SOUTH FLORIDA REGIONAL TRANSPORTATION AUTHORITY

Boca II

FEASIBILITY STUDY

Final

Prepared by

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Executive Summary

The South Florida Regional Transportation Authority (SFRTA) operates the 72-mile Tri-Rail regional commuter rail system providing service to 18 stations in Miami-Dade, Broward, and Palm Beach counties, including one (1) station located in the City of Boca Raton, near Yamato Road. A future second Boca Raton Station, called Boca Raton II for the balance of this study, is included in the following local, regional, and state plans:

- SFRTA's Transit Development Plan (TDP)
- Palm Beach Metropolitan Planning Organization's (MPO's) 2040 Long Range Transportation Plan (LRTP) – Cost Feasible
- Florida Department of Transportation's (FDOT's) State Rail Plan Investment Element
- FDOT District Four's Strategic Intermodal System (SIS) priority list

The proposed Boca Raton II Station would be located in the vicinity of Military Trail and Glades Road, near regional destinations and major employment centers as well as large residential populations.

The purpose of this study is to determine the overall feasibility of opening the Boca Raton II Station. The study included: a review of possible site locations; operational costs and impacts to existing Tri-Rail services and operations; and a benefit-cost analysis to evaluate feasibility.

Site Location Analysis

The study included a review of the following prior and ongoing studies:

- SFRTA Site Location Analysis – Boca Raton II Station, *May 2010*
- Boca Raton Downtown Transit Feasibility Study, *August 2016*
- Glades Road Project Development and Environment (PD&E) study, *ongoing*

The SFRTA Site Location Analysis identified four (4) potential sites for the proposed Boca Raton II Station.

<u>Site 1</u>

- Consists of two (2) parcels equaling approximately 81,000 square feet
- Accommodates a kiss-and-ride drop-off area, bus drop-off area, walkway to the station, station amenities, and a 50-100 space surface parking lot
- Requires additional ingress/egress point for buses and emergency vehicles
- Contains a Florida Gas Transmission (FGT) line along the southern portion of the site

Site 2

- Consists of approximately 33,000 square feet and is a subparcel to a larger area of undeveloped land
- Accommodates a kiss-and-ride drop-off area, bus drop-off area, walkway to the station, station amenities, and a 20-30 space surface parking lot

Site 3

- Consists of approximately 174,000 square feet and is the larger parcel that contains Site 2
- Accommodates a kiss-and-ride drop-off area, bus drop-off area, walkway to the station, station amenities, and a 250-300 space surface parking lot

Site 4

- Approximately 11,000 square feet
- Located between an office building and a parking garage
- Could accommodate a walkway connecting the station to the adjacent roadway and existing structures, and station amenities

Existing data and documentation, such as development plans, utilities, lighting, drainage, ridership projections, and track geometrics, were analyzed to determine the feasibility of constructing the new station on each of four (4) potential sites. The matrix below details the ability of each site to meet requirements from SFRTA's Station Design Guidelines.

Site	Land Area	Area available to provide Kiss-and-Ride	Area to provide 250 Tri-Rail Parking Spaces	Area to provide Bus Drop Off
1	81,000 ft^2	Yes	No	Yes
2	33,000 ft^2	Yes	No	Yes
3	174,000 ft^2	Yes	Yes	Yes
4	11,000 ft^2	No	No	No

Right-of-Way Assessment

Since SFRTA does not own land in the vicinity of the proposed Boca Raton II Station location, land must be acquired or donated for the project. Site 3 was determined to be the most feasible site to accommodate a new Tri-Rail station. To determine a fair market value for Site 3, as well as determine the impact to the overall station cost, a real estate assessment was conducted. The value of the Site 3 parcel was appraised at $4,700,000.

Operational Analysis

The feasibility study included the analysis of the potential impacts to existing Tri-Rail service associated with the new station. Future ridership (number of boardings on an average weekday) was projected utilizing the Federal Transit Administration's (FTA's) STOPS (Simplified Trips-on-Project Software) transit ridership model. Diversion of existing passengers from adjacent stations (Deerfield Beach Station and existing Boca Raton Station) is anticipated but is relatively minor comprising less than 15% of the future Boca Raton II Station boardings (164 of 1,063 boardings). Including interaction with the 18 existing Tri-Rail stations, the new Boca Raton II Station is anticipated to add 935 new boardings per average weekday to the overall Tri-Rail system. 1,063 riders will board at the new Boca Raton II Station, which would rank in the top 5 of the 19 system-wide stations. An analysis of the existing Tri-Rail train schedule indicated that a new station would not significantly impact schedule timing nor require additional crews or train sets to accommodate the new station.

Benefit-Cost Analysis

A 40-year Benefit-Cost (B/C) analysis was conducted to consider the financial impacts of a new station including station construction and right-of-way acquisition costs. The 40-year revenue estimate for the new Boca Raton station is $106.7 million. The 40-year cost, including right-of-way acquisition and the station construction, design, permitting, annual maintenance, security, shuttle bus, and fuel costs over the 40-year analysis period is approximately $109.8 million including inflation. The resulting net present value (NPV) is approximately $38.9 million for the benefit and $51.2 million for the cost, resulting in a B/C of approximately 0.76. Therefore, the revenue created by the station is anticipated to be exceeded by the capital and operating costs.

An additional 40-year B/C analysis was conducted to consider the financial impacts of a new station including station construction but excluding the $4.7 million right-of-way acquisition costs. The 40-year revenue estimate for the new Boca Raton station is still $106.7 million. However, the 40-year cost, including the station construction, design, permitting, annual maintenance, security, shuttle bus, and fuel costs over the 40-year analysis period is approximately $105.1 million including inflation. The resulting NPV is approximately $38.9 million for the benefit and $46.8 million for the cost resulting in a B/C of approximately 0.83. Therefore, the revenue created by the station is anticipated to be exceeded by the capital and operating costs.

Other Benefits

In addition to the calculated benefits, there are other less tangible benefits to constructing the new Tri-Rail station in Boca Raton. These benefits include socio-economic, mobility, and environmental. The new station will benefit the community surrounding the station, as it will provide an alternative mode of travel for residents who do not have access to their own vehicles based on income, age, etc. In particular, Tri-Rail is the only transit line that provides access to all three counties (Palm Beach, Broward, and Miami-Dade) in the Tri-county area. Additionally, of the 935 new boardings, a portion of these riders will be choice riders, opting to take Tri-Rail instead of using their private vehicle. This mode shift will reduce the number of vehicles on the roadway network, particularly I-95 as the Tri-Rail rail line parallels I-95 for the majority of the system. The reduction of vehicles on the roadway will result in less congestion, less vehicle miles travelled (VMT), and less vehicle hours travelled (VHT). Less VMT can also lead to a reduction in crashes as well as a reduction in wear and tear on the roadway. Less VMT and VHT also has a secondary effect of reducing the amount of fuel consumption and pollution.

Findings

The purpose of this study was to determine the overall feasibility of opening a second Tri-Rail station in Boca Raton. After completing a review of possible site locations; operational costs and impacts to existing Tri-Rail services and operations; and a benefit-cost analysis, it was deemed that the addition of the proposed Boca Raton II Station is feasible.

Table of Contents

Executive Summary i
Introduction 1
Relevant Past and Ongoing Studies 3
Station Location Criteria, SFRTA TDP *2007 Update* 3
Site Location Alternative Analysis – Boca Raton II Tri-Rail Station, *May 2010* 4
Station Design Guidelines – Station Platforms, *August 2012* 5
SFRTA Transit Development Plan (TDP), *FY 2016-2025* 5
Palm Brach MPO Directions 2040 Plan, *February 2016* 5
Palm Beach MPO Transportation Improvement Program (TIP), *FY 2017-2021* 6
Boca Raton Downtown Transit Feasibility Study, *August 2016* 6
Glades Road Project Development and Environment (PD&E), *2016 ongoing* 8
Key Boca Raton II Station Requirements 8
Site Location Analysis 9
Aerial Images 9
Surveys 14
Development Plans / Drainage 14
Utilities and Lighting 25
Ownership, Assessment, and Use Type Information 25
Field Review 26
Pedestrian and Bicycle Facilities 27
Track Geometrics Evaluation 28
Operational Impacts 28
Baseline Ridership Projections 28
New Station Ridership Projection 30
Tri-Rail Schedule Impact 32
Station Location Impact 35
40-Year Benefit/Cost Analysis 35
Revenue Projection 35
Benefit-Cost 38
Conclusions 42
Site Location Analysis 42
Operational Analysis 42
Benefit-Cost Analysis 42

List of Figures

Figure 1. Study Area 2
Figure 2. Downtown Boca Raton to Proposed Tri-Rail Station (Military Trail/Glades Road) 7
Figure 3. Aerial image of Site 1 10
Figure 4. Aerial image of Site 2 11
Figure 5. Aerial image of Site 3 12
Figure 6. Aerial image of Site 4 13
Figure 7. FGT Gas Line 15
Figure 8. Boca Raton II Station Location - Site 1 16
Figure 9. Site 1 Looking Southeast 17
Figure 10. Boca Raton II Station Location - Site 2 19
Figure 11: Site 2 Looking East-Northeast 19
Figure 12. Boca Raton II Station Location - Site 3 21
Figure 13: Site 3 Looking Southwest 22
Figure 14. Boca Raton II Station Location - Site 4 24
Figure 15: Site 4 Looking Southwest 25
Figure 16: Military Trail at NW 19 Street Curb Ramp without ADA mat 27
Figure 17: Tri-Rail Station Map 33
Figure 18. Average Ticket Fares (FY 15/16) 36

List of Tables

Table 1. Ownership, Assessment, and Existing Land Use 26
Table 2. Ridership Projections 29
Table 3. Calendar Year 2015 Tri-Rail Boardings 29
Table 4. Base 2015 STOPS Results 31
Table 5. 2015 With Boca Raton II Station STOPS Results 32
Table 6. Boca Raton II Station Projected Revenue 37
Table 7. Boca Raton II Station Cost with Right-of-Way Cost 40
Table 8. Boca Raton II Station Cost without Right-of-Way Cost 41

Appendices

Appendix A: Topographic Surveys
Appendix B: Property Ownership Information
Appendix C: Growth Rate Calculation
Appendix D: STOPS Results
Appendix E: SFRTA/Keolis Commuter Bus Operations Report, April 2016
Appendix F: SFRTA Glades Road Station Operations Analysis
Appendix G: Tri-Rail Schedule Update
Appendix H: 40-Year Benefit-Cost Analysis

Introduction

The South Florida Regional Transportation Authority (SFRTA) operates the 72-mile Tri-Rail regional commuter rail system providing service to 18 stations in Miami-Dade, Broward, and Palm Beach counties, including one (1) station located in the City of Boca Raton, near Yamato Road. A second Boca Raton station, called Boca Raton II, has been proposed in several prior studies for the area near Glades Road and Military Trail. Figure 1 depicts the study area for the Boca Raton II Station surrounding the Glades Road and Military Trail intersection.

The proposed Boca Raton II Station could provide improved access to the Tri-rail system for the surrounding urbanized area, including providing access to thousands of jobs, regional destinations (such as the Town Center at Boca Raton), and large residential populations within walking distance of the Tri-Rail corridor. The new station would be part of the local service running 50 trips per weekday and 30 trips per weekend day between Mangonia Park and Miami International Airport.

The purpose of this study is to determine the feasibility of opening the Boca Raton II Station. To determine feasibility, this study includes a review of possible site locations, capital costs, operational costs and impacts, and a benefit-cost analysis. To determine the impacts that a new Tri-Rail station may have on the existing Tri-Rail schedule, operations, ridership, and costs, this study includes:

- **Analysis of existing data** – review of past and on-going projects, aerial photography, survey, and field visits to verify land use compatibility and the availability of bicycle/pedestrian facilities;
- **Ridership projections** – review of historical passenger data and utilizing the Federal Transportation Administration's (FTA's) Simplified Trips-on-Project Software (STOPS) model to forecast boardings for the new station; and
- **Station costs** – determine capital costs to acquire real estate and construct the station, as well as annual operations costs for the shuttle bus, security, and station maintenance.

The impacts to be analyzed include potential schedule changes due to adding a new station, additional train crews that may be required if the schedule requires significant changes, operations costs for the new station and additional trains, and impacts to number of boardings at adjacent Tri-Rail stations. The feasibility determination is based on the anticipated impacts to existing infrastructure and Tri-Rail service, as well as a 40-year Benefit-Cost (B/C) analysis. The benefit is the additional revenue generated by the *new* Tri-Rail boardings (excluding diversions from adjacent stations) and the costs include capital costs for station construction and real estate acquisition and operations costs for shuttle bus service, security, maintenance, etc.

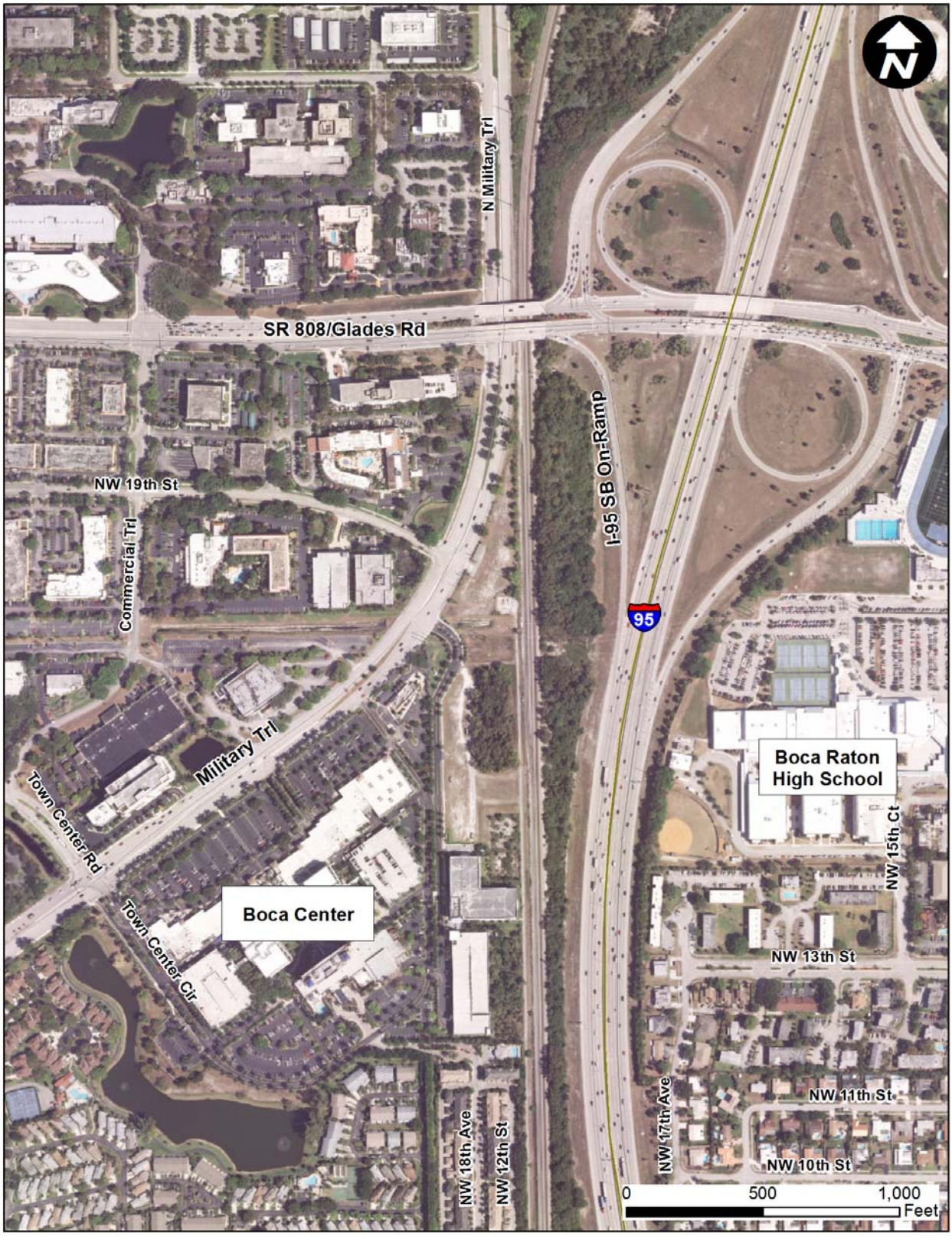


Figure 1. Study Area

Relevant Past and Ongoing Studies

An important element of a successful plan is to understand prior and current initiatives that can provide information about the context within which this plan was formed and provide information about projects that can be used as a starting point. Recommendations and projects identified in prior and current studies that may affect the outcome of this plan have been identified and reviewed.

The following studies and plans were reviewed as part of this effort. A brief summary of the review of each item is included.

- Station Location Criteria, SFRTA Transit Development Plan (TDP) *2007 Update*
- Site Location Alternative Analysis – Boca Raton II Tri-Rail Station, *May 2010*
- SFRTA Station Design Guidelines – Station Platforms, *August 2012*
- SFRTA TDP, *FY 2016-2025*
- Palm Beach Metropolitan Planning Organization's (MPO's) Directions 2040 Plan, *February 2016*
- Palm Beach County MPO Transportation Improvement Program (TIP), *FY 2017-2021*
- Boca Raton Downtown Transit Feasibility Study, *August 2016*
- Glades Road PD&E, *2016 ongoing*

Station Location Criteria, SFRTA TDP *2007 Update*

As part of the SFRTA TDP FY 2008-2012, station location criteria were recommended by SFRTA. The following station location criteria were included in the TDP:

- **Distance between stations** – ideal spacing of 3 to 4 miles, although a 2-mile minimum is allowable in some situations.
- **Minimum daily boardings** – the recommended minimum standard for keeping a station open is 100 daily boardings and for new stations the recommended minimum standard is 350 daily boardings.
- **Station access** – stations should be sited at visible locations on collector roads or minor arterials and not on major arterials or residential sties.
- **Track geometrics** – stations should be located on tangent sections of track where there is no superelevation and there is good sight distance from stations platforms.
- **Parking spaces** – Tri-Rail should adopt a 1,000-foot criterion for the maximum distance from the station platform to the most remote parking space.
- **Bus bays** – a minimum standard of two (2) bus bays with priority bus stops.

- **Kiss-and-Ride** – circulation for buses, taxis, kiss-and-ride, and parking should be segregated as much as practically possible within the station site.
- **Signage** – signage standards should be included in station location criteria.

Site Location Alternative Analysis – Boca Raton II Tri-Rail Station, *May 2010*

This report identifies and evaluates potential sites to assist the SFRTA in selecting a preferred location for the new Boca Raton II Tri-Rail Station. Six (6) sites were considered but only three (3) sites were determined to be potentially acceptable. Site 1 (Old King's Deli Site), Site 2B (Phase II of 1800 Boca Center), and Site 2C (Phase I of 1800 Boca Center) were advanced for further evaluation of their potential to serve as the site for the new Boca Raton II Tri-Rail Station. Key points from the analysis are provided below:

Site 1 is located along a tangent track section. The Glades Road overpass to the north of where the station platform would be located may impact visibility of the station from Glades Road. An existing track siding is located west of the main tracks. Site 1 would require the acquisition of two (2) parcels to build a station.

Site 2B (Phase II of 1800 Boca Center) is located along a tangent track section. A track siding is located in proximity to the site on the west side of the main tracks. The development of a station on Site 2B would require using a portion of one (1) parcel to build a station.

Site 2C (Phase I of 1800 Boca Center) is located along a tangent track section. An existing siding starts approximately 350 feet north of where the station platform would be located. The development of a station on Site 2C would require using a portion of one (1) parcel to build a station.

Site 2B (Phase II of 1800 Boca Center) was identified as the preferred location for the new Boca Raton Tri-Rail Station. The track geometries are suitable to locate a Tri-Rail station with the condition of the abandonment and removal of an existing track siding on the west side of the main tracks.

Station Design Guidelines – Station Platforms, *August 2012*

The following guidelines apply to side platforms, which are the preferred configuration:

- **Length** – Platforms shall be 400 feet in length. Tri-Rail/AMTRAK stations shall have a minimum platform length of 1,000 feet.
- **Width** – 25 foot minimum, with additional width as necessary to meet the "Platform Area".
- **Platform Area** – The minimum net area (usable area) of each platform shall be no less than 83.3% of the total square footage of the platform, exclusive of platform edge "clear zone", structural elements, vertical circulation elements, queuing spaces for designated station elements, and any restricted or otherwise unusable areas. Listed below are the requirements:
    - A two-foot wide platform edge clear zone shall extend the entire length of each platform.
    - The minimum platform width delineated herein shall be increased as necessary to meet this Platform Area requirement.
    - Should property lines or other geometric restrictions limit the platform widths, platform lights may be extended as necessary to meet this Platform Area requirement.
- **Alignment** – Platforms should be located along tangent track.
- **Slope & Curvature** – Essential level and flat.

SFRTA Transit Development Plan (TDP), *FY 2016-2025*

The SFRTA updates their TDP (a.k.a. *Moving Our Region Forward* (*SFRTA Forward*)) annually. As part of the TDP requirements, major updates must be completed every five (5) years, covering a 10-year period. The last major update was in 2013. *Moving Our Region Forward* includes the Boca Raton II Station in the 10-year capital plan. Funding is identified for this project in FY 2017 and FY 2018.

Palm Brach MPO Directions 2040 Plan, *February 2016*

The Palm Beach MPO updates their Long Range Transportation Plan (LRTP), *Directions 2040 Plan*, every five (5) years per federal legislation requirements. The *Directions 2040 Plan* outlines expenditures for surface transportation programs including highways, transit, safety, research, and freight. The LRTP represents a 25-year forecast of future system needs, including specific projects that are projected to be financially feasible. The *Directions 2040 Plan* was adopted by the MPO Governing Board in October 2014 and amended in February 2016. The *Directions 2040 Plan* includes a proposed new Tri-Rail Station near Glades Road in Boca Raton in its Cost Feasible plan. Funding is identified for this project for 2015-2019.

Palm Beach MPO Transportation Improvement Program (TIP), *FY 2017-2021*

The Palm Beach County MPO prepares the annual TIP consistent with Federal guidelines. At the time of this Study, the FY 2017 to FY 2021 TIP was in effect and had been approved by the MPO Governing Board in June 2016. The TIP specifies proposed transportation improvements to be implemented in Palm Beach County over the upcoming five (5) years. Constructing a second Tri-Rail Station in Boca Raton on the CSX/South Florida Rail Corridor (SFRC) along the east side of Military Trail south of Glades Road is programmed. A total of $18.5 million in funding is identified for this project between FY 2017 ($1.5 million) and FY 2018 ($17.0 million), making this project a funding priority. At the September 2016 SFRTA Board meeting the Board approved a Joint Participation Agreement (JPA) (FM #430458-1) between SFRTA and FDOT for State funds in the amount of $1.5 million for the Boca Raton II Station, consistent with the FY 2017 funding of $1.5 million identified in the TIP.

Boca Raton Downtown Transit Feasibility Study, *August 2016*

One objective of the Boca Raton Downtown Transit Feasibility Study is to identify the best solution to connect Downtown Boca Raton via commuter bus services to and from Tri-Rail. The Boca Raton Station at Yamato Road, the proposed new Boca Raton II Tri-Rail Station at Military Trail and Glades Road, and the Deerfield Beach Tri-Rail station were evaluated. This study recommends using the Boca Raton II Station, once open, to serve Downtown Boca Raton via Palmetto Park Road (see Figure 2).

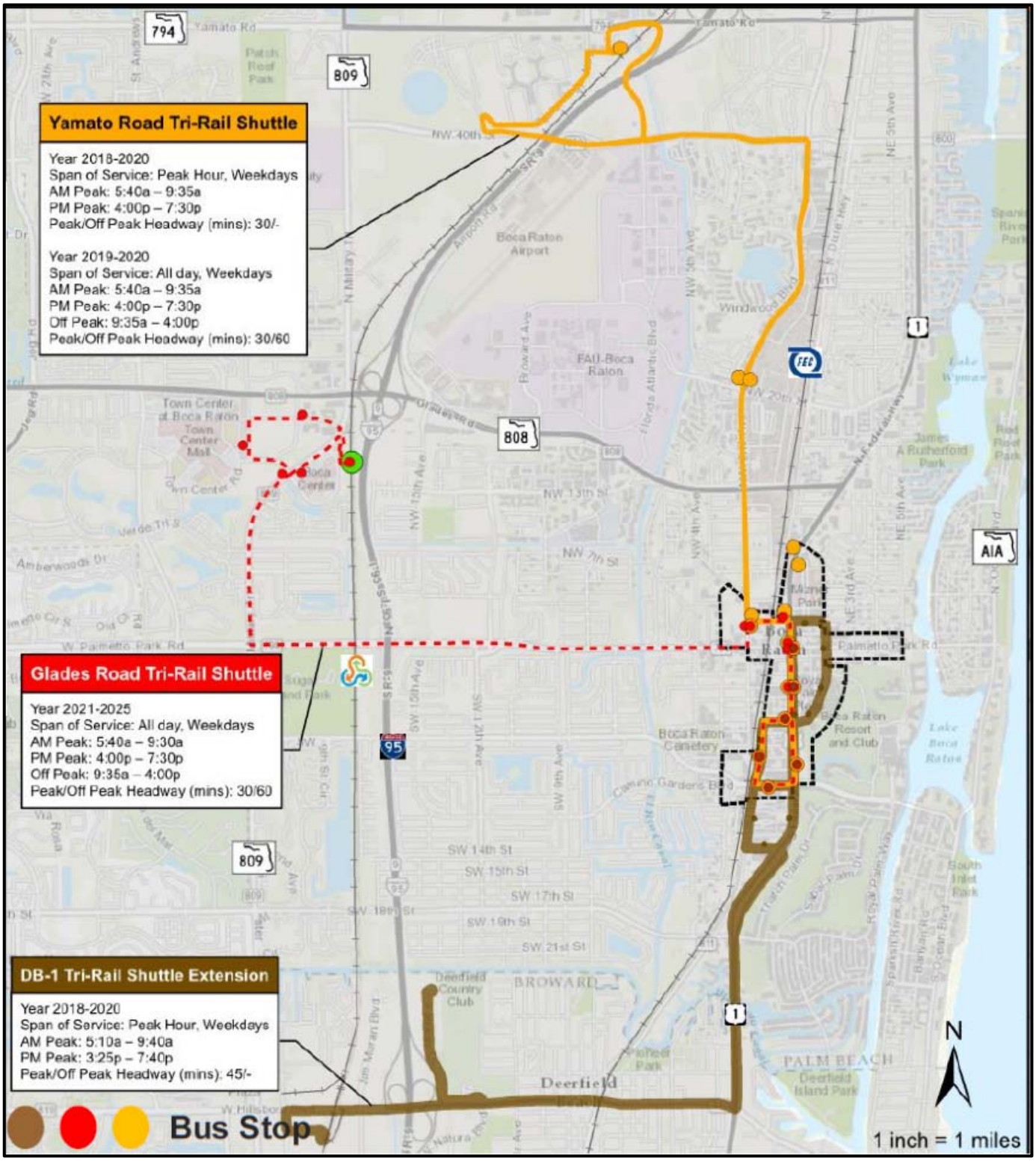


Figure 2. Downtown Boca Raton to Proposed Tri-Rail Station (Military Trail/Glades Road)

Glades Road Project Development and Environment (PD&E), *2016 ongoing*

The Glades Road PD&E is currently analyzing the transit operations along Glades Road. The following are the transit goals of the project:

- Identify opportunities to improve the existing service
- Identify opportunities to effectively serve existing and future travel markets
- Identify ways to mitigate first and last mile challenges
- Identify potential transit hub locations in the corridor
- Identify and test potential for premium service along the corridor
- Other multi-modal considerations

One of the mid-term improvements being considered in the plan is the new Boca Raton II Tri-Rail Station at Glades Road. In addition, the mid-term service plan identifies stops for local and circulator bus connections. The potential for a bus facility incorporated into the new Boca Raton II Tri-Rail Station is being considered. This study is ongoing.

