Alternative

STATION	BUS ROUTES	BUS BAYS
DeLand Amtrak	V20, V24, V60	3
DeBary/Saxon Boulevard Extension	V21, V22, V23	4
Sanford/SR 46	V23, 46	3
Lake Mary	33,34,39,45,63	5
Longwood	39,61,65	4
Altamonte Springs	39,41,71,F1	6
Winter Park/Park Avenue	1,9,23	4
Florida Hospital	1,9,14,39	5
LYNX Central Station	n/a	n/a
Church Street	20,36	3
Orlando Amtrak/ORMC	7,11,18,40	5
Sand Lake Road	11,18,37,42,43,64,102	7
Meadow Woods	18	2
Osceola Parkway	12,70	3
Kissimmee Amtrak	4,10,55,56	5
Poinciana Industrial Park	26	2

Source: Transit Operating Plans Report, December 2005

2.3.5 Operating Plans

This section documents operating plan assumptions for the alternatives applied to each of the CRT Alternatives. These assumptions include: the operating agency, pricing, span of service, vehicle capacity/loading standards, vehicle performance, station dwell times, and bus service design guidelines.

Operating Agency

Existing public transit services are operated in the CRT study area by LYNX, VOTRAN, and a number of private transportation operators. LYNX provides local and express bus public transit services throughout the Orlando metropolitan area, serving Orange, Osceola and Seminole counties. VOTRAN provides local and express bus service in Volusia County, including western Volusia County where the CRT commuter rail service would operate. Private transportation operators provide transit services throughout the Central Florida region, but are principally focused in the tourist corridor encompassing the OIA, International Drive, and Disney World.

LYNX and VOTRAN are assumed to be the operators of any public transit local and express bus services in the CRT study area, within their respective jurisdictions.

The Florida Department of Transportation will be responsible for the construction of the capital portion of the Central Florida Commuter Rail system. For the commuter rail operations, several alternatives are being investigated by FDOT and the local project sponsors. Several of the alternatives include FDOT contracting with a private vendor to operate the CRT system, with varying degrees of local oversight. Other alternatives include adding the contracting and contract management to existing regional agencies. Under all options, the commuter rail system would be operated via contract with a third party contract operator.

Regardless of the management alternative selected, a third party contractor, selected through competitive bid, would supply the bulk of the services required to provide

commuter rail service. This would include, but not be limited to, dispatch, operations, and maintenance.

Passenger Fares

Each of the three transit operators in the CRT study area – LYNX, VOTRAN, and I-Ride Trolley – presently have flat fare, "pay as you board" systems on their fixed route buses. Passenger fares for local and express bus services in the CRT Alternatives are assumed to be identical to current fares, shown in Table 2-4.

Table 2-4: Passenger Fares (FY 2005)

SERVICE	FARE
LYNX Local Bus Adult Cash Fare	$1.25(a)
LYNX Express Bus Adult Cash Fare	$2.00
LYNX Activity Center Circulators	$0.50
LYMMO	Free
LYNX Transfers (Local to Local)	Free
VOTRAN Local Bus Adult Cash Fare	$1.00
VOTRAN Express Bus Adult Cash Fare	$2.00
VOTRAN Transfers (Local to Local)	Free
I-Ride Trolley	$0.75(b)

Source: Transit Operating Plans Report, December 2005
(a) LYNX increased its adult cash fare to $1.50 on March 20, 2005.
(b) I-Ride increased its cash fare to $1.00 on October 1, 2005.

Each system also presently provides discounts for multiple day passes (e.g., weekly or monthly) and for children and senior citizens. Those discounted fares are also assumed for all future alternatives. Fares are assumed to increase in the future at rates consistent with the Consumer Price Index.

All CRT Alternatives assume that no parking charge is levied at public transit stations or park-and-ride lots.

The base commuter rail fare would be $1.25 for trips made wholly within one county. A surcharge of $1.00 would be added for trips made between two counties (total $2.25); a surcharge of $2.00 would be added for trips spanning three counties (total $3.25); and a surcharge of $3.00 would be added for trips spanning four counties (total $4.25). The maximum one-way fare would be $4.25. Travelers could transfer free from the commuter rail system to either the LYNX or VOTRAN local bus system. LYNX or VOTRAN bus riders, however, would have to pay a fare upgrade for travel on the commuter rail system.

Span of Service

Service on transit routes will be provided on weekdays, Saturdays, Sundays and holidays. Table 2-5, below, summarizes the assumed span of service for local and express services included in the CRT Alternatives. Initially, the CRT will only operate on weekdays.

Table 2-5: Span of Service

DAY OF WEEK	TIME PERIOD	HOURS
Weekdays	Early a.m.	5:00-6:30 a.m.
	a.m. Peak Period	6:30-9:00 a.m.
	Midday	9 a.m. – 4 p.m.
	p.m. Peak Period	4:00 – 6:30 p.m.
	Early Evening	6:30 – 9:00 p.m.
	Late Evening	9 p.m. – 1 a.m.
Saturdays	Early a.m.	5 – 9 a.m.
	Midday	9 a.m. – 9 p.m.
	Late Evening	9 p.m. – 1 a.m.
Sundays & Holidays	Early a.m.	5 – 9 a.m.
	Midday	9 a.m. – 9 p.m.
	Late Evening	9 p.m. – 1 a.m.

Source: Transit Operating Plans Report, December 2005
Note: CRT only operates on weekdays initially.

The span of service for local and express bus routes varies depending on demand requirements and service characteristics. For example, the express routes that serve downtown Orlando generally operates on weekdays during the a.m. and p.m. peak periods only. Local bus routes may or may not have early evening or late evening service, depending on demand and the need for connections to other routes. A detailed description of each route is included in the Transit Operating Plans Report, December, 2005.

Service frequency varies by route and time period to reflect demand requirements. Careful consideration was given to span of service assumptions for bus routes that feed Express Bus or Commuter Rail stations. Key feeder bus routes will have a span of service that is consistent with the corresponding CRT service.

Vehicle Capacity & Passenger Loading Standards

Vehicle capacity and passenger loading standards have been established in order to determine the service frequency and fleet requirements for each of the CRT routes. As specified by FTA planning guidelines, passenger loading standards should be comparable for all alternatives. Table 2-6, below, summarizes the assumed vehicle capacity (seats) and passenger loading standards.

Table 2-6: Vehicle Capacity and Peak Hour Passenger Loading Standards

TRANSIT MODE	SEATS	LOAD STANDARD
Circulator Bus	30	150% of seats
Local Bus	40	125% of seats
Express Bus	40	110% of seats
Commuter Rail	98-188	110% of seats

Source: FTA Planning Guidelines

The above load standards were used to determine the appropriate peak hour service frequency for the project alternatives. During off-peak hours, the load standard for all modes will be a maximum of 100 percent (i.e., no standees).

Commuter rail vehicle capacities vary depending on the manufacturer and model of the vehicle. Use of DMU technology for the CRT Build Alternative was determined during the AA process. Typical seating capacities for DMU vehicles are summarized below using data provided by Colorado Railcar, a DMU manufacturer:

- Single-Level Car with Cab = 98 seats
- Double Deck Car with Cab = 188 seats

Vehicle Performance

Commuter rail vehicles (DMUs) are assumed to accelerate at a rate of about 1.5 miles per hour per second (mphps) between 0 and 25 mph. Once the DMU has reached approximately 25 mph, the acceleration rate begins to decrease. Normal service braking is assumed to be a constant 1.5 mphps from 65 mph to 0 mph. The maximum speed allowed in the CRT corridor is limited to 79 mph. However, the operating plan in several segments along the corridor reduces the maximum speed substantially for various reasons such as, horizontal curves, crossover, avoidance of delays due to opposing traffic meets at single track sections (Maitland and St. John's River Bridge), the operating environment (e.g., through residential neighborhoods), and station spacing. Station-to-station CRT time estimates have been developed based on these criteria and applied to the project's rail alignment drawings.

Bus travel times for mixed traffic operations were determined from the travel demand model. The model estimates bus travel speeds on the basis of highway link speeds. Relationships between transit and highway link speeds take into account time for bus stops. Bus travel times for exclusive lanes were based on bus performance characteristics, design speed, roadway geometrics, street crossings (signalized and unsignalized), and posted speed limits.

Station Dwell Times & End-of-Line Layovers

Average station dwell times (i.e., time to allow passengers to board and alight the transit vehicle) for all of the Build Alternatives are assumed to be one minute at LYNX Central Station and 30 seconds at other stations. All CRT trains are assumed to stop at all stations.

Route service plans include time for end-of-line layovers. Layovers provide sufficient time for drivers to take breaks as required by union agreement as well as provide for some schedule recovery (i.e., a late bus or train can "catch up" to its schedule). Bus service plans reflect layovers equal to 5 minutes or 15 percent of the one-way run time at each end-of-line terminal, whichever is greater. Rail service plans reflect longer layovers due to the need to change cab controls at the end-of-line station.

Station Facilities

Station parking and access were determined following the initial travel demand projections. Bus bay requirements at passenger stations, transit centers, and park and ride lots were determined with the following criteria:

- No more than four to five buses per bay, per hour

- No more than two routes assigned to each bay
- One additional unassigned bay shall be assumed at each station to accommodate future bus service growth.

Bus Route Design Guidelines

The definition of new circulator, local, express and feeder bus routes for this project are consistent with bus route design guidelines established in the LYNX FY 2005-2009 TDP. Key bus route design guidelines are:

- Small loops and branches may be included at ends of routes.
- Turn backs should be used when possible to increase the service frequency on trunk portions of routes, when warranted by ridership.
- Direct routing is desired, with transit route mileage between two terminal points not exceeding a 1.2 factor of highway route mileage.
- Minimum peak and base period policy headways for weekday service should be 30 minutes. Minimum evening, Saturday and Sunday policy headways is 60 minutes. Clock headways are to be used at all times.
- Routes should be interlined or connected to better serve trip desires and reduce the need to transfer.
- Pulse scheduling should be provided at peripheral transit centers to accommodate transfer activity.
- Bus stops should be provided every 600 to 900 feet for local routes.
- Passenger shelters should be provided at any location having 15 or more boarding per day.

2.3.6 Stations

The location, function, and capacity of proposed transit stations was a major component of the EA alternatives development process for both the Full Build TSM/Baseline and CRT Full/LPA Build Alternatives.

TSM/Baseline Stations

The TSM/Baseline alternative would provide upgraded bus station stop facilities similar to the established LYNX Superstop or transit center facilities already in place at a growing number of locations in the LYNX system. The TSM/Baseline station stops and features are summarized in Table 2-1 earlier in this chapter.

Full/LPA Build Stations

The stations for the CRT Build Alternative were identified through a comprehensive station siting and sizing process as summarized below.

