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CITY OF TAMPA WALK-BIKE PLAN PHASE VI WEST TAMPA MULTIMODAL PLAN

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Metropolitan Planning
for Transportation

City of Tampa Walk–Bike Plan Phase VI

West Tampa Multimodal Plan

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Executive Summary

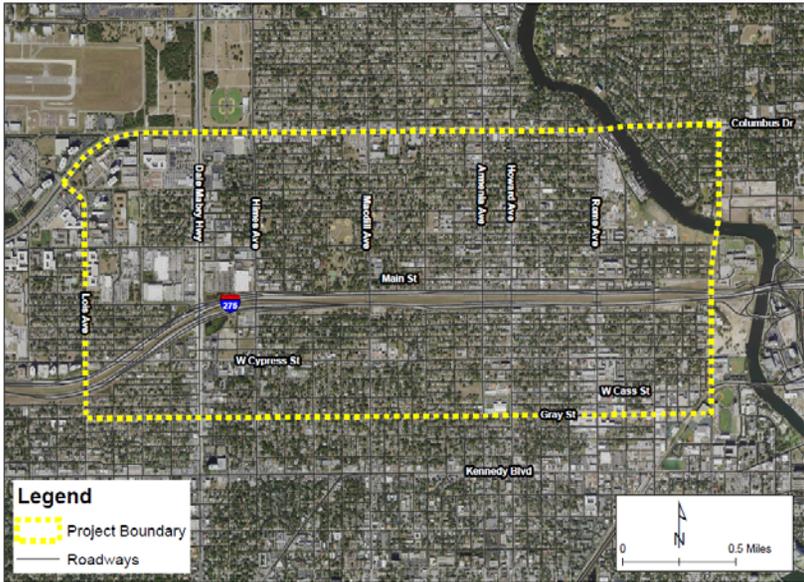
Introduction and Purpose

To help the City of Tampa achieve its “Livable City” vision of a robust network of pedestrian and bicycle facilities to improve transportation options and livability, the Hillsborough Metropolitan Planning Organization (MPO) and the City of Tampa have coordinated on the development of a series of Walk-Bike and multimodal plans that have identified opportunities for pedestrian and bicycle improvements throughout the city. Whereas parts of the greater West Tampa area have been reviewed by some of these previously-completed studies, many of these efforts considered how to get people through West Tampa as a means of connecting to other regional activity centers but were not focused on how people within West Tampa get around.

The purpose of this multimodal plan is to identify opportunities to improve safety and mobility for all transportation users with a focus on identifying opportunities to enhance the pedestrian and bicycle environment. Although some of the identified enhancements will help connect people through West Tampa, the focus of this plan is to support mobility within the neighborhoods of West Tampa. This has become increasingly necessary, as the West Tampa area has been experiencing a wave of reinvestment, revitalization, and growth; with this, there is an increasing need to ensure a safe, inviting, and well-connected transportation network that supports all users and modes.

The West Tampa Multimodal Plan study area includes the neighborhoods of North Hyde Park, Old West Tampa, West Tampa, West Riverfront, Macfarlane Park, Armory Gardens, Carver

City/Lincoln Gardens, North Bon Air, and Oakford Park. The study area is bounded by Gray Street to the south, Lois Avenue to the west, Columbus Drive to the north, and North Boulevard to the east.



West Tampa Multimodal Plan Study Area

Background and Existing Conditions Review

A multitude of planning efforts that impact the West Tampa area have been developed and are essential for understanding how the area is intended to evolve in the coming decades. The review of West Tampa planning efforts helped inform recommendations and ensure that planning efforts are not duplicated or redundant.

A review of the existing conditions and facilities within the study area was conducted to provide background information and context and was used to guide the development of potential pedestrian and

bicycle improvements throughout the study area. The existing conditions review provided documentation of community assets and history, existing transportation facilities, planned improvements, crash history, and identified gaps in the current multimodal network.

Multimodal Enhancements

As noted, the purpose of this multimodal plan is to identify opportunities to improve safety and mobility for all transportation users by identifying opportunities to enhance the pedestrian and bicycle environment, improve connections between existing and planned pedestrian and bicycle facilities, and identify opportunities to implement complete streets strategies throughout the study area. The potential safety and mobility enhancements in this plan are categorized as either Best Practice Enhancements or Site-Specific Enhancements.

Best Practice Enhancements

A variety of transportation best practices have been established and are available for moving the West Tampa area towards the “Livable City” vision and connecting and enhancing the pedestrian and bicycle network. Although the list of Best Practice Enhancements is by no means exhaustive, it provides a range of enhancements that may or may not be appropriate based on an area’s context, goals, and financial feasibility. Additionally, the identified Best Practice Enhancements typically go beyond providing improvements to the transportation realm and often create synergies that help beautify areas, bolster economic development, and improve community cohesiveness and sense of place. The following are best practices that should be considered throughout the study area, whether specifically mentioned or not, throughout the remainder of the plan.

- Complete sidewalks
- Speed management
- Lighting
- Intersection enhancements
- Mid-block crossings
- Access to transit
- Drainage

Site-Specific Enhancements

The Site-Specific Enhancements explore opportunities to improve safety and mobility at specific locations/corridors throughout the study area. Although many of the concepts from these enhancements could be applied elsewhere, they were developed specifically for the identified locations. The Site-Specific Enhancements were grouped into three categories—Complete Street Enhancements, Neighborhood Greenway Enhancements, and Trail Connections. The following is an overview of the identified Site-Specific Enhancements.

Complete Street Enhancements

“Complete streets” is a modern term for roadways designed and built to enable safe access for all users, including pedestrians, bicycles, motorists, and public transportation. Complete streets are accessible and promote safety and mobility for users of all ages and all abilities. Additionally, complete streets can be used to encourage economic development and activity, promote social cohesion, and make for an improved urban environment. Three corridors within the West Tampa study area were identified for potential complete street enhancements:

- Main Street from MacDill Avenue to N Boulevard
- Columbus Drive from Dale Mabry Highway to the Hillsborough River
- Howard and Armenia Avenues from Columbus Drive to south of Gray Street

Main Street Complete Street Enhancements – Main Street was once the heart of the thriving City of West Tampa and is now the center of social efforts and economic development in the West Tampa neighborhood. The historical and present significance of Main Street, the land use fronting the street, and a significant amount of pedestrian traffic provide additional opportunities for complete street improvements to reinforce Main Street’s historic significance.



Proposed Typical Section for Main Street from Howard Avenue to Albany Avenue

In general, the identified improvements for Main Street involve better delineating the existing pavement by marking the on-street parking areas, providing shared-lane markings, improving the visibility of pedestrians at intersections through enhanced crosswalk markings and bulb-outs, and installing neighborhood traffic circles at selected intersections. Due to the planned West River redevelopment, most of the identified improvements focused on the western part of Main Street between MacDill Avenue and Rome Avenue, but some identified improvements could be considered between Rome Avenue and N Boulevard.

Columbus Drive Complete Street Enhancements – Columbus Drive provides east-west connections through West Tampa to the Westshore area on the western end of the corridor and to Tampa Heights, V.M. Ybor, and East Tampa beyond the Hillsborough River. Recently, some segments of Columbus Drive east of the study area were studied for complete street improvements. Considering complete street enhancements along Columbus Drive west of N Boulevard would improve safety and mobility throughout the West Tampa area.

The identified enhancements along Columbus Drive include heightened corridor lighting where necessary, providing marked crosswalks along the corridor, wider sidewalks/pathways between Lois Avenue and Dale Mabry Highway, and intersection improvements at Lincoln Avenue, MacDill Avenue, Habana Avenue, Armenia Avenue, Howard Avenue, and Albany Avenue. Additionally, a consideration for a road diet along Columbus Drive from Rome Avenue to N Boulevard was revisited (originally identified as a potential improvement in Phase I of the Walk–Bike Plan), along with potential road-diet improvements to the intersection of Columbus

Drive at Rome Avenue; these alternative included an evaluation of signaling the intersection or constructing a roundabout at the intersection.



Columbus Drive Bridge, Looking East

Howard Avenue and Armenia Avenue Complete Street Enhancements – Howard Avenue and Armenia Avenue are north-south one-way pairs that connect West Tampa to the neighborhoods to the north and south of the study area. Both streets are planned for resurfacing by Hillsborough County. A previous resurfacing project by the County included the addition of buffered bicycle lanes on the sections of Howard Avenue and Armenia Avenue from north of Columbus Drive to St. Louis Street, south of Columbus Drive. Although there are no known current plans to extend the buffered bicycle lanes south as part of the upcoming resurfacing project, providing complete and continuous bicycle facilities should be a top priority for both Hillsborough County and the City of Tampa.

Similar to the identified enhancements along Main Street and Columbus Drive, most of the identified enhancements along Howard Avenue and Armenia Avenue include enhancing lighting, improving pedestrian visibility through the use of enhanced crosswalk markings and bulb-outs, providing enhanced and additional crossings, and exploring speed management strategies throughout the corridor.



Howard Avenue at Carmen Street (south of Cass Street)

Neighborhood Greenway Enhancements

Neighborhood greenways, also known as bicycle boulevards and bikeways, are streets that have been designed, designated, and prioritized for bicycle travel. Neighborhood greenways provide a safe, inviting, low-stress option for bicyclists of varying degrees of experience. Neighborhood greenways, as part of a larger bicycle network, help provide connections between neighborhoods, destinations, and different bicycle facilities. In addition to improving safety, comfort, and connectivity for bicyclists, neighborhood greenways create safer streets for all users and can help promote

communities that encourage bicycling as a more convenient, easy, and sociable mode of transportation.

Although there is no set design template for neighborhood greenways, a few common principles should apply when considering one:

- Logical, direct, and continuous bike route
- Safe and comfortable intersection crossings
- Reduced bicyclists delay
- Enhanced access to desired destinations
- Low motor vehicle speeds
- Low motor vehicle volumes



Shared-Lane Markings with Green Background

Gray Street Neighborhood Greenway Enhancements – Gray Street is a two-way undivided east-west local street that parallels Kennedy Boulevard to the south and Cass Street to the north. The street is residential in character, with low speeds (posted 25 mph) and low traffic volume. Unlike many of the local streets in the area, Gray

Street provides a continuous connection between Westshore Boulevard and Rome Avenue and has signalized crossings at Westshore Boulevard and Dale Mabry Highway. Gray Street’s connectivity and location between Kennedy Boulevard and I-275 make it an ideal candidate for neighborhood greenway treatments.

Enhancements identified for Gray Street include the addition of pavement markings and signage that distinguish the street as a neighborhood greenway, speed management strategies including the installation of speed cushions and neighborhood traffic circles, and the enhancement of crossings at major streets such as Lois Avenue, MacDill Avenue, Armenia Avenue, and Howard Avenue.

Beach Street Neighborhood Greenway Enhancements – Beach Street is a two-way undivided east-west local street situated between Spruce Street and Columbus Drive. It is primarily residential in character, with low-speeds (posted 25 mph) and low traffic volumes, and it provides a continuous connection between Dale Mabry Highway and Rome Avenue. Similar to the Gray Street neighborhood greenway, the enhancements along Beach Street focus on providing pavement markings and signage, speed management through speed cushions and neighborhood traffic circles, and improving crossings at major streets such as MacDill Avenue, Armenia Avenue, and Howard Avenue.

Trail Connections

I-275 Greenway and Green Spine Trail Connections – The Green Spine and I-275 Greenway are key bicycle and pedestrian projects aimed at connecting the major activity centers and greenspaces in Tampa and providing recreational amenities to residents. Although the projects are separated by less than a half mile in places, the lack

of a safe and obvious connection between the two is a challenge that interrupts the overall network.

Although both projects are incomplete, with many segments still in planning and design stages, a connection between the two pathways should be considered and addressed. Several alternative alignments for connecting to the two are available, the creation of which may further an integrated pedestrian and bicycle network beyond connecting only these two major infrastructure projects. Four potential alternatives to connect these facilities were examined as part of this effort:

- *Alternative 1* mostly uses existing Florida Department of Transportation (FDOT) right-of-way and portions of La Salle Street to connect the I-275 Greenway between Himes Avenue and North Boulevard.
- *Alternative 2* follows the Alternative 1 alignment between Himes Avenue and Rome Avenue. It would then use the planned bicycle lanes on Rome Avenue or a potential pathway along the west side of Rome Avenue to connect to the planned Green Spine extension along Cass Street.
- *Alternative 3* follows the Alternative 1 alignment between Himes Avenue and Armenia Avenue. This alignment proposes converting the east side of Armenia Avenue between the existing I-275 Greenway trailhead at Armenia Avenue to a potential future Cass Street extension. This alternative would require right-of-way through the existing armory to extend the Green Spine and Cass Street from Howard Avenue to Armenia Avenue.
- *Alternative 4* uses the Alternative 1 alignment between Himes Avenue and MacDill Avenue. It then travels along

MacDill Avenue between La Salle Street and Main Street and then a two-way bikeway down the middle of Main Street from MacDill Avenue to N Boulevard. This alternative would require eliminating the on-street parking along Main Street and would prohibit many of the identified Main Street complete street enhancements, but it would move a large portion of the I-275 Greenway out the I-275 right-of-way.



I-275 Greenway at Armenia Avenue, Looking West

Next Steps

The key to implementing the enhancements identified in this plan is continued coordination among the various involved agencies, including the Hillsborough MPO, City of Tampa, Hillsborough County, FDOT, and the West Tampa Community Redevelopment Area (CRA). This coordination will help to ensure that the identified improvements are realized.



Photo Credit: Chris Wilkerson

Introduction

As part of the “Livable City” vision for the City of Tampa, a robust network of pedestrian and bicycle facilities has been identified as critical for both transportation and livability. To help achieve this vision, the Hillsborough MPO and the City of Tampa have coordinated on the development of a series of Walk–Bike Plans that have identified opportunities for pedestrian and bicycle improvements throughout the city. Whereas it has been reviewed, in part, by other plans, the greater West Tampa area has not been the focus of one of the previously-completed Walk–Bike Plans. The neighborhoods of West Tampa have been experiencing a wave of reinvestment, revitalization, and growth; with this, there is a need to ensure a safe, inviting, and well-connected transportation network that supports all users and modes and connects users to not only the major activity centers of West Tampa and the surrounding community but supports mobility within the neighborhoods themselves.

The purpose of this multimodal plan is to identify opportunities to improve safety and mobility for all transportation users by identifying opportunities to enhance the pedestrian and bicycle environment, improve connections between existing and planned pedestrian and bicycle facilities, and identify opportunities to implement complete streets strategies throughout the study area.

The multimodal plan is structured as follows:

- West Tampa Study Area
- West Tampa Planning Efforts
- Existing Conditions
- Planned Capital Improvements
- Enhancing Safety and Mobility in West Tampa
 - Best Practice Enhancements
 - Site-Specific Enhancements

West Tampa Study Area

The West Tampa Multimodal Plan’s study area is bounded by Gray Street to the south, Lois Avenue to the west, Columbus Drive to the north, and N Boulevard to the east, as shown Figure 1.

The study area includes the neighborhoods of North Hyde Park, Old West Tampa, West Tampa, West Riverfront, Macfarlane Park, Armory Gardens, Carver City/Lincoln Gardens, North Bon Air, and Oakford Park. The neighborhoods and study area have a rich historical context and a well-established street grid and include a National Historic District. The study area is home to a significant number of historic and contributing structures, including the first public library in Hillsborough County, the West Tampa Free Public Library. Enhancing the multimodal environment throughout West Tampa will help to reinforce and reestablish a sense of place, create new connections, and improve economic opportunity.

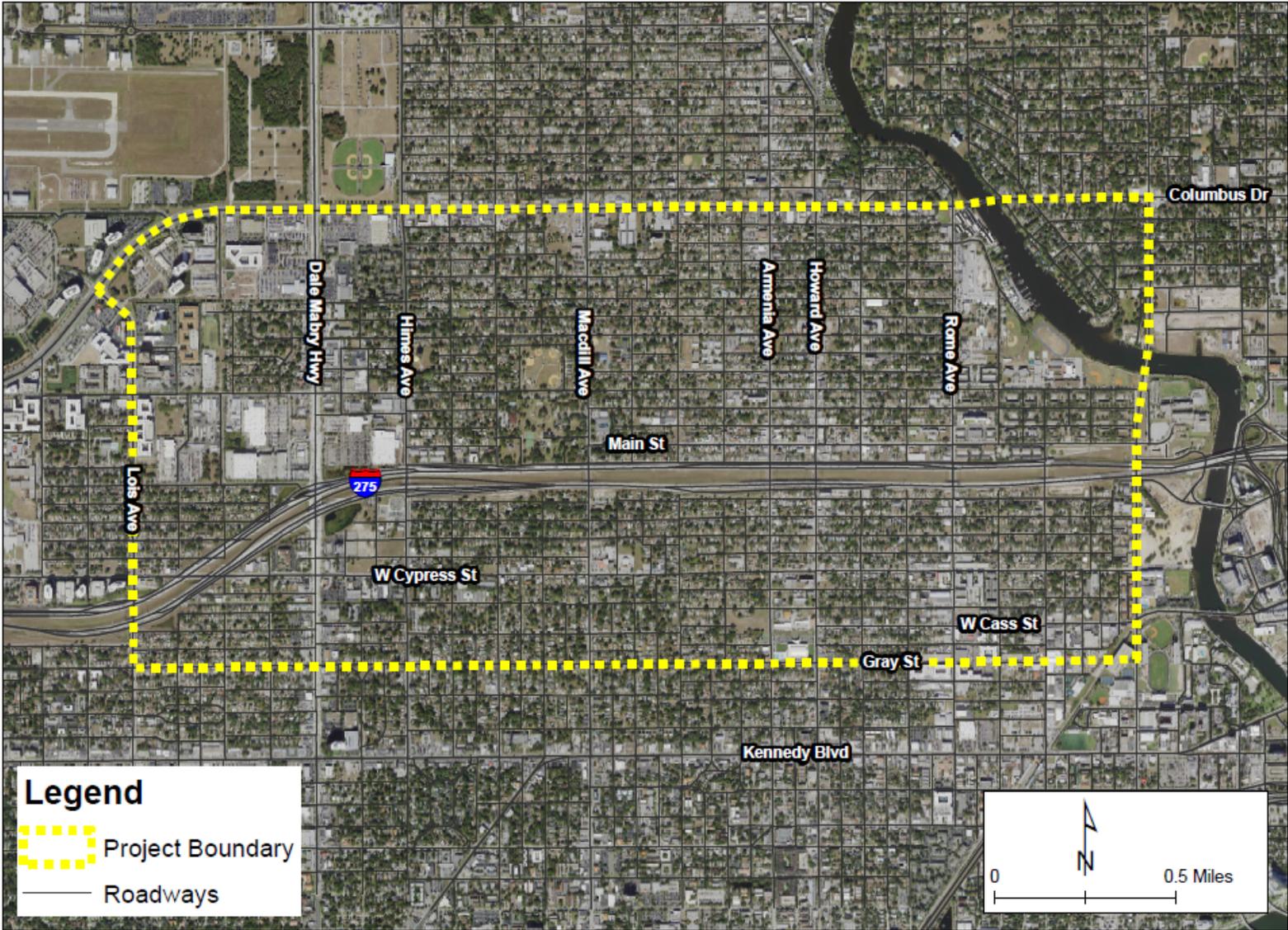


Figure 1: Study Area Boundary

West Tampa Planning Efforts

A multitude of planning efforts that impact the West Tampa area have been developed and are essential for understanding how the area is intended to evolve in the coming decades. The review of West Tampa planning efforts provided below will help inform recommendations and ensure that planning efforts are not duplicated or redundant. The following plans and studies were reviewed as part of this study effort:

- City of Tampa Walk–Bike Plans I–V
- Green Spine Corridor
- Westshore Pedestrian Plan
- Westshore Circulator Study
- West River Master Plan
- West Tampa Community Redevelopment Area (CRA) Plan
- West Tampa Strategic Action Plan
- Greenways and Trails Master Plan
- Dale Mabry Pedestrian Overpass Technical Feasibility Analysis
- Spruce Street Pedestrian and Bicycle Improvements Technical Memorandum
- Regional Transit Feasibility Study
- Tampa Bay Next
- USF Sustainable Transportation Class Project

City of Tampa Walk–Bike Plans

The City of Tampa has released five Walk–Bike plans between 2011 and 2016 that identify an extensive list of possible improvements to

the pedestrian and bicycle network. Improvements and proposals including new, improved, and refurbished sidewalks and crossings, bicycle lanes, and overall network and connectivity redesign. Recent iterations of the Walk–Bike plan focus on a bicycle/pedestrian loop trail (the Green ARTery) linking downtown Tampa to neighborhoods along the river and back down through East Tampa and Ybor City to downtown, connecting parks, schools, and other destinations along its path.