Key Boca Raton II Station Requirements

Based on SFRTA policies and discussions with SFRTA staff, SFRTA has specific requirements that should be considered when planning and designing for a new Tri-Rail Station. These requirements are intended to provide for an accessible Station as well as provide a consistent experience across the Tri-Rail system. The following requirements were identified in consultation with SFRTA staff for the Boca Raton II Station:

- Two (2) station platforms within SFRC right-of-way with full canopies, ticket vending machines, real time messaging, Wi-Fi, and other standard Tri-Rail Station elements as defined in "Station Design Guidelines, *Second Edition*."
- Pedestrian bridge with elevators
- 250 parking spaces dedicated to SFRTA/Tri-Rail
- Kiss-and-Ride and Bus drop-off areas
- Shuttle Bus to Town Center Mall area

Site Location Analysis

Aerial Images

High-resolution aerial images of the proposed study corridor were gathered from FDOT's Office of Surveying and Mapping to review four (4) potential sites for the new Boca Raton II Tri-Rail Station. The four (4) sites review the three (3) sites identified as acceptable in the report entitled *Site Location Alternative Analysis – Boca Raton II Tri-Rail Station, May 2010* (2010 Site Location Analysis) (Site 1, Site 2B, Site 2C). The fourth site is a larger overall parcel that contains Site 2B as a subparcel. Figures 3, 4, 5, and 6 depict the four potential sites for the new Boca Raton II Tri-Rail Station shaded in blue and labeled as Site 1, Site 2, Site 3, and Site 4, respectively. The station platforms can be accommodated within the SFRC right-of-way; therefore, the sites shaded in blue depict the area needed to accommodate the associated station infrastructure and amenities such as parking, kiss-and-ride drop-off/pick-up, shuttle bus drop-off/pick-up, and bus drop-off/pick-up.

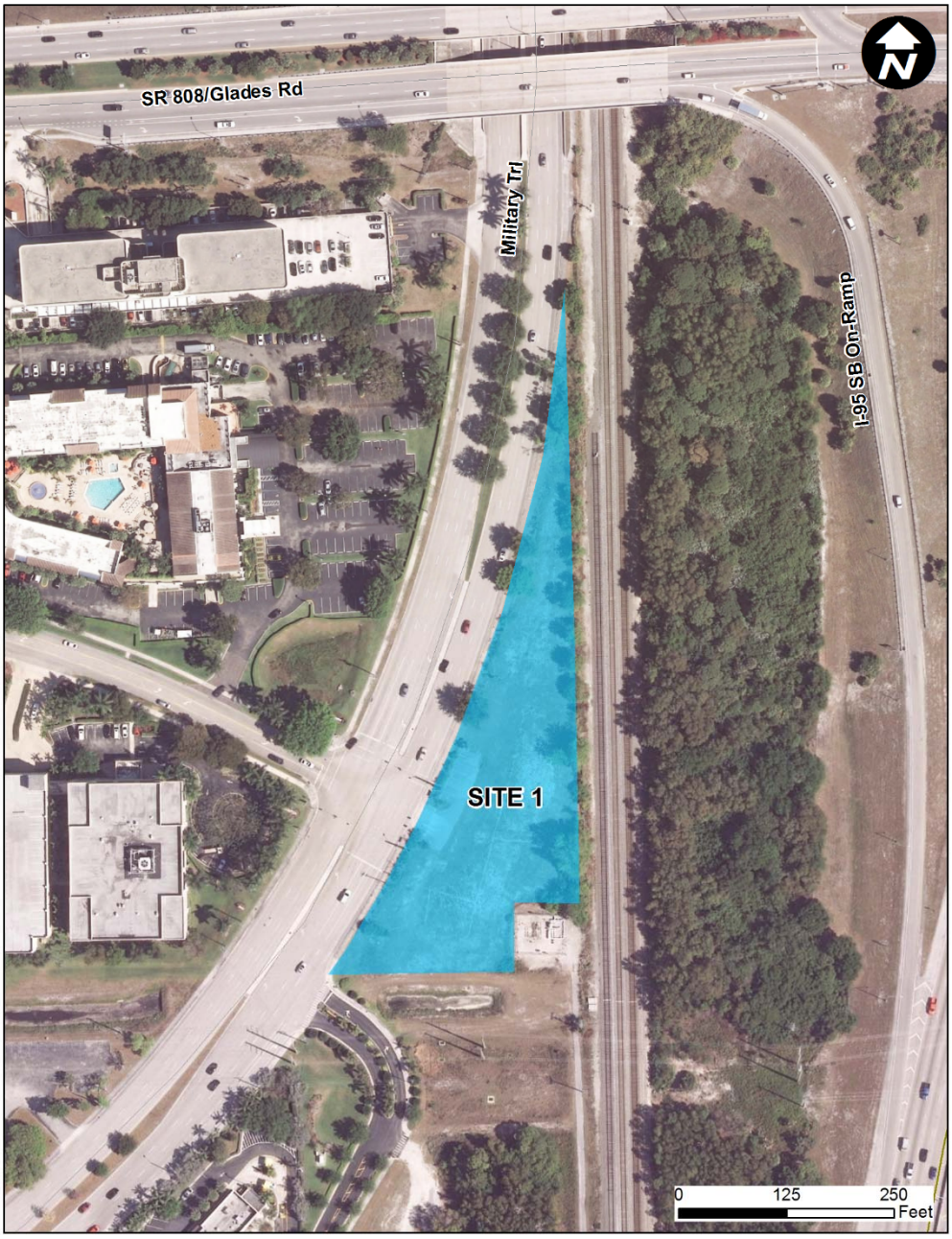


Figure 3. Aerial image of Site 1

Site 1 was also labeled as Site 1 (Old King's Deli Site) in the 2010 Site Location Analysis.

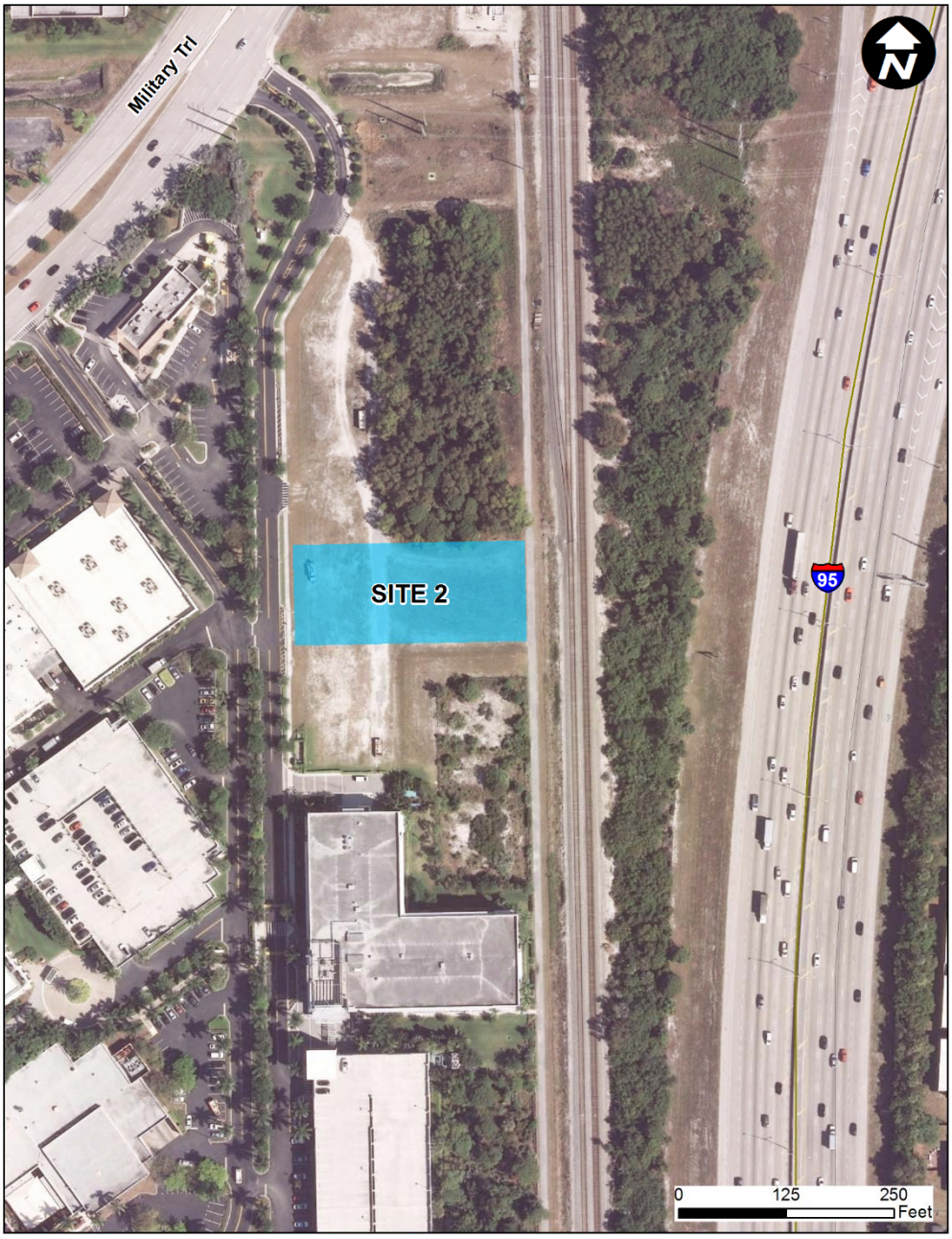


Figure 4. Aerial image of Site 2

Site 2 was labeled as Site 2B (Phase II of 1800 Boca Center) in the 2010 Site Location Analysis. Site 2 is an approximately 0.76 acre subparcel of the overall Phase II of 1800 Boca Center parcel.

Figure 5. Aerial image of Site 3

Site 3 was not included in the 2010 Site Location Analysis. Site 3 is an approximately 3.99 acre parcel covering the entirety of Phase II of 1800 Boca Center, of which Site 2 is a subparcel.

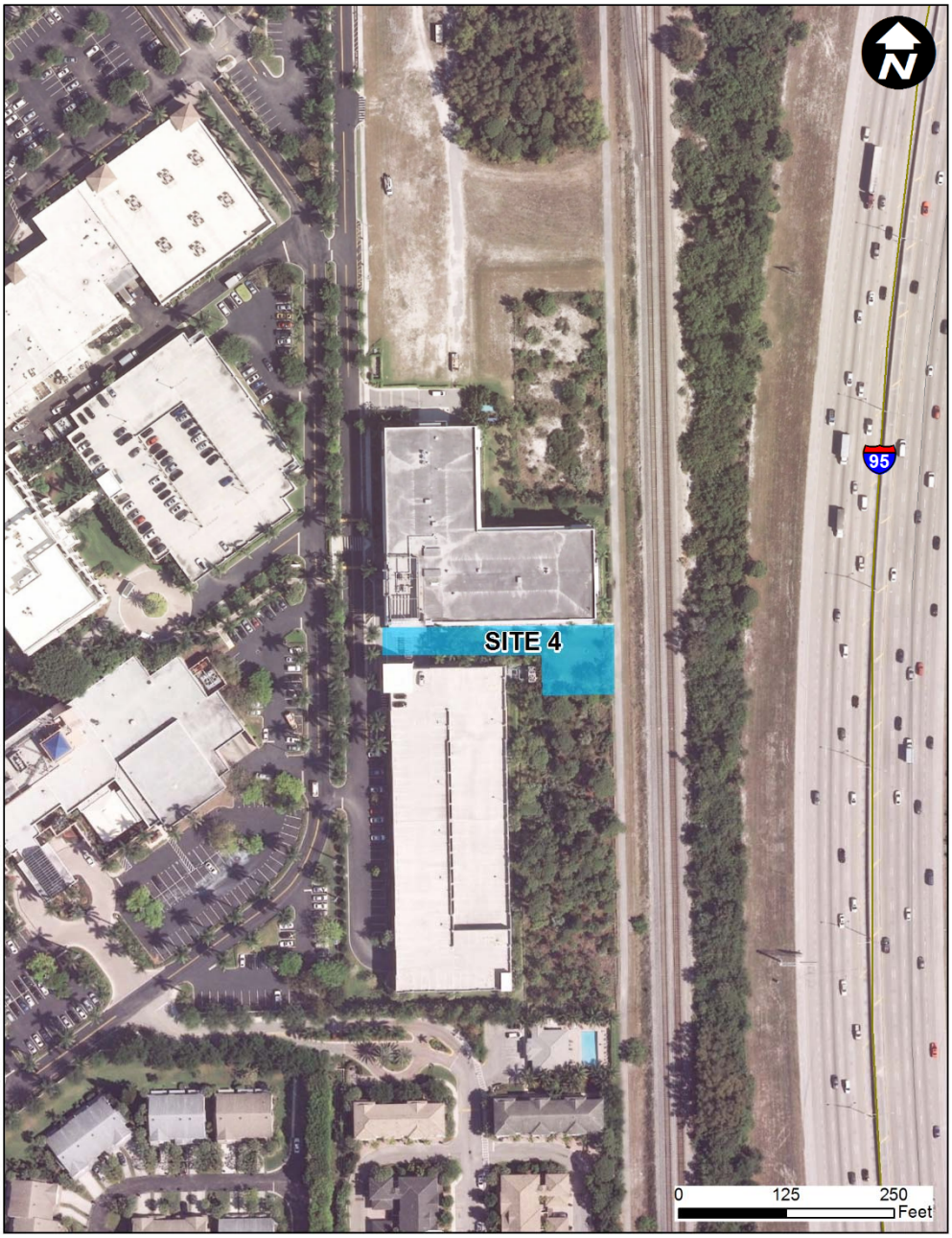


Figure 6. Aerial image of Site 4

Site 4 was labeled as Site 2C (Phase I of 1800 Boca Center) in the 2010 Site Location Analysis. Site 4 is an approximately 0.25 acre subparcel of the overall Phase I of 1800 Boca Center parcel.

Surveys

FDOT provided topographic survey data for the SFRC. Site 1 is located between STA 141+00 and STA 145+00, Site 2 is located between STA 134+00 and STA 136+00, Site 3 is located between STA 133+00 and STA 141+00, and Site 4 is located between STA 128+00 and STA 132+00. Appendix A includes the topographic surveys.

Development Plans / Drainage

The four (4) sites are located within one-third (1/3) mile of each other in the same development (Boca Center). The sites are under the same ownership, Boca Center at Military LLC. On behalf of SFRTA, Kimley-Horn contacted the owner to determine if they would be willing to meet and discuss their future plans. A meeting could not be scheduled; therefore, no insight into the future use of the property could be obtained. For this study's right-of-way acquisition analysis, it was assumed that consistent land uses and density of the current development would remain into the future. However, to advance the Boca Raton II Station within the identified area, the land use and zoning will need to be modified to accommodate Transit Oriented Development (TOD) uses. As three (3) of the potential sites are undeveloped, there is an opportunity to proactively plan future development to complement transit. Additionally, based on previous discussions with representatives for Boca Center at Military LLC, there is potential for redevelopment of the surrounding properties. Redevelopment could allow for a more cohesive TOD design, such as incorporating the train station as a prominent feature of the town center, including bicycle-pedestrian friendly design, and providing specialized retail near the station to serve commuters. Development options for the three (3) potential sites were reviewed to determine if parking and drainage could be accommodated on-site or if off-site options would need to be explored.

<u>Site 1</u>

Site 1 is comprised of two (2) parcels that equal approximately 81,000 square feet. Site 1 is the second largest of the four (4) potential station locations for the Boca Raton II Station, and it provides the opportunity to construct a surface parking lot, drop-off area, walkway to the station, and space for various station amenities. A surface parking lot in this area could provide between 50 and 100 parking spaces for riders; however, an additional ingress/egress connection point would have to be provided to allow fire trucks and buses to access the site. The 50 to 100 parking spaces does not meet SFRTA requirements for a station. As shown in Figure 7, a Florida Gas Transmission (FGT) line runs east-west along the southern portion of the property. It is likely that a surface parking lot or drive aisle could be constructed over the FGT easement,

although SFRTA may be responsible for costs to repair the pavement if FGT had to access the transmission line.

Figure 7. FGT Gas Line

Assuming the additional ingress/egress connection and restricted development within the utility easement is approved, this location provides sufficient space to address drainage requirements on-site. The parking lot area could utilize exfiltration trench and catch basins to collect stormwater runoff. The station walkway and space for site amenities could utilize dry retention or swale areas with yard drains and an underground pipe network to collect and convey stormwater. A canopy structure could be installed over walkway areas and this canopy structure could use rainwater leaders that also connect to the underground pipe network to convey stormwater. The combination of exfiltration trench and on-site dry retention is believed to address water quality requirements. Water quantity and staging of water on the site would need to be further verified through stormwater modeling. Figure 8 depicts the potential location of the Boca Raton II Tri-Rail Station for Site 1.

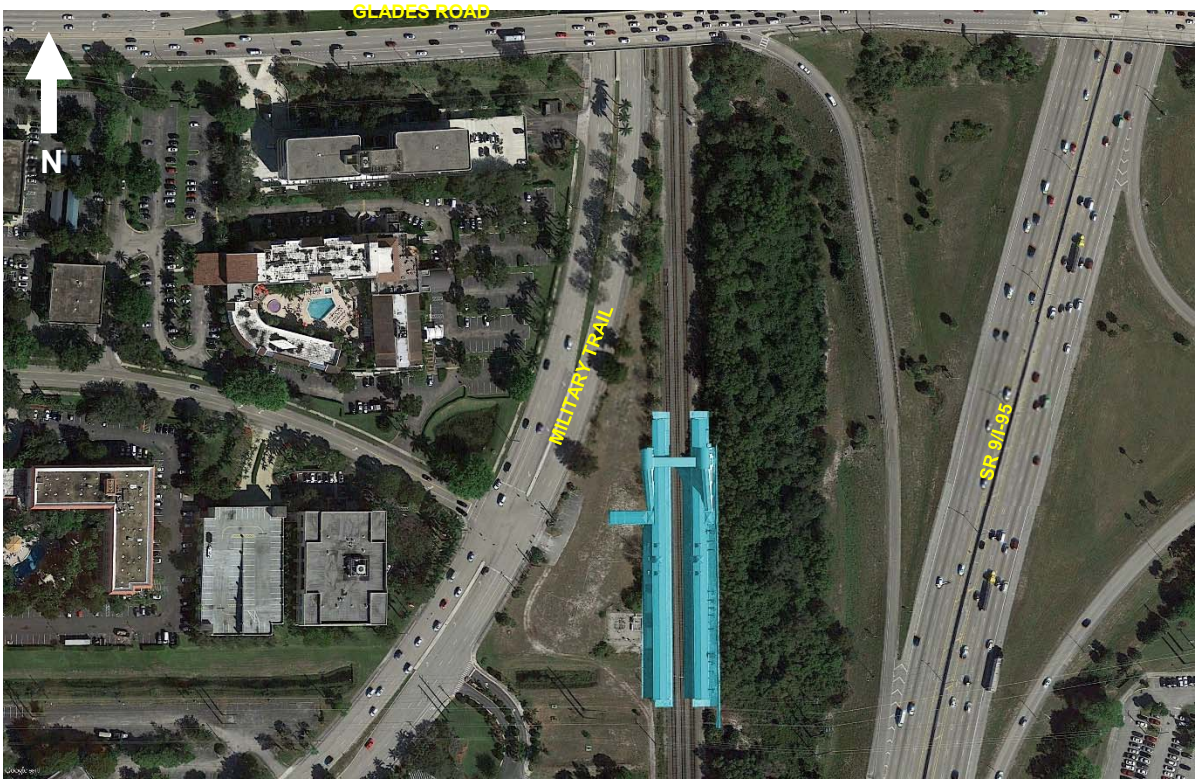


Figure 8. Boca Raton II Station Location - Site 1

A field review was performed on April 29, 2016 for Site 1 (see photograph in Figure 9) which is located north of the Boca Center, just south of the Glades Road overpass. Site 1 has an access connection to Military Trail at NW 19 Street. A majority of the area is undeveloped with a small paved parking area and driveway that transitions to a dirt path as it travels south. The dirt path then connects to a service road that runs parallel to the SFRC. A Boca Raton Meter Station for FGT, surrounded by barbed wire fencing, is located in

the southeast corner of the Site 1 parcel. A stormwater detention pond is located on the southern part of Site 1. High voltage electric exists overhead and runs east-west just south of the detention pond.

Figure 9. Site 1 Looking Southeast

Within the vicinity of Site 1, undesignated bicycle lanes and sidewalks are located along both the east side and west side of Military Trail. Glades Road is elevated over and does not connect with Military Trail. NW 19 Street has sidewalks on both sides and provides access to the Town Center Mall.

A review of the US Fish and Wildlife Service's Information for Planning and Conservation website (https://ecos.fws.gov/ipac/) was conducted to assess the potential of listed species to inhabit the area. Based on this review, the gopher tortoise (*Gopherus Polyphemus*) is the most likely listed species to inhabit the area.

A site visit was conducted on June 10, 2016, to assess the potential for various environmental constraints, such as wetlands or surface waters and listed species or their habitat. During field reconnaissance it was observed that the site was previously disturbed. Vegetation in the open area consists of ruderal vegetation, such as blue morning glory (*Ipomoea indica*) and various pasture grasses. A forested area borders the east-central portion of the property. The overstory and midstory is comprised of slash pine (*Pinus elliottii*), Brazilian pepper (*Schinus terebinthifolia*), and saw palmetto (*Serenoa repens*). The understory is comprised of muscadine (*Vitis rotundifolia*), air potato (*Dioscorea bulbifera*), and bracken fern (*Pteridium aquilinum*).

During field reconnaissance, site utilization by wildlife was limited to the Eastern cottontail rabbit (*Sylvilagus floridanus*), green heron (*Buorides virescens*), and various songbird species. A 100 percent gopher tortoise survey was performed during field reconnaissance. No evidence of utilization by gopher tortoises was

documented. Based on the existing conditions and previous clearing onsite, listed species usage of the site is unlikely.

Since Site 1 cannot accommodate the SFRTA minimum 250 parking space requirement for a Tri-Rail station, this site was not analyzed further

Site 2

Site 2 is located within an area of undeveloped land and is approximately 33,000 square feet of the overall 174,000 square foot vacant parcel. Although smaller in area than Site 1, this site can accommodate a small surface parking lot, walkway to the station, and space for station amenities. Due to the site limitations, a fire truck would not be able to enter and exit the site. The parking lot would be limited to a maximum depth of 100 feet as measured from the adjacent roadway, so a fire truck could serve the parking lot while parked on the adjacent street. The surface parking lot is estimated to provide between 20 and 30 parking spaces, which does not meet SFRTA requirements for a station. Stormwater runoff could be collected through the use of exfiltration trench and catch basins. The remaining area dedicated to walkways and station amenities could utilize dry retention and swale areas with yard drains to collect the stormwater runoff. The combination of exfiltration trench and on-site dry retention is believed to address water quality requirements. Water quantity and staging of water on the site would need to be further verified through stormwater modeling. Figure 10 depicts the potential location of the Boca Raton II Tri-Rail Station for Site 2.

The project site was previously cleared and graded. An Environmental Resource Permit (ERP) was issued for the site in 2006 to construct a stormwater management system for Phase I of an office building development known as 1800 North Military Trail. This development was constructed in 2007. Based on a review of this permit (ERP No. 51-07502-P, Application No. 060216-13), no wetlands were identified on-site.

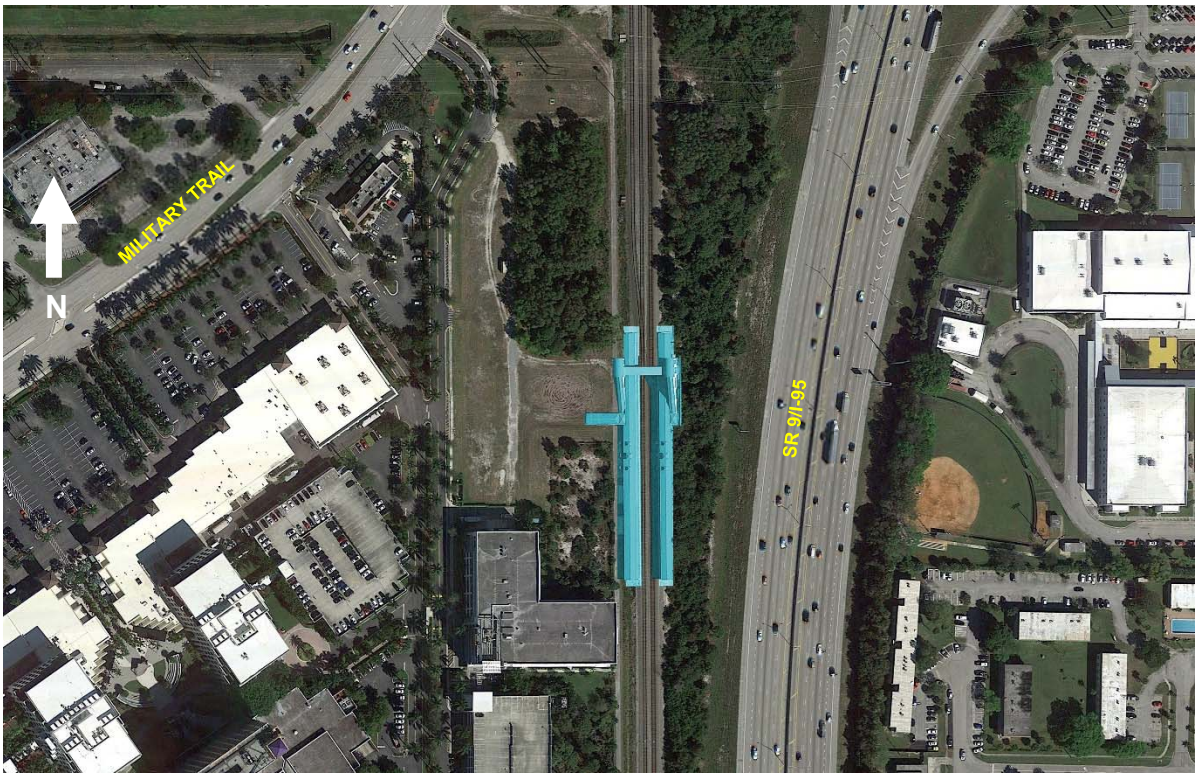


Figure 10. Boca Raton II Station Location - Site 2

A field review was performed on April 29, 2016 for Site 2 (see photograph in Figure 11) which is located east of the Boca Center. This site can be accessed by Town Center Circle or the 1800 Boca Center driveway. The site is a rectangular grassy area bounded by the SFRC on the east and the 1800 Boca Center driveway on the west. A paved surface oriented north-south bisects the site and connects to a dirt path which transitions to a paved roadway north towards Military Trail.