A total of 29 candidate station locations were identified and screened. Thirteen of the locations were previously identified in the AA; fourteen as a result of field reviews and interviews with local jurisdictions to serve as optional locations for stations identified in the AA; and two due to the request of municipalities whose community wanted a station

within their boundaries. Information from the Travel Market Analysis was also used to identify locations with significant concentrations of trip productions and attractions. The methodology used to screen and evaluate each of the thirty-one stations was based on an integrated site selection process, which assessed and scored various operational and spatial elements such as:

- Access
  - Vehicular
  - Pedestrian
  - Transit
- Engineering
  - Rail requirements
  - Intersecting/adjacent streets
- Land Use
  - Compatibility
  - Transit Oriented Development (TOD) joint development opportunities
- Land Needs Availability
  - Available land
  - Current land use
- Potential Impacts
  - Natural Impacts
  - Community Impacts
- Potential Cost
  - Land
  - Mitigation

Additionally, sensitivity analyses were performed to determine the ridership potential for the station locations. Following completion of the screening and initial evaluation, informational packages for the feasible station locations were prepared and distributed to the municipalities describing and depicting the station locations, and requesting local review, comment, and concurrence. Capital costs were developed for the short-listed stations. Finally, a public alternatives workshop was held at which the alternatives were presented and described, including the stations, and further input and comment solicited. Through this integrated process of technical analysis, local government coordination, and community outreach, the final list of stations for the Full Build CRT Alternative was developed.

The basic station will include kiss n ride, bus drop-off facilities, two 300 foot long parallel platforms with benches, canopies, ticket vending machines and other amenities. The downtown stations are considered primarily destination stations and as such do not have parking. The stations away from downtown will have parking with the number of spaces estimated to accommodate the expected demand. The intermodal stations are located at the junction of two or more fixed route transit facilities. The results of the station siting process are summarized in Table 2-7 and the CRT station prototypes are depicted in Figure 2-8 through Figure 2-12. Conceptual Station Site plans are shown in Figure 2-13 through Figure 2-27

Table 2-7: Full Build Stations and Key Features

Station Name	Station Prototype	Parking Spaces	CRT Alternative
DeLand Amtrak	Park & Ride	180	Full Build
DeBary/ Saxon Boulevard Ext.	Park & Ride	275	Full Build, LPA, IOS
Sanford/SR 46	Park & Ride	300	Full Build, LPA, IOS
Lake Mary	Park & Ride	650	Full Build, LPA, IOS
Longwood	Park & Ride	375	Full Build, LPA, IOS
Altamonte Springs	Park & Ride	650	Full Build, LPA, IOS
Winter Park/Park Avenue	No Parking	0	Full Build, LPA, IOS
Florida Hospital	No Parking	0	Full Build, LPA, IOS
LYNX Central Station	Intermodal	0	Full Build, LPA, IOS
Church Street	No Parking	0	Full Build, LPA, IOS
Orlando Amtrak/ORMC	No Parking	0	Full Build, LPA, IOS
Sand Lake Road	Intermodal	650	Full Build, LPA
Meadow Woods	Park & Ride	390	Full Build, LPA
Osceola Parkway	Park & Ride	200	Full Build, LPA
Kissimmee Amtrak	Park & Ride	390	Full Build, LPA
Poinciana Industrial Park	Park & Ride	250	Full Build, LPA
TOTAL		4,310	