Phase I of the Walk–Bike Plan identified Cypress Street, Willow Avenue, MacDill Avenue, Lois Avenue, N Boulevard, Rome Avenue, Himes Avenue, and Habana Avenue for improvements. Phase II identified the Howard–Armenia Avenue corridor for possible improvements. Figure 2 shows previously identified Walk–Bike Plan improvements in the study area.

Green Spine Corridor

The Green Spine Corridor is a proposed and partially-completed separated cycle-track facility along Cass Street and Nuccio Parkway between Howard Avenue and 21st Avenue. Phase I of the project between the Cass Street Bridge and Nebraska Avenue was completed in 2016, and Phase II, between Howard Avenue and the Cass Street Bridge, is slated to begin construction sometime in summer 2018. The project, once completed, will result in a 3.4-mile cycle-track facility connecting North Hyde Park, Downtown Tampa, and Ybor City and will be a significant component of a well-connected bicycle network.

Westshore Pedestrian Plan

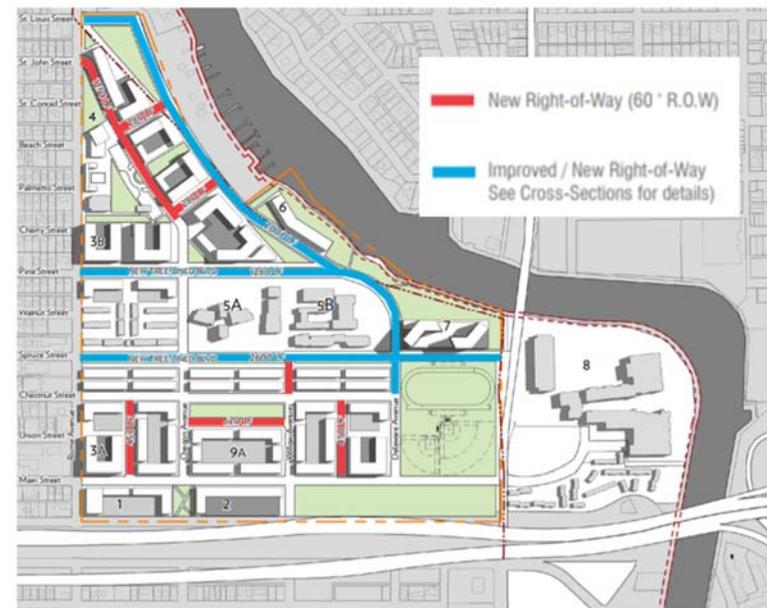
The Westshore Pedestrian Plan, originally released in 2005 and updated in 2009, identified pedestrian improvements and designated pedestrian priority streets within the Westshore area, which overlaps with the West Tampa Multimodal Plan study area between Dale Mabry Highway, Lois Avenue, Boy Scout Boulevard, and Gray Street. Of note, the plan identified Cypress Street, Spruce Street, and Lois Avenue as pedestrian priority roadways. Three enhanced pedestrian crosswalks were identified on Lois Avenue between La Salle Street and Green Street, and intersection crosswalk improvements at all major roadway intersections were identified within the study area. The plan also proposed a trail along I-275 from Dale Mabry Highway to Westshore Boulevard, which has carried through multiple plans and iterations.

Westshore Circulator Study

Findings from this 2012 study from the Hillsborough MPO indicated conditional support for bus circulator service within the Westshore Area, which aimed to expand on and provide mobility choices for various markets, including residents, workers, visitors, and students, connecting key area such as Tampa International Airport, Raymond James Stadium, Al Lopez Park, and the two regional malls in the area. The study indicated that key triggers such as land use changes, proposed premium transit services, and economic development initiatives would foster the environment needed for a viable circulator service. The study stressed that the service can be a major asset to the community, provided it is implemented at a level and time that are consistent with the needs presented by the community and corresponding triggers.

West River Master Plan

The West River Master Plan is a transformative redevelopment plan for the area between I-275, Columbus Drive, Rome Avenue, and the Hillsborough River. The area will be home to multiple mixed-use developments with a focus on creating a livable urban environment. The plan includes a comprehensive section on transportation infrastructure improvements that identifies several new bicycle and pedestrian facilities that will be created or improved with the new development, as well as several new streets that will seek to reinforce or reestablish the grid network in the area.



West River Plan Transportation Improvements

West Tampa CRA Plan

The West Tampa Community Redevelopment Plan was published with the goal of providing a strategy to “eliminate conditions of blight found to exist within the area.” The West Tampa CRA Plan identified several transportation issues to address, notably that 33% of the roadways within the CRA have a pavement condition index of “Failed” and that there is an overabundance of surface parking that was identified as an impediment to growth and as aesthetically displeasing. In terms of transit and mobility, the CRA identified the need for additional transit choices and improved frequency of service and further identified the need for new and improved bicycle and pedestrian facilities. The creation of a trail along the west side of the Hillsborough River was identified as a potential mobility and beautification improvement.

West Tampa Strategic Action Plan

The West Tampa CRA is in the process of developing a Strategic Action Plan for the West Tampa area, which is envisioned to include strategic public investment projects that attract private investment, regulatory actions that can foster quality development, incentive programs to attract private investment, and community services that enhance the economic standing, social and cultural environment, and public safety of the area. Work on the plan is currently identifying priorities, including economic development, job creation, housing and business assistance, infrastructure improvements, greenspace, transportation, parking, and sensitivity to and embracing of the West Tampa area’s history, culture, and diversity.

Greenways and Trails Master Plan

In 2016, the Hillsborough MPO, Hillsborough County, and the City of Tampa updated the Tampa-Hillsborough Greenways and Trails Master Plan. The plan identified several enhancements, including continuation of the I-275 Greenway, an essential component of the Greenways and Trails Master Plan that ultimately aims to connect Cypress Point Park and the Courtney Campbell Trail to Robles Park north of Downtown Tampa through West Tampa and over the Fortune Street Bridge. Much of the trail uses the I-275 right-of-way but also traverses several parallel streets and facilities, including the West River Greenway.

The northeast corner of the study area also includes a small portion of the proposed Perimeter Trail, which is envisioned to circle Central Tampa. The Perimeter Trail aims to connect neighborhood assets, the Hillsborough River, Tampa’s greenspaces, and the Greenways and Trails System with improved bicycle and pedestrian facilities both on- and off-street.

Dale Mabry Pedestrian Overpass Technical Feasibility Analysis

This analysis examined potential alignments and the engineering feasibility of providing a pedestrian overpass across Dale Mabry Highway in the vicinity of I-275. The overpass is to become a part of the I-275 Greenway and was identified as a critical gap in the planned trail. The analysis recommended an alignment along the south side of I-275 using existing FDOT right-of-way to provide a continuous uninterrupted trail facility from Cypress Street at I-275 to Himes Avenue.

Spruce Street Pedestrian and Bicycle Improvements

The Spruce Street Pedestrian and Bicycle Improvement Plan was completed by the Hillsborough MPO to identify safety and mobility improvements for pedestrians and bicyclists along the Spruce Street corridor between Rome Avenue and Dale Mabry Highway. The plan identified intersection improvements throughout the corridor, including at Dale Mabry Highway, Armenia Avenue, and Howard Avenue, the potential for a small urban roundabout at Rome Avenue, the reconstruction of the sidewalk/pathway along the south side of Spruce Street in front of Macfarlane Park, and the inclusion of a wide sidewalk along the north side of Spruce Street between Dale Mabry Highway and Lincoln Avenue.

Regional Transit Feasibility Study

The Tampa Bay Regional Transit Feasibility Plan aims to identify a catalyst transit project that has the greatest potential to be built, compete for federal and State dollars, and spur further investment in transit services in Tampa Bay. The plan's catalyst and recommended project is a 41-mile express or rapid bus service between Wesley Chapel and St. Petersburg that uses I-275 as the primary corridor. The plan calls for several stations to be built along the I-275 right-of-way, including an elevated station at Howard/Armenia and street-level stations at Himes Avenue and N Boulevard. As the study progresses, identifying pedestrian and bicycle connections to and from the planned station areas will be a critical component of any transit investments through West Tampa.

Tampa Bay Next

Tampa Bay Next is a transportation modernization effort aimed at addressing transportation problems throughout Tampa Bay with a comprehensive set of multimodal solutions. A large component of Tampa Bay Next is identifying interstate improvements, including the potential for new express lanes along I-275 through West Tampa and the reconstruction of the I-275/SR 60 interchange to the west of the study area and the Downtown interchange east of the study area. Current interstate plans call for express lanes to be built from I-4 in Ybor City through I-275 to St. Petersburg using right-of-way within I-275. Currently, the Tampa Bay Next process is exploring express lane options that include looking at the potential for express lane access ramps at either Himes Avenue or MacDill Avenue, or potentially both. Decisions on what and how I-275 may operate in the future are being made concurrently with the timeframe of this study and will be monitored for further development as part of the study process.

USF Sustainable Transportation Class Project

Recently the Hillsborough MPO paired with the University of South Florida's (USF) Department of Civil and Environmental Engineering Sustainable Transportation class to consider complete street redesigns for Columbus Drive between Dale Mabry Highway and the Hillsborough River. As part of the class project, four concepts for complete street redesigns came out of the cooperative effort. Some notable concepts from the class projects included:

- Roundabouts at MacDill Avenue and Himes Avenue
- Howard Avenue and Armenia Avenue improvements, including bicycle-oriented intersection design
- Dedicating a lane of Columbus Drive for transit, either as a bus lane or streetcar extension
- Directional medians
- Road diet that would include bike lanes, where feasible
- Improved signage, street lighting, and pedestrian lighting

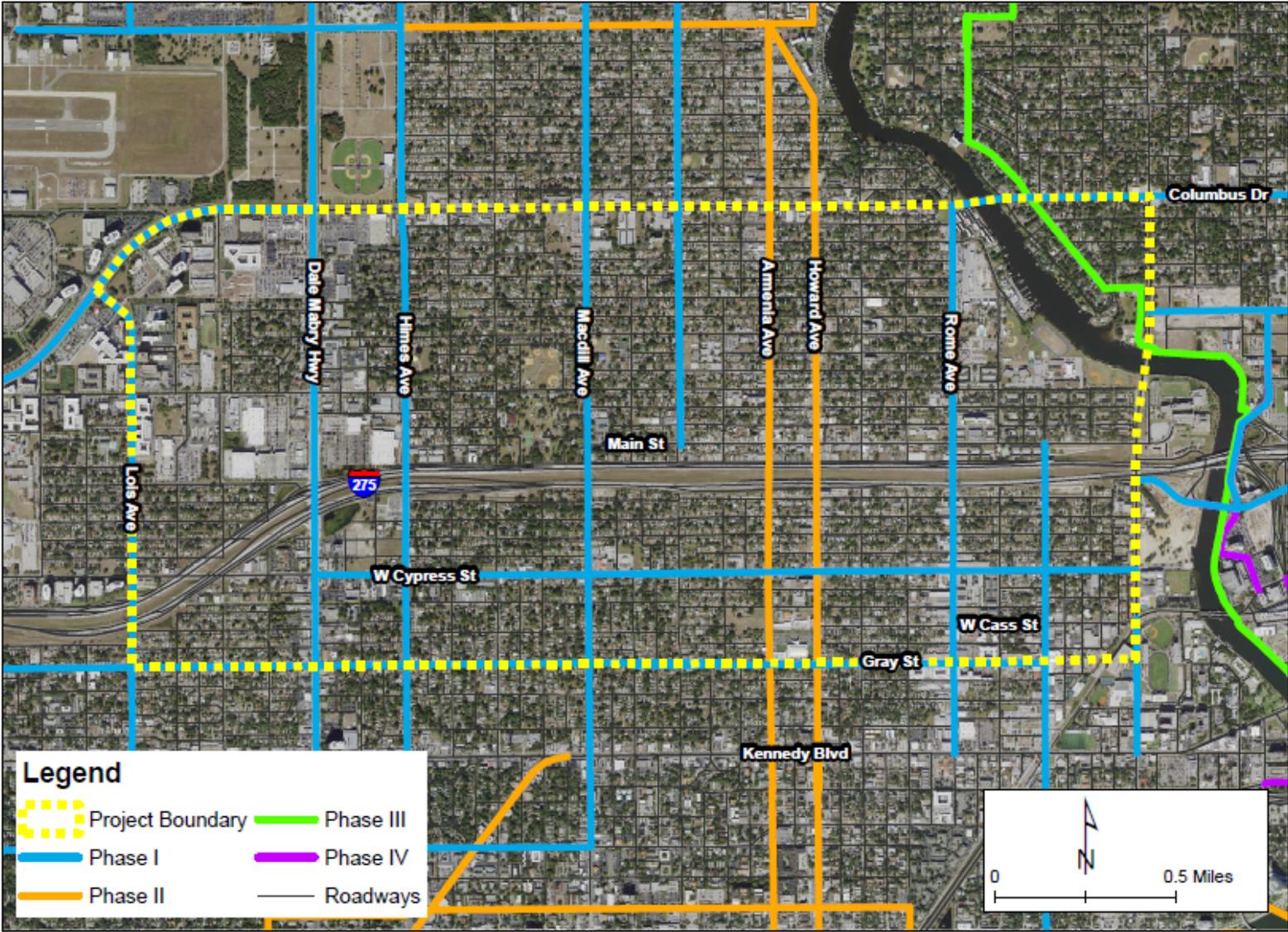


Figure 2: City of Tampa Walk-Bike Plan Recommendations by Plan Phase

Existing Conditions

A review of the existing conditions and facilities within the study area was conducted to provide background information and context and has been used to guide the development of potential pedestrian and bicycle improvements throughout the study area. This section provides documentation of community assets and history, existing transportation facilities, planned improvements, and identified gaps in the current multimodal network.

Community Assets

The West Tampa area is rich with historic and modern community assets, including a state-of-the-art community center, a recently-refurbished riverfront park, and the first public library in Hillsborough County. Recognizing, documenting, and mapping the range of community assets aids in identifying where people are going within the neighborhood and how to create a network of facilities that effectively connects people to destinations that are frequented. Figure 3 shows the location of community assets, including the many parks, community centers, and schools located within and adjacent to the study area.

Several community centers are scattered throughout the study area that provide a range of services and recreational opportunities for residents of varying incomes. The newest community center is the new Bryan Glazer Family Jewish Community Center (JCC), which opened in December 2016 in the historic Fort Homer Hesterly Armory building and has 100,000+ square feet for community services, including aquatics, visual arts, senior centers, areas for teens and tweens, event space, community services space, and a business

accelerator and incubator. Other community centers include the Dr. Martin Luther King Jr. Community Center with a pool complex, the Rey Park Community Center, the Tampa Bay Community Center, and the David Barksdale Senior Citizen Center. The Loretta Ingraham Center and Pool is immediately outside the study area boundaries.

The study area is home to eight city parks. The two major parks are: MacFarlane Park, the largest and most central in the study area, and the newly-renovated Julian B. Lane Park, immediately adjacent to the study area. Other parks in the study area include Jim Walters Park, Lincoln Gardens Park Soccer Field, Fremont Linear Park, Salcines Park, Villa Brothers Park, Rey Park, and the Dr. Martin Luther King Jr. Center Parks.

The West Tampa area is home to one public library, the West Tampa Branch Library, which was Hillsborough County's first public library. Funded by a \$17,500 grant by Andrew Carnegie, the structure opened in 1914 and is currently recognized as a historical building, in part due to its Neo-classical revivalist architecture, characteristic of Carnegie libraries.

The study area is home to five public schools, with three additional public schools within a mile of the study area. It also is home to two private schools. Just Elementary, West Tampa Elementary, and Macfarlane Elementary are within the study area, and Graham Elementary and Mitchell Elementary are within a half-mile of the study area. Stewart Middle Magnet School is the only middle school in the study area, and Roland Park K-8, Blake High School, and Jefferson High School are immediately outside the study area. Other notable schools near the study area include St. Joseph Catholic School, Tampa Preparatory School, and the University of Tampa.



Figure 3: Community Assets and Points of Interest

Overlays and Special Districts

Several distinct overlays or special district designations are located within the study area, including a CRA, a National Historic District, and two Special Overlay Districts.

Community Redevelopment Areas

The West Tampa CRA (see Figure 4), established in 2015, is located within the study area and encompasses 964 acres immediately adjacent to the Central Business District (CBD). The West Tampa area was identified as being physically, economically, and aesthetically distressed, and the CRA and the use of Tax Increment Financing (TIF) were created to allow for strategic investments and facilitate redevelopment throughout the community.

West Tampa National Historical District

West Tampa is home to a nationally-recognized Historic District – home to buildings, properties, and sites that have been designated as historically or architecturally significant. National Historic Districts are recognized through the US Department of the Interior under the National Park Service, are afforded no special legal status, and impose no restrictions on what property owners may do with a designated property. Historic Districts contain two types of properties—contributing and non-contributing; contributing structures are broadly considered to add to the historical integrity or architectural qualities that make a historic district significant. Figure 5 shows the extent of the West Tampa National Historic District.

Overlay Districts

The West Tampa area overlay districts are shown in Figure 6.

West Tampa Overlay

The West Tampa Overlay District is intended to ensure that all types of infill development and other major additions to structures are compatible in building and structural orientation, design elements, height, lot dimensional requirements, public safety, and other site and spatial relationships set by current precedent in the area. Standards within the overlay include setbacks, roof pitches, parking, and other elements intended to complement or simulate the historic and architectural significance of the neighborhood.