Figure 11: Site 2 Looking East-Northeast

Within the vicinity of Sites 2, 3, and 4, sidewalks are present on the east side of the 1800 Boca Center driveway, providing pedestrian access from Military Trail to the 1800 Boca Center office building. Town Center Circle does not have sidewalks or bicycle facilities.

A review of the US Fish and Wildlife Service's Information for Planning and Conservation website (https://ecos.fws.gov/ipac/) was conducted to assess the potential of listed species to inhabit the area. Based on this review, the gopher tortoise (*Gopherus Polyphemus*) is the most likely listed species to inhabit the area.

A site visit was conducted on June 10, 2016, to assess the potential for various environmental constraints, such as wetlands or surface waters and listed species or their habitat. During field reconnaissance it was observed that the site was previously disturbed. Vegetation in the open area consists of ruderal vegetation, such as blue morning glory (*Ipomoea indica*) and various pasture grasses. A forested area borders the east-central portion of the property. The overstory and midstory is comprised of slash pine (*Pinus elliottii*), Brazilian pepper (*Schinus terebinthifolia*), and saw palmetto (*Serenoa repens*). The understory is comprised of muscadine (*Vitis rotundifolia*), air potato (*Dioscorea bulbifera*), and bracken fern (*Pteridium aquilinum*).

During field reconnaissance, site utilization by wildlife was limited to the Eastern cottontail rabbit (*Sylvilagus floridanus*), green heron (*Buorides virescens*), and various songbird species. A 100 percent gopher tortoise survey was performed during field reconnaissance. No evidence of utilization by gopher tortoises was documented. Based on the existing conditions and previous clearing onsite, listed species usage of the site is unlikely.

Since Site 2 cannot accommodate the SFRTA minimum 250 parking space requirement for a Tri-Rail station, this site was not analyzed further.

Site 3

The entirety of undeveloped land containing the Site 3 parcel is approximately 174,000 square feet. This site is the largest of the four (4) potential station locations. A parking lot estimated to provide 250 to 300 parking spaces could be accommodated, which meets SFRTA requirements for a station. Collection of stormwater runoff could be accomplished through the use of exfiltration trench and catch basins. The remaining area dedicated to walkways and station amenities could utilize dry retention and swale areas with yard drains to collect the stormwater runoff. The combination of exfiltration trench and on-site dry retention is believed to address water quality requirements. Water quantity and staging of water on the site would

need to be further verified through stormwater modeling. Figure 12 depicts the potential location of the Boca Raton II Station for Site 3, which is consistent with the station location for Site 2 which is a subparcel of Site 3.

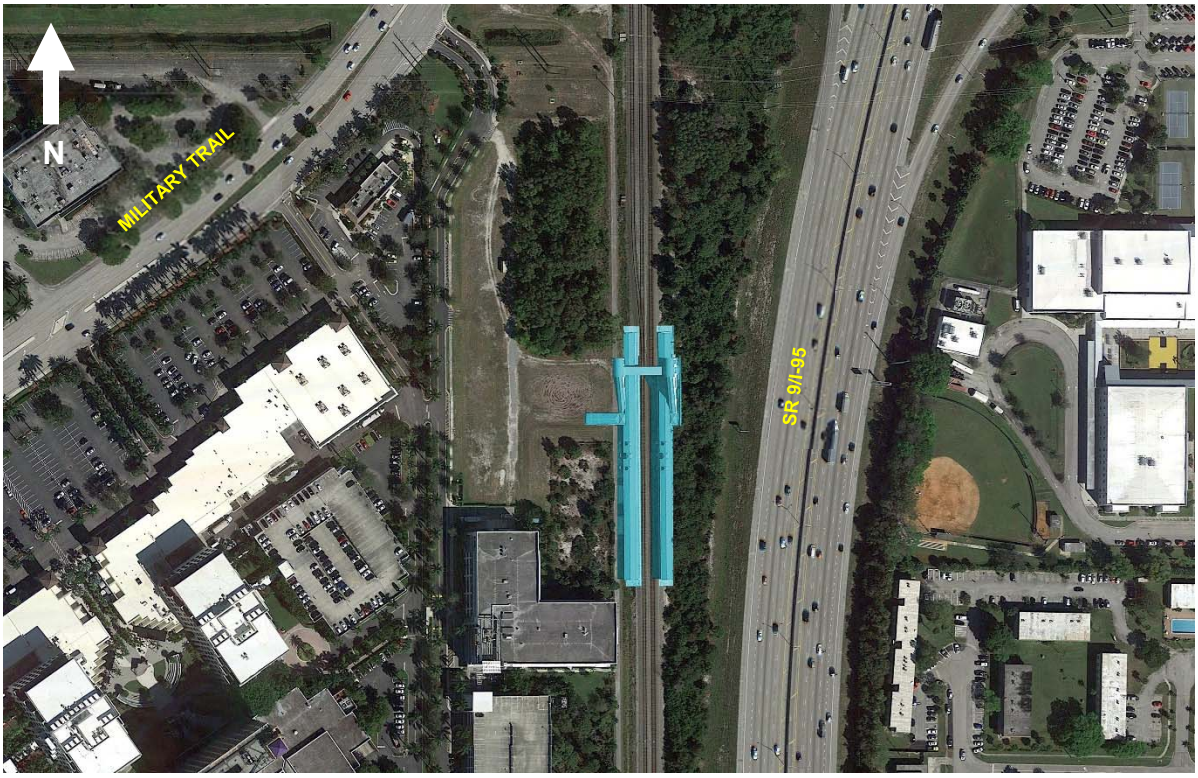


Figure 12. Boca Raton II Station Location - Site 3

A field review was performed on April 29, 2016 for Site 3 (see photograph in Figure 13) which is located east of the Boca Center. This site can be accessed by Town Center Circle or the 1800 Boca Center driveway. The area is mostly grassy with a portion currently uncleared. The parcel is bounded by the SFRC on the east, the 1800 Boca Center driveway on the west, Phase I of 1800 Boca Center on the south, and Site 1 to the north. A paved surface oriented north-south bisects the site and connects to a dirt path which transitions to a paved roadway north towards Military Trail.

Figure 13: Site 3 Looking Southwest

Within the vicinity of Sites 2, 3, and 4, sidewalks are present on the east side of the 1800 Boca Center driveway, providing pedestrian access from Military Trail to the 1800 Boca Center office building. Town Center Circle does not have sidewalks or bicycle facilities.

Most of the project site was previously cleared and graded. An ERP was issued for the site in 2006 to construct a stormwater management system for Phase I of an office building development known as 1800 North Military Trail. This development was constructed in 2007. Based on a review of this permit (ERP No. 51-07502-P, Application No. 060216-13), no wetlands were identified on-site. However, a 0.86-acre environmental conservation area was identified on the plans just north of the existing building. Field reconnaissance confirmed that there is an undeveloped area with wooden fencing typical of upland preserves located north of the existing buildings on-site. No recorded conservation easements could be found for this area. A drainage feature and dry retention pond with associated drainage grates was observed in the northern portion of the site. The drainage feature, characterized by steep banks, was connected to a ditch west of Military Trail and contained approximately 1 to 2 feet of standing water. These drainage features are part of ERP No. 51-07502-P referenced above.

A review of the US Fish and Wildlife Service's Information for Planning and Conservation website (https://ecos.fws.gov/ipac/) was conducted to assess the potential of listed species to inhabit the area. Based on this review, the gopher tortoise (*Gopherus Polyphemus*) is the most likely listed species to inhabit the area.

A site visit was conducted on June 10, 2016, to assess the potential for various environmental constraints, such as wetlands or surface waters and listed species or their habitat. During field reconnaissance it was observed that the site was previously disturbed. Vegetation in the open area consists of ruderal vegetation, such as blue morning glory (*Ipomoea indica*) and various pasture grasses. A forested area borders the east-central portion of the property. The overstory and midstory is comprised of slash pine (*Pinus elliottii*), Brazilian pepper (*Schinus terebinthifolia*), and saw palmetto (*Serenoa repens*). The understory is comprised of muscadine (*Vitis rotundifolia*), air potato (*Dioscorea bulbifera*), and bracken fern (*Pteridium aquilinum*).

During field reconnaissance, site utilization by wildlife was limited to the Eastern cottontail rabbit (*Sylvilagus floridanus*), green heron (*Buorides virescens*), and various songbird species. A 100 percent gopher tortoise survey was performed during field reconnaissance. No evidence of utilization by gopher tortoises was documented. Based on the existing conditions and previous clearing onsite, listed species usage of the site is unlikely.

Site 3 can accommodate the SFRTA requirements for a Tri-Rail station; therefore, this site was analyzed further.

Site 4

Site 4 is a small L-shaped area of approximately 11,000 square feet. This area is located between an existing office building and a parking garage, and the area currently contains walkways and covered areas that connect the two (2) buildings. The L-shaped area would primarily serve as a walkway connection to the station and could provide some station amenities. The walkway would ideally be centralized with a canopy structure utilizing swales running along either side of the walkway to collect stormwater runoff. An underground pipe network could collect and convey stormwater from the swales and canopy rainwater leaders. One (1) apparent challenge of this area is that it serves as a dry retention area for the existing development. The redevelopment of this area would require modeling to verify water quality and quantity could be achieved in the area, and to determine if additional drainage system improvements would be required to compensate for impacts to the existing dry retention area. Since Site 4 is within a developed parcel, the environmental conditions are tied to the existing development. Figure 14 depicts the potential location of the Boca Raton II Tri-Rail Station for Site 4.

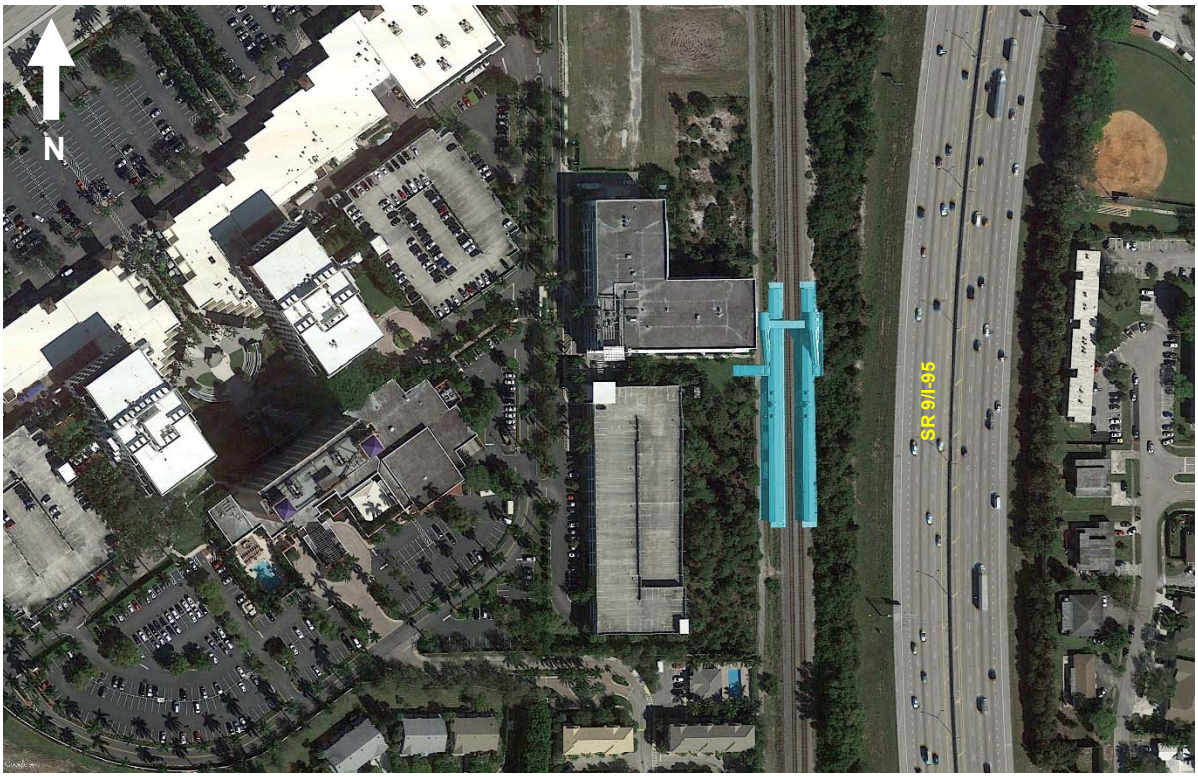


Figure 14. *Boca Raton II Station Location* - Site 4

A field review was performed on April 29, 2016 for Site 4, (see photograph in Figure 15) which is located east of the Boca Raton Marriott hotel. The site is situated between an office building to the north, a conservation easement to the south, and a parking garage to the southwest. The area is a rectangular landscaped grassy area. A sidewalk is provided along the south side of the office building allowing access between the 1800 Boca Center driveway in front of the office building and the service road running parallel and adjacent to the SFRC.

Figure 15: Site 4 Looking Southwest

Within the vicinity of Sites 2, 3, and 4, sidewalks are present on the east side of the 1800 Boca Center driveway, providing pedestrian access from Military Trail to the 1800 Boca Center office building. Town Center Circle does not have sidewalks or bicycle facilities.

Since Site 4 cannot accommodate the SFRTA minimum 250 parking space requirement for a Tri-Rail station, this site was not analyzed further.

Utilities and Lighting

Overhead electric lines run east-west and cross over Military Trail approximately 340 feet south of NW 19 Street and these lines continue east over Site 3. Water and Sewer in the vicinity of the sites is provided by the City of Boca Raton. A Florida Gas Transmission (FGT) line runs east-west along the southern portion of Site 1 just north of Site 3 (see Figure 7). Standard cobrahead street lighting is provided on both sides of Military Trail in the study area. Lighting is provided within the walkways and parking area of the Boca Center development.

Ownership, Assessment, and Use Type Information

Ownership information, appraised/assessed property values, and property use types were obtained from the Palm Beach County Property Appraiser website for Site 3. Information obtained from the Palm Beach County Property Appraiser is included in Appendix B. Site 3 is part of a larger overall parcel; therefore, information

obtained from the Palm Beach County Property Appraiser applies to the larger partially developed parcel and not specifically to the Site 3 area. A summary of the information is shown in Table 1.

Table 1. Ownership, Assessment, and Existing Land Use

Parcel Control Number	Mailing Address	Owner Name	Appraisals (2015 Total Market Value)	Use Type
06-42-47-23-38-001-0000	Cornerstone Real Estate Advisers LLC C/O 180 Glastonbury Boulevard, Suite 200 Glastonbury, CT	Boca Center at Military LLC	$31,718,961	1800 – Office Multi-Story

Notes: Site 3 will only require use of a portion of the larger parcel, and the appraisal value is reflective of the larger parcel.

To determine a fair market value for the Site 3 area, a real estate assessment was conducted. Integra Realty Resources prepared an "Appraisal of Real Property" assessing the value of the undeveloped 3.99 acre Site 3 area. The value of the 3.99-acre Site 3 area was appraised at $4,700,000. The Appraisal Report has been submitted to SFRTA under separate cover.

Field Review

A field review was performed on April 29, 2016, for each of the four (4) proposed sites and the surrounding areas. The limits of the field review included NW 19 Street to the north, Town Center Road to the south, the SFRC to the east, and Military Trail to the west.

Surrounding Areas

The Military Trail at Town Center Road-Town Center Circle intersection, located approximately one-half (½) mile south of Glades Road, is under traffic signal control. The unsignalized Military Trail at Boca Center intersection, located approximately 750 feet north of the Military Trail at Town Center Road-Town Center Circle intersection, provides access to the Boca Center retail area east of Military Trail. The unsignalized Military Trail at Town Center Circle intersection, located approximately 420 feet north of the Military Trail at Boca Center intersection, provides access to the north end of the Boca Center retail area. The unsignalized Military Trail at 1800 Boca Center driveway intersection, located approximately 385 feet north of the Military Trail at Town Center Circle intersection, provides access to the 1800 Boca Center office building from the north. The Military Trail at NW 19 Street intersection, located approximately 250 feet north of the Military Trail at 1800 Boca Center driveway intersection and 830 feet south of Glades Road, is under traffic signal control.

Pedestrian and Bicycle Facilities

Roadways in the study area around the potential station sites include Military Trail, Glades Road, Town Center Circle, and NW 19 Street.

Standard crosswalks are provided on all legs of the Military Trail at NW 19 Street signalized intersection. Curb ramps and pedestrian signals with countdown display are provided on all corners of the intersection. As shown in Figure 16, ADA detectable warning mats are not provided.

Figure 16: Military Trail at NW 19 Street Curb Ramp without ADA mat

The Military Trail at Town Center Road-Town Center Circle intersection provides standard crosswalks on all legs of the intersection. Curb ramps and pedestrian signals without countdown displays are provided on all corners of the intersection. ADA detectable warning mats are only provided on the northwest corner of the intersection.

The Military Trail at Boca Center intersection provides an unmarked crosswalk at the driveway connection to the Boca Center retail area. Curb ramps are provided on the northeast and southeast corners of the intersection. ADA detectable warning mats are not present.

The Military Trail at Town Center Circle intersection provides a special emphasis crosswalk. Curb ramps are provided on the northeast and southeast corners of the intersection. ADA detectable warning mats are not present.

Track Geometrics Evaluation

Track geometrics were evaluated for Site 3. The track geometrics evaluation included determining if the site is within a tangent track section (consistent with SFRTA's Station Design Guidelines), whether the site is within a track section with no superelevation (consistent with SFRTA's Station Location Criteria), the number of tracks/sidings in proximity of the site, and sight distance considerations at potential station platform locations.

Site 3 is located along a tangent track section. The tangent section curves approximately 1,700 feet north of where the station would be located and no superelevation of the tracks exists in proximity to the site. An existing track siding is located west of the main tracks with the junction located just north of the potential station platform location. In order to locate the station at this site, the track siding may need to be relocated.

Operational Impacts

Baseline Ridership Projections

In order to evaluate ridership potential for the proposed Boca Raton II Station, historical ridership data was gathered and reviewed for the Tri-Rail system. Historical Tri-Rail average weekday ridership (2005-2015) is summarized in Table 2. Additionally, the 2015 Tri-Rail monthly ridership data (boardings and alightings) were gathered for the existing Boca Raton and Deerfield Beach Stations, located adjacent to the north and south of the proposed Boca Raton II Station. The 2015 monthly ridership data is presented in Table 3.

The 2005-2015 historical ridership data was analyzed and it was determined that the historical growth rate for the Tri-Rail system was 3.9% per year. The supporting data and calculations are presented in Appendix C. The linear 3.9% growth rate was utilized to project the future ridership for the Tri-Rail system and at the existing Boca Raton and Deerfield Beach Stations.

Table 2. Ridership Projections

Year	Tri-Rail Average Weekday Ridership
2005	9,158
2006	10,818
2007	11,805
2008	14,732
2009	12,880
2010	12,149
2011	13,380
2012	13,882
2013	14,522
2014	14,557
2015	14,000

Source: SFRTA

Table 3. Calendar Year 2015 Tri-Rail Boardings

Month	Boca Raton	Deerfield Beach
Jan	33,971	18,862
Feb	31,535	17,087
Mar	33,293	18,971
Apr	30,614	17,590
May	27,857	16,975
Jun	25,317	17,129
Jul	22,948	16,889
Aug	26,246	17,255
Sep	29,797	17,070
Oct	31,259	17,954
Nov	28,233	16,578
Dec	25,407	17,792
Total	**346,477**	**210,152**
Average Weekday(1)	**1,129**	**685**

Note (1): Converted yearly ridership to average weekday by dividing yearly total by conversion factor calculated from 2015 SFRTA Data. FY 2015: 4,292,705 boardings per year / 14,000 boardings per average weekday = 307 weekday/year annualization conversion factor.

New Station Ridership Projection

The boardings for the potential new Boca Raton II Station were projected utilizing two (2) different programs: (1) FDOT's TBEST (Transit Boardings Estimation and Simulation Tool), Version 4.2.1; and (2) FTA's STOPS (Simplified Trips-on-Project Software).

TBEST

The TBEST results for the Boca Raton II Station showed an anticipated ridership of approximately 960 boardings; however, neither the Boca Raton Station nor the Deerfield Beach Station showed a reduction in ridership to coincide with the anticipated diversion of riders to the new station. Therefore, the results of the TBEST model were not utilized further and FTA's STOPS was employed.

STOPS

STOPS is a GIS-based transit modeling software developed by FTA that utilizes Socio-Economic and Census Block Boundary data to estimate transit ridership for Traditional Bus, BRT, Streetcar, LRT, Heavy Rail, and Commuter Rail. Ridership is provided in Walking, Kiss-and-Ride, Park-and-Ride, and Transfer Boardings for the Weekday peak period and Weekday off-peak period. FDOT District Four developed a South Florida specific STOPS model that includes Palm Beach, Broward, and Miami-Dade counties, with all transit lines validated within the Tri-County area. The major transit commuter services included in this South Florida specific model are: Tri-Rail; PalmTran; Broward County Transit (BCT), and Miami-Dade Transit (MDT) Bus, Metrorail, and Metromover. Input variables for each period include Stop Name, Schedule, Drop-off Type, Pick-up Type, Distance Travelled, and Number of Park-and-Ride Spaces at each station. Two (2) scenarios were analyzed: (1) Existing 2015, and (2) Existing 2015 with the new Boca Raton II Station (Build).

The STOPS model calculated 14,142 weekday boardings for the entire Tri-Rail system in 2015, versus the 14,000 actual weekday boardings in 2015, a difference of only 142 boardings (1.0 percent). Therefore, the STOPS model is calibrated well for the overall Tri-Rail system. As shown in Table 4, the STOPS model calculated 747 existing boardings at the Boca Raton Tri-Rail Station and 609 boardings at the Deerfield Beach Tri-Rail Station. The existing weekday ridership used to validate the STOPS output was 1,129 boardings at the Boca Raton Tri-Rail Station (-382/-34%) and 685 boardings at the Deerfield Beach Tri-Rail Station (-76/-11%). Per conversations with the FDOT consultant that prepared the South Florida STOPS model, the Boca Raton Tri-Rail Station model output does not match the existing ridership due to the high number of Florida Atlantic University (FAU) students that utilize that station to access the campus. This is a

unique scenario that could not be replicated within the model. Based on engineering judgement and discussion with SFRTA staff, it was it was decided that due to the proximity of the existing Boca Raton Tri-Rail Station at Yamato Road and the access provided by PalmTran from this Tri-Rail station to FAU, a significant diversion of FAU riders from the existing Boca Raton Tri-Rail Station to the Boca Raton II Station is not anticipated. Since the existing FAU riders are not accurately reflected in the STOPS model and it is not anticipated that FAU riders will divert from the existing Boca Raton Station to the Boca Raton II Station, no adjustment/calibration was applied to the STOPS model forecast for the Boca Raton II Station. Therefore, the diversion of trips projected by the model was assumed to be for the typical riders and not the "unique" FAU riders. The STOPS model results are provided in Appendix D.

Table 4. Base 2015 STOPS Results

Station (Boardings per Weekday)			
Scenario	**Boca Raton**	**Deerfield Beach**	**System**
STOPS Results	747	609	14,142
Actual	1,129	685	14,000
Difference	-382 (-34%)	-76 (-11%)	+142 (+1.0%)

The proposed Boca Raton II Station was input into the 2015 STOPS model network and the model was re-run. As shown in Table 5, the anticipated boardings with the Boca Raton II Station is 636 weekday boardings at the existing Boca Raton station, 1,063 weekday boardings at the new Boca Raton II Station, and 556 weekday boardings at the Deerfield Beach Station. This is a decrease of 111 weekday boardings for the Boca Raton Station and 53 weekday boardings for the Deerfield Beach Station from the base 2015 results. The addition of the Boca Raton II Station impacted ridership at other stations along the system besides the two (2) adjacent stations. Stations further to the north and south will also be origins/destinations for riders at the Boca Raton II Station; therefore, daily boardings at these stations will be impacted by the new station. Consequently, the true increase in system boardings resulting from the addition of the Boca Raton II Station is the net increase in boardings for all stations along the entire system, inclusive of new riders and the diversion of riders from adjacent stations. As shown in Table 5, the overall system boardings increased by 935 boardings from 14,142 boardings to 15,077 boardings. The STOPS mode results show that the existing land uses surrounding the proposed Boca Raton II Station can support a ridership comparable to and exceeding the ridership currently being supported by the existing Boca Raton Station and the Deerfield Beach Station. The STOPS model results are provided in Appendix D.

Table 5. 2015 With Boca Raton II Station STOPS Results

	Station (Boardings per Weekday)			
	Boca Raton	**Boca Raton II**	**Deerfield Beach**	**System**
Projections	636	1,063	556	15,077
Difference	-111 (-15%)	+1,063	-53 (-9%)	+935 (+7%)

The Boca Raton Station currently has a shuttle (BR-1) that runs from Yamato Road to the Town Center Mall and surrounding areas along Glades Road. It is reasonable to assume that riders currently taking the BR-1 route from the Boca Raton Station to the Glades Road area would utilize the new station. Based on the SFRTA/Keolis Commuter Bus Operations Report, dated April 2016, there were 4,156 monthly riders using the BR-1 line, which is more than the number of boardings for the existing Boca Raton Station. A copy of the SFRTA/Keolis Commuter Bus Operations Report is included in Appendix E. The high number of BR-1 riders is likely due to the fact that this shuttle is free, and some riders are utilizing the route as a "hop-on/hop-off" service and are not always Tri-Rail riders.