Source: CRT Station Location Report, December 2005

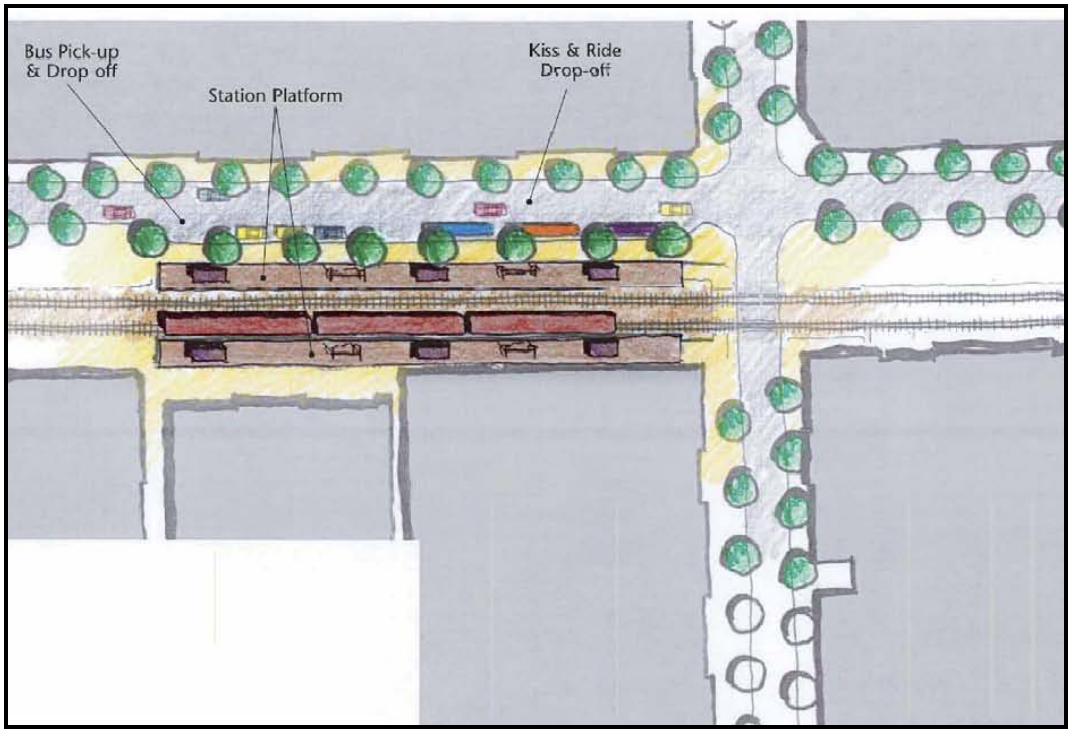

Figure 2-8 Prototypical Station without Parking

Figure 2-9 Prototypical Station with Parking

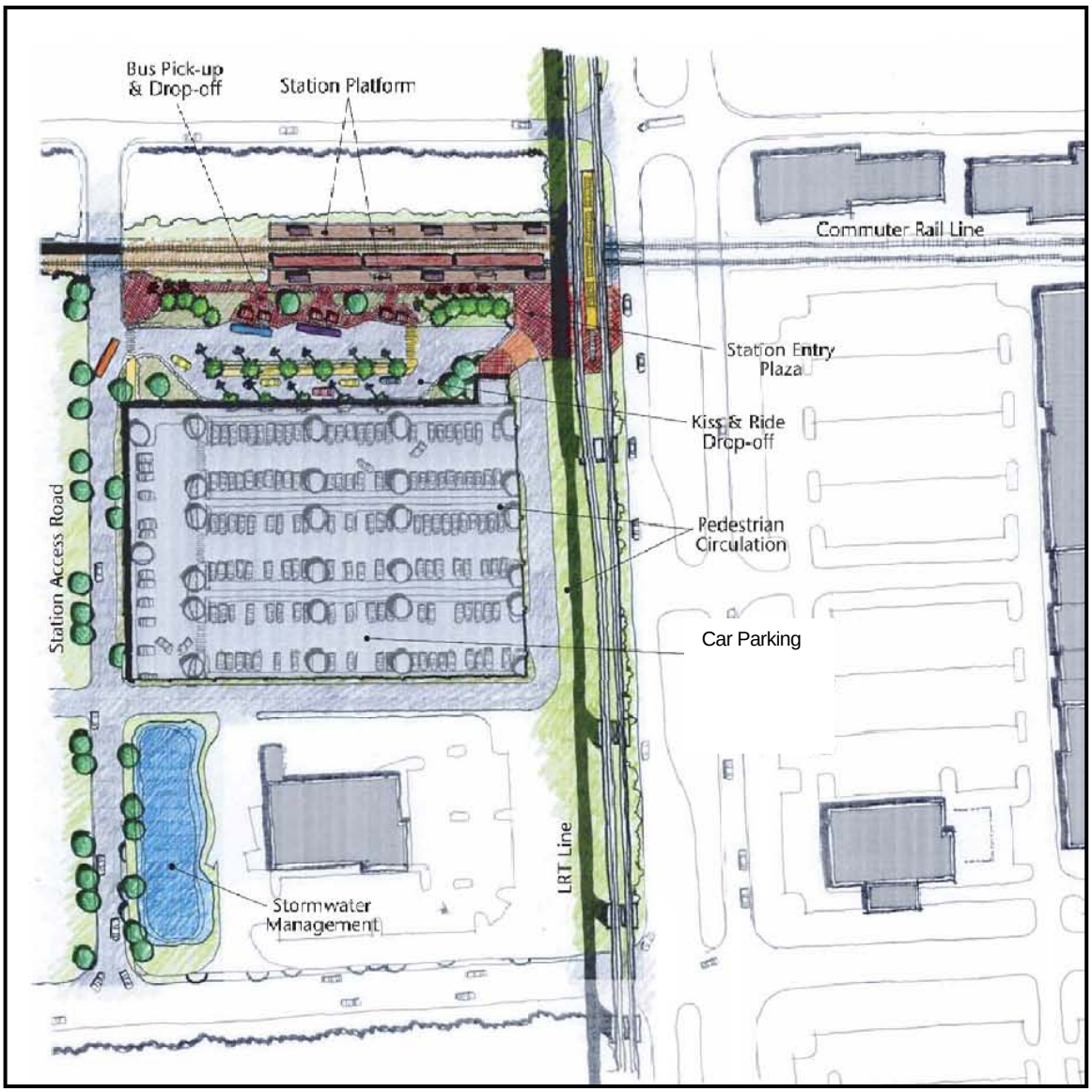

Figure 2-10 Prototypical Intermodal Station

Figure 2-11 Prototypical Station without Overhead Pedestrian Walkway

Figure 2-12 Prototypical Station with Overhead Pedestrian Walkway

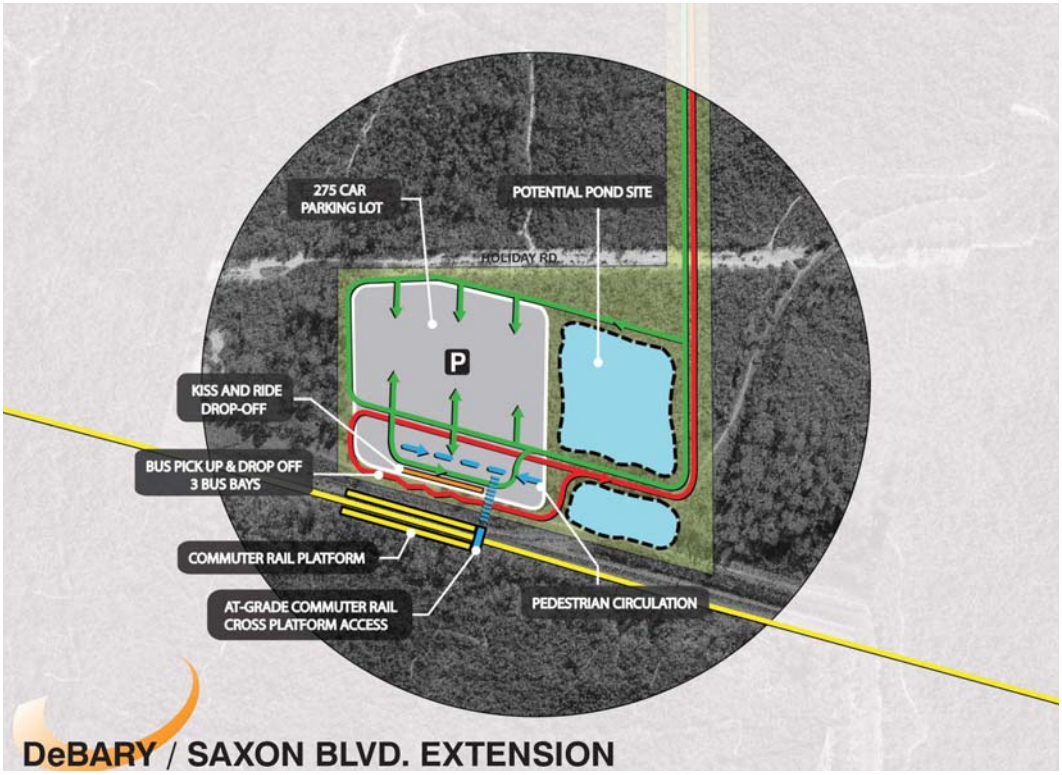

Figure 2-13 Conceptual Station Site Plan – DeBary/Saxon Blvd Extension

Figure 2-14 Conceptual Station Site Plan – Sanford/SR46

Figure 2-15 Conceptual Station Site Plan – Lake Mary

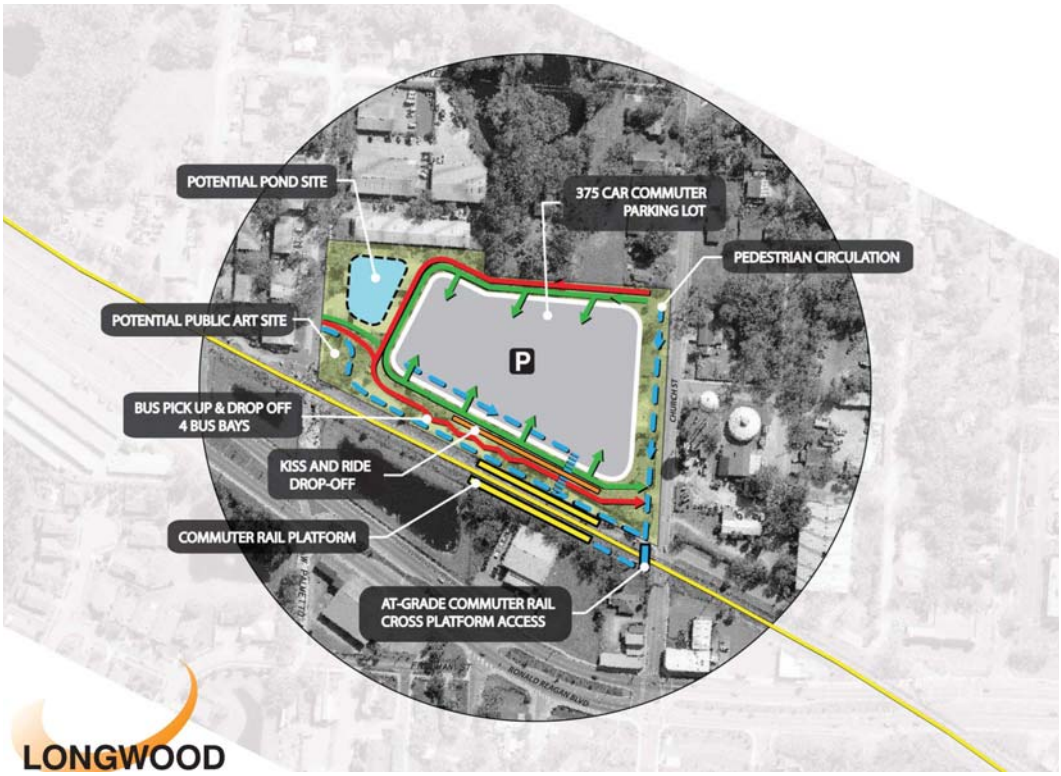

Figure 2-16 Conceptual Station Site Plan – Longwood

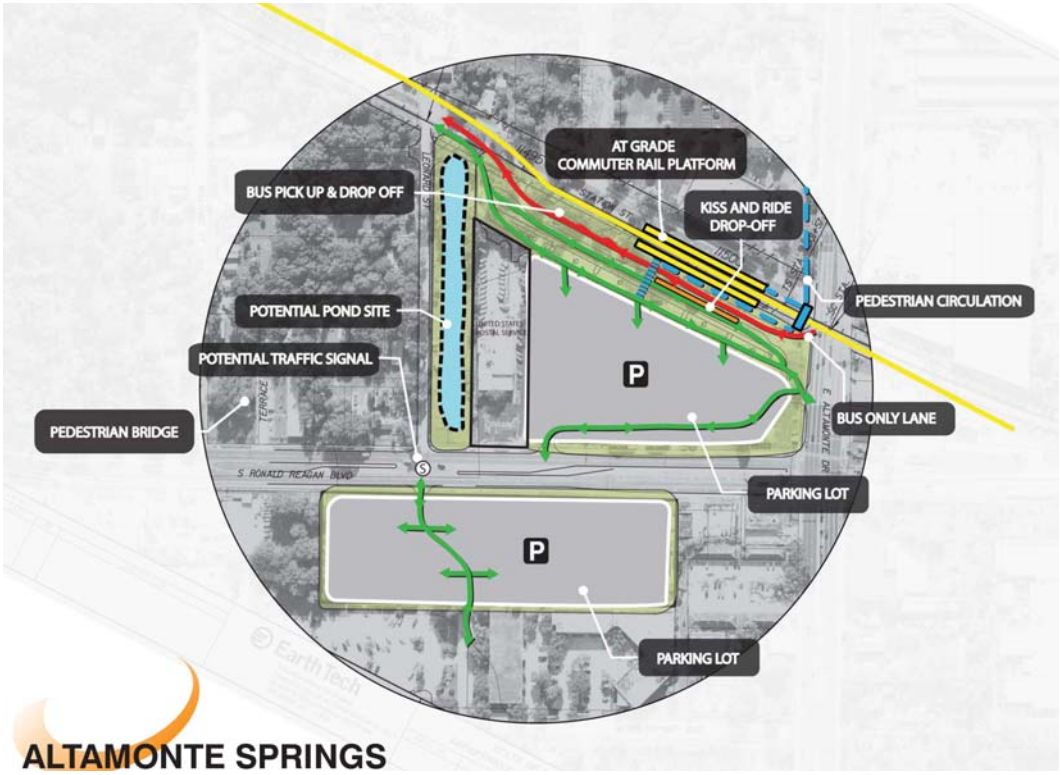

Figure 2-17 Conceptual Station Site Plan – Altamonte Springs

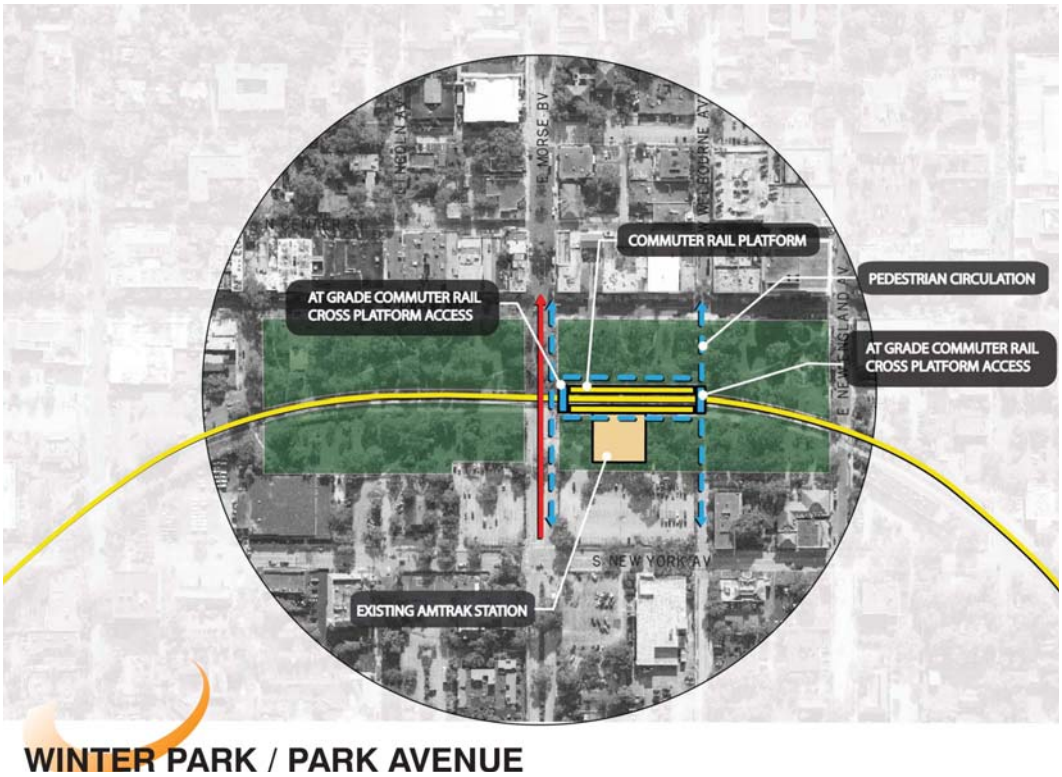

Figure 2-18 Conceptual Station Site Plan – Winter Park/Park Avenue

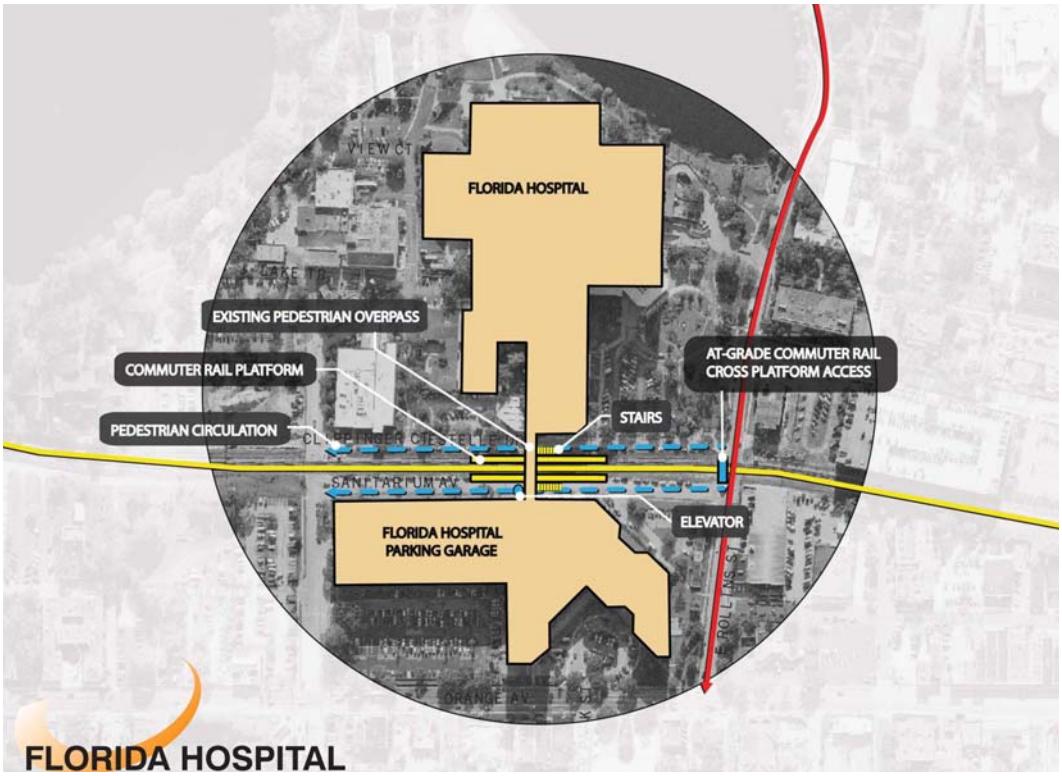

Figure 2-19 Conceptual Station Site Plan – Florida Hospital

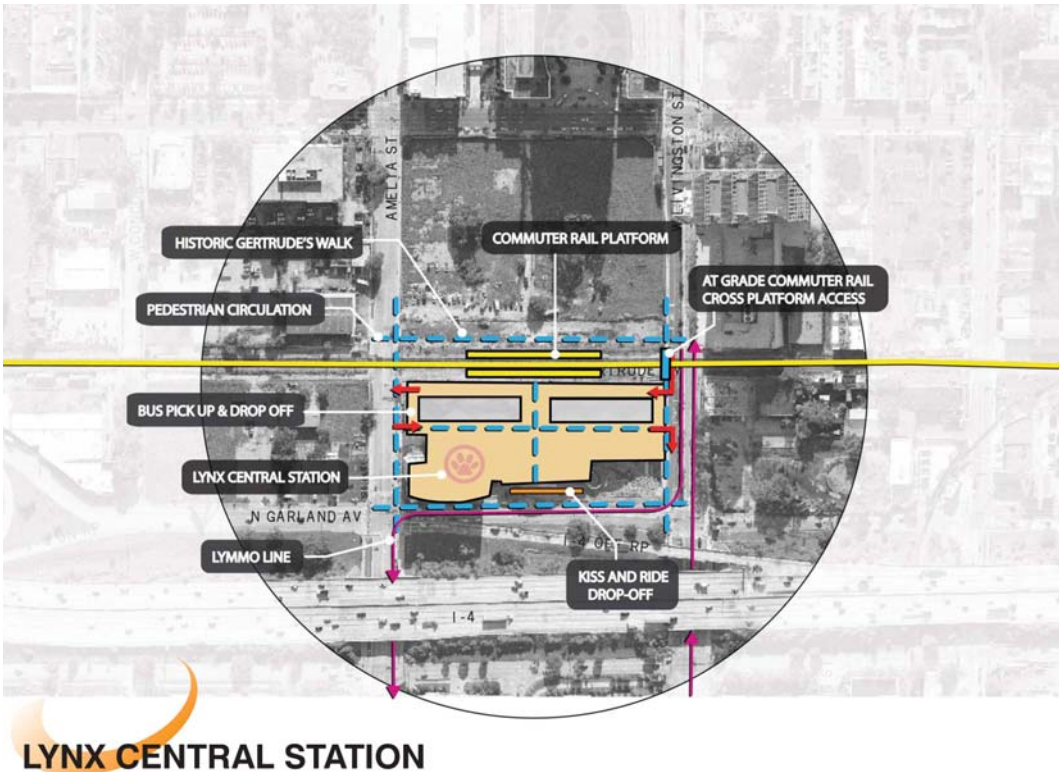

Figure 2-20 Conceptual Station Site Plan – LYNX Central Station

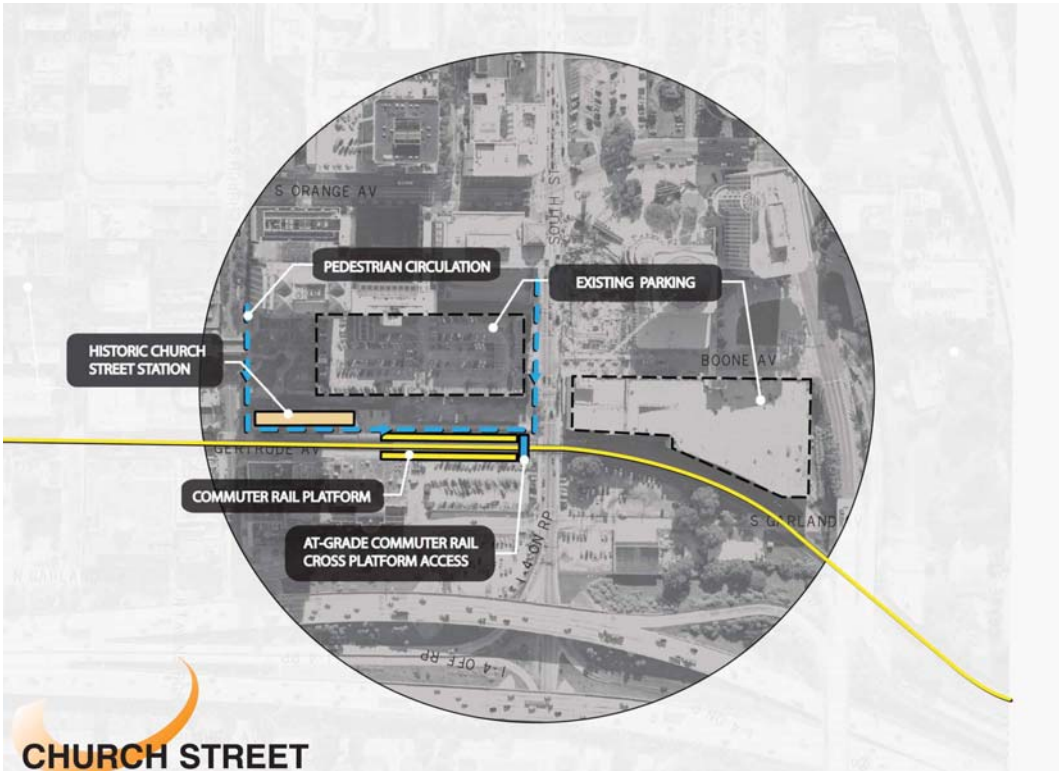

Figure 2-21 Conceptual Station Site Plan – Church Street

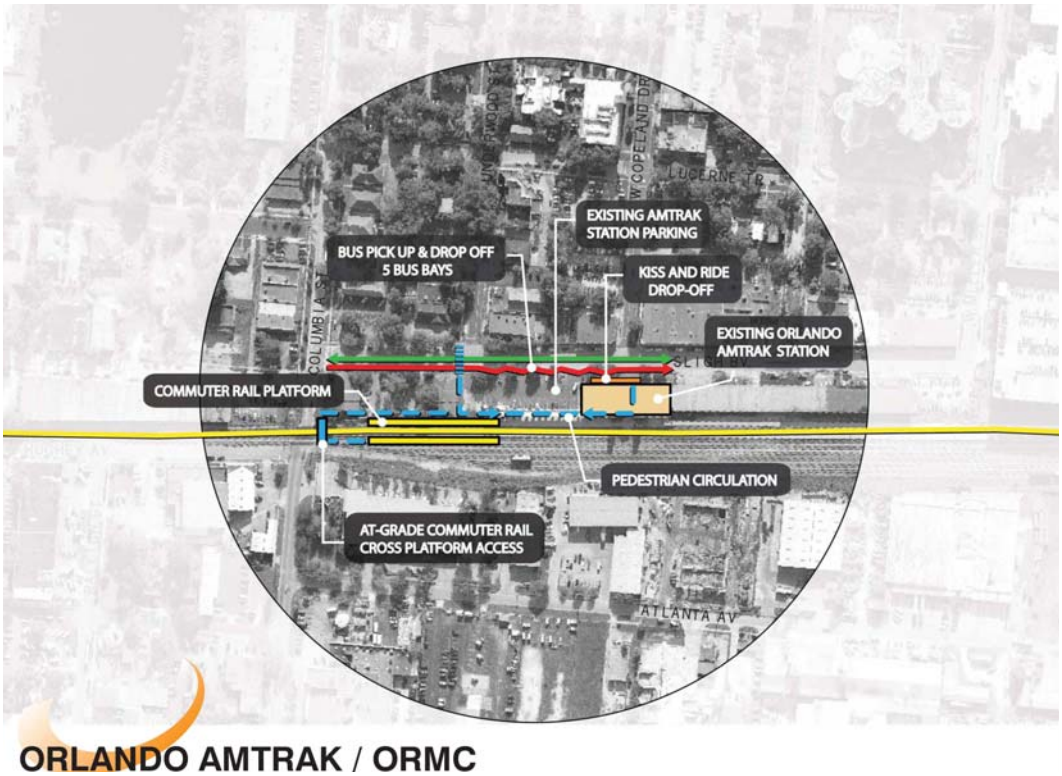

Figure 2-22 Conceptual Station Site Plan – Orlando Amtrak/ORMC

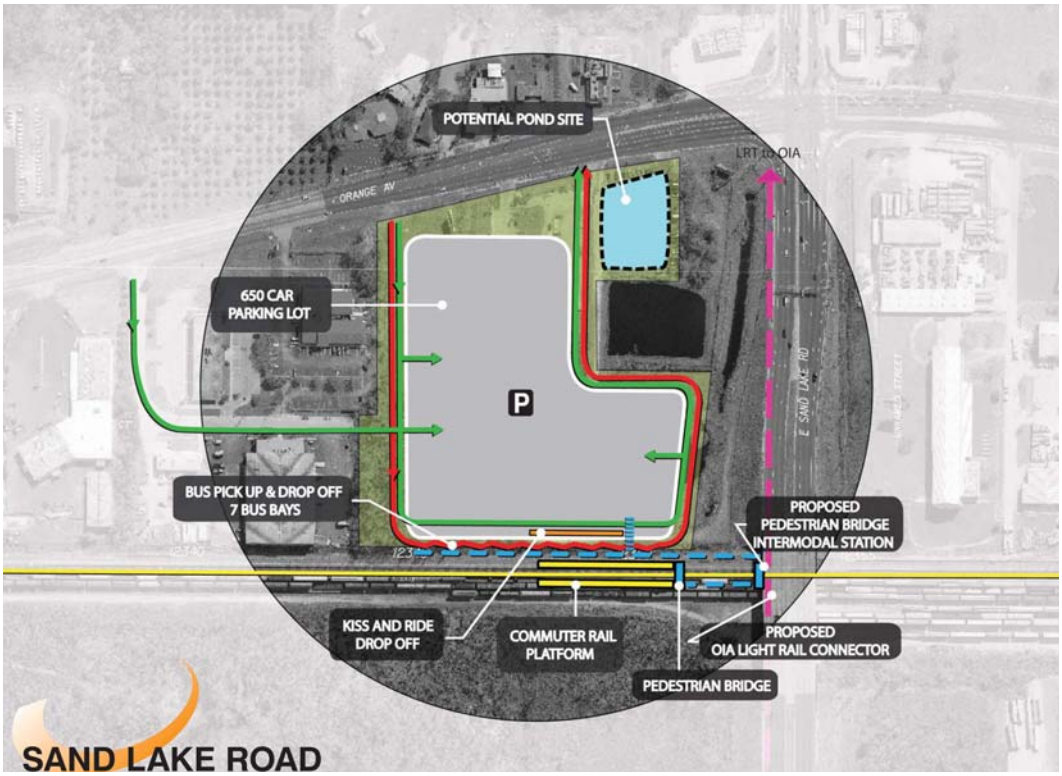

Figure 2-23 Conceptual Station Site Plan – Sand Lake Road

Figure 2-24 Conceptual Station Site Plan – Meadow Woods

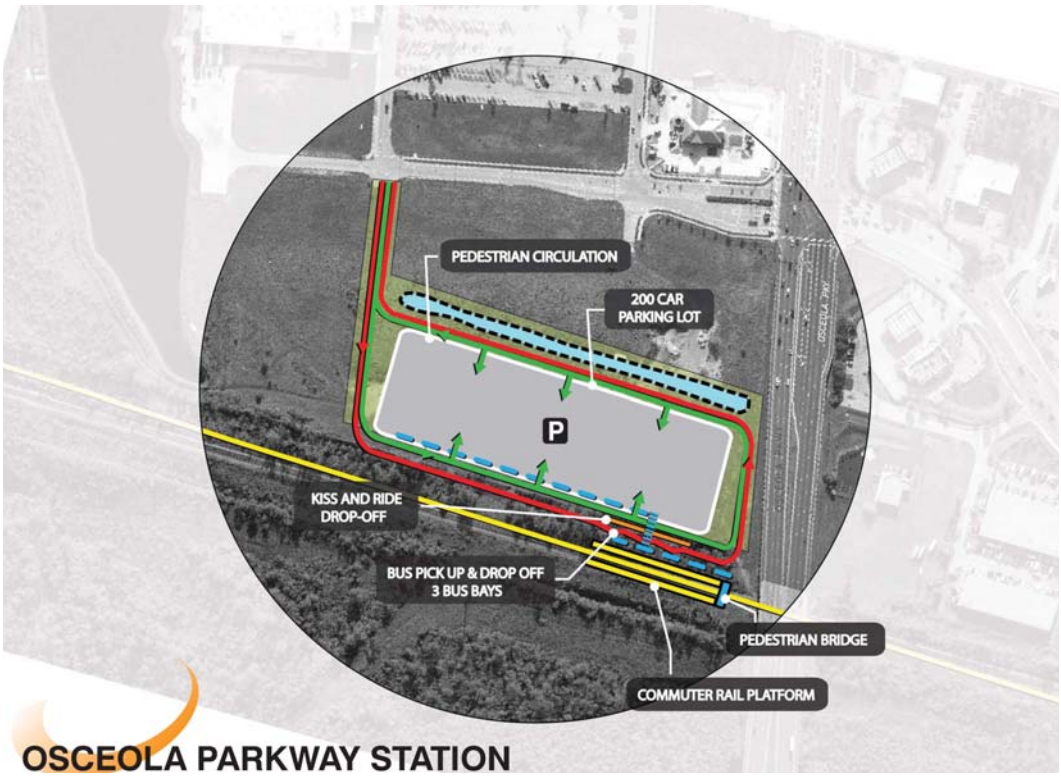

Figure 2-25 Conceptual Station Site Plan – Osceola Parkway

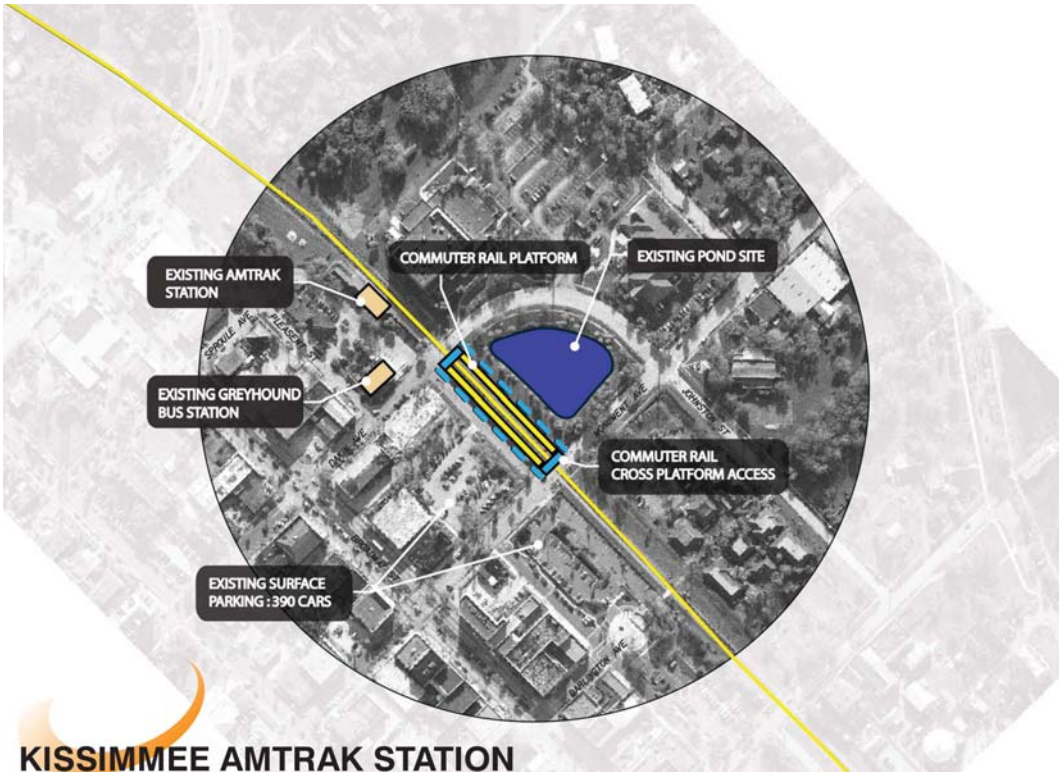