Westshore Overlay

The Westshore Overlay District Standards are designed to guide the future development and character of the Westshore area by creating an appealing business, commercial, and residential development environment and improve existing conditions through the lens of public health, safety, comfort, amenities, properties, and general welfare. The standards provide guidance on the appropriate advertisement of goods and services, enhancing pedestrian and bicyclist connectivity, and increasing public awareness of the Westshore District as a significant economic activity area with high concentrations of retail, business, and residential and mixed-use density. The standards simultaneously aim to protect and preserve the existing lower-density residential development in the District from encroachment and adverse impacts and identify several pedestrian priority streets that include guidance on sidewalk widths, setbacks, building heights, and other design criteria. Identified priority streets include Westshore Boulevard, Lois Avenue, Spruce Street, Himes Avenue, Kennedy Boulevard, Dale Mabry Highway, and Hillsborough Avenue.

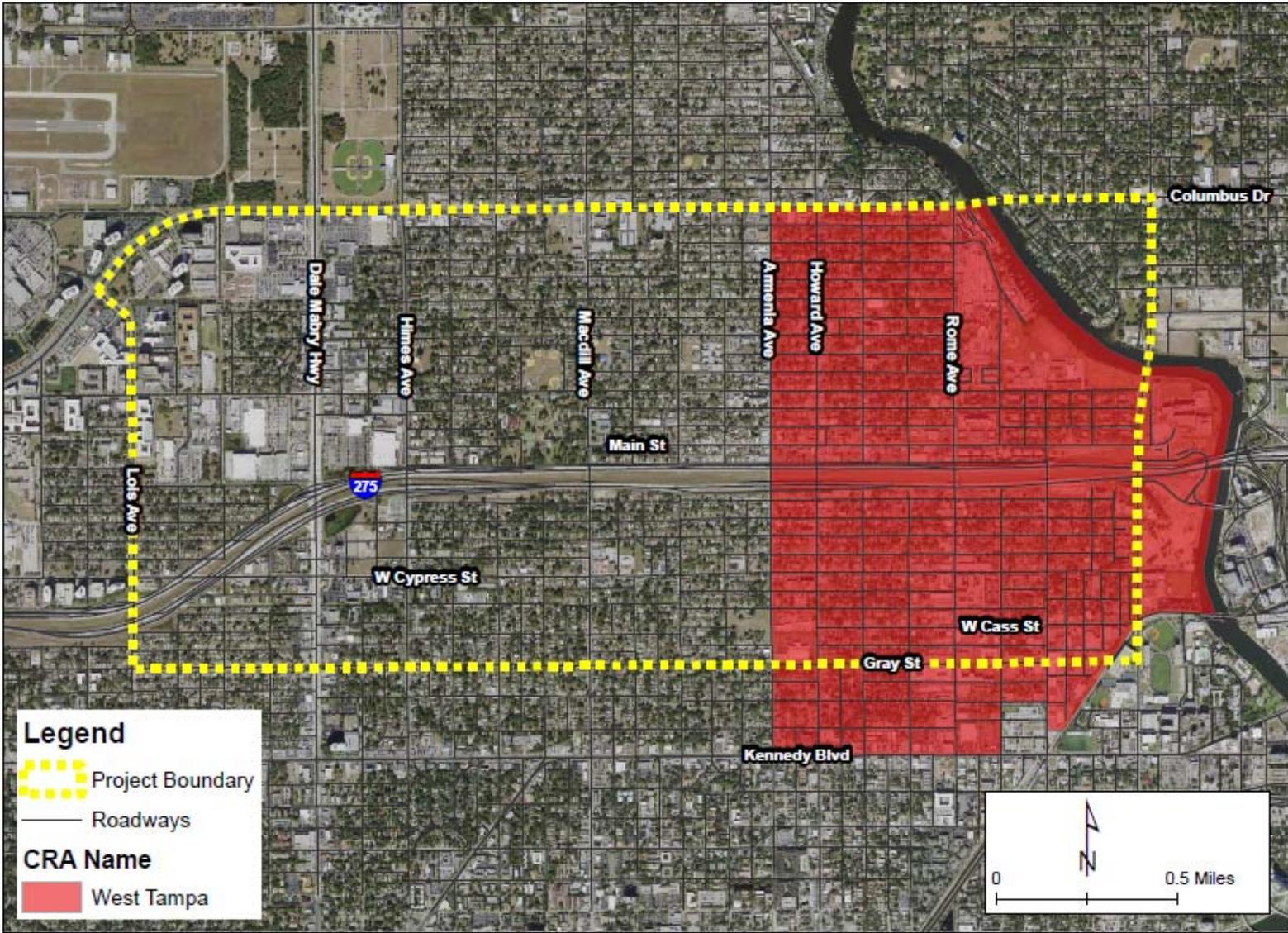


Figure 4: Community Redevelopment Areas

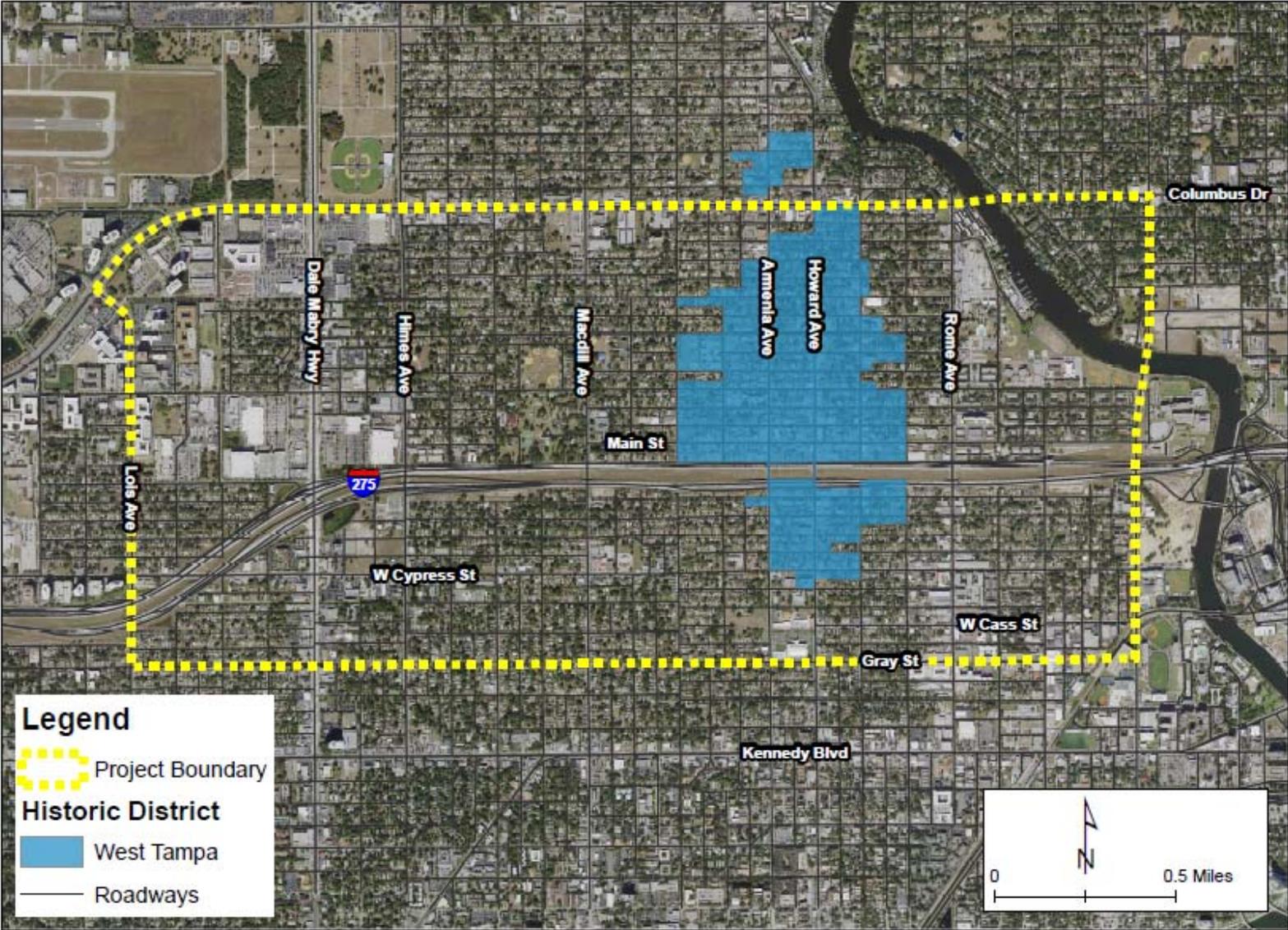


Figure 5: West Tampa Historic District

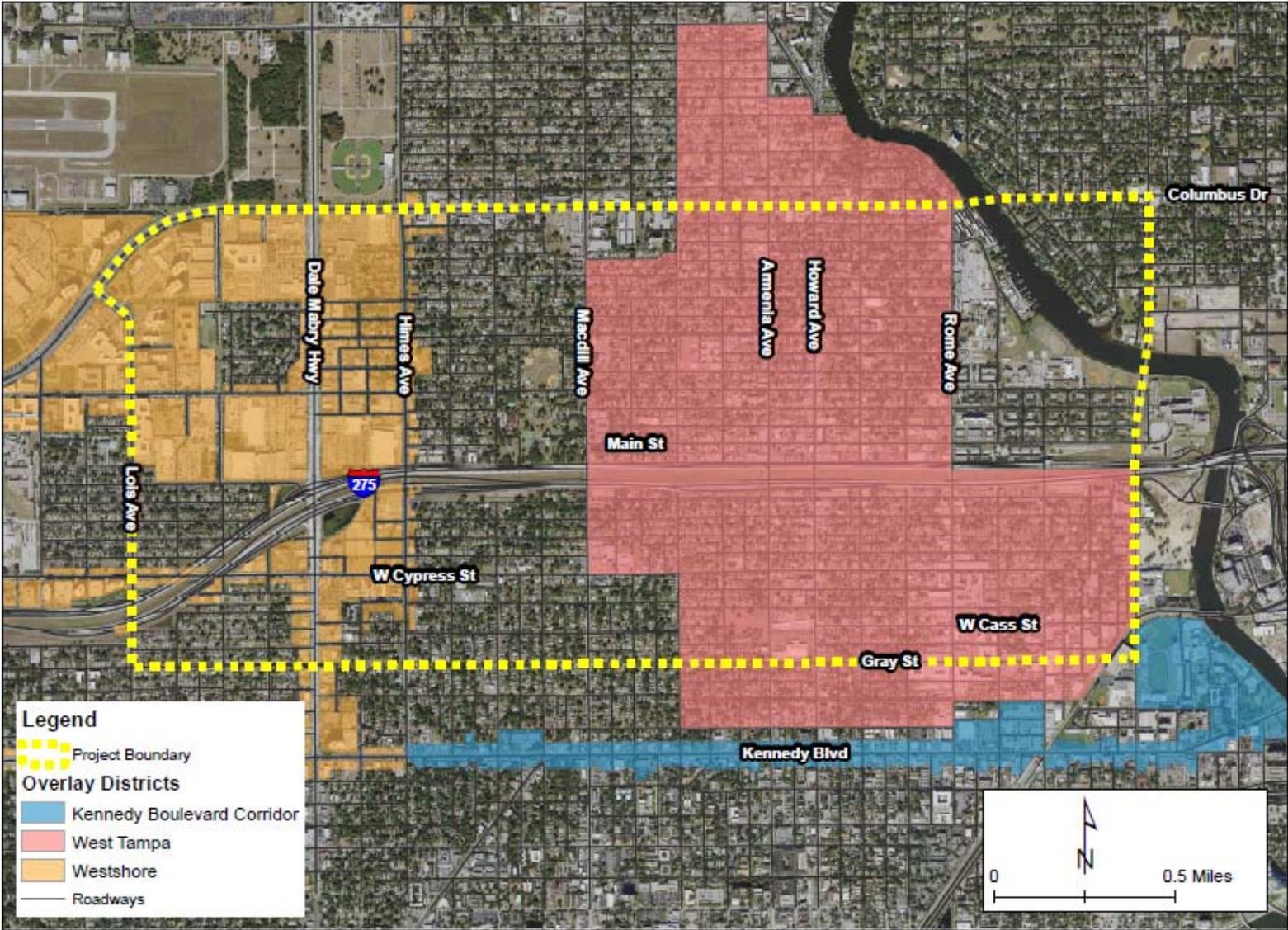


Figure 6: Overlay Districts

Roadway Classification

Roadways are grouped into functional classes according to the character of the service they provide or are intended to provide. The following are the major roadways in the study area grouped by their current functional classification:

- *Arterial* – Dale Mabry Highway, MacDill Avenue, Howard Avenue, Armenia Avenue, Lois Avenue, Columbus Drive, N Boulevard
- *Collector* – Habana Avenue (I275 to Columbus Drive), Himes Avenue, Cass Street, Cypress Street (Lois Avenue to MacDill Avenue), Willow Avenue
- *Neighborhood Collector* – Cypress Street (MacDill Avenue to N Boulevard), Main Street, Spruce Street (MacDill Avenue to Lois Avenue)

Intersection Control

In 2015, Florida ranked as the #1 state in the country for intersection-related traffic fatalities; 30% of all traffic fatalities in Florida occur as a result of intersection-related crashes. A great opportunity for improving the safety of the transportation network in the study area lies in improving or addressing operational and safety issues at at-grade intersections. As part of the existing conditions analysis, all signalized and four-way stop intersections within the study area were identified and mapped and are shown in Figure 7.

Pedestrian Facilities

Sidewalks and other facilities such as curb ramps are essential components of creating a safe, accessible, and well-connected

pedestrian network. A significant portion of the roadways within and immediately surrounding the study area have a sidewalk on one or both sides of the roadway, and the major roadways typically have a sidewalk and ADA accessible curb ramps on both sides of the roadway and at intersections. Figure 8 shows existing sidewalks along with current sidewalk gaps in the study area, and Figure 9 shows sidewalk gaps along the classified/major roadway network. Consideration to prioritizing sidewalks along these streets should be given. It is important to note that current projects are addressing sidewalks and the pedestrian network along Himes Avenue, Cass Street, Lois Avenue, Willow Avenue, and North Boulevard.

Bicycle Facilities

Bicycle facilities including trails/shared-use paths, bicycle lanes, and shared-lane markings provide bicyclists with opportunities to travel on various facilities based on their levels of comfort and experience. Figure 10 shows the various existing bicycle facilities within the greater West Tampa area.

Several planned bicycle facilities are within and adjacent to the study area. Figure 11 shows these planned improvements along with the existing facilities. A few of the more prominent bicycle improvements include the expansion of the Green Spine, a protected two-way cycle track along Cass Street from the Cass Street Bridge to Howard Avenue; buffered bike lanes along both Howard Avenue and Armenia Avenue between Kennedy Boulevard and Columbus Drive; new bike lanes along Himes Avenue and along Lois Avenue between Kennedy Boulevard and Boy Scout Boulevard; and a potential trail bridge along the south side of I-275 at Dale Mabry Highway.