Tri-Rail Schedule Impact

On behalf of SFRTA, Jacobs Engineering Group (Jacobs) conducted an operational analysis to determine the impact to the train schedule caused by the new Boca Raton II Station. Below is a summary of the analysis conducted by Jacobs. Since the exact location of the Boca Raton II Station has yet to be determined, the Jacobs report assumed a location within the general limits of Site 3, approximately 2.0 miles south of the existing Boca Raton Station and 3.7 miles north of the Deerfield Beach Station. Per the Station Location Criteria in the SFRTA TDP *2007 Update,* the minimum spacing between stations is 2 miles. Figure 17 depicts the locations of the proposed Boca Raton II Station and adjacent Boca Raton and Deerfield Beach Stations. A copy of the Operations Analysis report is provided in Appendix F.

The current Tri-Rail service is scheduled with a seven (7) minute southbound run time from the time the train leaves the Boca Raton station to the time it departs the Deerfield Beach Station. In the northbound direction the run time varies from seven (7) to nine (9) minutes from the time the train leaves the Deerfield Beach Station to the time it departs the Boca Raton Station.

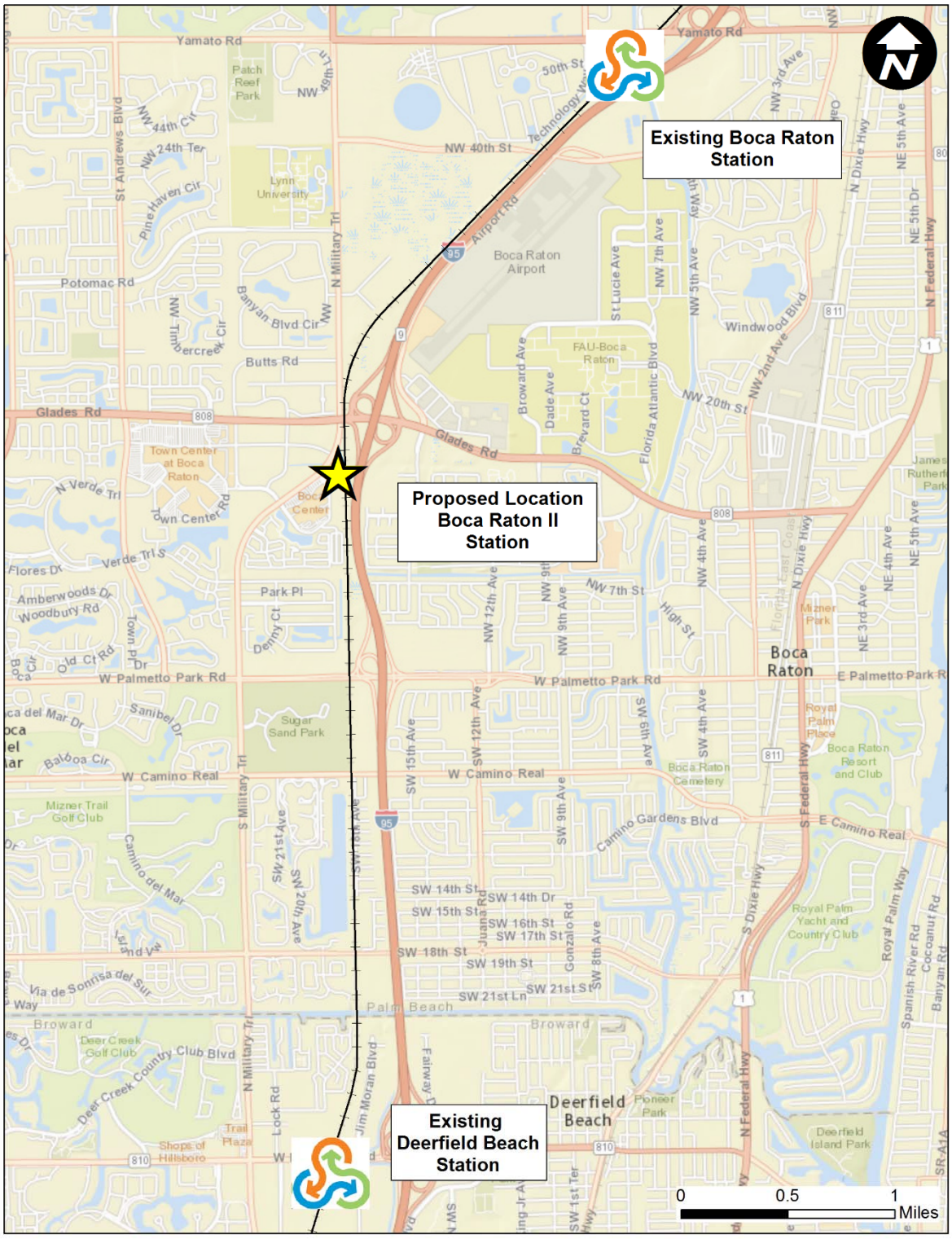


Figure 17: Tri-Rail Station Map

In the southbound direction the no-build simulation predicts 6:50 minutes in elapsed time between departing the existing Boca Raton Station and departure from the Deerfield Beach Station, consistent with the 7:00 minutes allowed in the Tri-Rail schedule. With the new Boca Raton II Station added to the simulation, the same trip is predicted to require 9:22 minutes, adding 2:32 minutes to overall travel time. In the northbound direction, the no-build simulation predicts 7:03 minutes in elapsed time between leaving the Deerfield Beach Station and departure from the existing Boca Raton Station. The Tri-Rail schedule allows 7:00 to 9:00 minutes for the same movement. The additional one (1) or two (2) minutes of travel time presumably allows for heavy passenger traffic loading and unloading at the busy existing Boca Raton Station. With the proposed Boca Raton II Station added to the simulation, the same trip is predicted to require 9:28 minutes, adding 2:25 minutes to overall time.

Overall, the simulation model projected an approximately 2:30 minute increase in travel time in both directions to accommodate the new Boca Raton II Station. Rounding up to allow for variability in weather conditions, human factors, and other considerations, the one-way travel time of Tri-Rail trains would be increased by three (3) minutes upon opening of the new station.

Based on the three (3) minutes in additional travel time in both the northbound and southbound directions, a new train schedule was developed based on the current Tri-Rail schedule. The start and stop times were adjusted to accommodate the additional three (3) minutes by making the scheduled start time at the beginning of a run earlier by three (3) minutes or making the scheduled arrival time at the end of the run later by three (3) minutes. Consistent with the current Tri-Rail weekday schedule, a minimum 18 minute turn time was maintained. The end result is that over the full day the last train is anticipated to make its last stop at 11:38 PM instead of 11:35 PM for the current schedule (an overall delay of 3 minutes) (See Appendix G). Based on the three (3) minute overall change to the schedule, the current number of trains and crews can accommodate the new station with minimal impact and no additional crew costs. However, due to the additional fuel needed to accelerate the train from a full stop at the new station, an increase in approximately 85,000 gallons of diesel fuel per year will be required, which is currently valued at $300,000 per year.

Station Location Impact

An intermediate train signal is located just north of a siding located south of Glades Road. It is not anticipated that a station at Site 3 will impact this train signal. Additionally, there is a switch located south of Site 3. Although the switch will not impact the location of the train station, it may impact the train schedule. To maintain flexibility to switch trains between the east or west tracks, both northbound and southbound trains should not be scheduled to arrive and/or depart the new Boca Raton II Station within the same timeframe. If one of the tracks needs to be closed due to train problems or track maintenance then having opposing trains scheduled to reach the new station at the same time would result in schedule delays.

40-Year Benefit/Cost Analysis

A benefit/cost analysis is a systematic evaluation of the economic advantages (benefits) and disadvantages (costs) of an alternative. The 40-year benefit/cost (B/C) analysis will help answer from an economic perspective if the proposed Boca Raton II Station is a worthy public investment. A 40-year analysis period was analyzed to be consistent with FTA guidance on the lifespan for a commuter rail station.

The projected capital and annual operating costs for the Boca Raton II Station were calculated based on information provided by SFRTA. The station costs are approximately $18.5 million, including design, permitting, right-of-way, contingency, and construction. The station costs are based on costs associated with the ongoing reconstruction of the existing Pompano Beach station. The annual operating costs are approximately $700,000 per year in 2016 dollars, including security, maintenance, and shuttle buses. Also, an additional fuel cost of $300,000 per year (in 2016 dollars) will be required. Additional crews and trains will not be required for adding the Boca Raton II Station.

Revenue Projection

SFRTA provided revenue reports for average ticket fares that were available for the past year (May 2015 to March 2016). Figure 18, displays the average ticket fares fluctuation from May 2015 through March 2016. The average ticket fare over the 11-month period was $3.04.

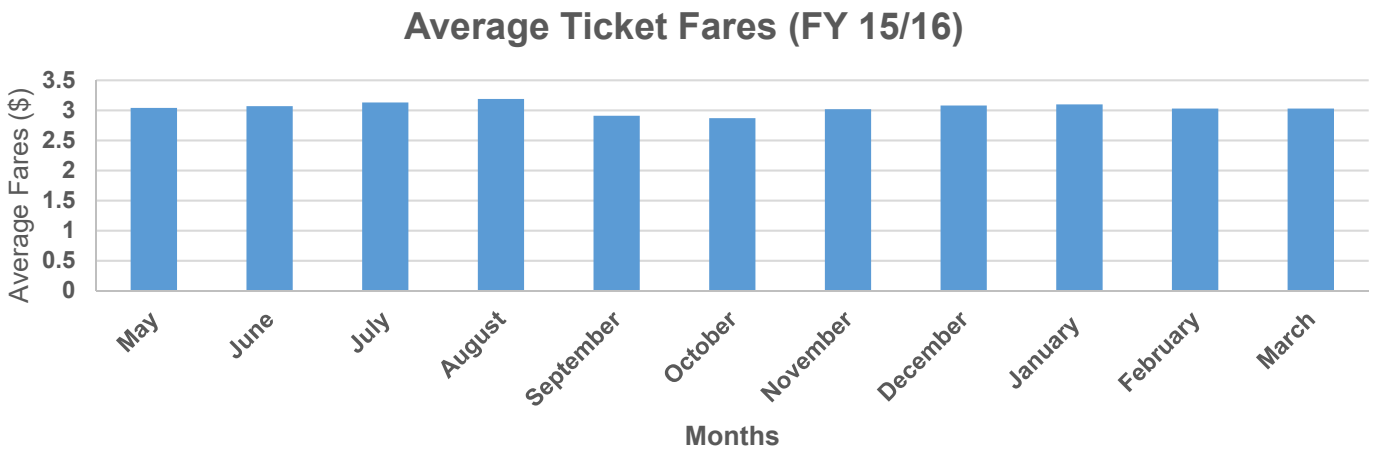


Figure 18. Average Ticket Fares (FY 15/16)

The Boca Raton II Station is projected to have 1,063 daily boardings in 2015 according to the STOPS ridership model. The resulting annual boardings are 326,341 boardings (1,063 average weekday boardings x 307 weekday/year annualization factor[(1)]). The benefit of the new station was calculated as the average yearly fares collected by the net new riders, which is 935 daily boardings (i.e. total increase for entire system inclusive of loss of diverted riders from other stations). The resulting 2015 net new annual ridership is 287,045 boardings (935 boardings x 307 weekday/year annualization factor[(1)]). An annual growth rate of 3.9 percent was utilized consistent with the Tri-Rail system historical growth rate over the past 10 years to obtain boardings for the 2020 opening year and beyond. The current average fare is $3.04. Based on information provided by SFRTA, the most recent fare increase was in 2009, which was a 25 percent increase over the previous fare set in 1995 (14 year period). To be consistent with the previous fare increase, it was assumed that the fare would increase 25 percent every 14 years (i.e. 2023, 2037, etc.). Table 6 summarizes the projected revenue over the 40-year period, as well as a net present value utilizing a 2020 opening year for the new station.

Note (1): Converted yearly ridership to average weekday by dividing yearly total by conversion factor calculated from 2015 SFRTA Data. FY 2015: 4,292,705 boardings per year / 14,000 boardings per average weekday = 307 weekday/year annualization factor.

Table 6. Boca Raton II Station Projected Revenue

Year (Project)	Ridership	Revenue	
	Annual Boardings	Average Fare	Total Annual
2016	0	$ 3.04	$ -
2017	0	$ 3.04	$ -
2018	0	$ 3.04	$ -
2019	0	$ 3.04	$ -
2020	343,019	$ 3.04	$ 1,042,777
2021	354,214	$ 3.04	$ 1,076,809
2022	365,408	$ 3.04	$ 1,110,841
2023	376,603	$ 3.80	$ 1,431,092
2024	387,798	$ 3.80	$ 1,473,632
2025	398,993	$ 3.80	$ 1,516,172
2026	410,187	$ 3.80	$ 1,558,712
2027	421,382	$ 3.80	$ 1,601,252
2028	432,577	$ 3.80	$ 1,643,792
2029	443,772	$ 3.80	$ 1,686,332
2030	454,966	$ 3.80	$ 1,728,872
2031	466,161	$ 3.80	$ 1,771,412
2032	477,356	$ 3.80	$ 1,813,952
2033	488,551	$ 3.80	$ 1,856,492
2034	499,745	$ 3.80	$ 1,899,032
2035	510,940	$ 3.80	$ 1,941,572
2036	522,135	$ 3.80	$ 1,984,112
2037	533,330	$ 4.75	$ 2,533,316
2038	544,524	$ 4.75	$ 2,586,491
2039	555,719	$ 4.75	$ 2,639,666
2040	566,914	$ 4.75	$ 2,692,841
2041	578,109	$ 4.75	$ 2,746,016
2042	589,303	$ 4.75	$ 2,799,191
2043	600,498	$ 4.75	$ 2,852,366
2044	611,693	$ 4.75	$ 2,905,541
2045	622,888	$ 4.75	$ 2,958,716
2046	634,082	$ 4.75	$ 3,011,891
2047	645,277	$ 4.75	$ 3,065,067
2048	656,472	$ 4.75	$ 3,118,242
2049	667,667	$ 4.75	$ 3,171,417
2050	678,861	$ 4.75	$ 3,224,592
2051	690,056	$ 5.94	$ 4,098,934
2052	701,251	$ 5.94	$ 4,165,431
2053	712,446	$ 5.94	$ 4,231,927
2054	723,640	$ 5.94	$ 4,298,424
2055	734,835	$ 5.94	$ 4,364,921
2056	746,030	$ 5.94	$ 4,431,418
2057	757,225	$ 5.94	$ 4,497,915
2058	768,419	$ 5.94	$ 4,564,412
2059	779,614	$ 5.94	$ 4,630,908
40-Year Total	**22,452,660**	**-**	**$ 106,726,498**

In addition to the ticket revenue, Federal funding (i.e. Federal drawn down) was also analyzed to determine if the increase in boardings would result in an increase in Federal funds. Per the FTA Formula Program Apportionment spreadsheet, SFRTA is slated to receive $34,475,707 in funding for Federal Fiscal Year 2016.

Federal funds are anticipated to increase by $1,377 to $34,477,084 with additional ridership associated with the Boca Raton II Station. Since the increase of $1,377 is less than one percent (1%) of the current funding, was additional Federal funds were considered to be insignificant and was not utilized in the B/C analysis.

Benefit-Cost

Benefit-Cost analyses were conducted for two (2) scenarios: (1) Total costs including train operations, station operations, station construction, and station right-of-way; and (2) Total costs including train operations, station operations, and station construction, but excluding station right-of-way.

With Right-of-Way

A total cost for the Boca Raton II Station including right-of-way acquisition and station construction was calculated. Table 7 summarizes the cost over the 40-year period including right-of-way acquisition, station construction, and annual operating and maintenance costs, utilizing FDOT inflation rates ranging from 2.9% to 3.3%. The total 40-year cost including right-of-way acquisition and the station construction, design, and permitting, as well as the maintenance, security, commuter bus, and additional fuel costs is $109,759,386. The net present value (NPV) of the cost is $51,154,261. The 40-year revenue estimate is $106,726,498, which is considered the benefit, and the resulting NPV of the benefit is $38,920,515. The B/C is approximately 0.76; therefore, the capital and operations costs of the station, including right-of-way, is anticipated to exceed the benefit of the revenue created by the station. Appendix H includes the Benefits-Cost analysis.

Without Right-of-Way

A total cost inclusive of station construction costs but not including costs for right-of-way acquisition was calculated. Table 8 summarizes the cost over the 40-year period, including station construction and annual operating and maintenance costs only, utilizing FDOT inflation rates ranging from 2.9% to 3.3%. The total 40-year cost including station construction, design, and permitting, as well as the maintenance, security, commuter bus, and additional fuel costs is $105,059,386. The net present value (NPV) of the cost is $46,808,846. The 40-year revenue estimate is $106,726,498, which is considered the benefit, and the resulting NPV of the benefit is $38,920,515. The B/C is approximately 0.83; therefore, the capital and

operating costs of the station, excluding right-of-way, is anticipated to exceed the benefit of the revenue created by the station. Appendix H includes the Benefits-Costs Analysis.

Table 7. Boca Raton II Station Cost with Right-of-Way Cost

Year (Project)	Station incl right-of-way	Maintenance	CPO+Supervisor	Fuel	Shuttle	Total Cost
2016	$ -					$ -
2017	$ 1,500,000	$ -				$ 1,500,000
2018	$ 17,000,000	$ -	$ -	$ -	$ -	$ 17,000,000
2019	$ -	$ -	$ -	$ -	$ -	$ -
2020	$ -	$ 131,563	$ 320,112	$ 347,107	$ 360,106	$ 1,158,888
2021	$ -	$ 135,905	$ 330,676	$ 358,562	$ 342,044	$ 1,167,187
2022	$ -	$ 140,390	$ 341,588	$ 370,395	$ 353,331	$ 1,205,704
2023	$ -	$ 145,023	$ 352,860	$ 382,618	$ 364,991	$ 1,245,492
2024	$ -	$ 149,809	$ 364,504	$ 395,244	$ 377,036	$ 1,286,593
2025	$ -	$ 154,753	$ 376,533	$ 408,287	$ 389,478	$ 1,329,051
2026	$ -	$ 159,860	$ 388,959	$ 421,760	$ 402,331	$ 1,372,910
2027	$ -	$ 165,135	$ 401,795	$ 435,678	$ 415,608	$ 1,418,216
2028	$ -	$ 170,584	$ 415,054	$ 450,055	$ 429,323	$ 1,465,016
2029	$ -	$ 176,213	$ 428,751	$ 464,907	$ 443,491	$ 1,513,362
2030	$ -	$ 182,028	$ 442,900	$ 480,249	$ 458,126	$ 1,563,303
2031	$ -	$ 188,035	$ 457,516	$ 496,097	$ 473,244	$ 1,614,892
2032	$ -	$ 194,240	$ 472,614	$ 512,468	$ 488,861	$ 1,668,183
2033	$ -	$ 200,650	$ 488,210	$ 529,379	$ 504,993	$ 1,723,232
2034	$ -	$ 207,271	$ 504,321	$ 546,849	$ 521,658	$ 1,780,099
2035	$ -	$ 214,111	$ 520,964	$ 564,895	$ 538,873	$ 1,838,843
2036	$ -	$ 221,177	$ 538,156	$ 583,537	$ 556,656	$ 1,899,526
2037	$ -	$ 228,476	$ 555,915	$ 602,794	$ 575,026	$ 1,962,211
2038	$ -	$ 236,016	$ 574,260	$ 622,686	$ 594,002	$ 2,026,964
2039	$ -	$ 243,805	$ 593,211	$ 643,235	$ 613,604	$ 2,093,855
2040	$ -	$ 251,851	$ 612,787	$ 664,462	$ 633,853	$ 2,162,953
2041	$ -	$ 260,162	$ 633,009	$ 686,389	$ 654,770	$ 2,234,330
2042	$ -	$ 268,747	$ 653,898	$ 709,040	$ 676,377	$ 2,308,062
2043	$ -	$ 277,616	$ 675,477	$ 732,438	$ 698,697	$ 2,384,228
2044	$ -	$ 286,777	$ 697,768	$ 756,608	$ 721,754	$ 2,462,907
2045	$ -	$ 296,241	$ 720,794	$ 781,576	$ 745,572	$ 2,544,183
2046	$ -	$ 306,017	$ 744,580	$ 807,368	$ 770,176	$ 2,628,141
2047	$ -	$ 316,116	$ 769,151	$ 834,011	$ 795,592	$ 2,714,870
2048	$ -	$ 326,548	$ 794,533	$ 861,533	$ 821,847	$ 2,804,461
2049	$ -	$ 337,324	$ 820,753	$ 889,964	$ 848,968	$ 2,897,009
2050	$ -	$ 348,456	$ 847,838	$ 919,333	$ 876,984	$ 2,992,611
2051	$ -	$ 359,955	$ 875,817	$ 949,671	$ 905,924	$ 3,091,367
2052	$ -	$ 371,834	$ 904,719	$ 981,010	$ 935,819	$ 3,193,382
2053	$ -	$ 384,105	$ 934,575	$ 1,013,383	$ 966,701	$ 3,298,764
2054	$ -	$ 396,780	$ 965,416	$ 1,046,825	$ 998,602	$ 3,407,623
2055	$ -	$ 409,874	$ 997,275	$ 1,081,370	$ 1,031,556	$ 3,520,075
2056	$ -	$ 423,400	$ 1,030,185	$ 1,117,055	$ 1,065,597	$ 3,636,237
2057	$ -	$ 437,372	$ 1,064,181	$ 1,153,918	$ 1,100,762	$ 3,756,233
2058	$ -	$ 451,805	$ 1,099,299	$ 1,191,997	$ 1,137,087	$ 3,880,188
2059	$ -	$ 466,715	$ 1,135,576	$ 1,231,333	$ 1,174,611	$ 4,008,235
	$ 18,500,000	**$ 10,622,739**	**$ 25,846,530**	**$ 28,026,086**	**$ 26,764,031**	**$ 109,759,386**

Table 8. Boca Raton II Station Cost without Right-of-Way Cost

Year (Project)	Station	Maintenance	CPO+Supervisor	Fuel	Shuttle	Total Cost
2016	$ -					$ -
2017	$ 1,500,000	$ -				$ 1,500,000
2018	$ 12,300,000	$ -	$ -	$ -	$ -	$ 12,300,000
2019	$ -	$ -	$ -	$ -	$ -	$ -
2020	$ -	$ 131,563	$ 320,112	$ 347,107	$ 360,106	$ 1,158,888
2021	$ -	$ 135,905	$ 330,676	$ 358,562	$ 342,044	$ 1,167,187
2022	$ -	$ 140,390	$ 341,588	$ 370,395	$ 353,331	$ 1,205,704
2023	$ -	$ 145,023	$ 352,860	$ 382,618	$ 364,991	$ 1,245,492
2024	$ -	$ 149,809	$ 364,504	$ 395,244	$ 377,036	$ 1,286,593
2025	$ -	$ 154,753	$ 376,533	$ 408,287	$ 389,478	$ 1,329,051
2026	$ -	$ 159,860	$ 388,959	$ 421,760	$ 402,331	$ 1,372,910
2027	$ -	$ 165,135	$ 401,795	$ 435,678	$ 415,608	$ 1,418,216
2028	$ -	$ 170,584	$ 415,054	$ 450,055	$ 429,323	$ 1,465,016
2029	$ -	$ 176,213	$ 428,751	$ 464,907	$ 443,491	$ 1,513,362
2030	$ -	$ 182,028	$ 442,900	$ 480,249	$ 458,126	$ 1,563,303
2031	$ -	$ 188,035	$ 457,516	$ 496,097	$ 473,244	$ 1,614,892
2032	$ -	$ 194,240	$ 472,614	$ 512,468	$ 488,861	$ 1,668,183
2033	$ -	$ 200,650	$ 488,210	$ 529,379	$ 504,993	$ 1,723,232
2034	$ -	$ 207,271	$ 504,321	$ 546,849	$ 521,658	$ 1,780,099
2035	$ -	$ 214,111	$ 520,964	$ 564,895	$ 538,873	$ 1,838,843
2036	$ -	$ 221,177	$ 538,156	$ 583,537	$ 556,656	$ 1,899,526
2037	$ -	$ 228,476	$ 555,915	$ 602,794	$ 575,026	$ 1,962,211
2038	$ -	$ 236,016	$ 574,260	$ 622,686	$ 594,002	$ 2,026,964
2039	$ -	$ 243,805	$ 593,211	$ 643,235	$ 613,604	$ 2,093,855
2040	$ -	$ 251,851	$ 612,787	$ 664,462	$ 633,853	$ 2,162,953
2041	$ -	$ 260,162	$ 633,009	$ 686,389	$ 654,770	$ 2,234,330
2042	$ -	$ 268,747	$ 653,898	$ 709,040	$ 676,377	$ 2,308,062
2043	$ -	$ 277,616	$ 675,477	$ 732,438	$ 698,697	$ 2,384,228
2044	$ -	$ 286,777	$ 697,768	$ 756,608	$ 721,754	$ 2,462,907
2045	$ -	$ 296,241	$ 720,794	$ 781,576	$ 745,572	$ 2,544,183
2046	$ -	$ 306,017	$ 744,580	$ 807,368	$ 770,176	$ 2,628,141
2047	$ -	$ 316,116	$ 769,151	$ 834,011	$ 795,592	$ 2,714,870
2048	$ -	$ 326,548	$ 794,533	$ 861,533	$ 821,847	$ 2,804,461
2049	$ -	$ 337,324	$ 820,753	$ 889,964	$ 848,968	$ 2,897,009
2050	$ -	$ 348,456	$ 847,838	$ 919,333	$ 876,984	$ 2,992,611
2051	$ -	$ 359,955	$ 875,817	$ 949,671	$ 905,924	$ 3,091,367
2052	$ -	$ 371,834	$ 904,719	$ 981,010	$ 935,819	$ 3,193,382
2053	$ -	$ 384,105	$ 934,575	$ 1,013,383	$ 966,701	$ 3,298,764
2054	$ -	$ 396,780	$ 965,416	$ 1,046,825	$ 998,602	$ 3,407,623
2055	$ -	$ 409,874	$ 997,275	$ 1,081,370	$ 1,031,556	$ 3,520,075
2056	$ -	$ 423,400	$ 1,030,185	$ 1,117,055	$ 1,065,597	$ 3,636,237
2057	$ -	$ 437,372	$ 1,064,181	$ 1,153,918	$ 1,100,762	$ 3,756,233
2058	$ -	$ 451,805	$ 1,099,299	$ 1,191,997	$ 1,137,087	$ 3,880,188
2059	$ -	$ 466,715	$ 1,135,576	$ 1,231,333	$ 1,174,611	$ 4,008,235
	$ 13,800,000	**$ 10,622,739**	**$ 25,846,530**	**$ 28,026,086**	**$ 26,764,031**	**$ 105,059,386**

Conclusions

The purpose of this study was to determine the overall feasibility of opening the proposed Boca Raton II Station. The study included a review of possible site locations, operational costs and impacts, and a benefit-cost analysis to determine feasibility.