Figure 2-26 Conceptual Station Site Plan – Kissimmee Amtrak

Figure 2-27 Conceptual Station Site Plan – Poinciana Industrial Park

2.3.7 Vehicle Storage and Maintenance and Layover Facilities

The CRT Full Build Alternative would utilize DMU rail technology vehicles that are self propelled rail cars. The DMU fleet needed to operate the CRT service described in the Full Build Alternative would require support facilities to clean, store and maintain the vehicles, as well as facilities to provide short-term layover capability at or near service terminus points. This section provides an overview of the Vehicle Storage and Maintenance Facility (VSMF) functions, sites considered and the recommended footprint. Additionally, the necessary layover facility functions are described and the recommended locations are identified.

VSMF – Prior Studies

The need for a VSMF was identified in the Alternative Analysis (AA) Phase prior to this document. Two existing rail yard sites along the corridor were reviewed, Kaley Yard near the Orlando Amtrak/ORMC Station and at the CSXT Rand Yard in Sanford. The Kaley Yard was determined to be too small and consequently Rand Yard was selected (Figure 2-28). The following VSMF design data was also included as part of the Alternative Analysis report recommendations:

- Maintenance building up to 50,000 square feet
- 40 acre site (full CSXT Rand Yard), network of parallel, tracks, switches, turnouts, signals and storage tracks
- Facilities for overnight storage of train sets
- Facilities for daily service, routine cleaning, fueling, regular maintenance and washing
- Facilities for heavy maintenance, major overhauls