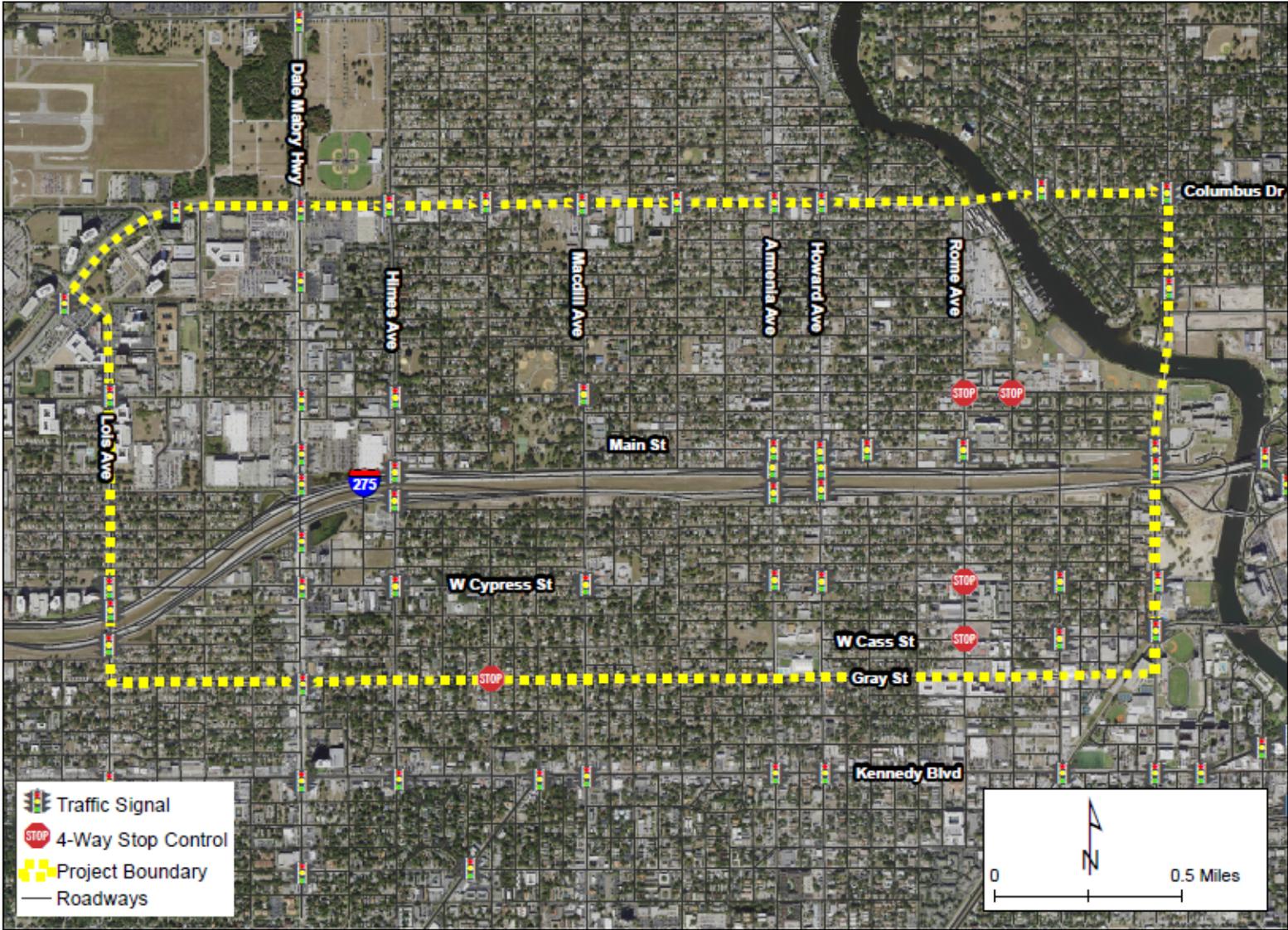


Figure 7: Existing Intersection Controls

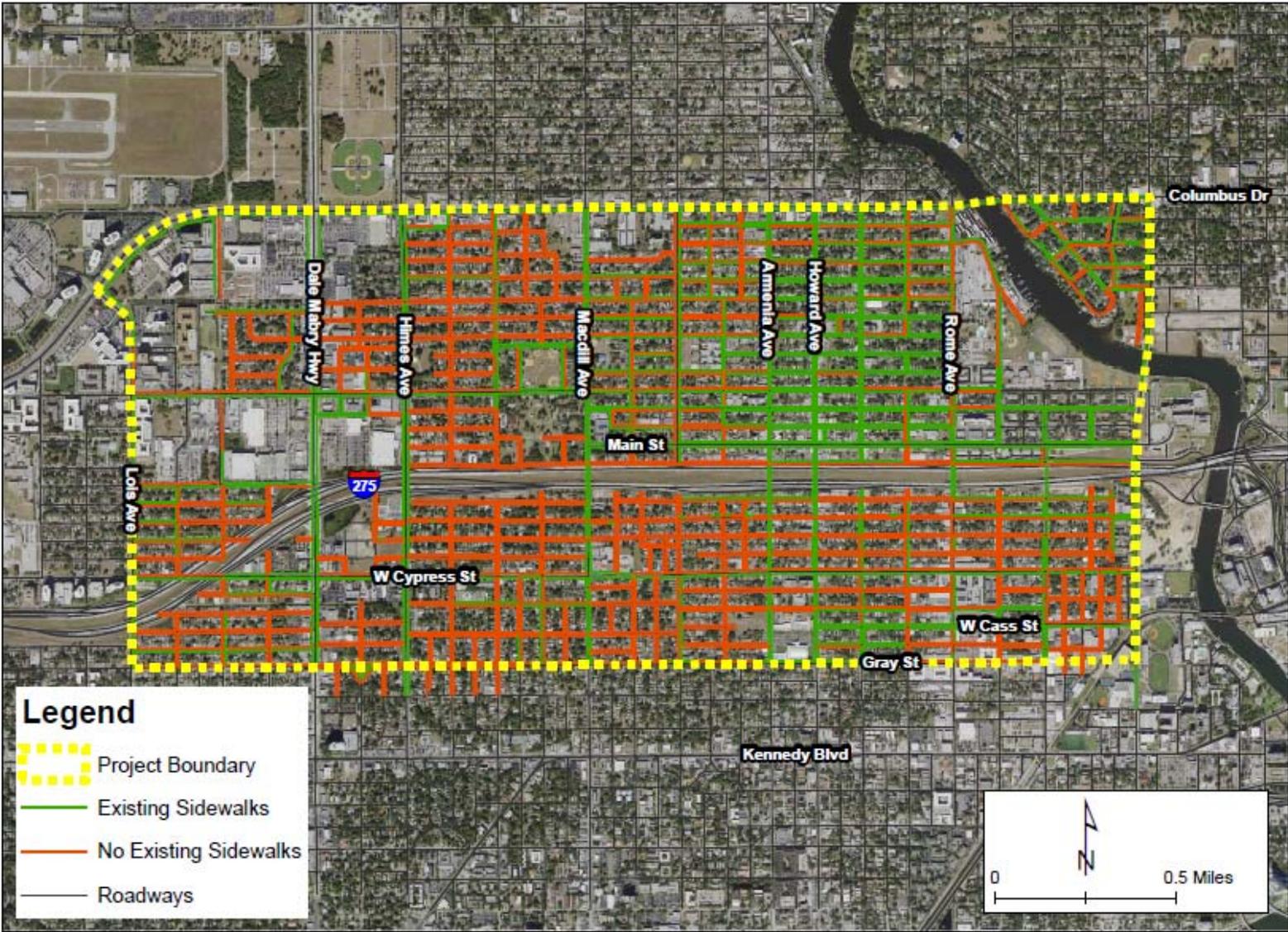


Figure 8: Existing Sidewalks and Gaps

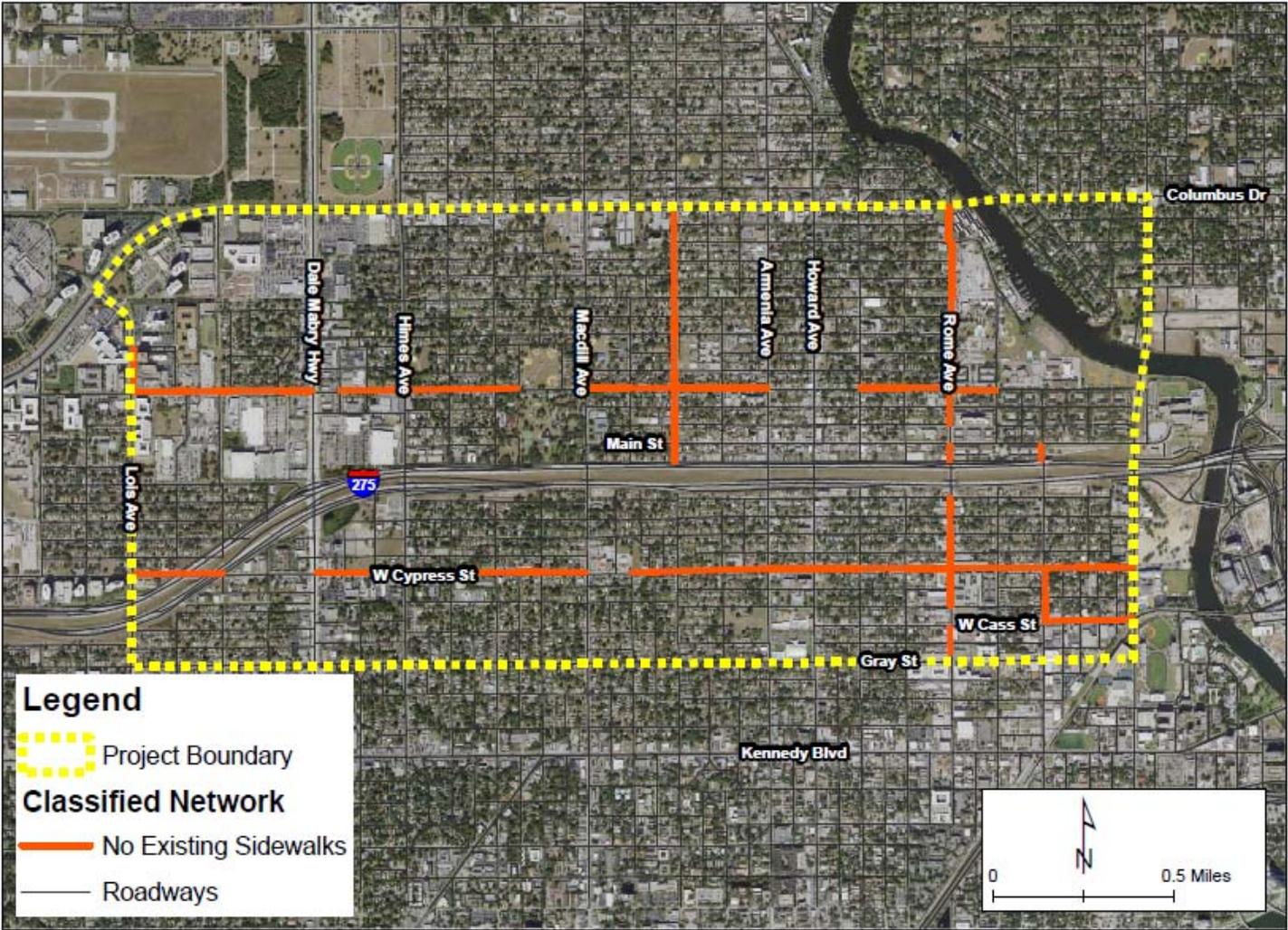


Figure 9: Sidewalk Gaps on Classified Network

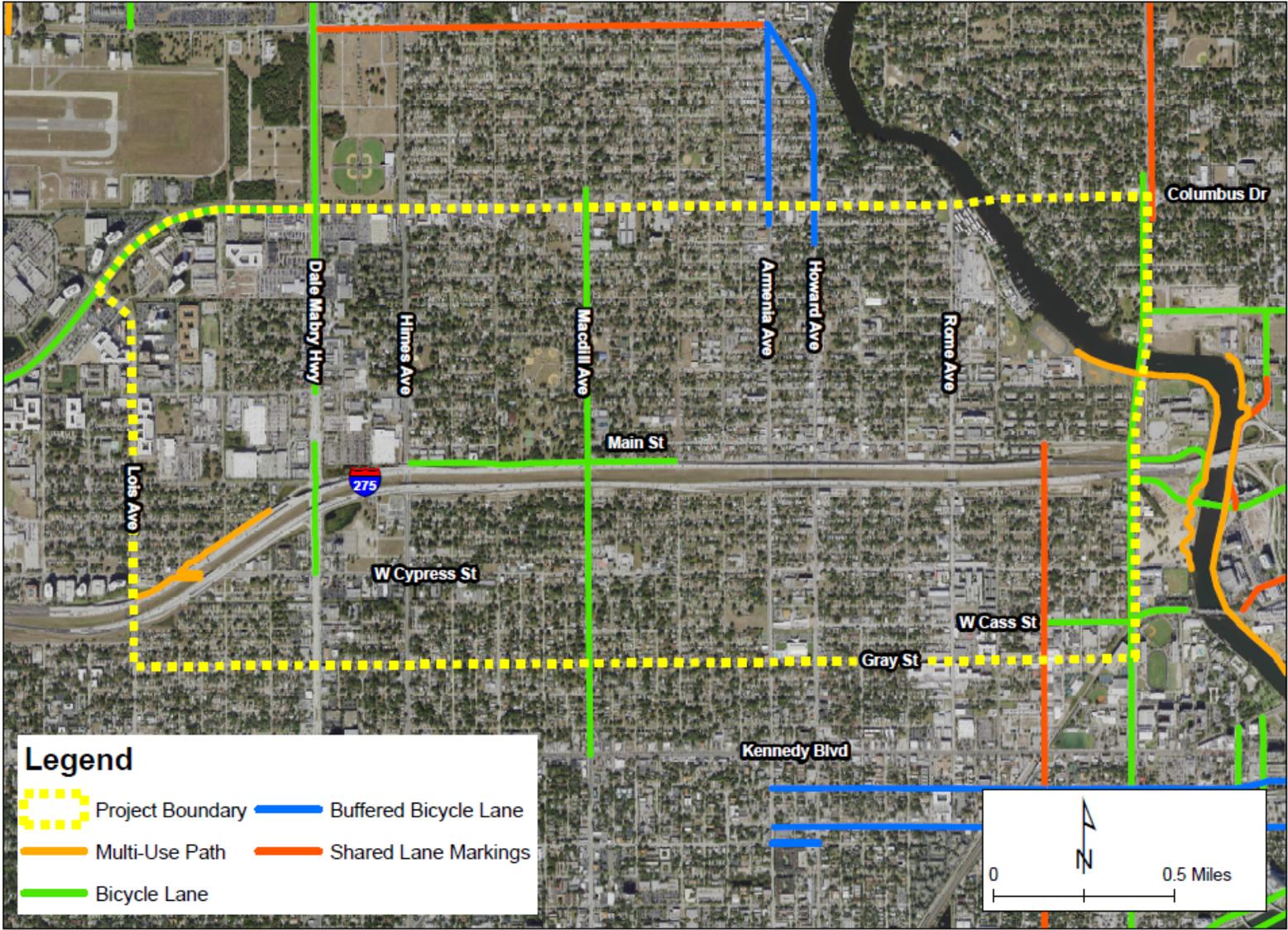


Figure 10: Existing Bicycle Infrastructure

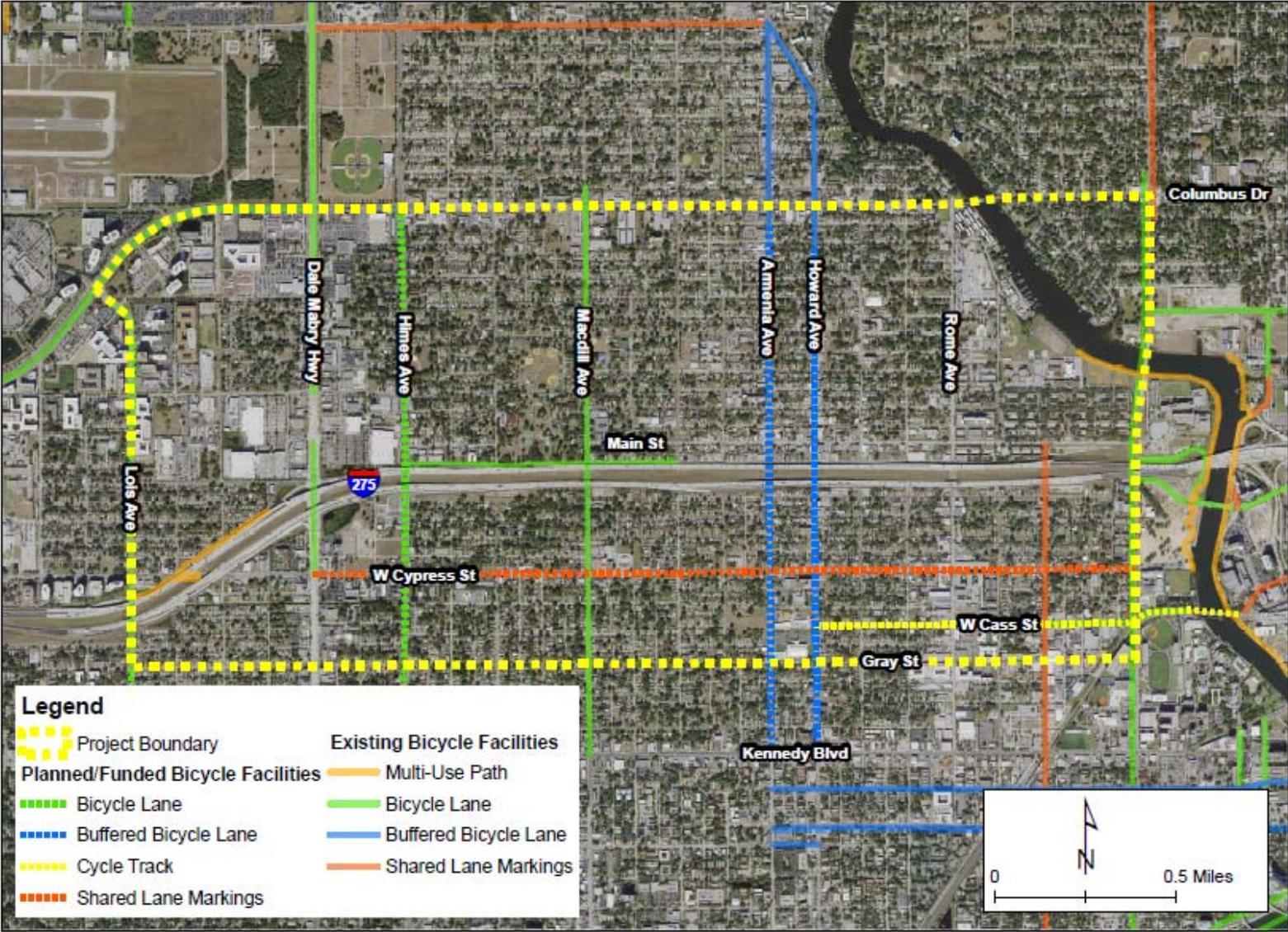


Figure 11: Planned and Existing Bicycle Infrastructure

Crash History

To help inform and prioritize safety improvements, a five-year (2013–2017) crash history, obtained from the FDOT District 7 Crash Data Management System, was reviewed. Figure 12 shows the location and concentration of total crashes that occurred within the study area; crashes were grouped into clusters based on proximity to each other to better show where the crashes occurred and the concentration of crashes within the study area. Based on review, it was determined that most crashes were concentrated along the study area’s major roadways, with the highest crash clusters near the following intersections:

- Dale Mabry Highway at Columbus Drive
- Cypress Street at Dale Mabry Highway
- Cypress Street at Lois Avenue
- Armenia Avenue off-ramp from I-275
- Himes Avenue at Columbus Drive

Given that a major focus of this planning effort is to improve pedestrian and bicycle safety, understanding where pedestrian and bicycle crashes are occurring is an essential component of identifying potential safety enhancements. Figure 13 shows clusters of pedestrian and bicycle crashes within and adjacent to the study area. Similar to total crashes, most of the pedestrian and bicycle crashes are concentrated along the major roadways, with the following locations having the highest concentration of pedestrian and bicycle crashes:

- Dale Mabry Highway at Gray Street
- Dale Mabry Highway at Spruce Street
- Dale Mabry Highway at Kennedy Boulevard
- Rome Avenue at Main Street

Transit Routes and Ridership

To help inform the design of the pedestrian and bicycle network, existing transit routes, stops, and stop ridership were evaluated. Figure 14 shows the existing fixed-route transit network within the study area, and Table 1 lists the existing transit routes with their existing service frequencies and operating times. Figure 15 shows stop-level transit ridership (boardings + alightings) for the stops within the study area.

The majority of routes within the study area operate on 30-minute headways during weekdays and 60-minute headways on weekends. Existing bus routes provide connections to the St. Petersburg Gateway area, Tampa International Airport, Downtown Tampa, Yukon Transfer Center, and other essential destinations in the county. In addition to the fixed-route services provided by Hillsborough Area Regional Transit (HART), there is a FLEX Route within the study area that provides door-to-door or door-to-transit service for all within the FLEX zone.