Site Location Analysis

The study included an analysis of four (4) locations, three (3) of which were previously identified in the Site Location Alternative Analysis – Boca Raton II, *May 2010* Report, to determine if these sites could accommodate a new Tri-Rail station. Site 3 is the only location recommended for further consideration. Sites 1, 2, and 4 cannot accommodate the required 250 parking spaces dedicated to SFRTA/Tri-Rail, which are desirable for a Tri-Rail Station.

Operational Analysis

Based on the ridership projections, the new Boca Raton II Station is anticipated to have boardings comparable to both the existing Boca Raton station and the Deerfield Beach Station, which exceeds the 350 minimum daily boardings SFRTA recommends for a new station. Although the new Boca Raton II Station is anticipated to divert some riders away from the adjacent stations, the new station is anticipated to have an overall positive impact on the Tri-Rail system by adding 935 new boardings per average weekday. Although additional time is needed for each run to accommodate the new station, the schedule can be adjusted such that additional crews and train sets are not required; therefore, no additional crew costs are anticipated. The addition of a second station in Boca Raton is operationally feasible.

Benefit-Cost Analysis

The 40-year B/C analysis, including station construction and right-of-way costs, is 0.76, which indicates that the new station capital and operating costs will exceed the revenue generated by the increase in boardings. When subtracting out the cost of right-of-way acquisition, the B/C for the construction and operation of the new station is 0.83, indicating that the costs will still exceed the revenue.

Although the B/C is under 1.0 when including capital costs, the new station will generate more riders than the minimum recommended for a new station. In addition, the new station has socio-economic, mobility, and environmental benefits. Therefore, the proposed Boca Raton II Station is recommended to be advanced into the next phase of environmental review.

APPENDIX A

TOPOGRAPHIC SURVEY

MATCH LINE A-A

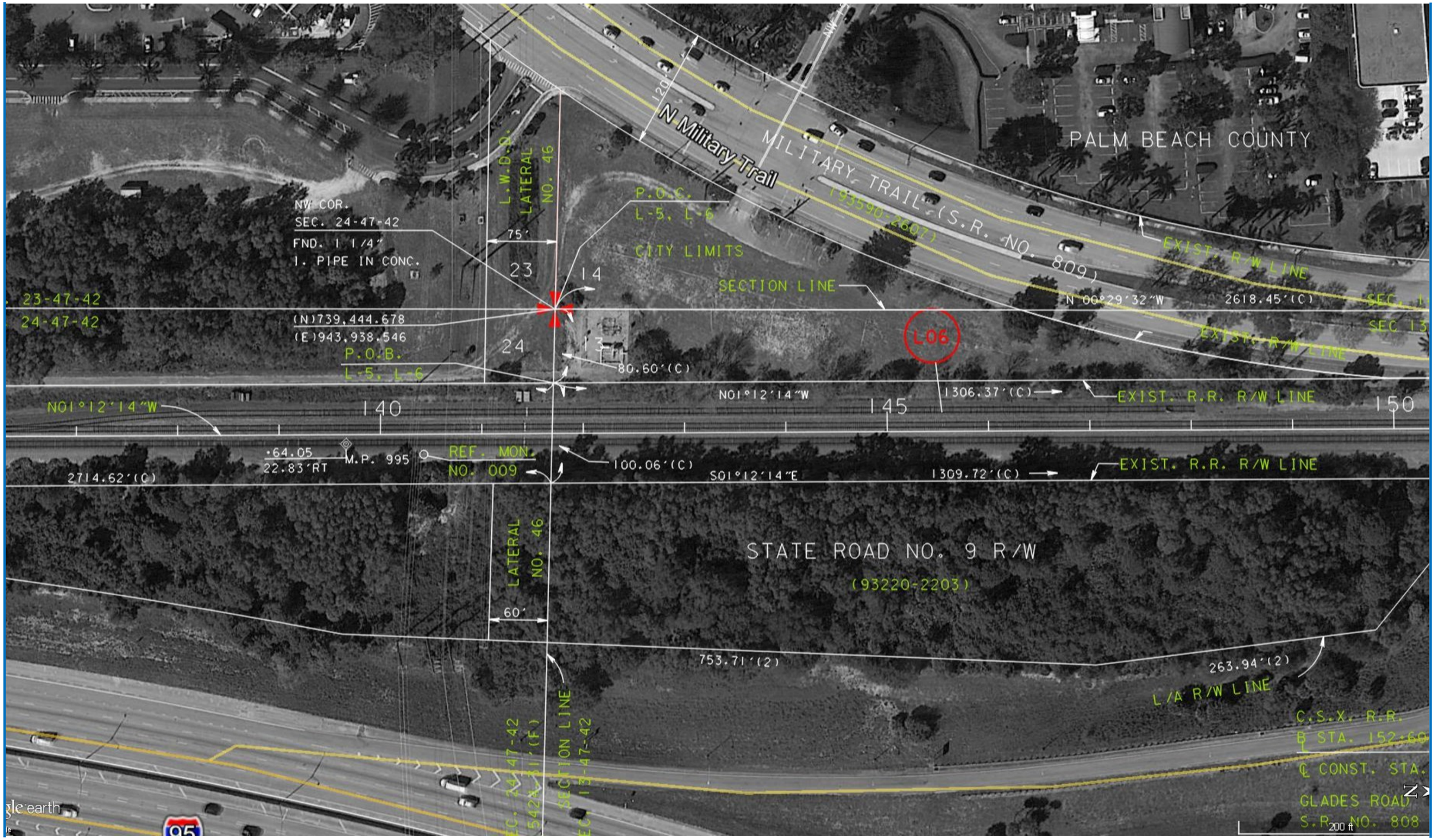
MATCH LINE A-A

MATCH LINE B-B

MATCH LINE B-B

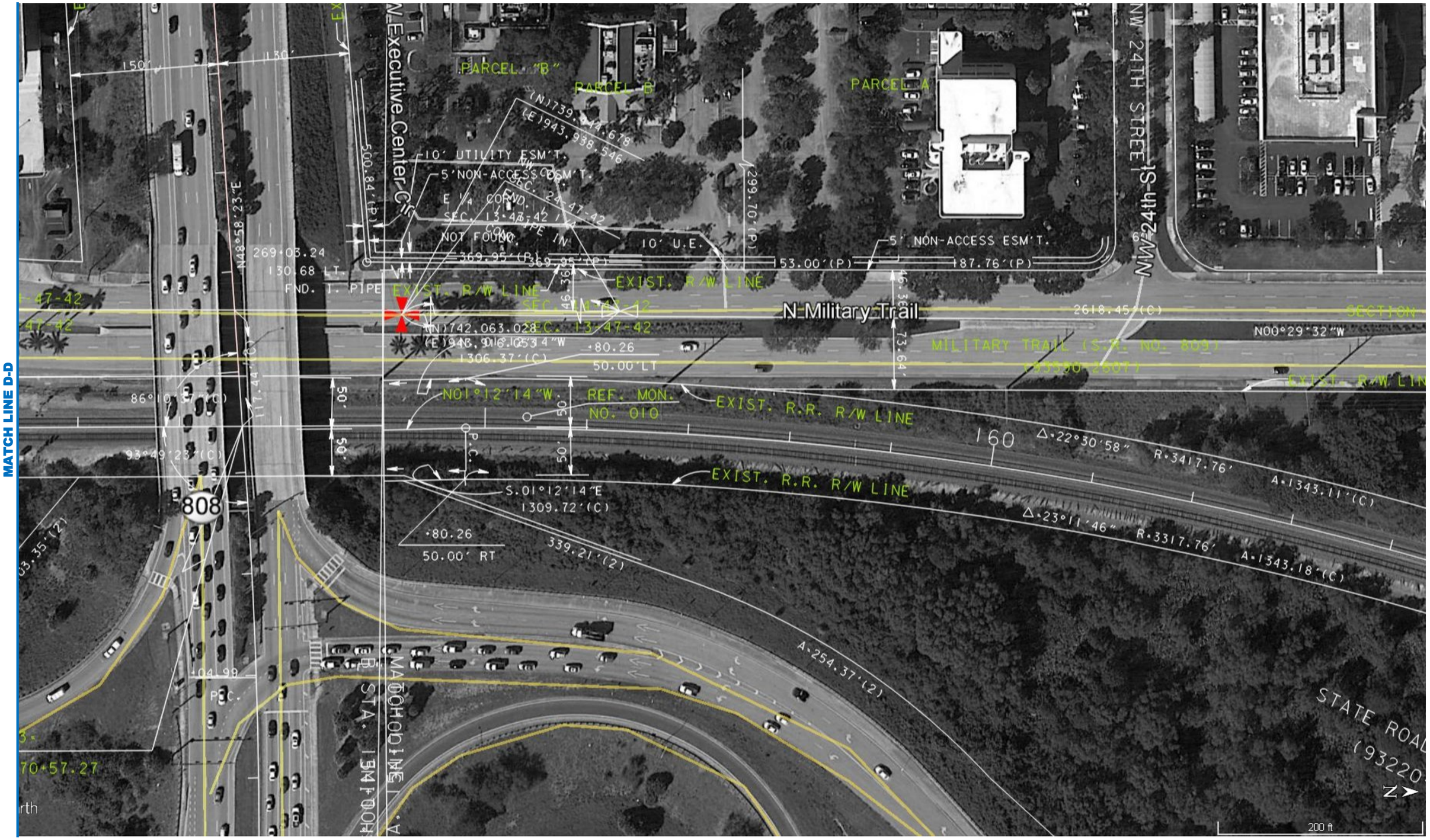
MATCH LINE C-C

MATCH LINE C-C



MATCH LINE D-D

MATCH LINE D-D



APPENDIX B

PROPERTY OWNERSHIP INFORMATION

Gary R. Nikolits, CFA
Property Appraiser
Palm Beach County

Homestead Exemption E-file

Location Address	S MILITARY TRL
Municipality	BOCA RATON
Parcel Control Number	06-42-47-13-00-000-7010
Subdivision	
Official Records Book	27249 Page 247
Sale Date	DEC-2014
Legal Description	13-47-42, SW 1/4 OF SW 1/4 W OF SAL R/W & S OF SR 808 (LESS S 80 FT IN OR932P1079, N 213 FT & MILITARY TR R/W

Owners

BOCA CENTER AT MILITARY LLC

Mailing address

CORNERSTONE REAL ESTATE ADVISERS LLC C/O 180 GLASTONBURY BLVD STE 200
GLASTONBURY CT 06033 4439

Sales Date	Price	OR Book/Page	Sale Type	Owner
DEC-2014	$10	27249 / 0247	WARRANTY DEED	BOCA CENTER AT MILITARY LLC
MAY-2009	$3,000,000	23255 / 0227	WARRANTY DEED	485 PROPERTIES LLC
JAN-2006	$3,500,000	19774 / 0516	WARRANTY DEED	MILITARY TRAIL PARTNERS LLC
OCT-2005	$10	19439 / 0796	WARRANTY DEED	COSTA SAM &
OCT-2005	$0	19536 / 0140	WARRANTY DEED	COSTA SAM &

1 2

No Exemption Information Available.

Number of Units 0 *Total Square Feet 0 Acres 0.8740

Use Code 1000 - VACANT COMMERCIAL Zoning RB1 - Motel Business (06-BOCA RATON)

Tax Year	2015	2014	2013
Improvement Value	$0	$0	$0
Land Value	$951,750	$685,260	$685,260
Total Market Value	$951,750	$685,260	$685,260

All values are as of January 1st each year

Tax Year	2015	2014	2013
Assessed Value	$951,750	$685,260	$649,931
Exemption Amount	$0	$0	$0
Taxable Value	$951,750	$685,260	$649,931

Tax Year	2015	2014	2013
Ad Valorem	$18,259	$13,308	$12,935
Non Ad Valorem	$0	$0	$0
Total tax	$18,259	$13,308	$12,935

Property Detail

Parcel Control Number:	06424713000007010	Location Address:	S MILITARY TRL		
Owners:	BOCA CENTER AT MILITARY LLC				
Mailing Address:	CORNERSTONE REAL ESTATE ADVISERS LLC C/O 180 GLASTONBURY BLVD STE 200,GLASTONBURY CT 06033 4439				
Last Sale:	Not available	Book/Page#:	27249 / 247	Price:	Not available
Legal Description:	13-47-42, SW 1/4 OF SW 1/4 W OF SAL R/W & S OF SR 808 (LESS S 80 FT IN OR932P1079, N 213 FT & MILITARY TR R/W				

2015 Values (Current)

Improvement Value	$0
Land Value	$951,750
Total Market Value	$951,750
Assessed Value	$951,750
Exemption Amount	$0
Taxable Value	$951,750

All values are as of January 1st each year

2015 Taxes

Ad Valorem	$18,259
Non Ad Valorem	$0
Total Tax	$18,259

2015 Qualified Exemptions

No Details Found

Applicants

No Details Found

Building Footprint (Building 1)

No Image Found

Subarea and Square Footage (Building 1)

Description	Area	Sq. Footage
No Data Found.		

Extra Features

Description	Unit
No Extra Feature Available	

Structural Details (Building 1)

No	Description

Acres 0.8740

MAP

Owner: BOCA CENTER AT MILITARY LLC PCN: 06424713000007010 1 of 1

Gary R. Nikolits, CFA
Property Appraiser
Palm Beach County

Homestead Exemption E-file

Location Address	1900 N MILITARY TRL
Municipality	BOCA RATON
Parcel Control Number	06-42-47-14-00-000-5090
Subdivision	
Official Records Book	27249 Page 247
Sale Date	DEC-2014
Legal Description	14-47-42, TH PT OF SE 1/4 LYG SELY OF MILITARY TR R/W AS IN OR2380P83-85 (LESS S 15 FT)

Owners

BOCA CENTER AT MILITARY LLC

Mailing address

CORNERSTONE REAL ESTATE ADVISERS LLC C/O 180 GLASTONBURY BLVD STE 200
GLASTONBURY CT 06033 4439

Sales Date	Price	OR Book/Page	Sale Type	Owner
DEC-2014	$10	27249 / 0247	WARRANTY DEED	BOCA CENTER AT MILITARY LLC
MAY-2009	$3,000,000	23255 / 0227	WARRANTY DEED	485 PROPERTIES LLC
JAN-2006	$3,500,000	19774 / 0516	WARRANTY DEED	MILITARY TRAIL PARTNERS LLC
DEC-2005	$10	19685 / 0991	WARRANTY DEED	COSTA SAM &
OCT-2005	$10	19439 / 0796	WARRANTY DEED	COSTA SAM &

1 2

No Exemption Information Available.

Number of Units	0	*Total Square Feet	0	Acres	0.9696
Use Code	1000 - VACANT COMMERCIAL	Zoning	RB1 - Motel Business (06-BOCA RATON)		

Tax Year	2015	2014	2013
Improvement Value	$0	$0	$0
Land Value	$1,055,850	$760,212	$760,212
Total Market Value	$1,055,850	$760,212	$760,212

All values are as of January 1st each year

Tax Year	2015	2014	2013
Assessed Value	$1,055,850	$760,212	$721,019
Exemption Amount	$0	$0	$0
Taxable Value	$1,055,850	$760,212	$721,019

Tax Year	2015	2014	2013
Ad Valorem	$20,256	$14,764	$14,349
Non Ad Valorem	$2,880	$2,880	$2,877
Total tax	$23,136	$17,644	$17,226

Property Detail

Parcel Control Number:	06424714000005090	Location Address:	1900 N MILITARY TRL		
Owners:	BOCA CENTER AT MILITARY LLC				
Mailing Address:	CORNERSTONE REAL ESTATE ADVISERS LLC C/O 180 GLASTONBURY BLVD STE 200,GLASTONBURY CT 06033 4439				
Last Sale:	Not available	Book/Page#:	27249 / 247	Price:	Not available
Legal Description:	14-47-42, TH PT OF SE 1/4 LYG SELY OF MILITARY TR R/W AS IN OR2380P83-85 (LESS S 15 FT)				

2015 Values (Current)

Improvement Value	$0
Land Value	$1,055,850
Total Market Value	$1,055,850
Assessed Value	$1,055,850
Exemption Amount	$0
Taxable Value	$1,055,850

All values are as of January 1st each year

2015 Taxes

Ad Valorem	$20,256
Non Ad Valorem	$2,880
Total Tax	$23,136

2015 Qualified Exemptions

No Details Found

Applicants

No Details Found

Building Footprint (Building 1)

No Image Found

Subarea and Square Footage (Building 1)

Description	Area	Sq. Footage
No Data Found.		

Extra Features

Description	Unit
No Extra Feature Available	

Structural Details (Building 1)

No	Description

Acres 0.9696

MAP

Owner: BOCA CENTER AT MILITARY LLC PCN: 06424714000005090 1 of 1

GARY R. NIKOLITS, CFA PALM BEACH COUNTY PROPERTY APPRAISER www.pbcgov.org/PAPA 5/6/2016

Gary R. Nikolits, CFA
Property Appraiser
Palm Beach County

Homestead Exemption E-file

Location Address	1800 N MILITARY TRL
Municipality	BOCA RATON
Parcel Control Number	06-42-47-23-38-001-0000
Subdivision	1800 NORTH MILITARY TRAIL
Official Records Book	27249 Page 247
Sale Date	DEC-2014
Legal Description	1800 NORTH MILITARY TRAIL PAR A K/A ALL OF PLAT

Owners
BOCA CENTER AT MILITARY LLC

Mailing address
CORNERSTONE REAL ESTATE ADVISERS LLC C/O 180 GLASTONBURY BLVD STE 200
GLASTONBURY CT 06033 4439

Sales Date	Price	OR Book/Page	Sale Type	Owner
DEC-2014	$10	27249 / 0247	WARRANTY DEED	BOCA CENTER AT MILITARY LLC

No Exemption Information Available.

Number of Units		*Total Square Feet 288238	Acres 11.7824
Use Code	1800 - OFFICE MULTISTORY	Zoning	-

Tax Year	2015	2014	2013
Improvement Value	$25,560,069	$21,814,620	$19,886,755
Land Value	$6,158,892	$6,158,892	$6,158,892
Total Market Value	$31,718,961	$27,973,512	$26,045,647

All values are as of January 1st each year

Tax Year	2015	2014	2013
Assessed Value	$31,718,961	$27,973,512	$26,045,647
Exemption Amount	$0	$0	$0
Taxable Value	$31,718,961	$27,973,512	$26,045,647

Tax Year	2015	2014	2013
Ad Valorem	$608,516	$543,254	$507,611
Non Ad Valorem	$45,108	$47,374	$47,489
Total tax	$653,624	$590,628	$555,100

Property Detail

Parcel Control Number:	06424723380010000	Location Address:	1800 N MILITARY TRL		
Owners:	BOCA CENTER AT MILITARY LLC				
Mailing Address:	CORNERSTONE REAL ESTATE ADVISERS LLC C/O 180 GLASTONBURY BLVD STE 200,GLASTONBURY CT 06033 4439				
Last Sale:	Not available	Book/Page#:	27249 / 247	Price:	Not available
Legal Description:	1800 NORTH MILITARY TRAIL PAR A K/A ALL OF PLAT				

2015 Values (Current)

Improvement Value	$25,560,069
Land Value	$6,158,892
Total Market Value	$31,718,961
Assessed Value	$31,718,961
Exemption Amount	$0
Taxable Value	$31,718,961

All values are as of January 1st each year

2015 Taxes

Ad Valorem	$608,516
Non Ad Valorem	$45,108
Total Tax	$653,624

2015 Qualified Exemptions

No Details Found

Applicants

No Details Found

Building Footprint (Building 1)

Sketch of 06424723380010000

Subarea and Square Footage (Building 1)

Description	Area	Sq. Footage
OFFICES	1	28852
OFFICES	2	6482
OFFICE LOBBY	3	2942
OFFICES	4	36154
OFFICES	5	37218
UNFINISHED OFFICE BASE	6	1638
OFFICES	7	30313
UNFINISHED OFFICE BASE	8	7485

Total Square Footage : 151084

Extra Features

Description	Unit
WALKWAY-CONCRETE	6490
WALKWAY-CONCRETE	4240
PAVING- ASPHALT	2247
PAVING- ASPHALT	525
COMMERCIAL FOUNTAIN	1
FENCE- CHAIN LINK 6FT #11 GAUG	440
PAVING- ASPHALT	41478

Unit may represent the perimeter, square footage, linear footage, total number or other measurement.

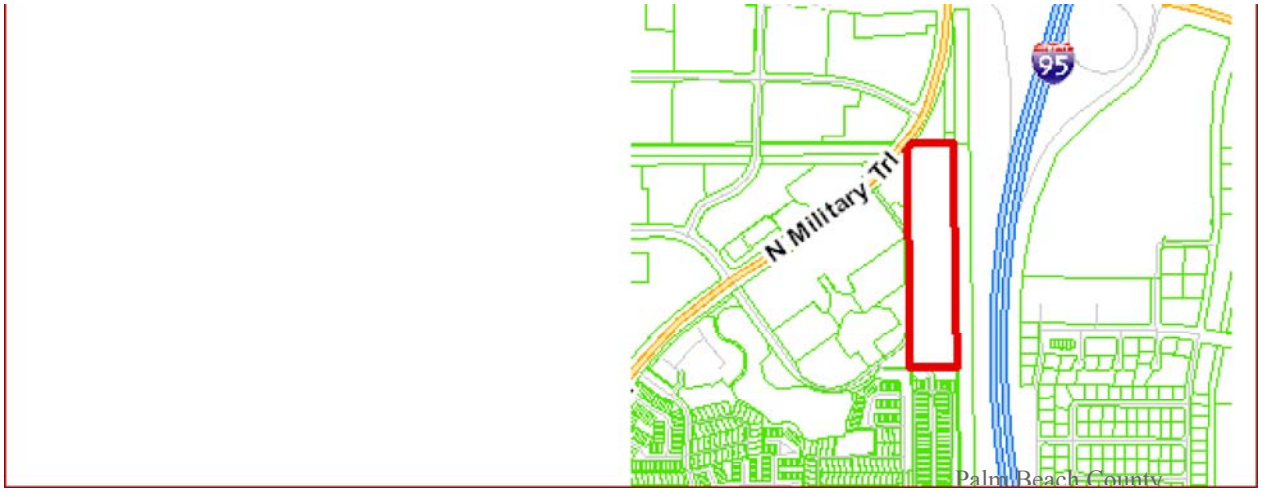
Structural Details (Building 1)

No	Description	
1.	YEAR BUILT	2008
2.	OFFICES	28852
3.	OFFICES	6482
4.	OFFICE LOBBY	2942
5.	OFFICES	36154
6.	OFFICES	37218
7.	UNFINISHED OFFICE BASE	1638
8.	OFFICES	30313
9.	UNFINISHED OFFICE BASE	7485

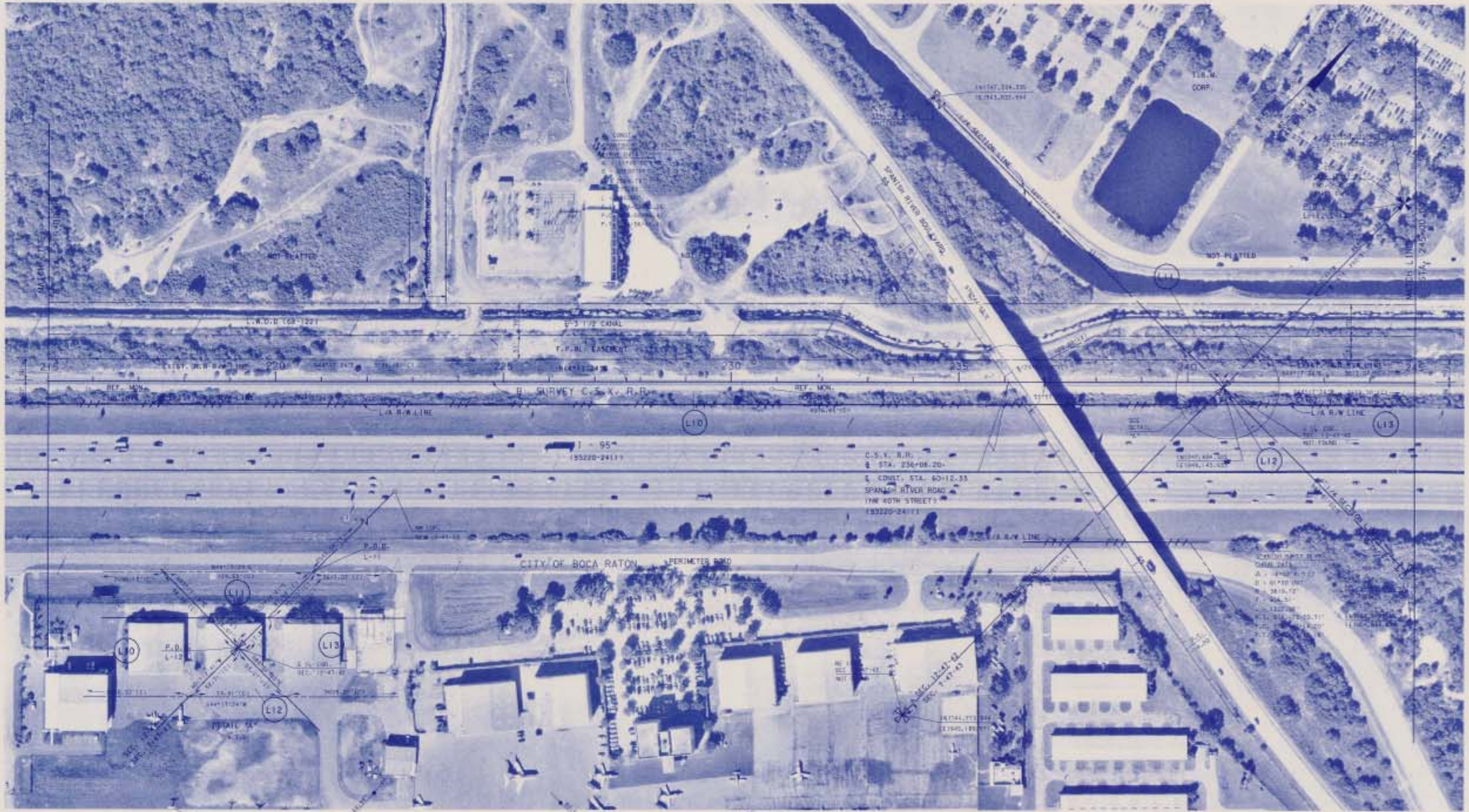
Acres 11.7824

MAP

Owner: BOCA CENTER AT MILITARY LLC PCN: 06424723380010000 1 of 1



GARY R. NIKOLITS, CFA PALM BEACH COUNTY PROPERTY APPRAISER www.pbcgov.org/PAPA 5/6/2016



REFERENCE MONUMENT NO. 014 DETAIL

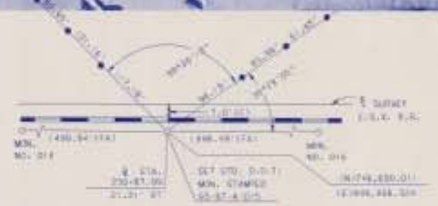
N.T.S.