- Sizing of facilities based on LPA utilizing 7 trains during peak service hours and 2 trains during off-peak hours, each train would consist of one single Diesel Multiple Units (DMU) and one Bi-level DMU. A 16 vehicle fleet .
- Yard functions to include staging and support areas for track, structure, right-of-way, and systems (signals & communications) maintenance support Maintenance- of-Way Base of Operations
- Operations Control Center (Central Control Facility)
- Fare Revenue Collection Center
- System Security Center
- Administrative Office Space.

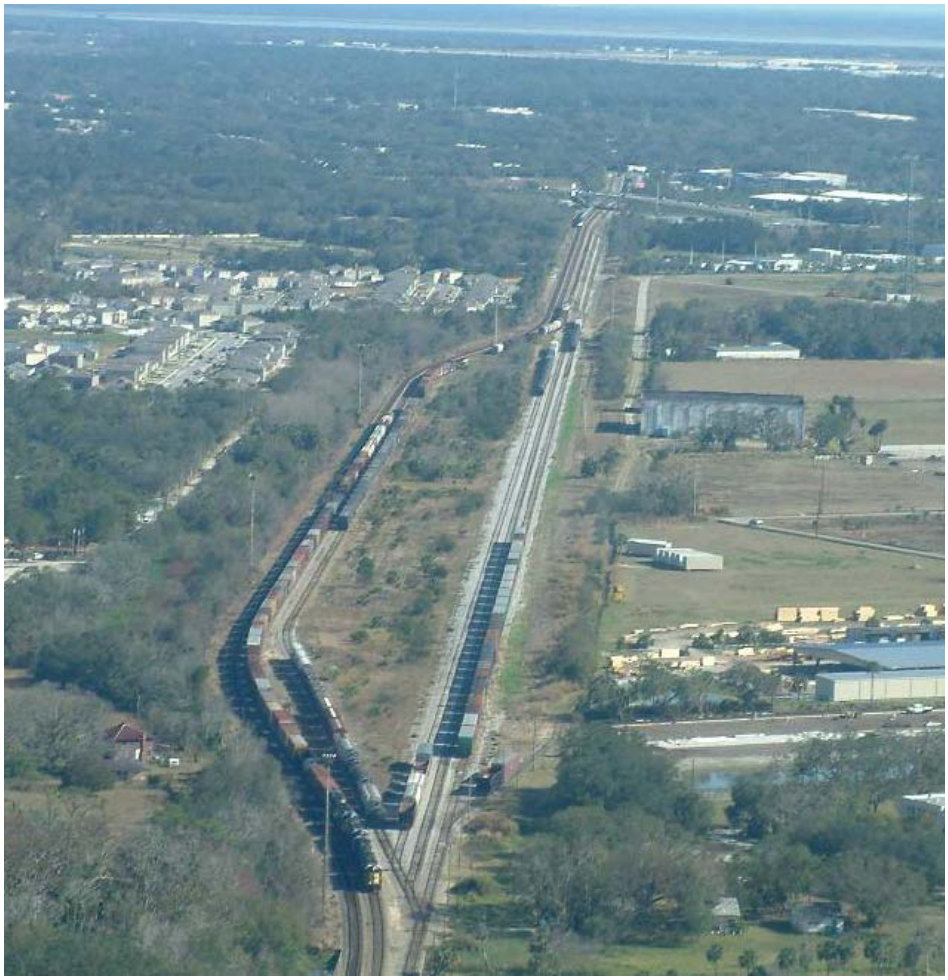

Figure 2-28 Existing CSXT Rand Yard

Two midday layover facilities were recommended, one at the north end of the corridor and the other at the south end of the corridor. No further design requirements were specified as part of the AA.

VSMF – Functional Requirements

General requirements identified in the AA were updated, refined and expanded as necessary based upon the needs of the CRT Full Build Alternative. Additional considerations for the VSMF include housing of on-track equipment, material storage, vehicles and staff facilities for Maintenance of Way (MOW), Track and Roadway (T&R), and Signals and Communications (S&C).

The vehicle maintenance will involve preventative, corrective and rehabilitative tasks encompassing daily service and inspection, scheduled maintenance and un-scheduled maintenance. Prior to entering revenue service all vehicles will be visually inspected by maintenance personnel to ensure there are no obvious defects. Major equipment components will be tested to confirm all are in satisfactory condition.