The highest ridership fixed-route bus stops within the study area are:

- Himes Avenue at Columbus Drive
- Dale Mabry Highway at Spruce Street

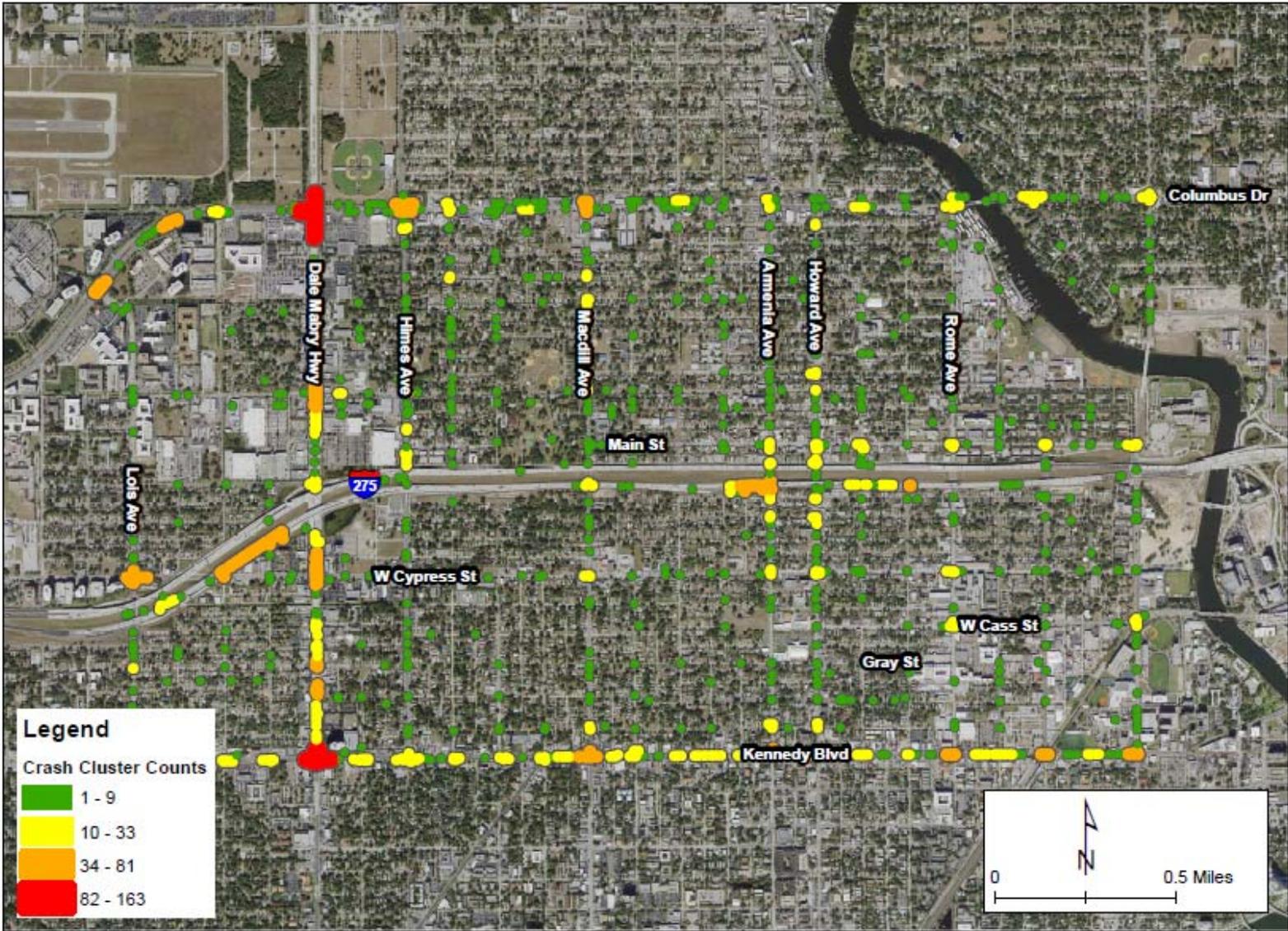


Figure 12: All Crash Clusters and Counts

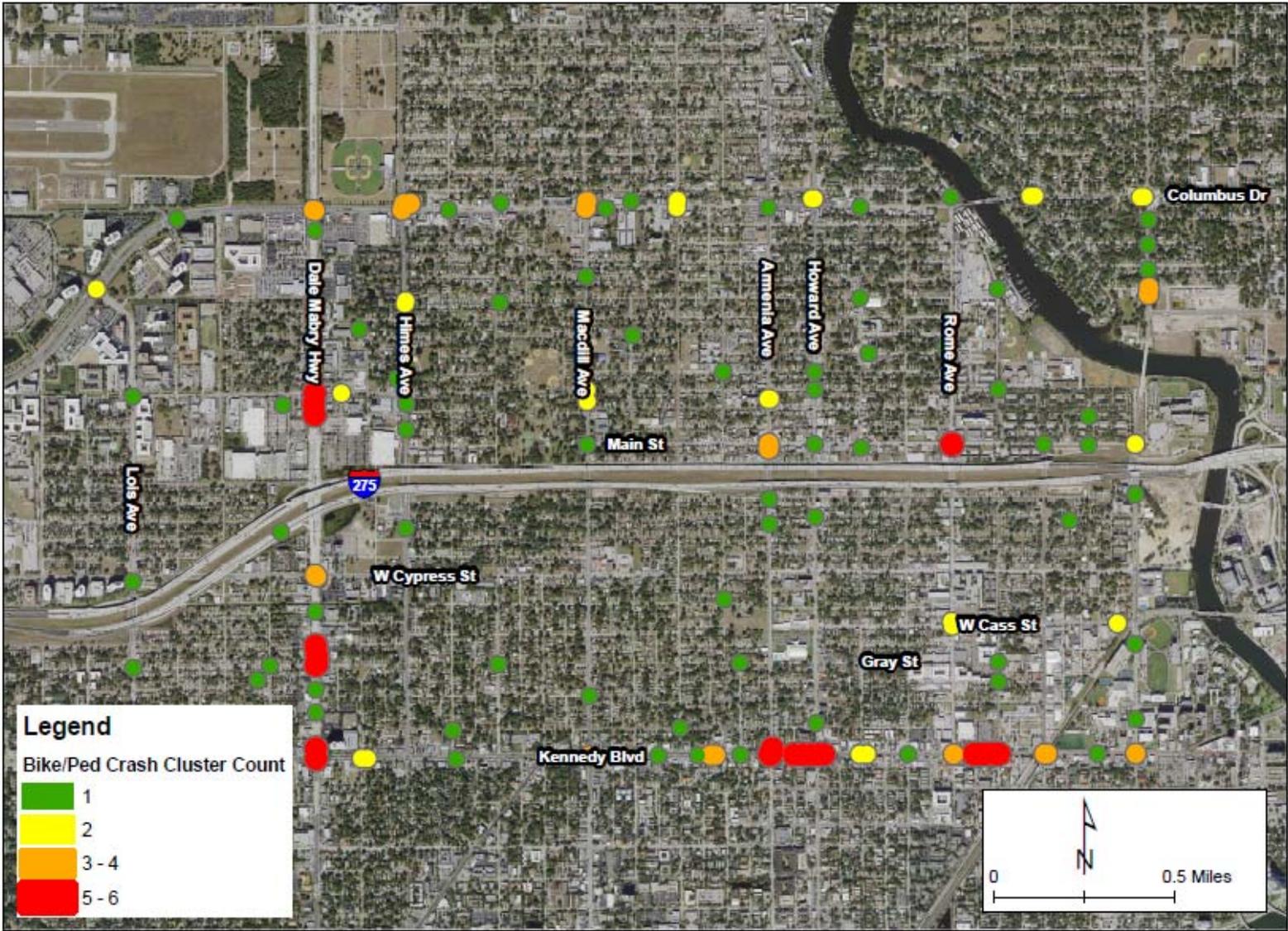


Figure 13: Bicycle and Pedestrian Crash Clusters and Counts

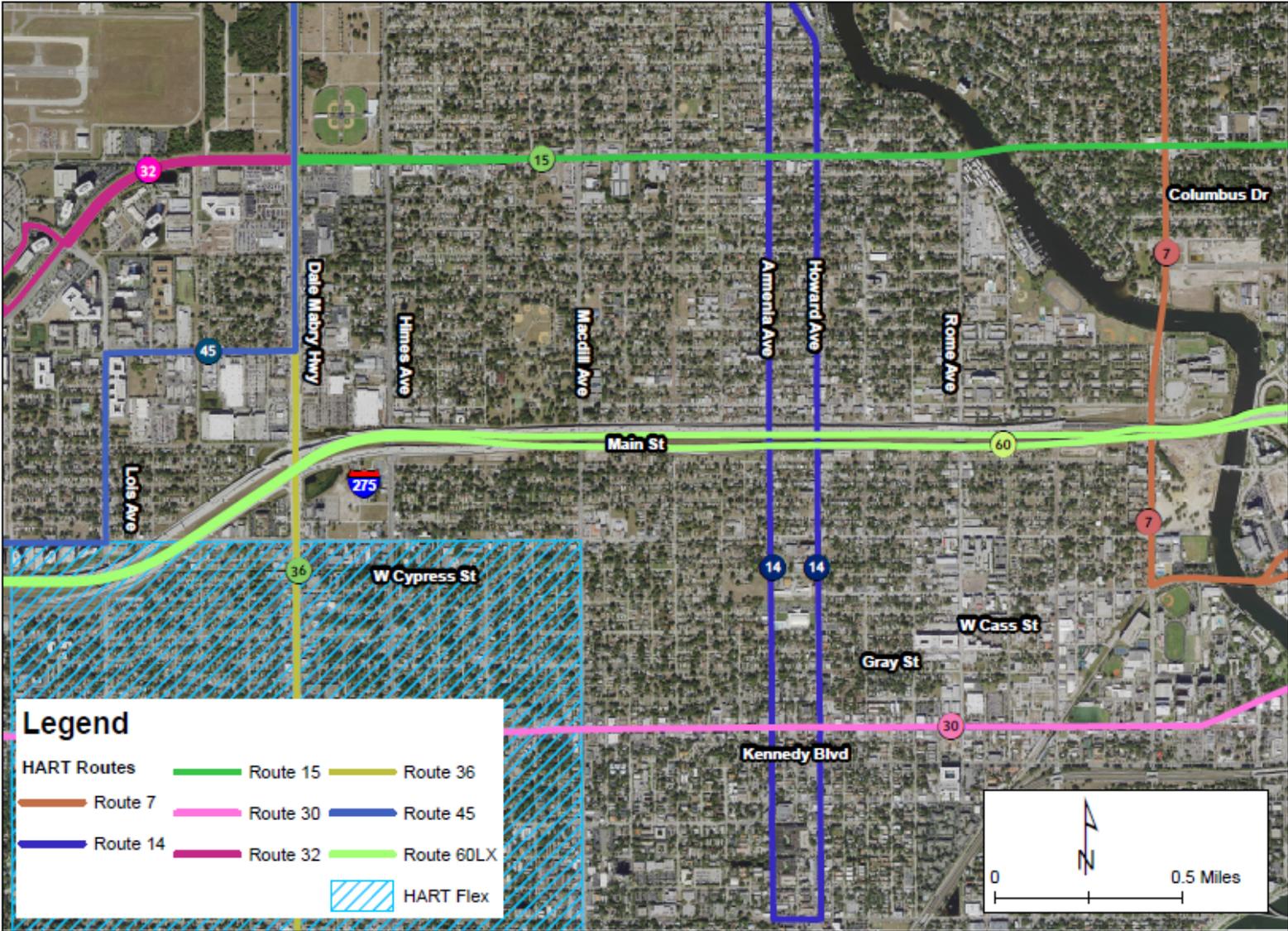


Figure 14: Existing Bus Service

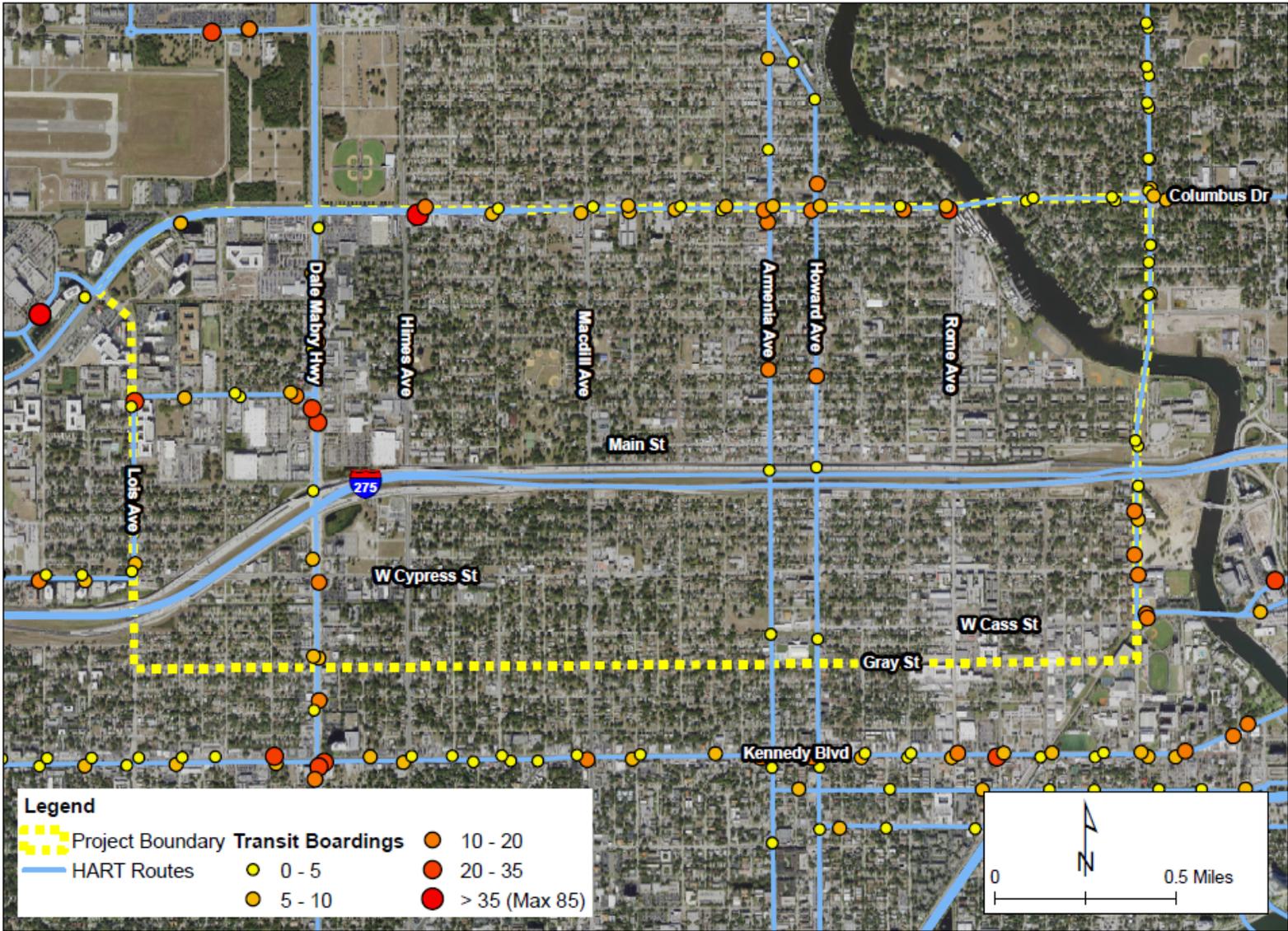


Figure 15: Average Daily Bus Stop Activity

Table 1: Existing Transit Routes Service in West Tampa

| | Route | Weekday Frequency | Weekday Span | Weekend Frequency | Weekend Span |
|------|-------------------------------|-------------------|------------------------|-------------------|------------------------|
| 7 | West Tampa | 30 min | 5:00 a.m. – 11:00 p.m. | 60 min | 6:30 a.m. – 11:00 p.m. |
| 14 | Armenia/Howard Avenue | 30 min | 5:00 a.m. – 11:00 p.m. | 30 min | 6:30 a.m. – 11:00 p.m. |
| 15 | Columbus Drive | 30 min | 5:00 a.m. – 11:00 p.m. | 60 min | 6:00 a.m. – 10:45 p.m. |
| 30 | Kennedy Boulevard | 30 min | 4:30 a.m. – 12:30 a.m. | 30 min | 6:45 a.m. – 12:30 p.m. |
| 32 | Dr. MLK Jr. Boulevard | 30 min | 5:00 a.m. – 12:45 a.m. | 60 min | 7:00 a.m. – 11:40 p.m. |
| 36 | Dale Mabry Hwy / Himes Avenue | 30 min | 5:00 a.m. – 11:00 p.m. | 60 min | 5:50 a.m. – 10:45 p.m. |
| 45 | Yukon / Westshore | 30 min | 5:00 a.m. – 11:00 p.m. | 60 min | 6:50 a.m. – 10:30 p.m. |
| 60LX | Cross County Limited Express | 60 min | 5:30 a.m. – 10:20 p.m. | 60 min | 6:30 a.m. – 10:20 p.m. |

Planned Capital Improvements

Himes Avenue Improvements

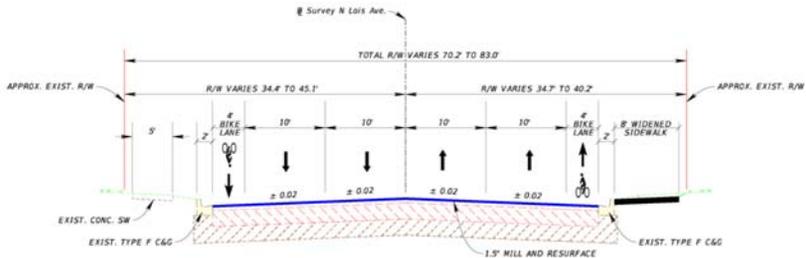
Himes Avenue between Kennedy Boulevard and Columbus Drive is currently a four-lane roadway with a center two-way left-turn lane and no existing bicycle facilities. The City of Tampa currently has planned improvements for Himes Avenue that will include the installation of raised median islands and dedicated left-turn lanes and as well as the narrowing of the existing travel lanes to create space for a bike lane on both sides of Himes Avenue. Additionally, a new mid-block crossing is planned along Himes Avenue between Carmen Street and Cass Street.



Himes Avenue, Showing Bike Lanes, Median, and Midblock Crossing North of Beach Street

Lois Avenue Improvements

Lois Avenue is currently being evaluated for a complete street redesign between Kennedy Boulevard and Boy Scout Boulevard. A concept study has identified bicycle and pedestrian connectivity issues and established new lane configuration that includes 4' bike lanes on both sides of the roadway.



Source: City of Tampa

**Lois Avenue, Proposed Typical Section
Cypress Street to Spruce Street**

Willow Avenue Improvements

Willow Avenue is currently receiving shared-lane markings from Kennedy Boulevard to Main Street and improvements to address sidewalk and ADA issues along both sides of the street between Cass Street and I-275. Additional signage and pavement markings are also proposed as part of the overall improvements along Willow Avenue.

Howard-Armenia Avenue Improvements

Although within the City of Tampa, Howard Avenue and Armenia Avenue are owned and maintained by Hillsborough County, which is currently developing plans to resurface both in the near future. A recently-completed resurfacing project along these streets north of

Columbus Drive included the addition of buffered bicycle lanes. This report will examine enhancements that could potentially be incorporated into the upcoming resurfacing project.



Willow Avenue, Looking North from Arch Street



Howard Avenue at Columbus Drive, Looking South

Rome Avenue Improvements

Identified in Phase I of the City of Tampa Walk–Bike Plan are improvements to Rome Avenue that address sidewalk gaps and the addition of bicycle lanes. The City’s current capital improvement program lists construction for these improvements some time in fiscal year 2020.



Rome Avenue at Cass Street, Looking North

West Cypress Street Improvements

West Cypress Street is functionally classified as a Collector Road from Dale Mabry Highway to MacDill Avenue and a Neighborhood Collector Road from MacDill Avenue to N Boulevard. Improvements to the roadway are currently divided into two phases that are being constructed independently and are intended to improve mobility and accessibility between the Westshore District and Downtown Tampa in accordance with Walk–Bike Plan Phase I.

Phase I of the W Cypress Street improvements from N Dale Mabry Highway to N Himes Avenue include:

- Widening the existing three-lane roadway to a four-lane roadway with a centered left-turn lane from Dale Mabry Highway to Himes Avenue
- Reconstructing the signalization infrastructure at Himes Avenue
- Providing a continuous sidewalk on both sides of the roadway
- Providing shared-lane markings

Phase II of W Cypress Street improvements from N Himes Avenue to N Boulevard include:

- Providing shared-lane markings
- Providing sidewalk connectivity on the north side of Cypress Street from Himes Avenue to MacDill Avenue
- ADA upgrades including curb ramps



Cypress Street at Oregon Avenue, Looking West

West Spruce Street Improvements

West Spruce Street is functionally classified as a Neighborhood Collector Road and consists of two lanes with a center two-way left-turn lane from Lois Avenue to Dale Mabry Highway and a two-lane, two-way roadway from Dale Mabry Highway to N Boulevard. Proposed improvements to W Spruce Street include roadway resurfacing and targeted improvements to operation and safety issues and to alleviate congestion.

Preliminary engineering is underway to identify operation improvements to traffic flow and congestion at the Dale Mabry Highway intersection. Additionally, the project is looking at a potential midblock crossing and the possibility of a multi-use path between Hesperides Street and Manhattan Avenue.