● - SET 5/8" I.D. ROD W/D.O.T. CAP

REFERENCE MONUMENT NO. 015 DETAIL

N.T.S.

● - SET 5/8" I.D. ROD W/D.O.T. CAP



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FLIGHT DATE - 01-04-02

CSX RAILROAD
THIS MAP IS NOT A SURVEY

RIGHT OF WAY MAP	FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAPPING	APPROVED: J. Smith SURVEY RIGHT OF WAY SURVEYOR	DATE: 1/21/03	REVISION	BY	DATE	REVISION	BY	DATE		BY	DATE	FED. PROJ. NO. N/A	SECTION 93220-2403	MAPS PREPARED BY: DERMAN ENGINEERING	FIELD BOOK NO.: SEE SHEET NO. 1
										PRELIM					W.P.I. NO.:	SCALE:
										FINAL			STATE ROAD NO. N/A	PALM BEACH COUNTY	ITEM/SEGMENT NO. N/A	SHEET 23 OF 75
										CHECKED						

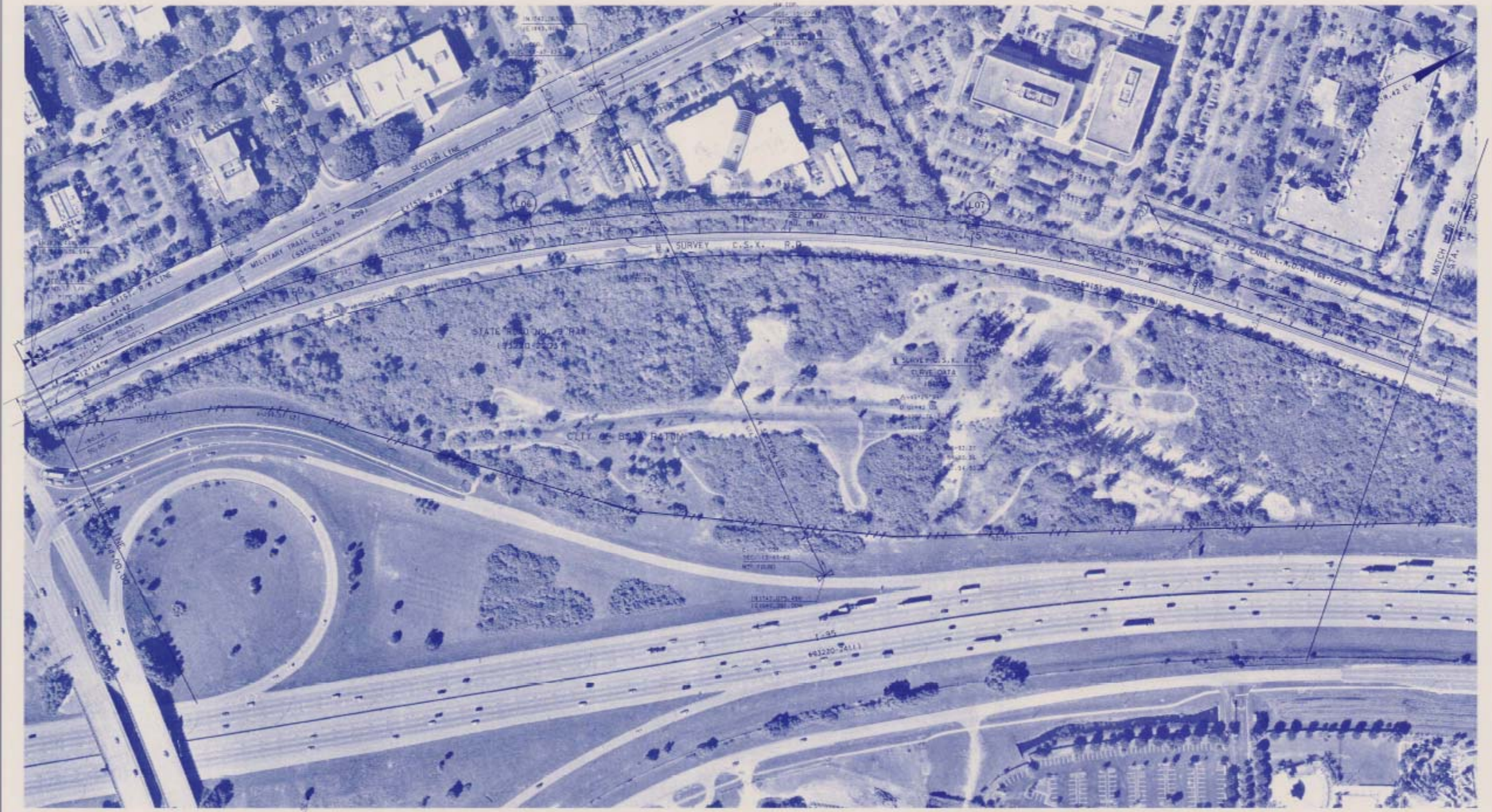
DISCLAIMER'S NOTE:

THIS R/W MAP IS A REPRODUCED COPY OF AN ORIGINAL MAP, DATED FEBRUARY 15, 1989. THE INTENT OF THIS MAP IS TO UPDATE THE AERIAL PHOTOGRAPHY SHOWN BUT KEEP THE INTEGRITY OF THE ORIGINAL MAPS LINE WORK. THE NEW FLIGHT DATE FOR THE AERIAL PHOTOGRAPHY IS JANUARY 4, 2002.

FLIGHT DATE - 01-04-02

CSX RAILROAD
THIS MAP IS NOT A SURVEY

RIGHT OF WAY MAP	FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAPPING	APPROVED BY J. Smith DISTRICT RIGHT OF WAY SURVEYOR DATE 1/21/03	REVISION	BY	DATE	REVISION	BY	DATE		BY	DATE	FED. PROJ. NO. N/A	SECTION 93220-2403	MAPS PREPARED BY CARAVAN ENGINEERS	FIELD BOOK NO.'S SEE SHEET NO. 1
									PRELIM	CROSS	2-98			M.P.I. NO. 414723	SCALE 1" = 100'
									FINAL	SAMS	2-98	STATE ROAD NO. N/A	PALM BEACH COUNTY	ITEM/SEGMENT NO. N/A	SHEET 22 OF 75
									CHECKED	CROSS	12-98				

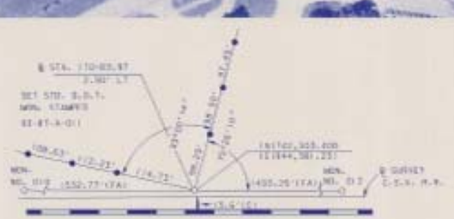


REFERENCE MONUMENT NO. 010 DETAIL

N.T.S.

REFERENCE MONUMENT NO. 011 DETAIL

N.T.S.



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FLIGHT DATE - 01-04-02

CSX RAILROAD
THIS MAP IS NOT A SURVEY

RIGHT OF WAY MAP	FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAPPING	APPROVED BY J. Smith DISTRICT RIGHT OF WAY SURVEYOR DATE 1/21/03	REVISION	BY	DATE	REVISION	BY	DATE		BY	DATE	FED. PROJ. NO. N/A	SECTION 93220-2403	MAPS PREPARED BY CARNAHAN ENGINEERS	FIELD BOOK NO.'S SEE SHEET NO. 1
									PRELIM	CROSS	2/00				
									FINAL	SAMPLE	2/00			M.P.I. No. 4107523	SCALE: 1" = 100'
									CHECKED	CROSS	12/00	STATE ROAD NO. N/A	PALM BEACH COUNTY	ITEM/SEGMENT NO. N/A	SHEET 21 OF 75

REFERENCE MONUMENT NO. 008 DETAIL

REFERENCE MONUMENT NO. 008 DETAIL

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FLIGHT DATE - 01-04-02

CSX RAILROAD
THIS MAP IS NOT A SURVEY

RIGHT OF WAY MAP	FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAPPING	1/21/03						FED. PROJ. NO. N/A	SECTION 93220-2403				
								STATE ROAD NO. N/A	PALM BEACH COUNTY	ITEM/SEGMENT NO. N/A		SHEET 20 OF 75	

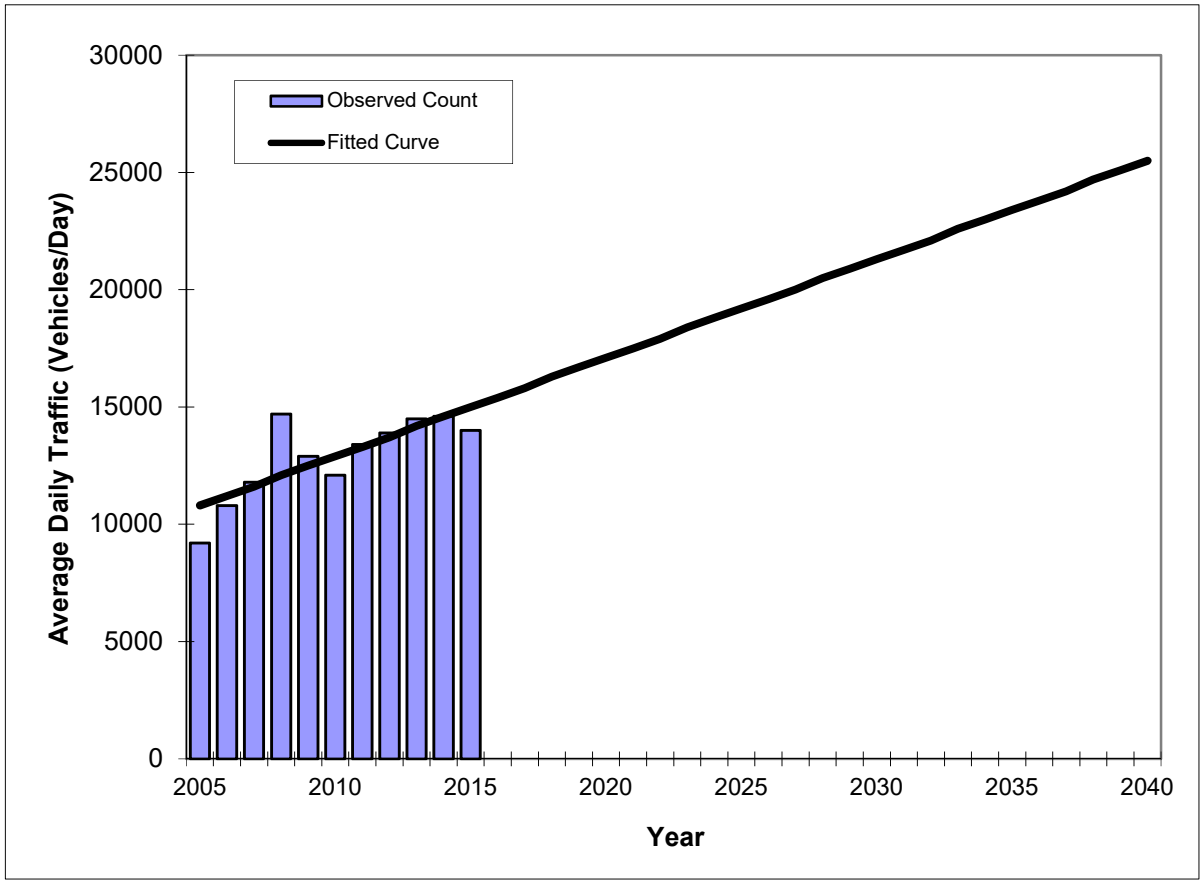
APPENDIX C

GROWTH RATE CALCULATION

TRAFFIC TRENDS

--

County:	0
Station #:	0
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2005	9200	10800
2006	10800	11200
2007	11800	11600
2008	14700	12100
2009	12900	12500
2010	12100	12900
2011	13400	13300
2012	13900	13700
2013	14500	14200
2014	14600	14600
2015	14000	15000
2020 Opening Year Trend		
2020	N/A	17100
2030 Mid-Year Trend		
2030	N/A	21300
2040 Design Year Trend		
2040	N/A	25500
TRANPLAN Forecasts/Trends		

*Axle-Adjusted

** Annual Trend Increase:	420
Trend R-squared:	62.4%
Trend Annual Historic Growth Rate:	3.89%
Trend Growth Rate (2015 to Design Year):	2.80%
Printed:	11-Oct-16

Straight Line Growth Option

APPENDIX D

STOPS RESULTS

Table 9.01 ***0 Default Daily Boardings***

New Station

***** AVG WEEKDAY STATION UTILIZATION (All Transit/All car HH) **********

Comparison of Station Boardings by Scenario

All Purposes All Transit All car HH

	Y2015 EXISTING					Y2015 NO-BUILD					Y2015 BUILD					Difference (Build-No-Build)					
Station Name	WLK	KNR	PNR	XFR	ALL	WLK	KNR	PNR	XFR	ALL	WLK	KNR	PNR	XFR	ALL	WLK	KNR	PNR	XFR	ALL	
MANGONIA PARK	248	132	264	194	837	248	132	264	194	837	250	109	206	168	733	2	-23	-58	-26	-104	
WEST PALM BEACH	394	28	81	613	1116	394	28	81	613	1116	399	31	89	646	1165	5	3	8	33	49	
LAKE WORTH	253	110	220	164	746	253	110	220	164	746	261	122	244	173	801	8	12	24	9	55	
BOYNTON BEACH	127	98	203	216	644	127	98	203	216	644	140	111	239	230	721	13	13	36	14	77	
DELRAY BEACH	182	89	191	581	1043	182	89	191	581	1043	212	92	200	382	886	30	3	9	-199	-157	
BOCA RATON	248	52	107	340	747	248	52	107	340	747	277	25	65	270	636	29	-27	-42	-70	-111	-15%
BOCA II	0	0	0	0	0	0	0	0	0	0	360	90	211	402	1063	360	90	211	402	1063	
DEERFIELD BEACH	296	66	120	128	609	296	66	120	128	609	321	32	65	138	556	25	-34	-55	10	-53	-9%
POMPANO BEACH	150	79	175	388	792	150	79	175	388	792	160	76	170	423	830	10	-3	-5	35	38	
CYPRESS CREEK	325	106	187	673	1291	325	106	187	673	1291	333	113	204	695	1345	8	7	17	22	54	
FORT LAUDERDALE	134	124	231	512	1001	134	124	231	512	1001	135	125	231	526	1017	1	1	0	14	16	
FT LAUDERDALE\HOLLYW	154	40	83	394	671	154	40	83	394	671	156	40	84	383	662	2	0	1	-11	-9	
SHERIDAN STREET	168	41	76	151	437	168	41	76	151	437	163	42	78	148	432	-5	1	2	-3	-5	
HOLLYWOOD	251	69	128	221	669	251	69	128	221	669	248	70	128	227	673	-3	1	0	6	4	
GOLDEN GLADES	263	99	106	511	979	263	99	106	511	979	267	99	107	495	968	4	0	1	-16	-11	
OPA-LOCKA	133	69	127	249	578	133	69	127	249	578	133	69	127	275	603	0	0	0	26	25	
TRI-RAIL/METRORAIL T	46	13	30	1179	1268	46	13	30	1179	1268	47	13	30	1191	1281	1	0	0	12	13	
HIALEAH MARKET	144	20	35	58	258	144	20	35	58	258	145	20	36	57	257	1	0	1	-1	-1	
MIAMI AIRPORT	31	13	17	395	456	31	13	17	395	456	30	13	17	388	448	-1	0	0	-7	-8	
Total	3547	1248	2381	6967	14142	3547	1248	2381	6967	14142	4037	1292	2531	7217	15077	490	44	150	250	935	7%

APPENDIXD E

SFRTA/KOELIS COMMUTER BUS OPERATIONS REPORT, APRIL 2016

Keolis
Commuter Bus

RTA SOUTH FLORIDA REGIONAL TRANSPORTATION AUTHORITY

Operations Report

April 2016

Keolis Commuter Bus

RTA SOUTH FLORIDA REGIONAL TRANSPORTATION AUTHORITY

Monthly Passengers by Route

System Wide Passenger Per-Hour
15.1

Average Passenger	
Weekdays	3,858
Weekends	1,235

Weekdays		
Route	Passenger	PPH
WPB	1,606	5.0
LKW1	2,891	9.3
BR1	4,156	12.4
DB1	2,975	17.7
DB2	1,472	7.8
PB1	2,330	12.3
CC1	2,534	7.3
CC2	3,688	10.5
CC3	2,852	10.9
FL1	17,650	29.0
FL2	2,867	10.3
FLA	26,018	28.3
SS1	1,601	11.3
OPAS	8,374	15.0
Totals :	**81,014**	**16.3**

Weekends		
Route	Passenger	PPH
WPB1 Weekend	679	1.2
FL3 Weekend	4,480	16.1
FLA Weekend	5,956	22.8
Totals:	**10,436**	**9.9**

PPH = Passenger Per-Hour

APPENDIX F

SFRTA GLADES ROAD STATION OPERATIONS ANALYIS

Introduction

SFRTA is considering the addition of new station to its current route along the SFRC. It would be part of the local (all stop) service running 50 trips per weekday and 30 per weekend day between Mangonia Park and Miami International Airport.

The new station south of Glades Road in Boca Raton would be situated at MP 994.7 approximately 2 miles south of the existing Boca Raton Station at Yamato Road (MP 992.7) and approximately 3.7 miles north of the Deerfield Beach Station (MP 998.4).

On April 14, 2016, Jacobs was asked to support SFRTA's planning efforts with a transportation cost analysis to investigate how the extra run time due to the station would affect the turns, number of train sets, number of crews, and crew hours. The analysis would focus on the existing Tri-Rail service without reference to other plans for expansion such at the Downtown Miami Link or the larger Tri-Rail Coastal Link initiatives.

This white paper reports the findings and methods of Jacobs analysis concerning how the new station would add to running times for existing Tri-Rail service.

Key Findings

A new passenger station stop at Glades Road adds 2.5 minutes to the estimated running time between the existing Boca Raton Station and the Deerfield Beach Station. Rounding up to allow for variability in weather conditions, human factors and other considerations, the schedules of all Tri-Rail trains would be increased by three (3) minutes.

Background

Present Tri-Rail service is scheduled with an end-to-end southbound travel time ranging between 110 and 122 minutes with a consistent 7 minutes allowed to run from the time the train leaves Boca Raton to the time it departs Deerfield Beach. In the northbound direction, total running times range between 113 and 128 minutes depending upon time of day with 7 to 9 minutes allowed for the trip between leaving Deerfield Beach and leaving Boca Raton.

The maximum allowable Tri-Rail speeds for the 5.8 miles between Boca and Deerfield Stations is generally 79 mph with 1.3 miles at 70 mph.

Methods and Assumptions

Using spreadsheet tools, Jacobs prepared a granular time and distance study to estimate running times for the no-build and build conditions between the existing Boca and Deerfield Stations. Track conditions, geometry, and maximum allowable speeds were derived from the most current available SFRTA track charts and timetable. Performance characteristics were derived from a 2009 study[1] that focused on the performance characteristics of SFRTA's new 3,241 HP locomotives hauling four fully loaded bi-level coaches under dry conditions[2].

[1] **Tri-County Commuter Rail Operation of Higher Horsepower Locomotive Haul Consist Using Predicted Performance Within 2-mile Distance**. Prepared for South Florida Regional Transportation Authority, Prepared by Booz I Allen I Hamilton (BAH) November 23,2009

[2] A day with light, misty rain could serve to degrade the performances. Fewer passengers could serve to improve the performances. The effects of either are also a function of the aptitude and cognizance of the Engineer.

A constant braking rate of 1.3 miles per hour per second (mphps) was applied[3]

The study assumed a conservative station dwell time of 60 seconds per stop consistent with other SFRTA planning studies and Tri-Rail operating practices.

Findings
Jacobs forecast acceleration and deceleration curves for southbound and northbound Tri-Rail trains are show in Figures 1 and 2.

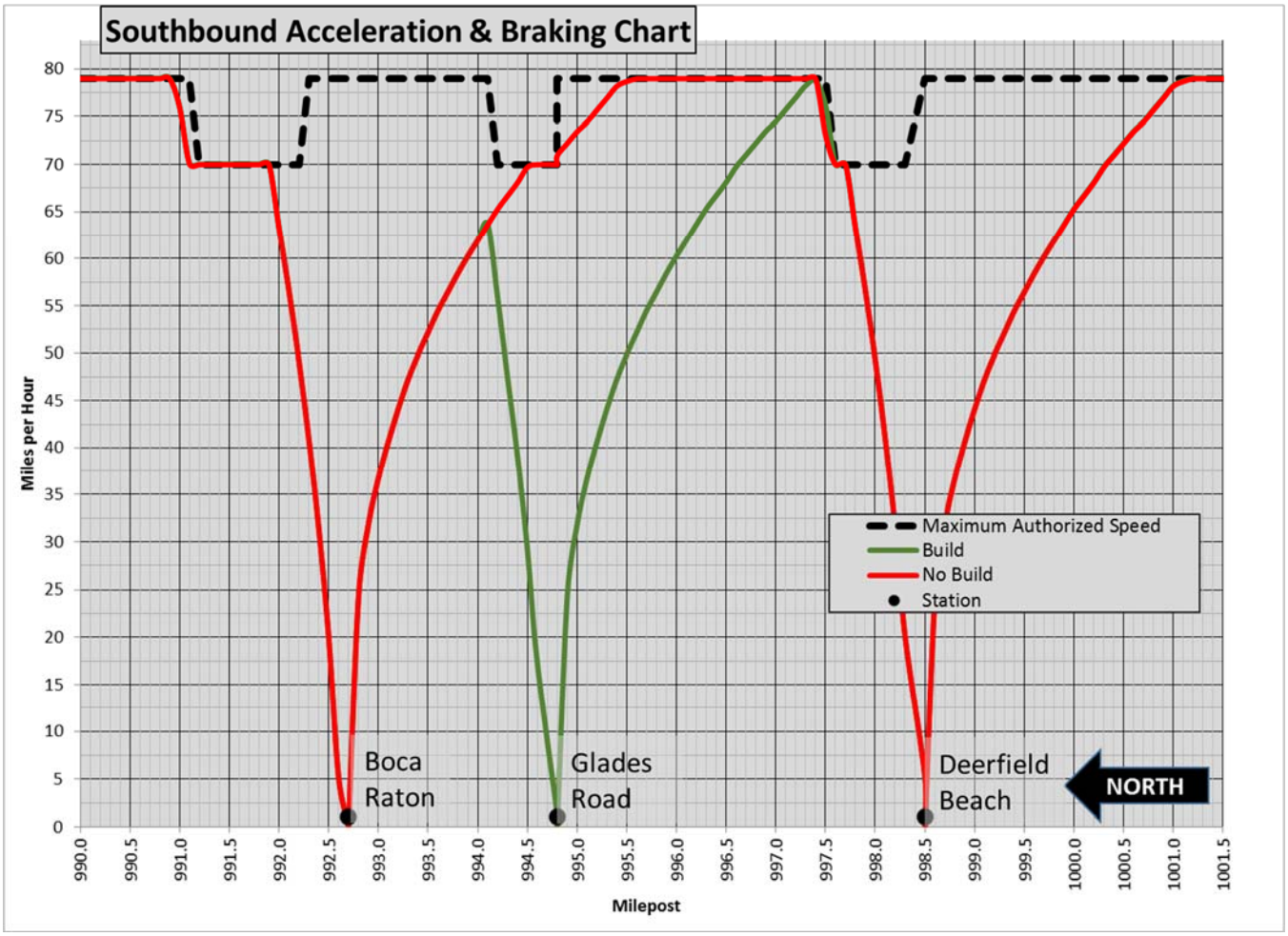


Figure 1 Southbound Performance Forecast

Under the build condition, with the new station, trains running between Boca and Glades Road will not reach the maximum track speed for 79 mph instead they will accelerate to a speed somewhat above 60 mph before the need to start to break for their next station stop.

[3] The BAH study used 1.36 mphps. Other train performance studies conducted on the same corridor by FDOT used a more conservative average figure of 1.18 mphps.

Trains running between Glades Road and Deerfield will barely accelerate to 79 mph before they would need to start braking for their next station stop.