Yard entrances to the mainline should allow access from both ends of the yard. Trains entering the yard from the mainline will be able to access the maintenance shop, car

wash facility track, refueling track or storage track. Shop, storage, wash and refueling tracks should not conflict with revenue train movements and should require the least number of switching movements. Several shorter storage tracks are preferable to long tracks. Curved storage tracks should be avoided and access from both ends is desirable.

Section 2.3.4 identified 34 DMU vehicles in the Full Build fleet will need to be maintained at the VSMF.

VSMF – Site Alternatives

Based on the proposed operation requirements, a review of other agencies and industry knowledge it was determined that smaller acreage requirement of 20 - 25 acres are required for a new VSMF rather than the 40 acres recommended in the Alternative Analysis. A review of the 60.8 mile corridor revealed several possible locations for the VSMF. The locations considered were:

a) Adjacent to the DeBary/Saxon Blvd Extension Station site using vacant Progress Energy property,
b) CSXT Rand Yard in Sanford,
c) Amtrak Auto Train Yard in Sanford,
d) Taft Yard near Sand Lake Road,
e) Poinciana Industrial Park.

Since the IOS ends north of Taft Yard and Poinciana Industrial Park only options a, b and c were considered feasible. Option a, the DeBary/Saxon Boulevard site was considered slightly less favorable since both options b and c were existing and functioning railway yards.

The existing CSXT Rand Yard is about 43 acres and is approximately 2,400 feet long with about 22,300 feet of existing track in the yard exclusive of the CSXT mainline. There are three active storage tracks and 10 turnouts.

The entrance to the Amtrak Auto Train Storage and Maintenance facility is located immediately south of Rand Yard in Sanford. The property adjacent to this facility is owned by CSXT. The use of the Amtrak VSMF would be limited to providing equipment maintenance and vehicle washing. Therefore, the CRT would need to develop the adjacent land to the south (formerly the Sanford Amtrak Station) for cleaning and storage of the 34 DMU vehicles, offices, MOW, T & R, S & C, parking, etc. as well as access to the CSXT mainline. Although this appears to be a very attractive option (location and economics) it requires further investigation and the development of a memorandum of understanding with Amtrak and CSXT.

This site screening process concluded that Rand Yard is the preferred location based on its large contiguous acreage, absence of major competing uses, and compatibility with surrounding land uses. Figure 2-29 depicts the VSMF proposed at Rand Yard. Rand Yard also requires an MOU with CSXT. Despite this EA Phase recommendation, the Amtrak VSMF should continue to be reviewed in the next phase.

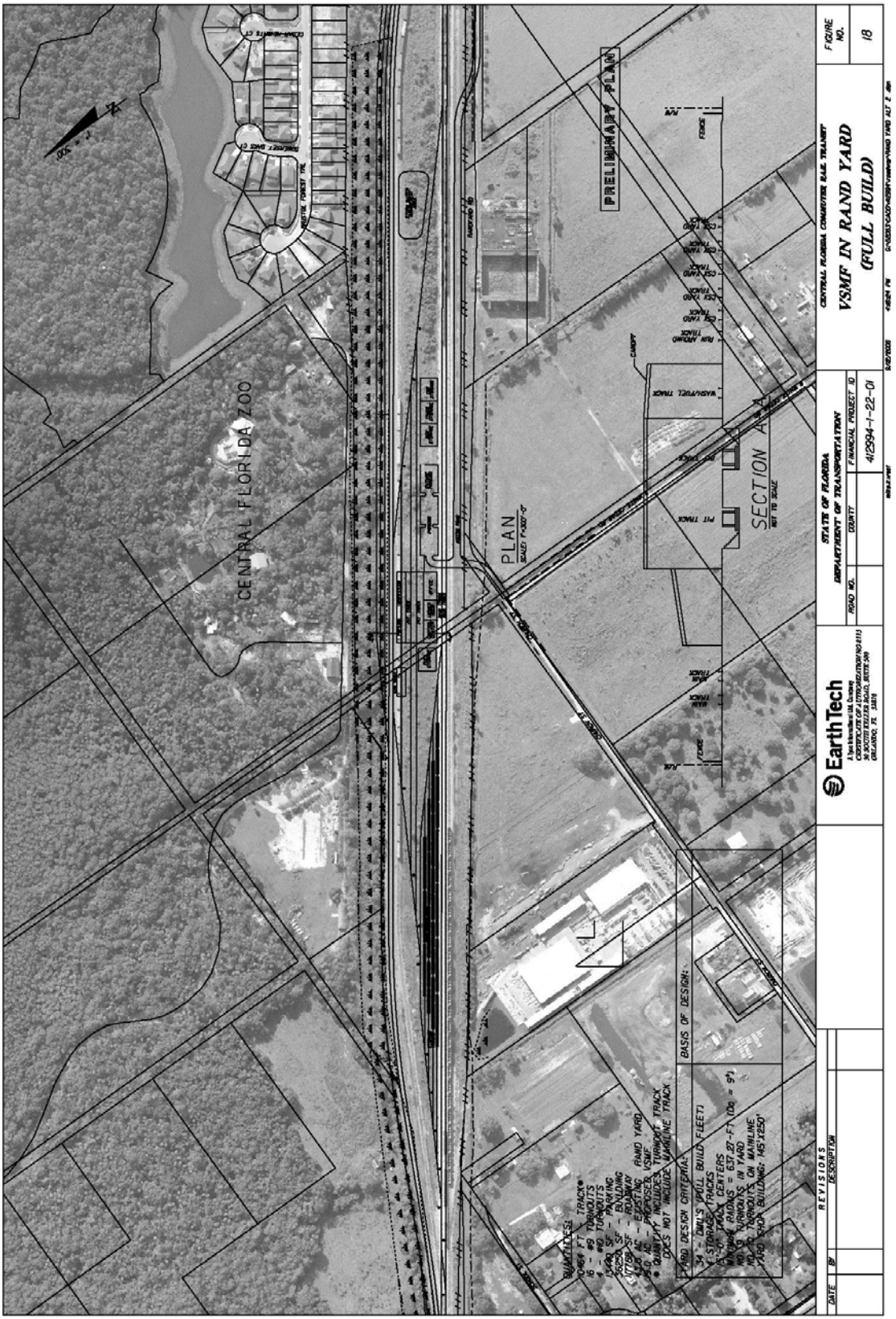

Figure 2-29 VSMF in Rand Yard (Full Build)

Maintenance Building

The shop building should be approximately 35,000 to 40,000 square feet (Figure 2-30) and will be designed to Florida Building Code standards. Requirements that are typical for the railway shop maintenance and repair environment would include:

- Inspection pits
- Cranes, lifts and/or jacks
- Wheel turning (optional)
- Truck, wheel & axle repair
- Paint and body repair
- Shop floor for primary repair
- Electronic repair
- Electro-Mechanical repair
- Traction motor or other drive train repair
- Diesel engine repair
- Maintenance and repair bays for automobiles, trucks and other equipment used for railway purposes.
- Air brake repair
- Scaffolding
- Glazing shop
- Upholstery & trim shop.

The shop would include at least two tracks with two maintenance bays on each track. A third parallel track outside the building would be used for daily inspection, exterior washing and fueling (Figure 2-30 through Figure 2-34).