Source: City of Tampa
West Spruce Street

East-West Green Spine/Cass Street

The East-West Green Spine is an urban trail/cycle track project that, when complete, will provide pedestrian and bicycle connections between North Hyde Park, Downtown, and Ybor City. The first phase of the Green Spine, between the Cass Street Bridge and Nebraska Avenue, was completed as part of the two-way conversion project along Cass Street and Tyler Street. The second phase of the Green Spine is expected to follow Cass Street and connect the North Hyde Park neighborhood from Howard Avenue into Downtown with a separated two-way cycle track. The current capital improvement program has identified just under \$1 million in construction funds for the extension of the Green Spine.



Source: City of Tampa

Proposed Green Spine Concept between Howard Avenue and Willow Avenue

Julian B. Lane Park

Julian B. Lane Park, on the eastern border of the study area, recently opened after a \$35 million renovation that provided a variety of new services, amenities, and recreation opportunities for the West Tampa area. The park is envisioned to become a major activity center and attraction, not only for the West Tampa community but for the entire City of Tampa.



Enhancing Safety and Mobility in West Tampa

This section explores potential safety and mobility enhancements and is arranged in the following sections:

- *Best Practice Enhancements* – This section reviews a variety of general transportation best practices that should be considered throughout the study area, whether specifically mentioned or not. In many instances, the Best Practice Enhancements noted herein may already have been established and are in place in many locations throughout the study area.
- *Site-Specific Enhancements* – This section explores opportunities to enhance safety and mobility at specific locations/corridors throughout the study area. Although the concepts from these enhancements could be applied elsewhere, they were developed specifically for the identified locations.

Best Practice Enhancements for Safety and Mobility

The “Livable City” vision for Tampa promotes a safe, accessible, and effective network of bicycle and pedestrian pathways across Tampa that connect people and neighborhoods to key destinations and also allow for local circulation. With the wave of growth and redevelopment in the West Tampa area, and given recent plans from the variety of transportation agencies in the Tampa Bay region, a thorough multimodal plan for the West Tampa area is needed to fulfill the “Livable City” vision. Although existing plans create a relatively effective network of trails, pathways, and sidewalks that connect the West Tampa area to key destinations such as Downtown

Tampa, Westshore, and the USF area, major network gaps exist within the study area that impede the full effective use of transportation facilities. Existing plans have focused on networks that connect the primary activity centers of Tampa, but have not been as focused on intra-neighborhood networks.

A variety of transportation best practices are available for moving the West Tampa area towards the “Livable City” vision and connecting and enhancing the planned bicycle and pedestrian networks. This list of Best Practice Enhancements is by no means exhaustive, but it provides a range of enhancements that may or may not be appropriate based on an areas context, goals, and financial feasibility. Additionally, the identified Best Practice Enhancements typically go beyond providing improvements to the transportation realm and often create synergies that help beautify areas, bolster economic development, and improve community cohesiveness and sense of place.

Complete Sidewalks

Sidewalks are an essential component of a transportation network and act as a conduit for pedestrian movement, access, and connectivity. Sidewalks are the ultimate public space, serving as facilitators of economic activity, social interaction, and community cohesion. Providing sidewalks along both sides of all major roadways should be a priority, followed by completed connections along local streets by filling sidewalk gaps and missing links.

Speed Management

Speed plays a critical role in the cause and severity of crashes, and there is a direct correlation among higher speeds, crash risk, and injury severity. Speed is also a factor in determining livability and overall comfort for all travel modes along a street. Managing travel speeds can help make streets feel like a part of the city rather than highways running through it.

Although speed reduction cannot be achieved simply by reducing the posted speed limit, a variety of speed management strategies can be employed to bring speeds to a more “livable” level. There are two approaches to managing speed—change the physical design of the street and/or change people’s perceptions and responses to the street.

Changing a street’s design changes people’s behavior. Street design traditionally has been based on highway design principles that accommodate higher speeds and are forgiving of driver error. Designing for higher speeds often means including mandated design features such as larger curb radii, wider travel lanes, and clear zones, features that have many positive benefits on highways intended to move a large number of fast-moving vehicles, but in complex urban environments with multiple users traveling at various speeds often create a less-than-favorable environment, especially for non-motorized users.

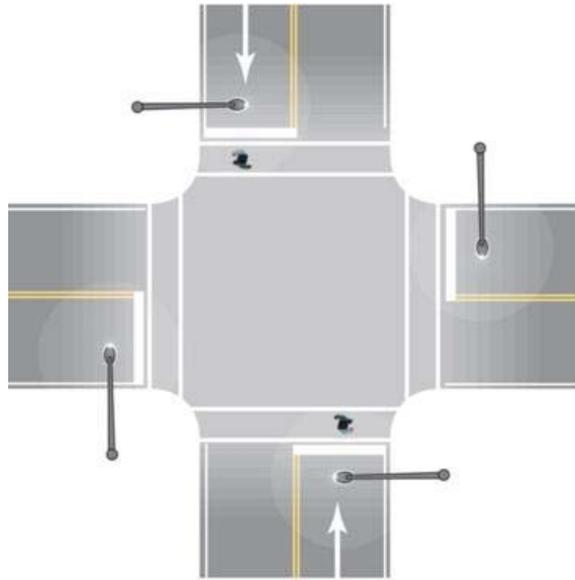
The conventional highway design practice for establishing posted speed limit involves establishing a roadway design speed based on existing observed (85th percentile) speeds on a roadway. The design speed is then used to determine the various design features of the roadway. An alternative approach to establishing posted speed is to

set the design speed and design features based on a target speed – the speed intended for drivers to travel – rather than the observed operating speeds. Target speed should be determined based on the context of the street and consistent with the existing/desired level of multimodal activity to provide mobility for motor vehicle and a safe environment for non-motorized users.

Using target speed to establish a roadway’s design speed can result in greater flexibility in implementing speed management strategies. Popular design strategies used to manage traffic speeds, change driver behavior, and improve the quality of the non-motorized environment include narrower lane widths, roadside landscaping, and extended curbs. Exploring strategies to manage speeds and create a safer and more livable environment throughout West Tampa should be supported and implemented where feasible.

Lighting

Street lighting is a critical component of street safety and should be designed to provide adequate illumination for all roadway users. Many factors affect street lighting and its effectiveness in improving safety, including the location and space of lights; orientation, intensity (brightness), and color; ambient light; type of light (e.g., LED or high-pressure sodium), and other factors. Generally, street lighting can be divided into two categories—intersection lighting and roadway lighting or lighting along the street. For intersection lighting, considerations to the placement of overhead lights in relation to the intersection and crosswalk should be considered; ideally, intersection lighting should be placed in advance of a crosswalk to positively illuminate pedestrians within the crosswalk (Figure 16).



Source: FHWA

Figure 16: Intersection and Crosswalk Lighting Design

Another form of lighting along the street is pedestrian-level lighting, which can enhance the overall environment and sense of place along a street while also improving pedestrian visibility to motorists. Pedestrian lighting differs from traditional street lighting in that it is often placed lower in height and is designed to light the primary walkway as opposed to the street itself.

Intersection Enhancements

As intersections are among the most dangerous places for road users, a variety of best practices have been developed to improve the safety and mobility of users. Possible intersection enhancements include the following:

Improved Crosswalk Markings – Crosswalks are a vital component of the pedestrian network and provide a designated crossing area for pedestrians, alerting drivers to the likelihood of pedestrians. Providing high-emphasis markings (Figure 17) helps discourage drivers from encroaching on the crosswalk area and may help pedestrians assert their right-of-way. Marked crosswalks should be provided at all signalized intersections and considered along major streets at cross-street and major driveway intersections.



Source: safety.fhwa.dot.gov

Figure 17: High-Emphasis Ladder Crosswalk Markings

Reduced Turning Radii – The radii of curbs and corners at intersections directly impact vehicle turning speeds and crossing distance for pedestrians. Smaller curb radii require vehicles to slow down more to complete a turning movement and are a key to creating compact urban intersections with safe turning speeds and short, safe pedestrian crossings. Figure 18 shows a reconstructed intersection corner with a reduced curb radius.



Source: pedbikesafe.org

Figure 18: Retrofitted Curb Cut with Smaller Turning Radius

Bulb-outs – Bulb-out (curb extensions or bump-outs) are extensions of the sidewalk into the roadway or parking lane at either intersections or mid-block locations. They provide additional space for pedestrians at intersections and increase pedestrian safety through improved visibility and shorter crossing distances. They also can be used to help reduce turning radii and slow down turning movement speeds. Figure 19 is an example of how bulb-outs can be used to reduce crossing distances and provide opportunities for an enhanced streetscape.

Roundabouts – Modern urban roundabouts and mini-roundabouts are near-circular intersections designed to reduce speeds, conflict points and provide for a more stable, smooth flow of traffic at intersections. Roundabouts may vary in size and design but follow the same general design principles and have similar applications. They are intended to make intersections safer through reduced speeds and reduced conflict points.

Neighborhood Traffic Circles – Similar to roundabouts, neighborhood traffic circles (Figure 20) are raised circular medians

constructed most often in the center of intersections along primarily residential streets. Vehicles approaching the circle must change their path of travel to maneuver around it, and they are often used in conjunction with an all-yield intersection. Although not as effective as roundabouts at managing travel speeds, neighborhood traffic circles can reduce travel speeds when used in series along a corridor, can promote a more consistent rate of travel, and provide an opportunity for increased aesthetics and landscaping.



Source: NACTO Urban Design Guide

Figure 19: Bulb-Outs



Source: NACTO Urban Design Guide

Figure 20: Neighborhood Traffic Circle

Mid-Block Crossings

Pedestrian crossings, particularly at or over busy roadways, are essential for creating a safe and uninterrupted pedestrian network. Although pedestrian crossing improvements typically focus on crossings at intersections, trail and mid-block crossings are also a needed component of pedestrian networks and often can be overlooked. Pedestrians are not always likely to cross at marked intersections, particularly where the markings are inconvenient or unsafe. Several pedestrian or trail crossings are proposed or needed within the study area.

Access to Transit

The so-called “first mile last mile” dilemma is a well-documented challenge for transit riders or those who wish to use transit. As a result, connecting the pedestrian and bicycle network to transit stop locations is an essential consideration for network design. Given that transit stops are traditionally located on busy high-traffic roadways, creating safe and accessible bicycle and pedestrian connections to stops can be a challenge. Best practices for creating improved access to transit for all users focus on complete street enhancements to auto-centric roadways and creating parallel alternative routes for other users where complete streets enhancements may not be practical.

Drainage

Streets and other impervious surfaces are a significant contributor to stormwater in urbanized areas, creating standing pools of water and flooding. Recognizing this dilemma, modern complete streets improvements are integrating stormwater management and green

infrastructure practices such as rain gardens (Figure 21) and bioswales into roadway design. Integrating stormwater management into street design allows for stormwater to be controlled at the source, provides an opportunity for improved aesthetics, may provide traffic calming benefits, and increases resiliency to climate change.



Source: dirt.asla.org

Figure 21: Bulb-Out with Rain Garden

Site-Specific Enhancements

The following section identifies potential improvements and recommendations for enhancing safety and mobility in West Tampa, with the aim of creating effective intra-neighborhood networks and significant safety enhancements. Through the variety of best practice treatments and practices discussed in the previous section, roadway safety improvements can significantly improve mobility for residents, beautify the neighborhood, bolster economic development, and reinforce the urban and social fabric of the area.

Complete Streets Opportunities

The term “complete streets” describes roadways designed and built to enable safe access for all users, including pedestrians, bicycles, motorists, and public transportation. Complete streets are accessible and promote safety and mobility for users of all ages and abilities. Additionally, complete streets can be used to encourage economic development activity, promote social cohesion, and make for an improved urban environment. Three corridors within the West Tampa study area were identified for potential complete street enhancements:

- Main Street from MacDill Avenue to N Boulevard
- Columbus Drive from Dale Mabry Highway to the Hillsborough River
- Howard Avenue and Armenia Avenue from Columbus Drive to south of Gray Street

Main Street

Main Street, once the heart of thriving West Tampa, is now the heart of social and economic development in the West Tampa neighborhood. The street and adjacent roadways are surrounded by a variety of historical structures and small businesses. Salcines Park fronts Main Street at Howard Avenue and serves as the center of the neighborhood. The western end of Main Street leads into Macfarlane Park, a major recreational area and greenspace for residents, and the eastern end connects into the West River redevelopment, which is planned as a new model for urban living. The historical and current significance of Main Street, the uses fronting the roadway, and a significant amount of existing pedestrian traffic provide additional opportunities for complete streets enhancements to reinforce Main

Street’s historic significance as the center of business and social life in West Tampa.

Main Street is a two-way two-lane undivided street with on-street parking on both sides throughout most of the corridor. The posted speed limit along Main Street is 25 mph. For most of its length, there is approximately 60 feet of right-of-way, comprising 40 feet of pavement and 5-foot sidewalks separated from the street by a 5-foot landscape buffer. Figure 22 is a representation of the typical section along the majority of Main Street.

Current pavement conditions along Main Street indicate that it has not been resurfaced in some time, as evidenced by cracked pavement, faded paint, and potholes. For the most part, the sidewalks along Main Street are in good condition and adequate for the existing levels of pedestrian activity, but there are locations where the sidewalks are severely cracked and in need of repair. There are existing street lights along the corridor, and it appears that many of the lights at intersections have been recently upgraded to brighter and more energy efficient LED lights.

In general, the identified complete streets enhancements for Main Street involve better delineating the on-street parking areas, which will have a narrowing effect on the travel lanes, improving the visibility of pedestrians at intersections through enhanced crosswalk markings and bulb-outs, installing neighborhood traffic circles at select intersections, and providing shared lane markings along the corridor. Due to the planned West River redevelopment, most of the identified enhancements are focused on the part of Main Street between MacDill Avenue and Rome Avenue, but there are some

identified enhancements for Main Street that could be considered between Rome Avenue and N Boulevard.



Figure 22: Main Street Existing Typical Section

The following is a detailed description of identified enhancements for Main Street.

Main Street, MacDill Avenue to Armenia Avenue – This portion of Main Street is primarily fronted by single family homes and begins to transition to commercial frontage near the Armenia Avenue intersection. While on-street parking is permitted through this

section the lack of on-street parking delineation creates the appearance of an extremely wide travel lane. There are no stops along Main Street between MacDill Avenue and Armenia Avenue, this in combination with wide travel lanes results in travel speeds that often exceed the posted 25 MPH through this segment. Some of the enhancements for this segment of Main Street include delineating the on-street parking areas and providing shared lane markings. These improvements will help to better define the roadway surface and create a narrower feeling street that is more conducive to non-motorized users (see Figure 23).



Figure 23: Proposed Typical Section for Main Street from MacDill Avenue to Armenia Avenue

Potential enhancements along this segment of Main Street include the following:

- As a considerable amount of westbound to southbound turning movements were observed during field visits, consider conducting a turning movement count at these locations to determine if a westbound left-turn lane on Main Street would be warranted. Additionally, based on the turning movement count, consider determining if a traffic signal would be warranted at this location.
- The north side of Main Street east of MacDill Avenue is used by Macfarlane Park IB Elementary School as a student pick-up/drop-off area. Consider providing pavement markings/stripping in front of the school to help designate this area as a drop-off/pick-up area and consider including signage stating that there is no parking during the designated drop-off and pick-up times.
- The sidewalk along the north side of Main Street between MacDill Avenue and Gomez Avenue is severely cracked in multiple locations and poses a potential trip hazard, especially given the proximity to Macfarlane Park and Macfarlane Elementary. Consider repairing/replacing the broken sidewalk sections.
- Evaluate the intersections of Habana Avenue and Tampania Avenue for neighborhood traffic circles and conversion from two-way stop control to an all-yield intersection. Also consider providing marked crosswalks on all legs of these intersections. As an alternative to the neighborhood traffic circles, consider installing bulb-outs at the intersections.

Main Street at Armenia Avenue – This intersection begins the transition to the more commercial segments of Main Street, and the identified enhancements help align the travel lanes to the proposed enhancements for the next block of Main Street between Armenia Avenue and Howard Avenue. Potential enhancements that could be considered for this intersection include the following:

- Consider enhancing the existing crosswalk markings to include high-visibility ladder-style markings; alternatively, consider utilizing a decorative crosswalk with the ladder style markings integrated into the crosswalk (Figure 24).
- Evaluate constructing a raised (landscaped) median along Main Street west of Armenia Avenue extending from the intersection to approximately 225 feet west of the intersection.
- On the east side of the intersection, evaluate constructing a raised median between the westbound left-turn lane and the eastbound travel lane and extending the median approximately 225 feet east of the intersection past the left-turn lane.



Figure 24: Enhanced Decorative Crosswalk Markings

Main Street, Armenia Avenue to Howard Avenue – The block of Main Street between Armenia Avenue and Howard Avenue begins the transition from single-family residential to commercial. This segment also is signed for no on-street parking, partly due to the existing left-turn lanes at both Armenia Avenue and Howard Avenue.

Potential enhancements along this segment of Main Street include the following:

- Consider providing a raised landscaped median along Main Street between the left-turn lanes to help physically narrow the street and provide opportunities for enhancements to the streetscape and a potential gateway feature to the Main Street commercial district. Figure 25 is an illustrative concept of the proposed typical section between Armenia Avenue and Howard Avenue.

Main Street, Howard Avenue to Albany Avenue – The segment of Main Street between Howard Avenue and Albany Avenue is fronted by commercial properties and is the civic and commercial center for the corridor. The segment is anchored by parks on both ends, has 10-foot sidewalks, active storefronts, and on-street parking. Opportunities to highlight this segment as the commercial center of West Tampa should be explored and could include the addition of pedestrian-scale pedestal lighting and mid-block curb extensions that could be used to improve the streetscape and provide variety to the pedestrian environment. Figure 26 shows how shared-lane markings, marked on-street parking, and curb extensions could be used to transform the street without the need for major reconstruction.

Potential enhancements for this segment of Main Street include the following:



Figure 25: Proposed Typical Section for Main Street from Armenia Avenue to Howard Avenue

- At Howard Avenue, consider constructing bulb-outs in the northwest and northeast quadrants. In the northeast quadrant, consider continuing the curb extension along the north side of Main Street (adjacent to Salcines Park) to Ysolino Street. Also, consider enhancing the crosswalk markings at the intersection to include high-visibility ladder-style markings; alternatively, consider providing decorative crosswalks integrated with the ladder style markings.



Figure 26: Proposed Typical Section for Main Street from Howard Avenue to Albany Avenue

- There are existing alleyways behind the commercial properties north and south of Main Street; consider better using the alleyways to circulate traffic and for parking access within this segment. Encouraging parking access from the alleys could provide additional opportunity to improve the pedestrian realm along Main Street.
- At Albany Avenue, consider extending the curb along the north side of Main Street from the northwest corner at Albany Avenue to the existing driveway located west of the

park. Additionally, consider constructing a bulb-out in the southwest quadrant and along Main Street in the northeast and southeast quadrants.

- Consider enhancing the existing crosswalk markings to high visibility ladder style markings at Albany Avenue.