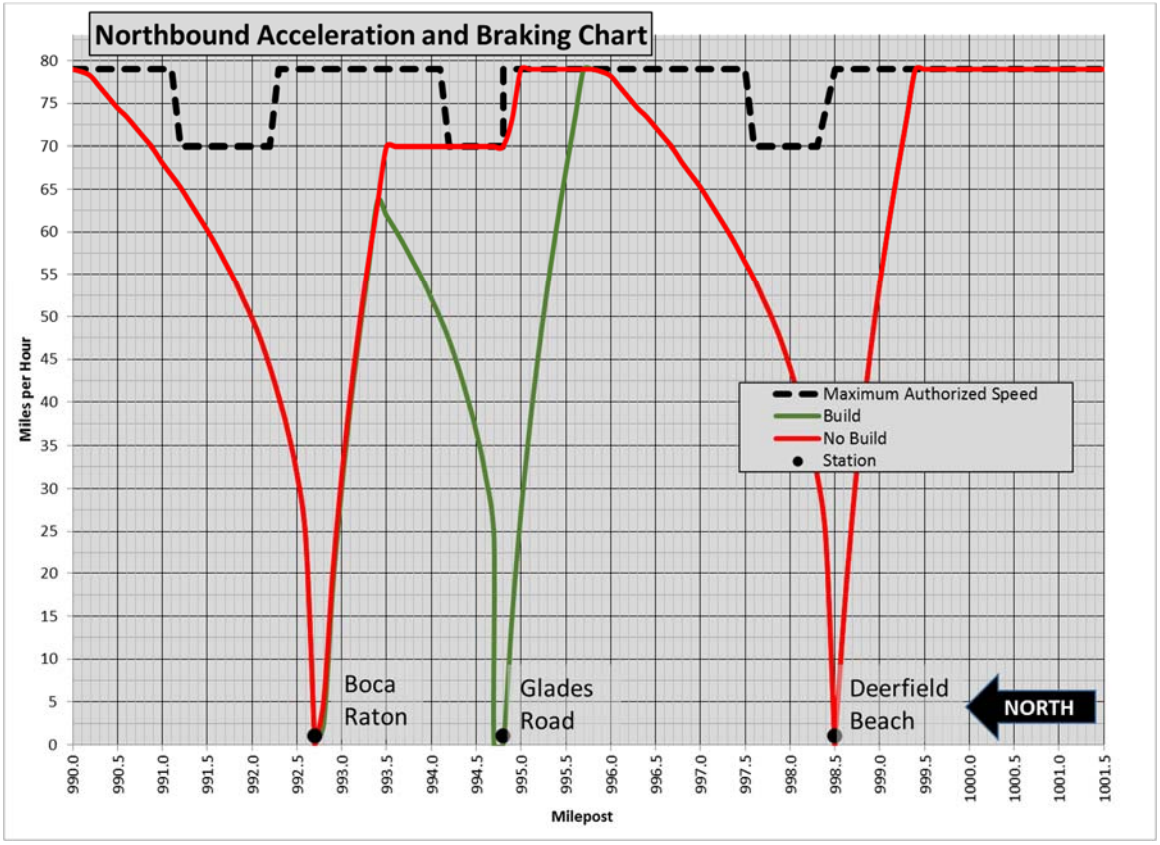


Figure 2 Northbound Performance Forecast

Until, or unless, SFRTA starts to run express service through this stretch of railway it might consider reducing its track maintenance standards from Class 4 to Class 3 between Boca and Glades Road since SFRTA trains would barely reach the Class 3 maximum allowable speed of 60 mph in the two miles between these two stations.

Figures 3 and 4 show forecast Tri-Rail running times for the segment between Boca and Deerfield for both the no-build and build conditions.

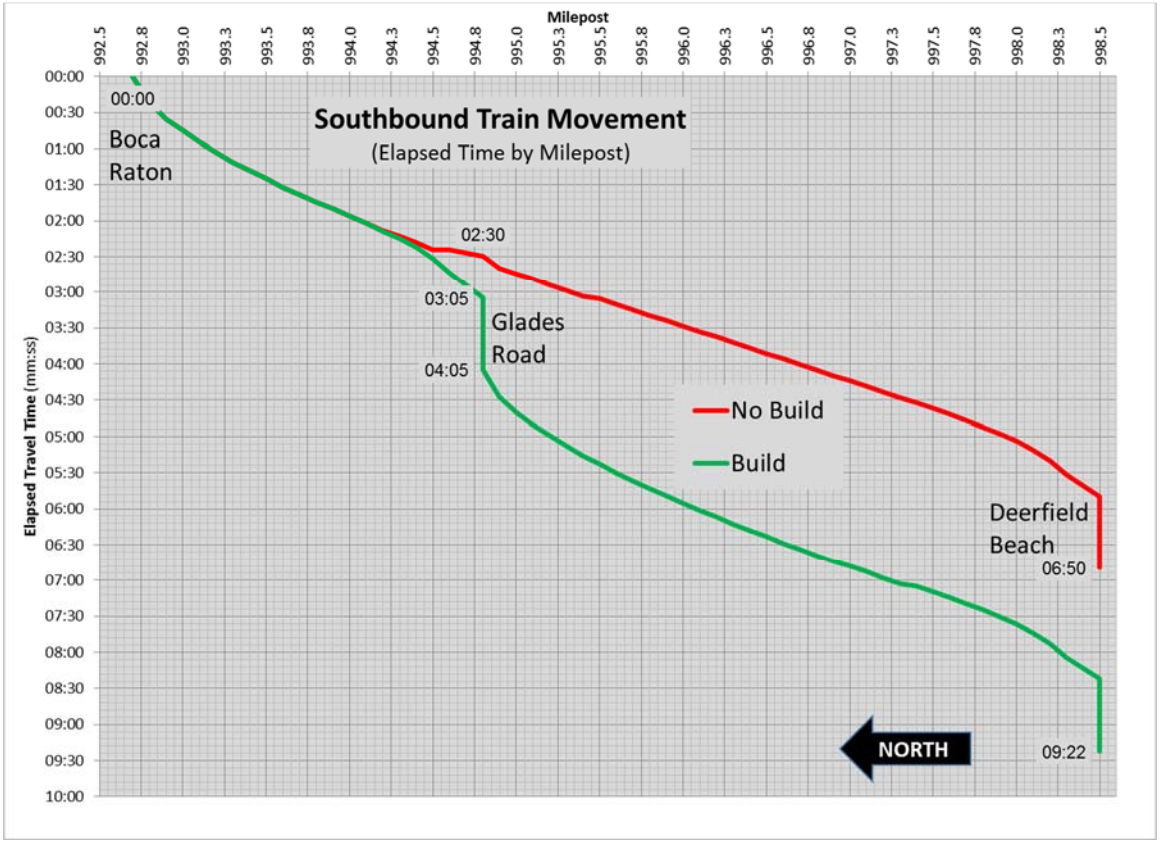


Figure 3 Southbound Elapsed Time by Station and Milepost

In the southbound direction, the no-build simulation results are consistent with SFRTA schedules. The simulation predicts 6:50 in elapsed time between leaving Boca and departure from Deerfield. Tri-Rail schedule allows 7:00 for the same movement.

With Glades Road added to the timetable the same trip is predicted to require 9:22 adding 2:32 to overall travel time.

In the northbound direction, the no-build simulation results are also consistent with SFRTA schedules. The simulation predicts 7:03 in elapsed time between leaving Deerfield and departure from Boca. Tri-Rail schedule allows 7:00 to 9:00 minutes for the same movement. The additional one or two minutes of travel time presumably allows for heavy passenger traffic loading and unloading at the busy Boca Raton Station.

With Glades Road added to the timetable the same trip is predicted to require 9:28, adding 2:25 to overall travel time.

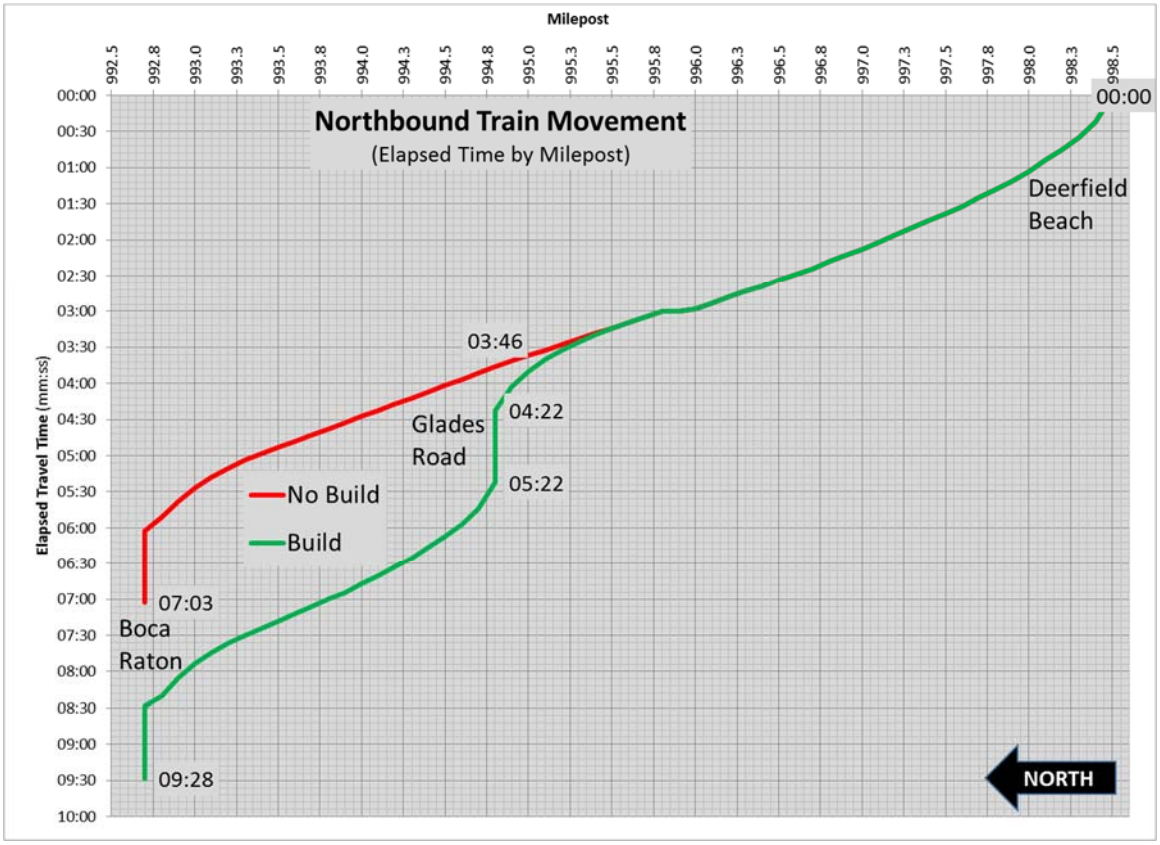


Figure 4 Northbound Elapsed Time by Station and Milepost

Conclusions and Next Steps

The analysis indicates that under "laboratory" conditions the addition of the Glades Road Station would add 2:30 in running time between the Deerfield Beach and Boca Raton stations. Recognizing that Tri-Rail, like all commuter railroads, schedules to the nearest minute and allows for real-world variability in weather conditions, human factors, and other considerations, the 2:30 should be rounded to add 3 minutes to the scheduled travel times of Tri-Rail trains.

In subsequent analyses, to be completed in May, Jacobs will review if and how the additional three minutes would affect train turns at terminals, rolling stock requirements, crew schedules, and crew hours.

APPENDIX G

TRI-RAIL SCHEDULE UPDATE

Appendix A – Schedule and Crew Requirement Impacts

Current Timetable Amended to Include Proposed new Glades Road Station

Set	6	7	8	9	10	1	2	3	4	6	8	9	10	3	4	8	5	9	7	6	10	3	4	1	2
Turn Time	NA	NA	NA	NA	NA	0:31	**0:19**	0:24	0:24	0:44	0:21	0:34	0:34	0:34	0:34	0:34	7:31	0:34	7:29	0:37	**0:19**	**0:19**	**0:19**	0:52	0:52
From Train	WPB	WPB	WPB	WPB	WPB	P600	P602	P604	P606	P610	P614	P616	P618	P620	P622	P624	P608	P626	P612	P628	P630	P632	P634	P636	P640
SOUTHBOUND	**P601**	**P603**	**P605**	**P607**	**P609**	**P611**	**P613**	**P615**	**P617**	**P619**	**P621**	**P623**	**P625**	**P627**	**P629**	**P631**	**P633**	**P635**	**P637**	**P639**	**P641**	**P643**	**P645**	**P647**	**P649**
Mangonia Park	3:57	4:37	5:17	5:57	6:17	6:37	7:00	7:30	8:00	9:00	9:57	10:57	11:57	12:57	13:57	14:57	15:27	15:57	16:25	17:00	17:30	18:15	18:45	19:40	20:40
West Palm Beach	4:03	4:43	5:23	6:03	6:23	6:43	7:06	7:36	8:06	9:06	10:03	11:03	12:03	13:03	14:03	15:03	15:33	16:03	16:31	17:06	17:36	18:21	18:51	19:46	20:46
Lake Worth	4:12	4:53	5:33	6:13	6:33	6:53	7:16	7:46	8:16	9:16	10:13	11:13	12:13	13:13	14:13	15:13	15:43	16:13	16:41	17:16	17:46	18:31	19:01	19:56	20:56
Boynton Beach	4:17	4:59	5:39	6:19	6:39	6:59	7:22	7:52	8:22	9:22	10:19	11:19	12:19	13:19	14:19	15:19	15:49	16:19	16:47	17:22	17:52	18:37	19:07	20:02	21:02
Delray Beach	4:26	5:08	5:48	6:28	6:48	7:08	7:31	8:01	8:31	9:31	10:28	11:28	12:28	13:28	14:28	15:28	15:58	16:28	16:56	17:31	18:01	18:46	19:16	20:11	21:11
Boca Raton	4:32	5:14	5:54	6:34	6:54	7:14	7:37	8:07	8:37	9:37	10:34	11:34	12:34	13:34	14:34	15:34	16:04	16:34	17:02	17:37	18:07	18:52	19:22	20:17	21:17
Glades Road	4:36	5:18	5:58	6:38	6:58	7:18	7:41	8:11	8:41	9:41	10:38	11:38	12:38	13:38	14:38	15:38	16:08	16:38	17:06	17:41	18:11	18:56	19:26	20:21	21:21
Deerfield Beach	4:42	5:24	6:04	6:44	7:04	7:24	7:47	8:17	8:47	9:47	10:44	11:44	12:44	13:44	14:44	15:44	16:14	16:44	17:12	17:47	18:17	19:02	19:32	20:27	21:27
Pompano Beach	4:48	5:30	6:10	6:50	7:10	7:30	7:53	8:23	8:53	9:53	10:50	11:50	12:50	13:50	14:50	15:50	16:20	16:50	17:18	17:53	18:23	19:08	19:38	20:33	21:33
Cypress Creek	4:54	5:37	6:17	6:57	7:17	7:37	8:00	8:30	9:00	10:01	10:58	11:58	12:58	13:58	14:58	15:58	16:28	16:58	17:26	18:01	18:30	19:15	19:45	20:40	21:40
Fort Lauderdale	5:01	5:45	6:25	7:05	7:25	7:45	8:08	8:38	9:08	10:11	11:08	12:08	13:08	14:08	15:08	16:08	16:38	17:08	17:36	18:11	18:38	19:23	19:53	20:48	21:48
Ft. Lauderdale Airport	5:08	5:53	6:33	7:13	7:33	7:53	8:16	8:46	9:16	10:20	11:17	12:17	13:17	14:17	15:17	16:17	16:47	17:17	17:45	18:20	18:46	19:31	20:01	20:56	21:56
Sheridan Street	5:12	5:57	6:37	7:17	7:37	7:57	8:20	8:50	9:20	10:24	11:21	12:21	13:21	14:21	15:21	16:21	16:51	17:21	17:49	18:24	18:50	19:35	20:05	21:00	22:00
Hollywood	5:16	6:01	6:41	7:21	7:41	8:01	8:24	8:54	9:24	10:29	11:26	12:26	13:26	14:26	15:26	16:26	16:56	17:26	17:54	18:29	18:54	19:39	20:09	21:04	22:04
Golden Glades	5:25	6:10	6:50	7:30	7:50	8:10	8:33	9:03	9:33	10:38	11:35	12:35	13:35	14:35	15:35	16:35	17:05	17:35	18:03	18:38	19:03	19:48	20:18	21:13	22:13
Opa-locka	5:31	6:16	6:56	7:36	7:56	8:16	8:39	9:09	9:39	10:44	11:41	12:41	13:41	14:41	15:41	16:41	17:11	17:41	18:09	18:44	19:09	19:54	20:24	21:19	22:19
Metrorail Transfer	5:38	6:23	7:03	7:43	8:03	8:23	8:46	9:16	9:46	10:51	11:48	12:48	13:48	14:48	15:48	16:48	17:18	17:48	18:16	18:51	19:16	20:01	20:31	21:26	22:26
Hialeah Market	5:44	6:29	7:09	7:49	8:09	8:29	8:52	9:22	9:52	10:57	11:54	12:54	13:54	14:54	15:56	16:56	17:26	17:56	18:24	18:59	19:22	20:07	20:37	21:32	22:32
Miami Airport	5:50	6:35	7:15	7:55	8:15	8:35	8:58	9:28	9:58	11:03	12:00	13:00	14:00	15:00	16:02	17:02	17:32	18:02	18:30	19:05	19:28	20:13	20:43	21:38	22:38
Next Train	P610	P612	P614	P616	P618	P636	P640	P620	P622	P628	P624	P626	P630	P632	P634	P638	P648	P642	P644	P646	HIA	HIA	HIA	HIA	HIA
Avg Boardings (Oct '15)	157	203	351	334	273	263	238	257	276	276	228	211	213	211	250	402	548	575	360	462	309	248	174	168	143
MPK to MIA	1:53	1:58	1:58	1:58	1:58	1:58	1:58	1:58	1:58	2:03	2:03	2:03	2:03	2:03	2:05	2:05	2:05	2:05	2:05	2:05	1:58	1:58	1:58	1:58	1:58

Set	1	2	3	4	5	6	7	8	9	10	3	4	8	9	6	10	3	4	1	8	2	9	7	6	5
Turn Time	NA	NA	NA	NA	NA	0:28	0:23	0:23	0:25	1:05	0:52	1:22	**0:20**	**0:20**	3:17	1:08	0:48	0:26	9:52	**0:18**	10:29	**0:18**	0:20	0:45	4:08
From Train	HIA	HIA	HIA	HIA	HIA	P601	P603	P605	P607	P609	P615	P617	P621	P623	P619	P625	P627	P629	P611	P631	P613	P635	P637	P639	P633
NORTHBOUND	**P600**	**P602**	**P604**	**P606**	**P608**	**P610**	**P612**	**P614**	**P616**	**P618**	**P620**	**P622**	**P624**	**P626**	**P628**	**P630**	**P632**	**P634**	**P636**	**P638**	**P640**	**P642**	**P644**	**P646**	**P648**
Miami Airport	4:13	4:43	5:08	5:33	5:58	6:18	6:58	7:38	8:20	9:20	10:20	11:20	12:20	13:20	14:20	15:08	15:48	16:28	16:50	17:20	17:50	18:20	18:50	19:50	21:40
Hialeah Market	4:16	4:46	5:11	5:36	6:01	6:21	7:01	7:41	8:23	9:23	10:23	11:23	12:23	13:23	14:23	15:11	15:51	16:31	16:53	17:23	17:53	18:23	18:53	19:53	21:43
Metrorail Transfer	4:21	4:52	5:17	5:47	6:07	6:27	7:07	7:47	8:30	9:30	10:30	11:30	12:30	13:30	14:30	15:18	16:07	16:37	16:59	17:29	17:59	18:29	18:59	19:59	21:49
Opa-locka	4:27	4:58	5:23	5:53	6:13	6:33	7:13	7:53	8:36	9:36	10:36	11:36	12:36	13:36	14:36	15:24	16:13	16:43	17:05	17:35	18:05	18:35	19:05	20:05	21:55
Golden Glades	4:33	5:04	5:29	5:59	6:19	6:39	7:19	7:59	8:43	9:43	10:43	11:43	12:43	13:43	14:43	15:31	16:19	16:49	17:11	17:41	18:11	18:41	19:11	20:11	22:01
Hollywood	4:41	5:13	5:38	6:08	6:28	6:48	7:28	8:08	8:52	9:52	10:52	11:52	12:52	13:52	14:52	15:40	16:28	16:58	17:20	17:50	18:20	18:50	19:20	20:20	22:10
Sheridan Street	4:45	5:17	5:42	6:12	6:32	6:52	7:32	8:12	8:56	9:56	10:56	11:56	12:56	13:56	14:56	15:44	16:32	17:02	17:24	17:54	18:24	18:54	19:24	20:24	22:14
Ft. Lauderdale Airport	4:49	5:21	5:46	6:16	6:36	6:56	7:36	8:16	9:00	10:00	11:00	12:00	13:00	14:00	15:00	15:48	16:36	17:06	17:28	17:58	18:28	18:58	19:28	20:28	22:18
Fort Lauderdale	4:58	5:30	5:55	6:25	6:45	7:05	7:45	8:25	9:09	10:09	11:09	12:09	13:09	14:09	15:09	15:57	16:45	17:15	17:37	18:07	18:37	19:07	19:37	20:37	22:27
Cypress Creek	5:04	5:37	6:02	6:32	6:52	7:12	7:52	8:32	9:16	10:16	11:16	12:16	13:16	14:16	15:16	16:04	16:52	17:22	17:44	18:14	18:44	19:14	19:44	20:44	22:34
Pompano Beach	5:10	5:43	6:08	6:38	6:58	7:18	7:58	8:38	9:23	10:23	11:23	12:23	13:23	14:23	15:23	16:11	16:58	17:28	17:50	18:20	18:50	19:20	19:50	20:50	22:40
Deerfield Beach	5:16	5:49	6:14	6:44	7:04	7:24	8:04	8:44	9:29	10:29	11:29	12:29	13:29	14:29	15:29	16:17	17:04	17:34	17:56	18:26	18:56	19:26	19:56	20:56	22:46
Glades Road	5:22	5:55	6:20	6:50	7:10	7:30	8:10	8:50	9:35	10:35	11:35	12:35	13:35	14:35	15:35	16:23	17:10	17:40	18:02	18:32	19:02	19:32	20:02	21:02	22:52
Boca Raton	5:26	6:00	6:25	6:55	7:15	7:35	8:15	8:55	9:41	10:41	11:41	12:41	13:41	14:41	15:41	16:29	17:15	17:45	18:07	18:37	19:07	19:37	20:07	21:07	22:57
Delray Beach	5:31	6:05	6:30	7:00	7:20	7:40	8:20	9:00	9:47	10:47	11:47	12:47	13:47	14:47	15:47	16:35	17:20	17:50	18:12	18:42	19:12	19:42	20:12	21:12	23:02
Boynton Beach	5:39	6:14	6:39	7:09	7:29	7:49	8:29	9:09	9:56	10:56	11:56	12:56	13:56	14:56	15:56	16:44	17:29	17:59	18:21	18:51	19:21	19:51	20:21	21:21	23:11
Lake Worth	5:45	6:20	6:45	7:15	7:35	7:55	8:35	9:15	10:02	11:02	12:02	13:02	14:02	15:02	16:02	16:50	17:35	18:05	18:27	18:57	19:27	19:57	20:27	21:27	23:17
West Palm Beach	5:56	6:31	6:56	7:26	7:46	8:06	8:46	9:26	10:13	11:13	12:13	13:13	14:13	15:13	16:13	17:01	17:46	18:16	18:38	19:08	19:38	20:08	20:38	21:38	23:28
Mangonia Park	6:06	6:41	7:06	7:36	7:56	8:16	8:56	9:36	10:23	11:23	12:23	13:23	14:23	15:23	16:23	17:11	17:56	18:26	18:48	19:18	19:48	20:18	20:48	21:48	23:38
Next Train	611	613	615	P617	P633	P619	P637	P621	P623	P625	P627	P629	P631	P635	P639	P641	P643	P645	P647	P649	WPB	WPB	WPB	WPB	WPB
MIA to MPK	1:53	1:58	1:58	2:03	1:58	1:58	1:58	1:58	2:03	2:03	2:03	2:03	2:03	2:03	2:03	2:03	2:08	1:58	1:58	1:58	1:58	1:58	1:58	1:58	1:58
Avg Boardings (Oct '15)	131	158	247	334	568	510	446	325	270	201	148	199	217	270	301	397	366	435	315	352	305	269	183	240	211

Magnitude of Proposed Schedule Changes (Proposed minus Current)

SOUTHBOUND	P601	P603	P605	P607	P609	P611	P613	P615	P617	P619	P621	P623	P625	P627	P629	P631	P633	P635	P637	P639	P641	P643	P645	P647	P649
Mangonia Park	-3	-3	-3	-3	-3	-3					-3	-3	-3	-3	-3	-3	-3	-3							
West Palm Beach	-3	-3	-3	-3	-3	-3					-3	-3	-3	-3	-3	-3	-3	-3							
Lake Worth	-3	-3	-3	-3	-3	-3					-3	-3	-3	-3	-3	-3	-3	-3							
Boynton Beach	-3	-3	-3	-3	-3	-3					-3	-3	-3	-3	-3	-3	-3	-3							
Delray Beach	-3	-3	-3	-3	-3	-3					-3	-3	-3	-3	-3	-3	-3	-3							
Boca Raton	-3	-3	-3	-3	-3	-3					-3	-3	-3	-3	-3	-3	-3	-3							
Deerfield Beach							3	3	3	3									3	3	3	3	3	3	3
Pompano Beach							3	3	3	3									3	3	3	3	3	3	3
Cypress Creek							3	3	3	3									3	3	3	3	3	3	3
Fort Lauderdale							3	3	3	3									3	3	3	3	3	3	3
Ft. Lauderdale Airport							3	3	3	3									3	3	3	3	3	3	3
Sheridan Street							3	3	3	3									3	3	3	3	3	3	3
Hollywood							3	3	3	3									3	3	3	3	3	3	3
Golden Glades							3	3	3	3									3	3	3	3	3	3	3
Opa-locka							3	3	3	3									3	3	3	3	3	3	3
Metrorail Transfer							3	3	3	3									3	3	3	3	3	3	3
Hialeah Market							3	3	3	3									3	3	3	3	3	3	3
Miami Airport							3	3	3	3									3	3	3	3	3	3	3

NORTHBOUND	P600	P602	P604	P606	P608	P610	P612	P614	P616	P618	P620	P622	P624	P626	P628	P630	P632	P634	P636	P638	P640	P642	P644	P646	P648
Miami Airport	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Hialeah Market	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Metrorail Transfer	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Opa-locka	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Golden Glades	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Hollywood	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Sheridan Street	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Ft. Lauderdale Airport	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Fort Lauderdale	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Cypress Creek	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Pompano Beach	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Deerfield Beach	-2	-2	-2	-2	-2	-2	-2	-2								-2	-2	-2							
Boca Raton	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	1	1	1	3	3	3	3	3	3	3
Delray Beach	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	1	1	1	3	3	3	3	3	3	3
Boynton Beach	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	1	1	1	3	3	3	3	3	3	3
Lake Worth	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	1	1	1	3	3	3	3	3	3	3
West Palm Beach	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	1	1	1	3	3	3	3	3	3	3
Mangonia Park	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	1	1	1	3	3	3	3	3	3	3

5	indicates minutes later than current schedule
-5	indicates minutes earlier than current schedule

APPENDIX H

40-YEAR BENEFIT/COST ANALYSIS

5. **Delray Beach Station**

Daily Cleaning (2 Years)	$	66,712
Monthly, Quarterly, Semi & Annual Cleaning (2 Years)	$	10,790
Landscaping and Fertilizing (2 Years)	$	42,552
Irrigation (2 Years)	$	5,805
Elevator maintenance (2 Years)	$	14,827
Maintenance Services (2 Years)	$	76,153
Pest Control (2 Years)	$	973
Total Price for Delray Beach Station	$	217,811