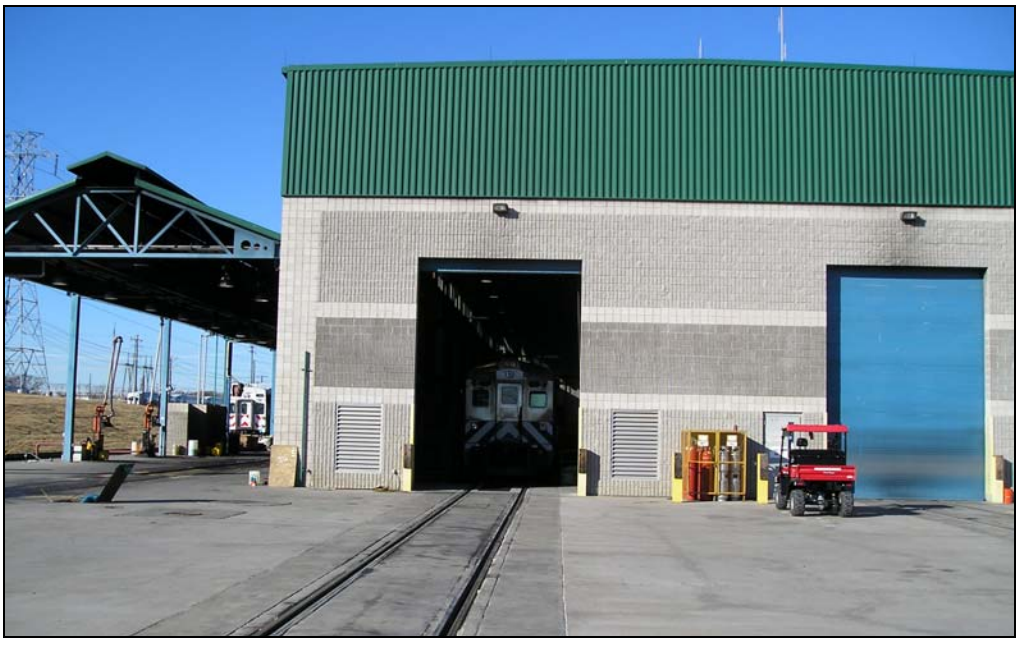

Figure 2-30 Example VSMF Shop Building

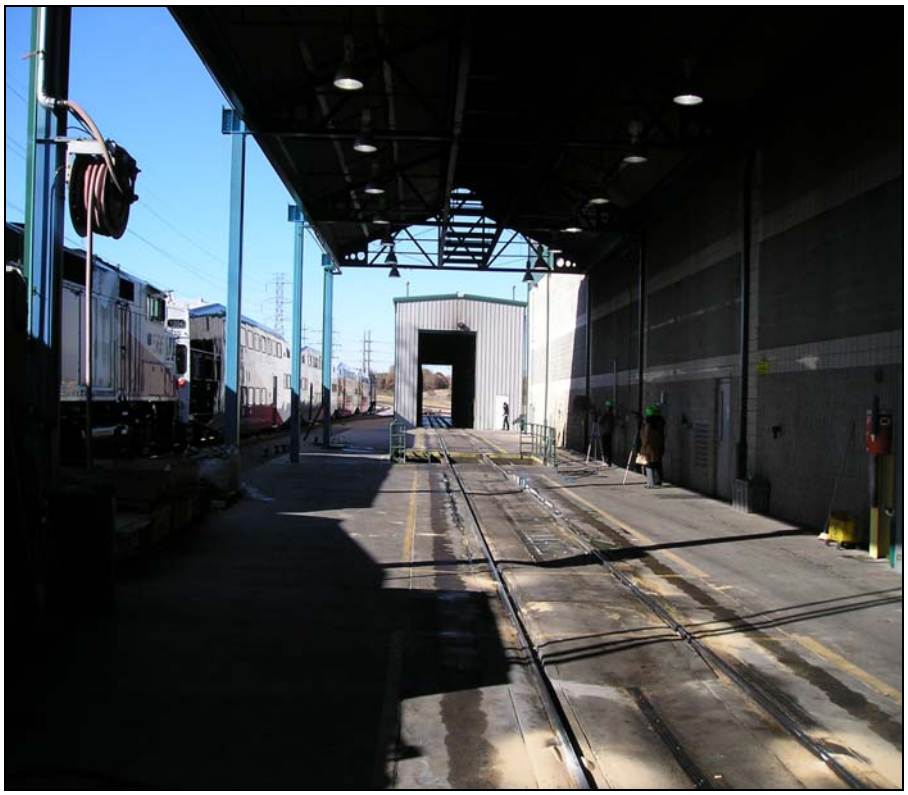

Figure 2-31 VSMF Typical Vehicle Wash, Fueling, and Track Inspection Pit

Figure 2-32 VSMF Typical Vehicle Wash

Figure 2-33 View Inside VSMF Shop Building

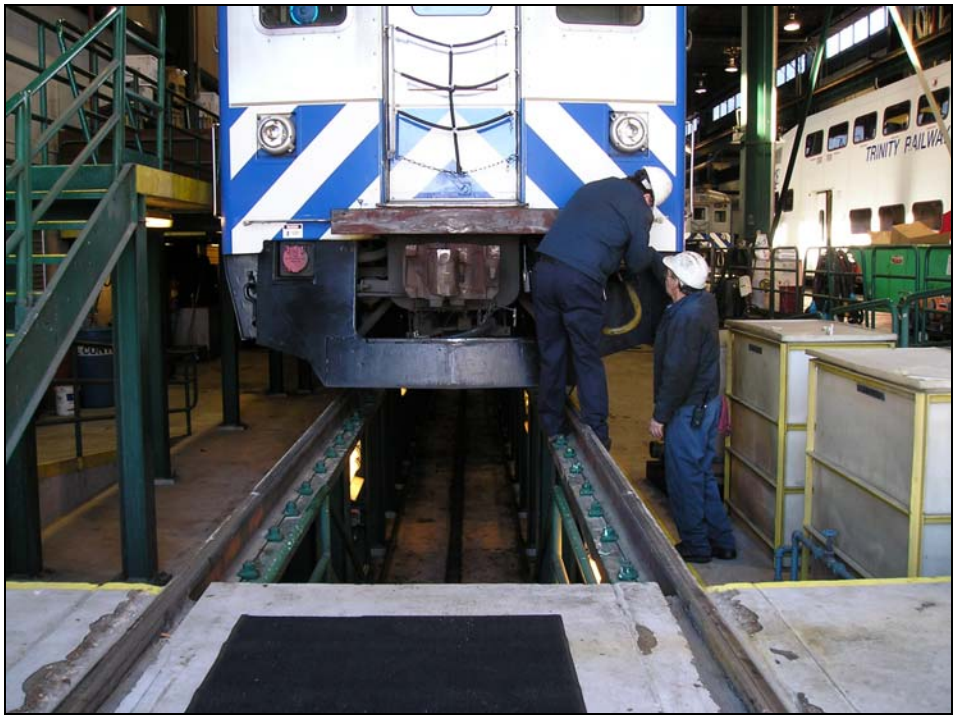

Figure 2-34 View of VSMF Shop Building Maintenance Pit

VSMF – Description of Existing and Proposed Facilities and Operation

This section describes the existing CSXT configuration and operations at Rand Yard. It also describes the proposed VSMF yard tracks and related support facilities, their operation, and why they will not have an impact on surrounding land uses.

Existing Rand Yard

Figure 2-28 is an aerial view of the existing 40 acre Rand Yard. The present CSXT freight yard configuration is shown to include two mainline tracks to the east and three yard storage/switching tracks to the west with a large vacant area between the mainline and yard tracks. Rand Yard currently operates 24 hours per day and 7 days a week. The current operation varies over the corridor with a maximum of up to 26 trains per day (10 through freight trains, 10 local freight trains and up to 6 passenger trains).

The majority of the existing Rand Yard freight activity is the result of the following:

- Two daily merchandise trains, traveling to and from Jacksonville and other points outside the corridor, drop and pick up rail cars on a daily basis in Rand Yard where they are stored while waiting for delivery by local train crews. Local trains distribute the cars to customers between DeLand and to points a few miles south of Rand Yard.

- Short unit trains loaded with rock often layover in Rand Yard temporarily (sometimes up to 1-2 days) waiting for room at Benson Junction where they are off-loaded.

- Rand Yard is the last stretch of existing double track prior to traveling through to Taft Yard. Therefore, the long through freight trains, Amtrak Auto train and passenger trains regularly meet at Rand Yard. This results in long freight trains idling in Rand Yard for 1-2 hours waiting for clearance to Taft Yard. The agreement between FDOT and CSXT to upgrade the track for commuter rail with the addition of 46 miles of double track plus a new signal system will mitigate this current idling situation at Rand Yard.

- Possible relocation of freight trains in the future in accordance to CSTX proposed plans identified in Section 2.24.

- The Contamination Section identifies Rand Yard as a location with “high” potential risk of encountering contaminated soils during construction of the VSMF. Contaminated soils encountered during construction of the VSMF will be addressed in accordance with all applicable regulations resulting in a cleaner site with the proposed project compared to the No-Build or TSM alternatives.

Proposed VSMF Configuration

Figure 2-29 shows the proposed configuration of the VSMF located in the vacant land between the Mainline and Yard tracks.

VSMF Land Use

The proposed project will reconfigure Rand Yard, not expand it, and will change its primary use from freight trains to primarily passenger trains, which are smaller and have

less impact on the environment. Rand Yard is and has been a rail yard for many decades. It will continue to serve CSXT as a rail yard, though with lower volumes of freight than currently. Rand Yard is bordered by I-4 in the west, SR 46 in the east and along a portion of the south side. Along the north side of the CSXT right of way, the border land uses feature wetlands, a zoo, and a small residential area behind a wall, and along the south border, vacant celery fields that are presently home to commercial and industrial facilities like Cox Lumber, Florida Recycling, a beer distribution operation, etc. There are also a few vacant buildings along the south side of the right of way. Immediately to the east of Rand Yard are the Amtrak Maintenance Facility and a Freight Transload facility. Both have switches off the CSX mainline under the SR 46 highway bridge.

Proposed Operations

The VSMF will provide for overnight storage of the DMU vehicles with operations to begin at approximately 5:30 a.m. and the final trains returning at approximately 11:00 p.m. The yard vehicle maintenance operation including car cleaning, fueling, light maintenance would not occur outside of this time frame. The VSMF would also be used for midday storage.

VSMF Noise

Review of the proposed VSMF facility shows no sensitive receptors located within the FTA screening distance. As a result further noise assessment of the facility was not performed. Noise from the proposed DMU vehicle at idle is reported to be half that of a standard diesel locomotive of the type used by freight trains, and while running DMUs emit only 25% of the noise of standard locomotives. DMUs will not be left idling overnight or between peak service periods at the VSMF.

VSMF Emissions

Although DMUs will be new emissions sources at the VSMF facility, due to the removal of existing freight operations at the facility, the overall emissions at the facility are expected to decrease. The DMUs meet EPA's Tier 2 controlled emission rates for NOx, HC, and PM emissions. The existing operations at the facility likely include locomotives manufactured prior to 1972, in which case these locomotives are exempt from even Tier 0 emission standards. In addition, wayside power will be available at the facility to reduce DMU idling emissions. This will be the same practice at the end of line layover facilities.

VSMF Lighting

Rand Yard currently has high mast lighting. Additional lighting may be required at a lower elevation to supplement the existing lighting.

VSMF Fueling

An environmentally compliant fueling facility including storage will be provided with the proposed VSMF facility, in accordance with all federal, state, and local regulatory requirements.

VSMF Transportation

There is only one at-grade crossing in Rand Yard and it is located at the west end of the yard at Monroe Street near I-4. The current operation by CSXT blocks the crossing for several minutes several times daily (e.g. early morning) during switching operations from the mainline to the yard tracks due to the proximity of the lead track to the crossing and the absence of the "constant warning time" (CWT) feature in the crossing protection. With the proposed capital upgrades for CFCRT and in the new yard configuration this problem will be eliminated by upgrading the crossing protection with CWT and moving the CSXT operation to the north as described earlier.

VSMF Summary

In summary, the proposed VSMF at Rand Yard will be located well within the boundaries of an existing CSXT freight rail yard buffered from adjacent land uses, and will result in a site, facilities, and operations that have fewer adverse impacts on the environment and the surrounding community than does the existing operation and future No-Build or TSM.

Layover Facilities

A layover facility is needed at each end of the line, located at the north and south terminus points of the proposed CRT Full Build Alternative from which service begins in the morning, and for mid-day layover of the DMUs to minimize deadheading (empty trips) back to the VSMF mid-day. Facilities and operations for each layover facility would include the following:

- One or two siding tracks totaling less than 500 feet in length
- Site utilities including electric, water, sewer, and telecommunications
- Small multifunction building for employees, administration, storage
- Access road, lighting, and fencing.

The layover facilities would be used primarily weekdays during the mid-day period and then again for overnight storage of 1 or 2 DMU train sets to provide the first inbound service in the morning. Wayside power will be provided for the DMUs to plug into at each facility, thereby eliminating the need for idling during layover.

The DeBary/Saxon Boulevard Extension Station will be the north terminus yard (Figure 2-35) and Poinciana Industrial Park Station will be the south terminus yard for mid-day storage. The Poinciana Industrial Park layover yard should be designed to provide for potential overnight DMU storage (1-2 train consists). Figure 2-36 depicts the layover facility at the south end of the corridor adjacent to the Poinciana Industrial Park facility.

The proposed layover facilities and operations are not anticipated to have an adverse impact because the facilities are small scale, primarily within the existing operating railroad right-of-way, and the operations are limited. Moreover, the sites chosen for the facilities are buffered from surrounding land uses by significant amounts of undeveloped land.