Main Street, Albany Avenue to Rome Avenue – This segment of Main Street begins the transition back to primarily residential from the commercial frontage in the previous blocks. As with the portions on the western end of the corridor, most of the enhancements through this segment are focused on better defining the roadway surface through the delineation of on-street parking and the inclusion of shared-lane markings. Other enhancements for this segment of Main Street could include the following:

- Consider providing crosswalk markings across the side street intersection at Fremont Avenue and extending the curb along Main Street to define the on-street parking areas and improve the visibility of pedestrians at this intersection.
- Consider providing enhanced intersection lighting at Rome Avenue; there currently is one overhead LED light in the northwest corner of the intersection. Evaluate the existing intersection and crosswalk lighting levels and enhance if necessary.
- The existing crosswalk markings at Rome Avenue are faded and in need of rehabilitation. Consider enhancing the crosswalk markings to high-visibility ladder-style markings. In addition to rehabilitating and enhancing the crosswalk markings, evaluate the existing pedestrian curb ramps to ensure that they meet ADA requirements and provide ADA detectable truncated dome pads within the curb ramps.

- Consider constructing bulb-outs along Rome Avenue in the northeast and southwest intersection quadrants. Additionally, consider evaluating the current need for northbound and southbound right-turn lanes on Rome Avenue; if turn lanes are not needed, consider constructing bulb-outs within these intersection quadrants.



Main Street at Rome Avenue

Main Street, Rome Avenue to N Boulevard – The West River Redevelopment Plan includes the portions of Main Street between Rome Avenue and N Boulevard. The West River Plan recognizes the historical and future importance of Main Street to the West Tampa area and has identified Main Street for land use, streetscape, and infrastructure enhancements that will promote pedestrian activity and incorporate complete street principles. Continue coordination with the West River Planning efforts and support for continued complete street enhancements along this segment of Main Street.

Columbus Drive

Columbus Drive provides east-west connections through West Tampa to the Westshore area on the western end of the corridor and to Tampa Heights, V.M. Ybor, and East Tampa beyond the Hillsborough River. The travel demand and character of Columbus Drive changes throughout the study area. Table 2 provides typical roadway information for the various segments of the corridor, and Table 3 shows recently collected annual average daily traffic (AADT) counts.

Table 2: Columbus Drive Typical Sections

| From – To | Lanes | Posted Speed (mph) | Est. ROW Width (ft) |
|---------------------------------|-------|--------------------|---------------------|
| Lois Ave to Grady Ave | 8D | 50 | 210' |
| Grady Ave to Dale Mabry Hwy | 6D | 45 | 180' |
| Dale Mabry Hwy to Himes Ave | 6D | 45 | 130' |
| Himes Ave to E of Lincoln Ave | 4D | 40 | 80' |
| E of Lincoln Ave to N Boulevard | 4U | 40 | 50' – 60' |

Table 3: Columbus Drive AADT

| Columbus Drive from/to | AADT (Year) |
|-----------------------------|---------------|
| Lois Ave to Dale Mabry Hwy | 48,000 (2015) |
| Dale Mabry Hwy to Himes Ave | 25,500 (2015) |
| Himes Ave to MacDill Ave | 26,052 (2015) |
| Habana Ave to Armenia Ave | 21,500 (2015) |
| Rome Ave to N Boulevard | 17,703 (2015) |

Recently, some segments of Columbus Drive east of the study area were studied for complete street improvements. Considering complete street enhancements along Columbus Drive west of N Boulevard would improve safety and mobility throughout the West Tampa area. The following is a detailed description of the identified enhancements for Columbus Drive; in addition to the identified enhancements, consideration should be given to enhancing lighting along the corridor where necessary and to providing marked

crosswalks at side streets and major driveway intersections along the corridor.

Columbus Drive, Lois Avenue to Grady Avenue – Consistent with previous Walk–Bike Plans, bicyclists in this high-speed, high-volume segment should be provided as an alternative to traveling in the on-street bike lanes. This is especially important because the on-street bike lanes are fragmented by right-turn drop lanes at either side of Jim Walter Boulevard, creating a challenging condition for bicyclists.

Potential enhancements to this segment of Columbus Drive include the following:

- Consider widening or reconstruction of existing 6' sidewalks to 8' minimum or preferred 12' shared-use paths.
- Consider improvements to sidewalk geometry at signalized and unsignalized intersections to better align pedestrian paths with intersection crosswalks and reduce out-of-direction travel.
- Consider providing pedestrian-scale lighting at roadway crossings to better enhance the safety of sidewalk/pathway users.

Columbus Drive, Grady Avenue to Dale Mabry Highway – This high-speed, high-volume segment does not have an existing eastbound bicycle lane.

Potential improvements to this segment include the following:

- Consider widening or reconstruction of existing 6' sidewalks to either minimum 8' sidewalk or preferred 12' shared-use path. From aerial and parcel map review, it appears that there may not be enough right-of-way to provide a

continuous 12' path along the south side of Columbus Drive, but that there may be adequate room for a 10' pathway without adversely impacting the properties along Columbus Drive.

- Consider improving sidewalk geometry to better align the pedestrian path with intersection crosswalks.
- Consider providing pedestrian-scale lighting at roadway crossings to enhance the safety of sidewalk/pathway users.

Columbus Drive at Dale Mabry Highway – This is a very large, high-volume intersection with geometric and operation conditions that do not favor non-motorized users.

Potential improvements for the safety and mobility for non-motorized users include the following:

- Consider reducing the curb radius in the southwest corner of the intersection to allow larger vehicles to turn into the center of inside travel lanes of southbound Dale Mabry Highway, and realign the crosswalk accordingly.
- The channelized westbound and southbound right-turn movements operate under free-flow conditions, which can diminish driver yield rates to pedestrians and result in higher-speeds and more severe crashes. Free-flow right turns may also contribute to rear-end crashes when the leading driver slows, not realizing the free-flow condition exists. To address this issue and improve safety at the northbound (non-free-flow) right-turn channel, consider the following:
 - Perform an intersection operational analysis to determine whether the free-flow condition is

necessary to maintain acceptable level of service at the intersection. If not, consider converting the free-flow lanes into conventional right-turn lanes without receiving lanes.

- Consider providing raised crosswalks between the curb and right-turn islands to reduce right-turning traffic speeds.
- Provide R10-15 (“Turning Traffic Yield to Pedestrians”) signage.
- Consider providing push-button activated Rectangular Rapid Flashing Beacons (RRFBs) to facilitate right-turn lane crossings between the curb and the channelized islands.
- Evaluate existing intersection and crosswalk lighting conditions and enhance as necessary; see *Florida Design Manual* Chapter 231 for guidance.

Columbus Drive, Dale Mabry Highway to Himes Avenue – This segment has a 10’ sidewalk along most of the south (eastbound) side of the roadway, and a sidewalk currently is being constructed along the north side of the roadway adjacent to the New York Yankees training facility.

Potential improvements to this segment include the following:

- Consider monitoring development and identifying opportunities to complete the 10’ wide sidewalk along the south side of Columbus Drive.

Columbus Drive, Himes Avenue to East of Lincoln Avenue – This segment has approximately 60’ of pavement with two travel lanes in

each direction and a center two-way left-turn lane with intermittent landscaped medians.

- The City of Tampa is in the process of enhancing Himes Avenue; enhancements to Columbus Drive include:
 - Replacing the existing painted median between Himes Avenue and Glen Avenue with a raised median.
 - Extending the existing raised median between Glen Avenue and Lincoln Avenue into the existing painted median areas east and west of the median.

Potential enhancements to this segment include the following:

- Consider evaluating the need for a mid-block crossing at Glen Avenue by conducting a pedestrian count near this intersection.
- At Lincoln Avenue, consider the following:
 - Enhance the existing crosswalks to high-visibility ladder-style markings.
 - There are LED overhead lights in the northeast and southwest quadrants of the intersection; lighting may be sufficient, but consider evaluating existing lighting levels and enhance if necessary.
 - Evaluate the existing pedestrian curb ramps to ensure that they meet ADA requirements and install ADA detectable truncated dome pads within the curb ramps.
 - The left turns from Columbus Drive onto Lincoln Avenue are permissive controlled movements. Consider conducting an operational analysis to

determine the feasibility of implementing a protected-permissive left-turn signal phase. Additionally, evaluate the existing span-wire signal structure to determine if it would support additional four-section flashing yellow arrow traffic signal assemblies.

- Consider extending the existing raised median into the painted median areas, similar to the planned improvements between Glen Avenue and Lincoln Avenue.

Columbus Drive, East of Lincoln Avenue to East of Habana Avenue –

This segment has approximately 48' of pavement with two travel lanes in each direction and no median. Between Matanzas Avenue and MacDill Avenue, the right-of-way is constrained by the Marti-Colon Cemetery along the south side of Columbus Drive. The sidewalk on the south side is substandard, at approximately 3' wide and adjacent to an approximate 4' tall wall. Traffic volumes on this segment exceed 25,000 AADT, making this segment a poor candidate for a conventional road diet.

Potential enhancements along this segment include the following:

- Consider reducing travel lane widths to 10' and provide a narrow 8' painted/textured median buffer with intermittent 6' wide landscaped median islands to help calm traffic.
- Consider widening the existing 5' sidewalks into the adjacent grass utility strip to provide a minimum 8' pathway that could be shared by pedestrians and bicyclists.
- Between St. Vincent Street and MacDill Avenue, there appears to be adequate pavement width; consider reducing the travel lanes to 10' and extend the curb along the south side to accommodate a wide (8') sidewalk.
- At MacDill Avenue, consider enhancing the existing crosswalk markings to high-visibility ladder-style markings and evaluating the existing intersection lighting levels and enhance if necessary.
- The existing eastbound and southbound left-turn movements are controlled by a permissive-only phase; consider conducting an operational analysis to determine the feasibility of implementing a protected-permissive left-turn phase for these movements. Both the westbound and northbound left-turns are controlled by a protected-permissive phase. Additionally, evaluate the existing span-wire signal structure to determine if it would support additional four-section flashing yellow arrow traffic signal assemblies; also determine if it would support replacing the existing five-section signal assemblies with four-section assemblies.
- Along MacDill Avenue, south of Columbus Drive, consider providing green skip markings through the northbound bike lane transition to the keyhole across the right-turn lane.
- Along MacDill Avenue north of Columbus Drive, consider extending the curb in the northeast quadrant into the existing painted gore area north of the intersection.
- At Habana Avenue, consider enhancing the existing crosswalk markings, evaluating intersection lighting conditions, and evaluating the existing pedestrian curb ramps to ensure that they meet ADA requirements. Additionally, consider installing ADA detectable truncated dome pads within the curb ramps.
- The left turns from Columbus Drive onto Habana Avenue are permissive controlled movements. Consider conducting

an operational analysis to determine the feasibility of implementing a protected-permissive left-turn signal phase. Additionally, evaluate the existing span-wire signal structure to determine if it would support additional four-section flashing yellow arrow traffic signal assemblies.



Columbus Drive East of MacDill Avenue, Looking East

Columbus Drive, East of Habana Avenue to West of Rome Avenue –

This segment has approximately 40' of pavement with two travel lanes in each direction and no median. The available right-of-way in this segment reduces to approximately 50' with 5' sidewalks located between the curb and right-of-way line.

Potential enhancements for this segment include the following:

- At Armenia Avenue, consider evaluating the existing pedestrian curb ramps to ensure that they meet ADA requirements and consider installing ADA detectable truncated dome pads within the curb ramps.
- At Howard Avenue, consider evaluating the existing pedestrian curb ramps to ensure that they meet ADA

requirements and consider installing ADA detectable truncated dome pads within the curb ramps.

- Albany Avenue splits into two two-way streets north of Columbus Drive; one continues straight north through the intersection, and the other continues in a northeast diagonal towards Kathleen Street. Consider either constructing a cul-de-sac to close off access to this portion of Albany Avenue from Columbus Drive or completely eliminate the diagonal segment of Albany Avenue between Columbus Drive and Kathleen Street.



Columbus Drive at Albany Avenue

Columbus Drive at Rome Avenue – The intersection of Columbus Drive and Rome Avenue is emerging as an important access point for the West River area and should be considered for safety, mobility, and operational enhancements. The following is a summary of potential intersection enhancements; Appendix A and Appendix C

contain additional discussion on these potential enhancements. Also, note that the identified improvements for this intersection are based on the assumption of a road diet along the portion of Columbus Drive from Rome Avenue to North Boulevard.

- Signalized intersection alternative – Consider installing a traffic signal at the intersection with the following intersection lane arrangement:
 - Northbound – single through left-turn lane with a single right-turn lane.
 - Southbound – single lane
 - Eastbound – prohibit left turns onto Rome Avenue, single through lane, right-turn drop lane onto Rome Avenue
 - Westbound – single through lane with dedicated left-turn lane
- Roundabout alternative – Consider constructing a compact modern urban roundabout with the following lane arrangement:
 - North leg – single southbound entry lane and single northbound exit lane
 - South leg – single northbound entry lane and single southbound exit lane; may need a southbound merge lane to accommodate right-turning vehicles from Columbus Drive
 - East leg – dual westbound entry lanes and a single eastbound exit lane
 - West leg – single eastbound entry leg with a single right-turn bypass lane onto Rome Avenue, two westbound exit lanes



Columbus Drive East of Rome Avenue, Looking West

Columbus Drive, West of Rome Avenue to North Boulevard – This segment has approximately 40' of pavement with two travel lanes in each direction and no median. The available right-of-way through this segment is approximately 50' with 5' sidewalks between the curb and right-of-way line.

Potential enhancements for this segment of Columbus Drive are as follows:

- Based on existing AADT, it appears reasonable to consider a road diet along the portion of Columbus Drive between Rome Avenue and North Boulevard.
 - Across the Hillsborough River Bridge is approximately 38' of pavement; consider a two-lane section with 10' travel lanes, a 4' median buffer, and buffered bike lanes (bicyclists currently are

asked to walk their bikes across the bridge due to the lack of available space; see Figure 27).

- From the river to N Boulevard is approximately 40' of pavement; consider a two-lane section with 10' travel lanes, a center turn lane with intermittent landscaped median islands, and 5' bike lanes on both sides.



Figure 27: Columbus Drive Bridge, Looking East

Howard Avenue and Armenia Avenue

Howard Avenue and Armenia Avenue are north-south one-way pairs that connect West Tampa to the neighborhoods to the north and south. Both are planned for resurfacing by Hillsborough County. A previous resurfacing project by the County included the addition of buffered bicycle lanes on the sections of Howard Avenue and Armenia Avenue from north of Columbus Drive to just south of Columbus Drive at St. Louis Street. Although there are no current plans to extend the buffered bicycle lanes south as part of the

upcoming resurfacing project, providing complete and continuous bicycle facilities should be a top priority for both Hillsborough County and the City of Tampa. The following is a detailed description of the identified enhancements for Howard Avenue and Armenia Avenue between Gray Street and Columbus Drive.

Gray Street to Cypress Street

Howard Avenue – Between Gray Street and Cypress Street, Howard Avenue is a three-lane one-way (northbound) street with some on-street parking along the west side and a posted speed limit of 40 mph. There are left-turn lanes into the Glazer Jewish Community Center parking lot and at Cypress Street. The existing pavement width through this section is approximately 40 feet, and there are 5' sidewalks along both sides of the street. The AADT on this segment of Howard Avenue was 17,500 in 2015.

Potential enhancements for this segment of Howard Avenue include the following:

- As part of the Gray Street Neighborhood Greenway, consider constructing bulb-outs along the west side of Howard Avenue and providing a marked crossing supplemented by RRFBs.
- Evaluate strategies to reduce the posted speed limit on this segment of Howard Avenue from 40 mph to 35 mph or less. If the posted speed can be lowered to or below 35 mph, consider providing shared lane markings along this segment.
- Consider widening the sidewalk along the east side of Howard Avenue using the existing utility strip. This wide sidewalk could accommodate both pedestrians and

bicyclists, especially if speeds cannot be reduced along Howard Avenue.



Howard Avenue at Carmen Street (south of Cass Street)

- Consider conducting an operational analysis to determine if the northbound left-turn lane onto Cypress Street is needed. If not, consider shifting the through travel lanes to the west (between State Street and Cypress Street) and construct a bulb-out in the southeast corner along Howard Avenue.

Armenia Avenue – Armenia Avenue between Gray Street and Cypress Street is a two-lane one-way (southbound) street with on-street parking along both sides and a pavement width of approximately 48'. The posted speed limit along this segment is 40 mph. There are no bicycle facilities along this segment, and there are 6' sidewalks along both sides of the street.

Potential enhancements for this segment of Armenia Avenue include the following:

- Evaluate strategies to reduce the posted speed limit to 35 mph or less.
- Consider providing a buffered bicycle lane; 48' feet of pavement for two travel lanes and two on-street parking lanes should provide more than enough space to accommodate a buffered (7') bicycle lane with an 8' | 7' | 12.5' | 12.5' | 8' lane configuration.
- Consider constructing bulb-outs at Gray Street and providing a marked crossing with RRFBs to accommodate the proposed Gray Street Neighborhood Greenway.
- Consider constructing bulb-outs along Armenia Avenue at all intersections between Gray Street and Cypress Street to better define the on-street parking lanes and improve pedestrian visibility.
- Consider conducting an operational analysis at the Armenia Avenue and Cypress Street intersection to determine if the southbound left- and right-turn lanes are needed to maintain appropriate intersection level of service. If not, consider repurposing the pavement width to better accommodate pedestrians at the intersection. If justified, consider constructing bulb-outs along Armenia Avenue in the southeast and southwest quadrants.

Cypress Street to Spruce Street

Howard Avenue – The portion of this segment between Cypress Street and I-275/Green Street is a three-lane one-way street with no on-street parking and a posted speed limit of 40 mph. At Main Street, Howard Avenue becomes a two-lane one-way street with a posted speed limit of 30 mph and on-street parking along both sides.

Potential enhancements for this segment of Howard Avenue include:

- Evaluate strategies to reduce the posted speed limit on the segment of Howard Avenue south of Main Street from 40 mph to 35 mph or less.
- Consider widening the existing sidewalk using the utility strip and FDOT right-of-way to accommodate a minimum 8' sidewalk for both pedestrians and bicyclists through the interchange.
- On-street parking returns along Howard Avenue north of Green Street, and the posted speed limit is reduced to 30 mph north of Main Street. Consider providing shared-lane markings along Howard Avenue between Main Street and Spruce Street.
- At Main Street, consider the enhancement identified in the Main Street section of this report.
- At Spruce Street, consider the enhancements identified in the MPO's Spruce Street Pedestrian and Bicycle Improvement Report; consider reconstructing the existing bulb-outs and providing enhanced crosswalk markings supplemented with RRFBs.
- Consider constructing bulb-outs along Howard Avenue at all intersections between Main Street and Spruce Street.
- Consider enhancing the existing crosswalk at Union Street to include high-visibility ladder-style markings.

Armenia Avenue – This segment of Armenia Avenue is similar to the segment to the south, in that it is primarily a two-lane one-way street with approximately 48' of pavement and a posted speed limit of 40 mph. Between Laurel Street (I-275 Ramp) and Main Street are three travel lanes along Armenia Avenue and no on-street parking.