6. **Boca Raton Station**

Daily Cleaning (2 Years)	$	66,712
Monthly, Quarterly, Semi & Annual Cleaning (2 Years)	$	10,790
Landscaping and Fertilizing (2 Years)	$	49,645
Irrigation (2 Years)	$	8,127
Elevator maintenance (2 Years)	$	14,827
Maintenance Services (2 Years)	$	76,153
Pest Control (2 Years)	$	1,163
Total Price for Boca Raton Station	$	227,416

Broward County

7. **Deerfield Beach Station**

Daily Cleaning (2 Years)	$	88,060
Monthly, Quarterly, Semi & Annual Cleaning (2 Years)	$	17,656
Landscaping and Fertilizing (2 Years)	$	49,645
Irrigation (2 Years)	$	7,388
Maintenance Services (2 Years)	$	111,183
Pest Control (2 Years)	$	1,163
Total Price for Deerfield Beach Station	$	275,095

8. **Pompano Beach Station**

Daily Cleaning (2 Years)	$	33,356
Monthly, Quarterly, Semi & Annual Cleaning (2 Years)	$	5,885
Landscaping and Fertilizing (2 Years)	$	10,638
Irrigation (2 Years)	$	4,222
Elevator maintenance (2 Years)	$	-
Maintenance Services (2 Years)	$	36,553
Pest Control (2 Years)	$	1,027
Total Price for Pompano Beach Station	$	91,682

CPO Rate $29.08

X 16 hours = $465.28 daily

X 7 days per week = $3256.96 weekly

16 hours x 30 days = 480 hours

480 hours x $29.08 = $13,958.40 monthly

16 hours x 365 days = 5840 hours

5840 hours x $29.08 = $169,827.20 annually

Supervisor Rate $36.69

X 8 hours = $293.52 daily

X 7 days = $2,054.64 weekly

X 52 weeks ==$106,841.28

BR-1 (Boca Center) Annual Operating Costs			
	Bus 1	**Bus 2**	**Total**
Fiscal Year 2017	$157,383	$157,383	$314,766
Fiscal Year 2018	$172,081	$172,081	$344,162
Fiscal Year 2019	$176,821	$176,821	$353,642
Fiscal Year 2020	$180,053	$180,053	$360,106
Fiscal Year 2021	$171,022	$171,022	$342,044

Fiscal Year = July 1 - June 30

Table D-1

Inflation Factors to Convert Project Cost Estimates to Year of Expenditure Dollars

Time Period for Planned Project or Project Phase Implementation	Multipliers to Convert Project Cost Estimates to Year of Expenditure Dollars			
	Project Cost in 2013 PDC $*	Project Cost in 2014 PDC $*	Project Cost in 2015 PDC $*	Project Cost in 2016 PDC $*
2019-2020	1.21	1.17	1.14	1.11
2021-2025	1.35	1.31	1.27	1.24
2026-2030	1.59	1.54	1.50	1.46
2031-2040	2.03	1.97	1.91	1.86

Multipliers are based on the following annual inflation estimates:

From	To	Annual Rate
2013 Dollars	2014 Dollars	3.1%
2014 Dollars	2015 Dollars	2.9%
2015 Dollars	2016 Dollars	2.9%
2016 Dollars	2017 Dollars	2.9%
2017 Dollars	2018 Dollars	2.9%
2018 Dollars	2019 Dollars	3.0%
2019 Dollars	2020 Dollars	3.1%
2020 Dollars	2021 Dollars and Beyond	3.3% each year

Source: FDOT Work Program Instructions, 2012

* "PDC $" means "Present Day Cost"

PROJECT NET PRESENT VALUE (NPV)

Project Name	**Boca Raton II With ROW**
Current Year	2016
Project Completion	2020
Project Life	40
Project Category	Transit Station
Discount Rate	0.04
Project Ends	2059

B/C Ratio	**0.76**

NPV - Cost	**-$51,154,261**
NPV - Benefits	**$38,920,515**
NPV - Total	**-$12,233,746**

Year #	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Calendar Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Estimated Cost	$0	$1,500,000	$17,000,000	$0	$1,158,888	$1,167,187	$1,205,704	$1,245,492	$1,286,593	$1,329,051	$1,372,910	$1,418,216	$1,465,016	$1,513,362	$1,563,303	$1,614,892	$1,668,183	$1,723,232	$1,780,099	$1,838,843	$1,899,526	$1,962,211	$2,026,964	$2,093,855	$2,162,953	$2,234,330	$2,308,062
Estimated Benefits					$1,042,777	$1,076,809	$1,110,841	$1,431,092	$1,473,632	$1,516,172	$1,558,712	$1,601,252	$1,643,792	$1,686,332	$1,728,872	$1,771,412	$1,813,952	$1,856,492	$1,899,032	$1,941,572	$1,984,112	$2,533,316	$2,586,491	$2,639,666	$2,692,841	$2,746,016	$2,799,191
Calculation																											
Discount Factor	1.000	0.962	0.925	0.889	0.855	0.822	0.790	0.760	0.731	0.703	0.676	0.650	0.625	0.601	0.577	0.555	0.534	0.513	0.494	0.475	0.456	0.439	0.422	0.406	0.390	0.375	0.361
Discounted Cost	$0	-$1,442,308	-$15,717,456	$0	-$990,622	-$959,343	-$952,885	-$946,472	-$940,101	-$933,774	-$927,489	-$921,246	-$915,045	-$908,886	-$902,769	-$896,692	-$890,657	-$884,661	-$878,707	-$872,793	-$866,919	-$861,084	-$855,288	-$849,532	-$843,814	-$838,135	-$832,493
Discounted Benefits	$0	$0	$0	$0	$891,370	$885,059	$877,914	$1,087,512	$1,076,768	$1,065,242	$1,053,010	$1,040,143	$1,026,708	$1,012,767	$998,381	$983,602	$968,484	$953,073	$937,416	$921,552	$905,523	$1,111,704	$1,091,384	$1,070,982	$1,050,535	$1,030,077	$1,009,638

Year #	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Calendar Year	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059
Estimated Cost	$2,384,228	$2,462,907	$2,544,183	$2,628,141	$2,714,870	$2,804,461	$2,897,009	$2,992,611	$3,091,367	$3,193,382	$3,298,764	$3,407,623	$3,520,075	$3,636,237	$3,756,233	$3,880,188	$4,008,235
Estimated Benefits	$2,852,366	$2,905,541	$2,958,716	$3,011,891	$3,065,067	$3,118,242	$3,171,417	$3,224,592	$4,098,934	$4,165,431	$4,231,927	$4,298,424	$4,364,921	$4,431,418	$4,497,915	$4,564,412	$4,630,908
Calculation																	
Discount Factor	0.347	0.333	0.321	0.308	0.296	0.285	0.274	0.264	0.253	0.244	0.234	0.225	0.217	0.208	0.200	0.193	0.185
Discounted Cost	-$826,890	-$821,324	-$815,796	-$810,305	-$804,851	-$799,434	-$794,053	-$788,709	-$783,400	-$778,127	-$772,890	-$767,688	-$762,521	-$757,388	-$752,291	-$747,227	-$742,198
Discounted Benefits	989,248	968,932	948,716	928,622	908,671	888,880	869,267	849,848	1,038,733	1,014,985	991,527	968,372	945,532	923,016	900,833	878,991	857,497

PROJECT NET PRESENT VALUE (NPV)

Project Name	**Boca Raton II Station W/O ROW**
Current Year	2016
Project Completion	2020
Project Life	40
Project Category	Transit Station
Discount Rate	0.04
Project Ends	2059

B/C Ratio	**0.83**

NPV - Cost	**-$46,808,846**
NPV - Benefits	**$38,920,515**
NPV - Total	**-$7,888,332**

Year #	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Calendar Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Estimated Cost	$0	$1,500,000	$12,300,000	$0	$1,158,888	$1,167,187	$1,205,704	$1,245,492	$1,286,593	$1,329,051	$1,372,910	$1,418,216	$1,465,016	$1,513,362	$1,563,303	$1,614,892	$1,668,183	$1,723,232	$1,780,099	$1,838,843	$1,899,526	$1,962,211	$2,026,964	$2,093,855	$2,162,953	$2,234,330	$2,308,062
Estimated Benefits					$1,042,777	$1,076,809	$1,110,841	$1,431,092	$1,473,632	$1,516,172	$1,558,712	$1,601,252	$1,643,792	$1,686,332	$1,728,872	$1,771,412	$1,813,952	$1,856,492	$1,899,032	$1,941,572	$1,984,112	$2,533,316	$2,586,491	$2,639,666	$2,692,841	$2,746,016	$2,799,191
Calculation																											
Discount Factor	1.000	0.962	0.925	0.889	0.855	0.822	0.790	0.760	0.731	0.703	0.676	0.650	0.625	0.601	0.577	0.555	0.534	0.513	0.494	0.475	0.456	0.439	0.422	0.406	0.390	0.375	0.361
Discounted Cost	$0	-$1,442,308	-$11,372,041	$0	-$990,622	-$959,343	-$952,885	-$946,472	-$940,101	-$933,774	-$927,489	-$921,246	-$915,045	-$908,886	-$902,769	-$896,692	-$890,657	-$884,661	-$878,707	-$872,793	-$866,919	-$861,084	-$855,288	-$849,532	-$843,814	-$838,135	-$832,493
Discounted Benefits	$0	$0	$0	$0	$891,370	$885,059	$877,914	$1,087,512	$1,076,768	$1,065,242	$1,053,010	$1,040,143	$1,026,708	$1,012,767	$998,381	$983,602	$968,484	$953,073	$937,416	$921,552	$905,523	$1,111,704	$1,091,384	$1,070,982	$1,050,535	$1,030,077	$1,009,638

Year #	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Calendar Year	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059
Estimated Cost	$2,384,228	$2,462,907	$2,544,183	$2,628,141	$2,714,870	$2,804,461	$2,897,009	$2,992,611	$3,091,367	$3,193,382	$3,298,764	$3,407,623	$3,520,075	$3,636,237	$3,756,233	$3,880,188	$4,008,235
Estimated Benefits	$2,852,366	$2,905,541	$2,958,716	$3,011,891	$3,065,067	$3,118,242	$3,171,417	$3,224,592	$4,098,934	$4,165,431	$4,231,927	$4,298,424	$4,364,921	$4,431,418	$4,497,915	$4,564,412	$4,630,908
Calculation																	
Discount Factor	0.347	0.333	0.321	0.308	0.296	0.285	0.274	0.264	0.253	0.244	0.234	0.225	0.217	0.208	0.200	0.193	0.185
Discounted Cost	-826,890	-821,324	-815,796	-810,305	-804,851	-799,434	-794,053	-788,709	-783,400	-778,127	-772,890	-767,688	-762,521	-757,388	-752,291	-747,227	-742,198
Discounted Benefits	989,248	968,932	948,716	928,622	908,671	888,880	869,267	849,848	1,038,733	1,014,985	991,527	968,372	945,532	923,016	900,833	878,991	857,497

Year (Project)	Ridership	Revenue	
	Annual Boardings	Average Fare	Total Annual
2016	0	$ 3.04	$ -
2017	0	$ 3.04	$ -
2018	0	$ 3.04	$ -
2019	0	$ 3.04	$ -
2020	343,019	$ 3.04	$ 1,042,777
2021	354,214	$ 3.04	$ 1,076,809
2022	365,408	$ 3.04	$ 1,110,841
2023	376,603	$ 3.80	$ 1,431,092
2024	387,798	$ 3.80	$ 1,473,632
2025	398,993	$ 3.80	$ 1,516,172
2026	410,187	$ 3.80	$ 1,558,712
2027	421,382	$ 3.80	$ 1,601,252
2028	432,577	$ 3.80	$ 1,643,792
2029	443,772	$ 3.80	$ 1,686,332
2030	454,966	$ 3.80	$ 1,728,872
2031	466,161	$ 3.80	$ 1,771,412
2032	477,356	$ 3.80	$ 1,813,952
2033	488,551	$ 3.80	$ 1,856,492
2034	499,745	$ 3.80	$ 1,899,032
2035	510,940	$ 3.80	$ 1,941,572
2036	522,135	$ 3.80	$ 1,984,112
2037	533,330	$ 4.75	$ 2,533,316
2038	544,524	$ 4.75	$ 2,586,491
2039	555,719	$ 4.75	$ 2,639,666
2040	566,914	$ 4.75	$ 2,692,841
2041	578,109	$ 4.75	$ 2,746,016
2042	589,303	$ 4.75	$ 2,799,191
2043	600,498	$ 4.75	$ 2,852,366
2044	611,693	$ 4.75	$ 2,905,541
2045	622,888	$ 4.75	$ 2,958,716
2046	634,082	$ 4.75	$ 3,011,891
2047	645,277	$ 4.75	$ 3,065,067
2048	656,472	$ 4.75	$ 3,118,242
2049	667,667	$ 4.75	$ 3,171,417
2050	678,861	$ 4.75	$ 3,224,592
2051	690,056	$ 5.94	$ 4,098,934
2052	701,251	$ 5.94	$ 4,165,431
2053	712,446	$ 5.94	$ 4,231,927
2054	723,640	$ 5.94	$ 4,298,424
2055	734,835	$ 5.94	$ 4,364,921
2056	746,030	$ 5.94	$ 4,431,418
2057	757,225	$ 5.94	$ 4,497,915
2058	768,419	$ 5.94	$ 4,564,412
2059	779,614	$ 5.94	$ 4,630,908
40-Year Total	**22,452,660**	**-**	**$ 106,726,498**

Station Cost with Right-of-Way

Year (Project)	Station incl right-of-way		Maintenance		CPO+Supervisor		Fuel		Shuttle		Total Cost
2016	$ -	$ -	$ 113,708		$ 276,668		$ 300,000		$ 314,766		$ -
2017	$ 1,500,000	$ 1,500,000		$ -					$ 314,766		$ 1,500,000
2018	$ 17,000,000	$ 17,000,000		$ -		$ -		$ -	$ 344,162	$ -	$ 17,000,000
2019	$ -	$ -		$ -		$ -		$ -	$ 353,642	$ -	$ -
2020	$ -	$ -		$ 131,563		$ 320,112		$ 347,107	$ 360,106	$ 360,106	$ 1,158,888
2021	$ -	$ -		$ 135,905		$ 330,676		$ 358,562	$ 342,044	$ 342,044	$ 1,167,187
2022	$ -	$ -		$ 140,390		$ 341,588		$ 370,395		$ 353,331	$ 1,205,704
2023	$ -	$ -		$ 145,023		$ 352,860		$ 382,618		$ 364,991	$ 1,245,492
2024	$ -	$ -		$ 149,809		$ 364,504		$ 395,244		$ 377,036	$ 1,286,593
2025	$ -	$ -		$ 154,753		$ 376,533		$ 408,287		$ 389,478	$ 1,329,051
2026	$ -	$ -		$ 159,860		$ 388,959		$ 421,760		$ 402,331	$ 1,372,910
2027	$ -	$ -		$ 165,135		$ 401,795		$ 435,678		$ 415,608	$ 1,418,216
2028	$ -	$ -		$ 170,584		$ 415,054		$ 450,055		$ 429,323	$ 1,465,016
2029	$ -	$ -		$ 176,213		$ 428,751		$ 464,907		$ 443,491	$ 1,513,362
2030	$ -	$ -		$ 182,028		$ 442,900		$ 480,249		$ 458,126	$ 1,563,303
2031	$ -	$ -		$ 188,035		$ 457,516		$ 496,097		$ 473,244	$ 1,614,892
2032	$ -	$ -		$ 194,240		$ 472,614		$ 512,468		$ 488,861	$ 1,668,183
2033	$ -	$ -		$ 200,650		$ 488,210		$ 529,379		$ 504,993	$ 1,723,232
2034	$ -	$ -		$ 207,271		$ 504,321		$ 546,849		$ 521,658	$ 1,780,099
2035	$ -	$ -		$ 214,111		$ 520,964		$ 564,895		$ 538,873	$ 1,838,843
2036	$ -	$ -		$ 221,177		$ 538,156		$ 583,537		$ 556,656	$ 1,899,526
2037	$ -	$ -		$ 228,476		$ 555,915		$ 602,794		$ 575,026	$ 1,962,211
2038	$ -	$ -		$ 236,016		$ 574,260		$ 622,686		$ 594,002	$ 2,026,964
2039	$ -	$ -		$ 243,805		$ 593,211		$ 643,235		$ 613,604	$ 2,093,855
2040	$ -	$ -		$ 251,851		$ 612,787		$ 664,462		$ 633,853	$ 2,162,953
2041	$ -	$ -		$ 260,162		$ 633,009		$ 686,389		$ 654,770	$ 2,234,330
2042	$ -	$ -		$ 268,747		$ 653,898		$ 709,040		$ 676,377	$ 2,308,062
2043	$ -	$ -		$ 277,616		$ 675,477		$ 732,438		$ 698,697	$ 2,384,228
2044	$ -	$ -		$ 286,777		$ 697,768		$ 756,608		$ 721,754	$ 2,462,907
2045	$ -	$ -		$ 296,241		$ 720,794		$ 781,576		$ 745,572	$ 2,544,183
2046	$ -	$ -		$ 306,017		$ 744,580		$ 807,368		$ 770,176	$ 2,628,141
2047	$ -	$ -		$ 316,116		$ 769,151		$ 834,011		$ 795,592	$ 2,714,870
2048	$ -	$ -		$ 326,548		$ 794,533		$ 861,533		$ 821,847	$ 2,804,461
2049	$ -	$ -		$ 337,324		$ 820,753		$ 889,964		$ 848,968	$ 2,897,009
2050	$ -	$ -		$ 348,456		$ 847,838		$ 919,333		$ 876,984	$ 2,992,611
2051	$ -	$ -		$ 359,955		$ 875,817		$ 949,671		$ 905,924	$ 3,091,367
2052	$ -	$ -		$ 371,834		$ 904,719		$ 981,010		$ 935,819	$ 3,193,382
2053	$ -	$ -		$ 384,105		$ 934,575		$ 1,013,383		$ 966,701	$ 3,298,764
2054	$ -	$ -		$ 396,780		$ 965,416		$ 1,046,825		$ 998,602	$ 3,407,623
2055	$ -	$ -		$ 409,874		$ 997,275		$ 1,081,370		$ 1,031,556	$ 3,520,075
2056	$ -	$ -		$ 423,400		$ 1,030,185		$ 1,117,055		$ 1,065,597	$ 3,636,237
2057	$ -	$ -		$ 437,372		$ 1,064,181		$ 1,153,918		$ 1,100,762	$ 3,756,233
2058	$ -	$ -		$ 451,805		$ 1,099,299		$ 1,191,997		$ 1,137,087	$ 3,880,188
2059	$ -	$ -		$ 466,715		$ 1,135,576		$ 1,231,333		$ 1,174,611	$ 4,008,235
	$ 18,500,000	**$ 18,500,000**	**$ 113,708**	**$ 10,622,739**	**$ 276,668**	**$ 25,846,530**	**$ 300,000**	**$ 28,026,086**	**$ 2,029,486**	**$ 26,764,031**	**$ 109,759,386**

2015	2016	1.029
2016	2017	1.029
2017	2018	1.029
2018	2019	1.03
2019	2020	1.031
2020	2021	1.033
2021	2022	1.033
2022	2023	1.033
2023	2024	1.033
2024	2025	1.033
2025	2026	1.033
2026	2027	1.033
2027	2028	1.033
2028	2029	1.033
2029	2030	1.033
2030	2031	1.033
2031	2032	1.033
2032	2033	1.033
2033	2034	1.033
2034	2035	1.033
2035	2036	1.033
2036	2037	1.033
2037	2038	1.033
2038	2039	1.033
2039	2040	1.033
2040	2041	1.033
2041	2042	1.033
2042	2043	1.033
2043	2044	1.033
2044	2045	1.033
2045	2046	1.033
2046	2047	1.033
2047	2048	1.033
2048	2049	1.033
2049	2050	1.033
2050	2051	1.033
2051	2052	1.033
2052	2053	1.033
2053	2054	1.033
2054	2055	1.033
2055	2056	1.033
2056	2057	1.033
2057	2058	1.033
2058	2059	1.033

Station Cost without Right-of-Way

Year (Project)	Station incl right-of-way		Maintenance		CPO+Supervisor		Fuel		Shuttle		Total Cost
2016	$ -	$ -	$ 113,708		$ 276,668		$ 300,000		$ 314,766		$ -
2017	$ 1,500,000	$ 1,500,000		$ -					$ 314,766		$ 1,500,000
2018	$ 12,300,000	$ 12,300,000		$ -		$ -		$ -	$ 344,162	$ -	$ 12,300,000
2019	$ -	$ -		$ -		$ -		$ -	$ 353,642	$ -	$ -
2020	$ -	$ -		$ 131,563		$ 320,112		$ 347,107	$ 360,106	$ 360,106	$ 1,158,888
2021	$ -	$ -		$ 135,905		$ 330,676		$ 358,562	$ 342,044	$ 342,044	$ 1,167,187
2022	$ -	$ -		$ 140,390		$ 341,588		$ 370,395		$ 353,331	$ 1,205,704
2023	$ -	$ -		$ 145,023		$ 352,860		$ 382,618		$ 364,991	$ 1,245,492
2024	$ -	$ -		$ 149,809		$ 364,504		$ 395,244		$ 377,036	$ 1,286,593
2025	$ -	$ -		$ 154,753		$ 376,533		$ 408,287		$ 389,478	$ 1,329,051
2026	$ -	$ -		$ 159,860		$ 388,959		$ 421,760		$ 402,331	$ 1,372,910
2027	$ -	$ -		$ 165,135		$ 401,795		$ 435,678		$ 415,608	$ 1,418,216
2028	$ -	$ -		$ 170,584		$ 415,054		$ 450,055		$ 429,323	$ 1,465,016
2029	$ -	$ -		$ 176,213		$ 428,751		$ 464,907		$ 443,491	$ 1,513,362
2030	$ -	$ -		$ 182,028		$ 442,900		$ 480,249		$ 458,126	$ 1,563,303
2031	$ -	$ -		$ 188,035		$ 457,516		$ 496,097		$ 473,244	$ 1,614,892
2032	$ -	$ -		$ 194,240		$ 472,614		$ 512,468		$ 488,861	$ 1,668,183
2033	$ -	$ -		$ 200,650		$ 488,210		$ 529,379		$ 504,993	$ 1,723,232
2034	$ -	$ -		$ 207,271		$ 504,321		$ 546,849		$ 521,658	$ 1,780,099
2035	$ -	$ -		$ 214,111		$ 520,964		$ 564,895		$ 538,873	$ 1,838,843
2036	$ -	$ -		$ 221,177		$ 538,156		$ 583,537		$ 556,656	$ 1,899,526
2037	$ -	$ -		$ 228,476		$ 555,915		$ 602,794		$ 575,026	$ 1,962,211
2038	$ -	$ -		$ 236,016		$ 574,260		$ 622,686		$ 594,002	$ 2,026,964
2039	$ -	$ -		$ 243,805		$ 593,211		$ 643,235		$ 613,604	$ 2,093,855
2040	$ -	$ -		$ 251,851		$ 612,787		$ 664,462		$ 633,853	$ 2,162,953
2041	$ -	$ -		$ 260,162		$ 633,009		$ 686,389		$ 654,770	$ 2,234,330
2042	$ -	$ -		$ 268,747		$ 653,898		$ 709,040		$ 676,377	$ 2,308,062
2043	$ -	$ -		$ 277,616		$ 675,477		$ 732,438		$ 698,697	$ 2,384,228
2044	$ -	$ -		$ 286,777		$ 697,768		$ 756,608		$ 721,754	$ 2,462,907
2045	$ -	$ -		$ 296,241		$ 720,794		$ 781,576		$ 745,572	$ 2,544,183
2046	$ -	$ -		$ 306,017		$ 744,580		$ 807,368		$ 770,176	$ 2,628,141
2047	$ -	$ -		$ 316,116		$ 769,151		$ 834,011		$ 795,592	$ 2,714,870
2048	$ -	$ -		$ 326,548		$ 794,533		$ 861,533		$ 821,847	$ 2,804,461
2049	$ -	$ -		$ 337,324		$ 820,753		$ 889,964		$ 848,968	$ 2,897,009
2050	$ -	$ -		$ 348,456		$ 847,838		$ 919,333		$ 876,984	$ 2,992,611
2051	$ -	$ -		$ 359,955		$ 875,817		$ 949,671		$ 905,924	$ 3,091,367
2052	$ -	$ -		$ 371,834		$ 904,719		$ 981,010		$ 935,819	$ 3,193,382
2053	$ -	$ -		$ 384,105		$ 934,575		$ 1,013,383		$ 966,701	$ 3,298,764
2054	$ -	$ -		$ 396,780		$ 965,416		$ 1,046,825		$ 998,602	$ 3,407,623
2055	$ -	$ -		$ 409,874		$ 997,275		$ 1,081,370		$ 1,031,556	$ 3,520,075
2056	$ -	$ -		$ 423,400		$ 1,030,185		$ 1,117,055		$ 1,065,597	$ 3,636,237
2057	$ -	$ -		$ 437,372		$ 1,064,181		$ 1,153,918		$ 1,100,762	$ 3,756,233
2058	$ -	$ -		$ 451,805		$ 1,099,299		$ 1,191,997		$ 1,137,087	$ 3,880,188
2059	$ -	$ -		$ 466,715		$ 1,135,576		$ 1,231,333		$ 1,174,611	$ 4,008,235
	$ 13,800,000	**$ 13,800,000**	**$ 113,708**	**$ 10,622,739**	**$ 276,668**	**$ 25,846,530**	**$ 300,000**	**$ 28,026,086**	**$ 2,029,486**	**$ 26,764,031**	**$ 105,059,386**

2015	2016	1.029
2016	2017	1.029
2017	2018	1.029
2018	2019	1.03
2019	2020	1.031
2020	2021	1.033
2021	2022	1.033
2022	2023	1.033
2023	2024	1.033
2024	2025	1.033
2025	2026	1.033
2026	2027	1.033
2027	2028	1.033
2028	2029	1.033
2029	2030	1.033
2030	2031	1.033
2031	2032	1.033
2032	2033	1.033
2033	2034	1.033
2034	2035	1.033
2035	2036	1.033
2036	2037	1.033
2037	2038	1.033
2038	2039	1.033
2039	2040	1.033
2040	2041	1.033
2041	2042	1.033
2042	2043	1.033
2043	2044	1.033
2044	2045	1.033
2045	2046	1.033
2046	2047	1.033
2047	2048	1.033
2048	2049	1.033
2049	2050	1.033
2050	2051	1.033
2051	2052	1.033
2052	2053	1.033
2053	2054	1.033
2054	2055	1.033
2055	2056	1.033
2056	2057	1.033
2057	2058	1.033
2058	2059	1.033