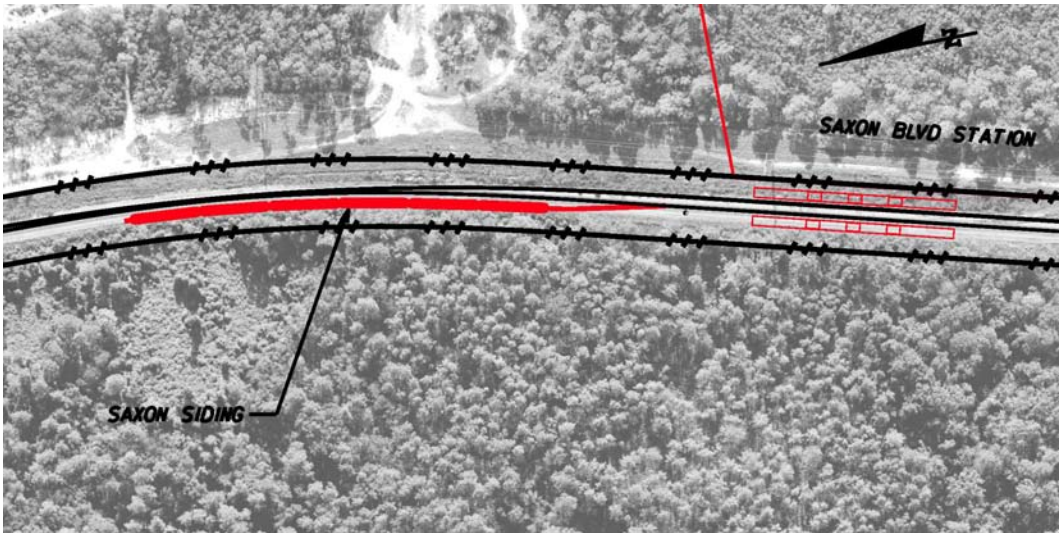

Figure 2-35 DeBary Saxon Extension Station Layover Facility

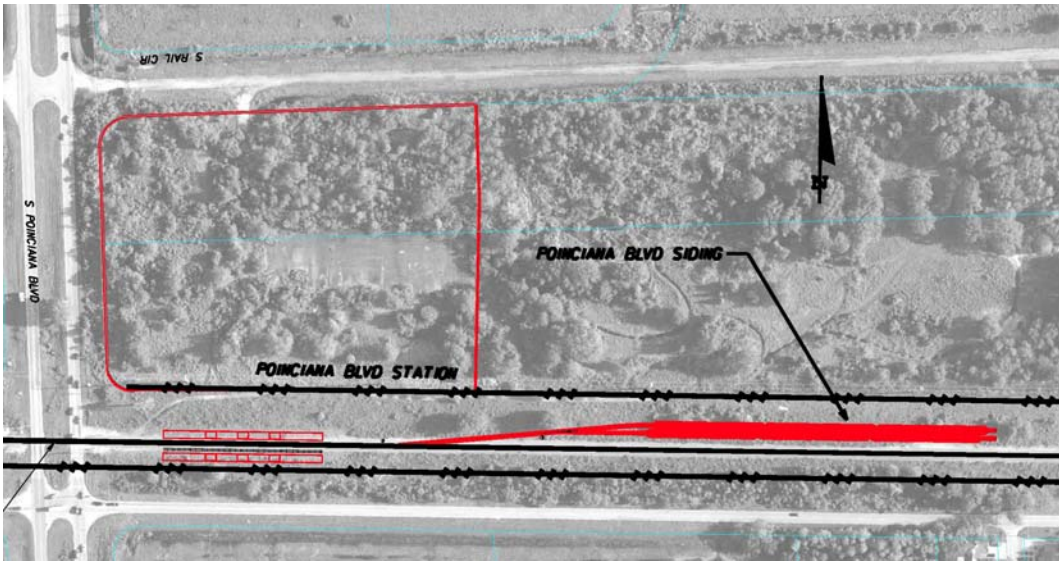

Figure 2-36 Poinciana Industrial Park Layover Facility

2.3.8 Grade Crossings

Implementation of the new commuter rail service using federal funding sources requires evaluation of at-grade railway crossings to ensure they meet current design and safety standards and to identify areas to enhance safety.

All existing public crossings have functional automatic highway crossing warning devices. Automatic highway crossing warning devices including automatic gates and flashers were present at all public at-grade roadway crossings and at one private crossing. The majority

of pedestrian crossings and private roadway crossings have passive or no warning devices.

The only grade crossing impacts are related to construction for the relocation of grade crossing protection due to the addition of 2nd track. Construction mitigation is covered in Chapter 3, Section 3.3.13 Construction Impacts.

The following summarizes the highway-railroad grade crossings in the 60.8 mile corridor:

- Number of crossings in the FRA Database = 144
- Number of Open Crossings = 126
- Number of Closed Crossings = 18
- Number of Public Roadway Crossings = 120 (113 open/7 closed)
- Number of Public Pedestrian Crossings = 7 (4 open/3 closed)
- Number of Private Crossings = 17 (9 open/8 closed).

2.4 Ridership, Revenues, Costs, and Financial Requirements

Ridership and revenue were projected, capital and O&M costs were estimated, and a financial plan for the project prepared, as summarized below.

2.4.1 Ridership and Revenues

Ridership for the TSM and CRT Build alternatives was forecast using the regional model and land use assumptions in compliance with FTA requirements and consistent with the two MPOs in the study area. Forecast daily boardings are summarized in Table 2-8.

For this initial stage of analysis, a $2.50 average fare per boarding (2005 dollars) was applied to the forecasted ridership projections to derive operating revenue. The $2.50 average fare reflects a “deep discount” fare policy utilized by LYNX to keep public transit affordable for its riders, as well as the blended yield of a potentially distance-based pricing structure. Other revenue sources identified are: Ancillary (from advertising); Maintenance of Traffic (MOT) funds for I-4 construction mitigation based on the precedent of Tri-Rail during reconstruction of I-95; Section 5307 Preventive Maintenance formula funds; and state and local operating assistance within a framework established in 2005 between FDOT and local governments.

Table 2-8: Daily Boardings by Service Type and Alternative (2025)

Service	2025 No-Build	2025 Full TSM	2025 LPA	2025 Full Build
LYNX	120,960	135,160	134,230	135,310
I-Ride	13,330	13,330	13,330	13,320
LYMMO	3,990	4,080	3,880	3,760
VOTRAN	1,380	1,890	1,920	2,450
CRT	0	0	8,334	13,760
Systemwide Boardings	139,660	154,460	161,660	168,600

Source: AECOM September 3, 2005

2.4.2 Capital Costs

Capital cost estimates were developed for the TSM and CRT Full Build Alternatives consistent with FTA Standard Capital Cost (SCC) methodology. The estimates incorporate percentage allowances for contingencies to cover items of work that cannot be identified in detail at this early stage of conceptual design. Contingencies range from 15-50 percent, with higher contingencies assigned to high risk items associated with land acquisition, utilities and intersection modifications. TSM capital cost estimates include both station costs and purchase of buses. A summary of the capital costs for the LPA, and Full Build version of each alternative is presented in Table 2-9. This information is presented in year 2005 dollars.

Table 2-9: CRT Capital Cost Estimates ($million)

Year	LPA TSM	Full TSM	30 min. headway LPA Build	15 min. headway Full Build
Current	$47.1	$47.1	$447.0	$632.0

Source: Draft Capital Cost Report, June, 2006

2.4.3 Operating Costs

Transit bus and commuter rail cost models were used to estimate annual operating and maintenance costs for the study alternatives: No-Build, Transportation System Management (TSM) and Full Build (commuter rail). Three separate models were used to estimate project costs: (1) LYNX bus operations; (2) VOTRAN bus operations; and (3) commuter rail operations. Each model was used to estimate costs based on projected system operating characteristics.

The O&M cost models used are appropriate for the CRT project for the following reasons: (1) the models have been fully tested and validated; (2) O&M cost results are consistent with those developed for the CRT Alternatives Analysis and other transit major investment studies in the Orlando area; and (3) LYNX organization structure and bus unit costs have remained largely unchanged since the calibration year (except for inflation). The O&M cost methodologies for the CRT project were presented in a previous report (Operations and Maintenance Cost Methodology Report, April 2005).

Table 2-10 shows the system characteristics and estimated annual Operations and Maintenance (O&M) costs for commuter rail operations for each phase of the CRT project Build Alternative. Costs were inflated to 2005 dollars with a 3.0 percent annual inflation rate. Detailed CR O&M costs are included in Appendix B of the *CRT Operating & Maintenance Cost Report, December 2005*. Table 2-11 summarizes the estimated annual O&M costs for each of the CRT project alternatives. The total annual O&M cost ranges from $141.6 million (No-Build) to almost $181 million (Full Build). The incremental O&M costs for the TSM/Baseline Alternatives and the Build alternatives are shown below.

Table 2-10: Commuter Rail Annual O&M Cost Estimates (2005 dollars)

Input Measure	LPA Build	Full Build
Annual Passenger Trips	2,161,000	3,578,000
Peak DMUs	14	28
Fleet DMUs	17	34
Annual Revenue Train-Hours	13,650	25,480
Annual Revenue Car-Miles	821,500	1,760,600
Directional Route-Miles	105.3	120.9
Stations	15	16
Daily Revenue Train Trips	30	56
Operating Agency O&M Cost	$4,131,786	$5,879,431
Contract Operator O&M Cost	$11,819,610	$22,718,898
Total CR O&M Cost	$15,269,769	$28,598,329

Source: Operations and Maintenance Cost Report, December 2005

Table 2-11: Total Annual O&M Cost Estimates (2005 dollars)

Input Measure	No-Build	LPA TSM	Full TSM	LPA Build	Full Build
LYNX O&M Cost (million)	$138.04	$147.16	$148.60	$143.40	$143.42
Votran O&M Cost (million)	$3.57	$4.48	$4.48	$4.86	$4.86
CR O&M Cost (million)	$0.00	$0.00	$0.00	$19.40	$32.56
Total Annual O&M Cost (million)	$141.61	$151.64	$153.08	$167.66	$180.84
Incremental Annual O&M Cost (million)	n/a	$10.03	$11.47	$16.02	$27.76

Source: Operations and Maintenance Cost Report, December 2005
Incremental cost of each TSM/Baseline Alternative is relative to the No-Build Alternative.
Incremental cost of each Build Alternative is relative to the corresponding TSM/Baseline Alternative

2.4.4 Anticipated Financial Plan

The CRT financial plan assumes that the North Corridor will enter revenue service in 2009. It is anticipated that construction of the South Corridor will begin shortly thereafter and that operation of the full system will commence in the 2013 timeframe. Federal discretionary grants under the Section 5309 New Starts Program are assumed to provide 50% of the funding required for the capital construction costs while the state and local governments would each contribute 25%.

The financial plan anticipates a federal grant pay-out that extends from 2006 to 2012. This assumption implies that CRT project sponsors will seek support from the Florida State Infrastructure Bank (SIB) to advance any funds that may be required to match construction draws in excess of an assumed $50 million cap on annual New Starts funds. Recent credit structures for grant anticipation financing backed by Full Funding Grant Agreements (FFGA) are secured solely by future federal appropriations and would not affect the financial capacity of the Florida SIB.

The four local counties served by the CRT (Volusia, Seminole, Orange, and Osceola) will fund the 25% local share of the capital construction costs. To facilitate local financial participation, the Florida SIB would advance the local share, and each county requesting

such financing would repay the SIB advances over ten years starting with the initiation of revenue service of the full system.

The operations and maintenance finance plan assumes that after farebox recovery, federal formula funds, and ancillary system revenues, the local funding partners will fund the projected operating deficits. For the first seven years of operations, FDOT/Maintenance of Traffic (MOT) funds will offset the anticipated operating deficit, as the commuter rail program will serve as a MOT strategy for the reconstruction of Interstate 4.

2.5 Summary

The 60.8 mile Full Build Alternative provides 15 minute peak headway bi-directional service and 56 trips per day. This alternative operates 34 DMU Vehicles combined in 1, 2 or 3 car consists, adds 42 miles of new 2nd track within the CSX ROW, provides a new signal system, builds 16 simple platform stations, a VSMF in the existing CSX Rand Yard and end of line layover facilities at three terminus station locations.

The LPA is different from the Full Build Alternative in that it operates over 53.5 miles, offers less trips per day with a 30 minute peak headway bi-directional service, includes 25 miles of new 2nd track, provides a new signal system, builds 15 stations and requires a smaller VSMF.

The Full Build Alternative will be constructed in phases beginning with the IOS (North Corridor) of the LPA in 2009, the South Corridor of the LPA in 2013 and the North Corridor extension to DeLand to complete the Full Build Alternative at some time in the future.