Potential enhancements for this segment of Armenia Avenue include the following:

- Evaluate strategies to reduce the posted speed limit to 35 mph or less.
- Consider providing a buffered bicycle lane; 48' feet of pavement for two travel lanes and two on-street parking lanes should provide more than enough space to accommodate a buffered (7') bicycle lane with a 8' | 7' | 12.5' | 12.5' | 8' lane configuration.
- Consider construction bulb-outs along Armenia Avenue at all intersections between Cypress Street and Spruce Street.
- Consider providing marked crossing across south leg of the Armenia Avenue and Laurel Street/I-275 ramp intersection.
- Consider implementing the enhancements identified in the Main Street section of this report.
- At Spruce Street, consider the enhancements identified in the MPO's Spruce Street Pedestrian and Bicycle Improvement Report; consider reconstructing the existing bulb-outs and providing enhanced crosswalk markings supplemented with RRFBs.



Armenia Avenue at La Salle Street, Looking South

Spruce Street to Columbus Drive

Howard Avenue – Between Spruce Street and Columbus Drive, Howard Avenue is a two-lane one-way street with on-street parking along both sides between Spruce Street and Beach Street. The posted speed limit through this segment is 30 mph. At St Louis Street, south of Columbus Drive, there is a buffered bicycle lane that continues north of Columbus Drive.

Potential enhancements for this segment of Howard Avenue include the following:

- Consider providing shared-lane markings between Spruce Street and Beach Street.
- North of Beach Street, there is no marked on-street parking; consider reducing the travel lane widths, delineate on-street parking on the west side, and provide a buffered (7') bicycle lane to connect to the existing lane at St. Louis Street.

- Consider constructing bulb-outs along Howard Avenue at all intersections between Main Street and Beach Street.
- At Cherry Street, consider enhancing the existing crosswalks with high-visibility markings supplemented with RRFBs.
- At Palmetto Street, consider replacing the existing flashing beacon with a push-button-activated RRFB.
- At Beach Street, consider constructing bulb-outs and providing a marked crossing to accommodate the proposed Beach Street neighborhood greenway.

Armenia Avenue – This segment of Armenia Avenue is similar to the previous segments, in that it has two one-way travel lanes, a pavement width of approximately 48', and a posted speed limit of 40 mph.

Potential enhancements for this segment of Armenia Avenue include the following:

- Evaluate strategies to reduce the posted speed limit to 35 mph or less.
- Consider providing a buffered bicycle lane; 48' feet of pavement for two travel lanes and two on-street parking lanes should provide more than enough space to accommodate a buffered (7') bicycle lane with a 8' | 7' | 12.5' | 12.5' | 8' lane configuration.
- Consider constructing bulb-outs along Armenia Avenue at all intersections between Spruce Street and Columbus Drive.
- Consider relocating the existing signalized pedestrian crossing between Walnut Street and Pine Street to Pine Street.

- Enhance the existing crosswalks at Pine Street to include high-visibility ladder-style markings.
- Consider constructing bulb-outs and providing a marked crosswalk with RRFBs at Beach Street to accommodate the proposed Beach Street neighborhood greenway.

Neighborhood Greenway Opportunities

Neighborhood greenways, also known as bicycle boulevards and bikeways, are streets that have been designed, designated, and prioritized for bicycle travel. Neighborhood greenways provide a safe, inviting, low-stress option for bicyclists of varying degrees of experience. Neighborhood greenways, as part of a larger bicycle network, help provide connections between neighborhoods, destinations, and different bicycle facilities. In addition to improving safety, comfort, and connectivity for bicyclists, neighborhood greenways create safer streets for all users and can help promote communities that encourage bicycling as a more convenient, easy, and sociable mode of transportation.

Although there is no set design template for neighborhood greenways, a few common principles should be applied when considering one:

- Logical, direct, and continuous bike route
- Safe and comfortable intersection crossings
- Reduced bicyclists delay
- Enhanced access to desired destinations
- Low motor vehicle speeds
- Low motor vehicle volumes

Neighborhood greenways typically employ a set of features that include signs, pavement markings, traffic volume management, and traffic calming to improve the safety and comfort of bicycling. Several design treatments can be used to transform a street into a neighborhood greenway, but it is important to recognize that these treatments can be tailored to fit local needs and can be phased over a period of time to achieve the complete transformation. Some common design considerations for neighborhood greenways include the following:

- *Pavement Markings* – Pavement markings are a reminder to both bicyclists and motorists that bicycle travel is expected and has priority along the street.
- *Signage* – Signage can be used to passively identify the street as a neighborhood greenway and can help strengthen the branding of the facility. Neighborhood greenway signs can include post-mounted placard signs identifying the greenway at key points or specially-branded street name signs that identify the street as a neighborhood greenway. Wayfinding signage also can be provided to help direct, guide, alert, and inform bicyclists on distances and estimated travel times to key destinations.
- *Stop Sign Placement* – Frequent stop signs along a neighborhood greenway increase bicycling travel time and energy expenditure. This often increases the likelihood of non-compliance or the use of other routes. To improve bicycle travel and the attractiveness neighborhood greenways, bicyclists should be able to travel along the greenway with a minimal number of stops.
- *Intersection Treatments* – If bicyclists cannot safely and comfortably cross other roadways along the neighborhood

greenway, improvements along the greenway will have limited impact. Intersection treatments along neighborhood greenways should improve the visibility of bicyclists, reduce crossing distances, increase awareness to the presence of bicyclists, reduce or eliminate conflicts/movements, reduce bicyclist delay, and ultimately, make crossing streets along the neighborhood greenway safer, more convenient, and more comfortable for bicyclists. Common neighborhood greenway intersection treatments include intersection bulb-outs, roundabouts, and neighborhood traffic circles.

- *Speed Management* – Maintaining low motor vehicle speeds along a neighborhood greenway is a key component in creating a safe and comfortable bicycling environment. Speed management techniques are generally divided into two categories, vertical elements (speed humps or cushions) and horizontal elements (pinch points). Although various speed management techniques can be used on their own, they are most effective when used in combination and with other design elements and techniques.
- *Volume Management* – Volume management uses physical and operational elements to reconfigure traffic patterns along a street to help reduce or discourage through traffic to ensure that traffic volumes are maintained at a level that is comfortable to a wide range of bicyclists. Some elements include forced turn movements, partial closures (divert motor vehicle traffic in one direction), and full closures that divert motor vehicle traffic in both directions while still accommodating bicyclists.

A common concern about neighborhood greenways, especially pertaining to traffic calming and volume management, is maintaining access to properties along the neighborhood greenway. Vehicular access along a neighborhood greenway should be maintained, although the route to access particular properties may change. This is not uncommon during typical roadway reconstruction or access management improvements that may modify median openings and require drivers to adjust their route.

The following sections explore neighborhood greenway opportunities along two corridors, Gray Street between Westshore Boulevard and Rome Avenue and Beach Street between Himes Avenue and Rome Avenue.

Gray Street

Gray Street is a two-lane, two-way, undivided, east-west, local street that parallels Kennedy Boulevard to the south and Cass Street to the north. The street is residential in character, with low speeds (posted 25 mph) and low traffic volume. Unlike many local roads in the area, Gray Street provides a continuous connection between Westshore Boulevard and Rome Avenue and has signalized crossings at Westshore Boulevard and Dale Mabry Highway.

Gray Street's connectivity and position between Kennedy Boulevard and I-275 makes it a candidate for neighborhood greenway treatments, which is most likely why it was identified in Phase I of the City of Tampa's Walk-Bike Plan for enhancements. The following is a detailed overview of the proposed enhancements that would help transform Gray Street into a neighborhood greenway.

Although not identified in the detailed enhancements, one option that could be used to help “brand” the neighborhood greenway is the addition of specialized street name signage. There are many national and international examples of how cities have used street name signage to help in the designation of prioritized bicycle streets. Additionally, there are multiple options for pavement markings; some cities use special bike boulevard markings, some use typical shared-lane markings, and some—including some cities in Florida—have begun using shared-lane markings within a green background box (Figure 28).



Figure 28: Shared-lane markings with green background

Gray Street, Westshore Boulevard to Lois Avenue – The intersection of Gray Street and Westshore Boulevard is signalized, and this segment has existing traffic calming (speed humps). General considerations for this segment include the addition of pavement markings and supplemental signage (R4-11, “Bikes May Use Full Lane”). Additional neighborhood greenway enhancements along this segment include the following:

- Consider constructing neighborhood traffic circles and conversion to all-yield control at Hesperides Street, Manhattan Avenue, and Hubert Avenue.
- Consider providing wayfinding signage at Hesperides Street directing bicyclists to the trail that begins on Hesperides Street south of Carmen Street.
- Consider conducting a traffic signal warrant analysis at the intersection of Gray Street and Lois Avenue. The closest signalized intersections are at I-275 approximately 600’ to the north and Kennedy Boulevard approximately a quarter-mile to the south. An alternative to a signalized intersection would be to provide a raised median traffic diverter island along Lois Avenue that would allow bicyclists to continue through the intersection but would prohibit through and left-turn motor vehicle movements. The median island could be accommodated by narrowing the travel lanes on Lois Avenue.

Gray Street, Lois Avenue to Dale Mabry Highway – In addition to providing pavement markings and signage, potential enhancements along this segment include the following:

- Consider constructing a neighborhood traffic circle at Grady Avenue and converting the intersection from a four-way stop to an all-yield intersection.
- The intersection of Gray Street and Dale Mabry Highway is signalized. Consider installing bike boxes on the eastbound and westbound approaches and evaluating the feasibility of installing bicycle detection at the intersection to help reduce bicycle delay and improve compliance with the traffic signal.



Gray Street at Louis Avenue, Looking West

Gray Street, Dale Mabry Highway to Matanzas Avenue – Provide pavement markings and signage along with speed cushions between Himes Avenue and Glen Avenue and Lincoln Avenue and Matanzas Avenue. Additional enhancements include the following:

- Consider constructing neighborhood traffic circles at Glen Avenue, Lincoln Avenue, and Matanzas Avenue. Also consider converting these intersections from stop-controlled to all-yield.
- At Himes Avenue, consider conducting a traffic signal warrant analysis; the closest signalized intersections are at Cypress Street to the north and Kennedy Boulevard to the south, both approximately a quarter-mile from this intersection.



Gray Street at Dale Mabry Highway, Looking East

Gray Street, Matanzas Avenue to Armenia Avenue – Consider providing pavement markings and signage along with speed cushions between Matanzas Avenue and MacDill Avenue, MacDill Avenue and Gomez Avenue, Gomez Avenue and Habana Avenue, Habana Avenue and Tampania Avenue, and Tampania Avenue and Armenia Avenue. Following are additional enhancements for this segment:

- Consider conducting a traffic signal warrant analysis at MacDill Avenue. The closest signalized intersections are at Cypress Street to the north and Kennedy Boulevard to the south, both approximately a quarter-mile from this intersection.
- Consider neighborhood traffic circles and conversion to all-yield control at Gomez Avenue and Habana Avenue.
- At Armenia Avenue, consider constructing bulb-outs along Armenia Avenue in each quadrant and providing a marked crosswalk with RRFBs to accommodate the neighborhood greenway crossings.



Gray Street at Kathy Echevarria Greenspace, Looking East

Gray Street, Armenia Avenue to Rome Avenue – As with the other segments, consider providing pavement markings and signage. To help with traffic calming, consider speed cushions between Howard Avenue and Rome Avenue. Also consider the following enhancements along this segment:

- At Howard Avenue, consider constructing bulb-outs along the west side and providing a marked crossing supplemented with RRFBs.
- Consider constructing neighborhood traffic circles at Albany Avenue and Fremont Avenue. If neighborhood traffic circles are installed, consider converting the intersections from stop controlled to all-yield.
- At Rome Avenue, consider providing a marked crossing supplemented with RRFBs along the south leg of the intersection.



Gray Street at Howard Avenue, Looking South



Gray Street at Fremont Avenue, Looking East

Beach Street

Beach Street is a two-lane two-way undivided east-west local street situated between Spruce Street and Columbus Drive. It is primarily residential in character, with low speeds (posted 25 mph) and low

traffic volumes and provides a continuous connection between Dale Mabry Highway and Rome Avenue.

With the planned addition of bicycle lanes along Himes Avenue, it was determined that a logical western terminus of the neighborhood greenway would be Himes Avenue. Similar to Gray Street, there are multiple options for pavement markings, and the option of special street name signs could be included as part of the neighborhood greenway. Following is an overview of the enhancements that could help transform Beach Street into a neighborhood greenway.

Beach Street, Himes Avenue to MacDill Avenue – Consider providing pavement markings and supplemental signage (R4-11 “Bikes May Use Full Lane”) to this segment along with speed cushions between Himes Avenue and Glen Avenue, Glen Avenue and Lincoln Avenue, Lincoln Avenue and Matanzas Avenue, and Matanzas Avenue and MacDill Avenue. Additional enhancements to this segment include:

- Consider conducting a traffic signal warrant analysis at the intersection of Beach Street and Himes Avenue. The ongoing improvements to Himes Avenue will provide a marked mid-block crossing north of Beach Street, but it is unlikely that users of the neighborhood greenway will travel the distance out-of-direction to use the crossing. The closest signalized intersections to this intersection are Columbus Drive to the north and Spruce Street to the south, both approximately a quarter-mile from the intersection.
- Consider installing neighborhood traffic circles at Glen Avenue and Lincoln Avenue. In conjunction with the neighborhood traffic circles, consider converting the intersections from two-way stop control to all-yield intersections.

- Consider conducting a traffic signal warrant analysis at the intersection of Beach Street and MacDill Avenue. The closest signalized intersections to this intersection are Columbus Drive to the north and Spruce Street to the south, both approximately a quarter-mile from the intersection.

Beach Street, MacDill Avenue to Armenia Avenue – Consider providing pavement markings and signage along this segment. Additionally, consider installing speed cushions between MacDill Avenue and Armenia Avenue. Additional enhancements to this segment include:

- Consider installing a neighborhood traffic circle at Habana Avenue and converting the intersection to an all-yield intersection.
- At Armenia Avenue, consider constructing bulb-outs within all four quadrants, enhancing the existing crosswalk markings, and supplementing the crossing with RRFBs.

Beach Street, Armenia Avenue to Rome Avenue – Consider providing pavement markings along this segment with signage. There are existing speed humps along this segment that, while not conducive to bicycle travel, help with calming traffic along this segment. Additional improvements along this segment include the following:

- Consider constructing bulb-outs within all four quadrants at Howard Avenue, enhance the existing crosswalk markings, and supplementing the crossing with RRFBs.
- At Rome Avenue, consider installing a marked crosswalk with RRFBs to help facilitate movements to/from the neighborhood greenway.



Beach Street at Armenia Avenue, Looking East



Beach Street at Rome Avenue, Looking West



Beach Street at Howard Avenue, Looking East

Trail Connections – I-275 Greenway and Green Spine

The Green Spine and I-275 Greenway are key bicycle and pedestrian projects aimed at connecting the major activity centers and greenspaces in Tampa and providing recreational amenities to residents. Although the projects are separated by less than half a mile at parts, the lack of a safe and obvious connection between the two is a challenge that interrupts the overall network.

The Green Spine cycle-track, slated for Phase II construction on Cass Street between Howard Avenue and Willow Avenue between 2018 and 2020, will be a transformative project for the North Hyde Park neighborhood, creating a continuous protected bicycle pathway between the Glazer Family Jewish Community Center, Downtown Tampa, Ybor City, and the Cuscaden Pool and Park.

The I-275 Greenway, similarly, is envisioned as a continuous trail that will connect Cypress Point Park and the Courtney Campbell Causeway to the west with Downtown Tampa and beyond to the east. This

alignment also is identified as part of a larger Sun Trail alignment that will connect the Tampa Bay region to Collier County in Southwest Florida.

Although both projects are incomplete, with many segments still in the planning and design stages, a connection between the two pathways should be considered and addressed. Several alternative alignments for connecting to the two are available, the creation of which may further an integrated pedestrian and bicycle network beyond connecting only these two major infrastructure projects. Four potential alternatives to connect these facilities were examined as part of this effort, a detailed summary of which follows. For each alternative, the western terminus is Himes Avenue at La Salle Street and the eastern boundary is N Boulevard.

Alternative 1 – This alternative utilizes a combination of available right-of-way in the I-275 corridor and some on-street segments along La Salle Street. The total on-street portion of this alignment is just under a half-mile, similar to the alignment identified in the Tampa-Hillsborough Greenway and Trails Master Plan Update. Figures 29, 30, and 31 show the Alternative 1 alignment

Key components of the alternative include the following:

- From Himes Avenue, continue the trail within the FDOT right-of-way adjacent to La Salle Street to east of MacDill Avenue at New Jersey Avenue. A crossing at MacDill Avenue would need to be provided, and the pond site between MacDill Avenue and New Jersey Avenue may need to be modified to accommodate a trail and still provide maintenance access to the pond.



Right-of-Way along I-275 at Willow Avenue, Looking West

- An on-street section of the trail would continue along New Jersey Avenue approximately 50' to La Salle Street, continue along La Salle Street approximately 900' to connect to the existing I-275 Greenway at Habana Avenue, and then continue along the existing trail to Armenia Avenue.
- A crossing would need to be provided at Armenia Avenue; from there, the trail would continue on-street along La Salle Street for about a quarter-mile to Albany Avenue where it would connect into the existing trail/maintenance road north of the residences that front La Salle Street.

- The trail would continue along the existing trail/maintenance road to Oregon Avenue. At Oregon Avenue, consider continuing the trail within the FDOT right-of-way south of I-275 to N Boulevard.



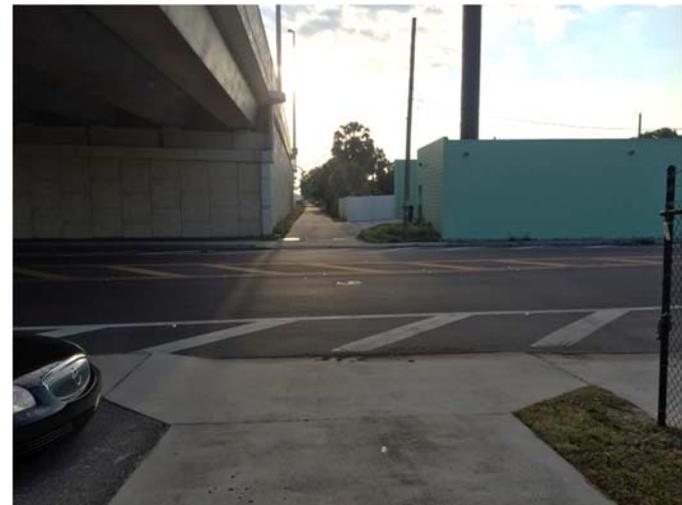
I-275 Greenway at Armenia Avenue, Looking West

Alternative 2 – Alternative 2 is similar to Alternative 1 except that at the eastern end of the study area the trail connects to the Green Spine/Cass Street via Rome Avenue. Figures 32, 33, and 34 illustrate the proposed alignment options, and the following provide details about the alternative:

- Use the I-275 right-of-way and La Salle Street to provide a connection between Himes Avenue and Rome Avenue.
- At Rome Avenue, use the planned bicycle lanes or consider exploring opportunities for a separated facility to connect to the planned Green Spine extension along Cass Street.
- The trail would then use the Green Spine to connect to and through downtown Tampa.



Rome Avenue South of I-275, Looking North



Existing I-275 Greenway at Rome Avenue, Looking East



Figure 29: Alternative 1 Alignment, Dale Mabry Highway to New Jersey Avenue

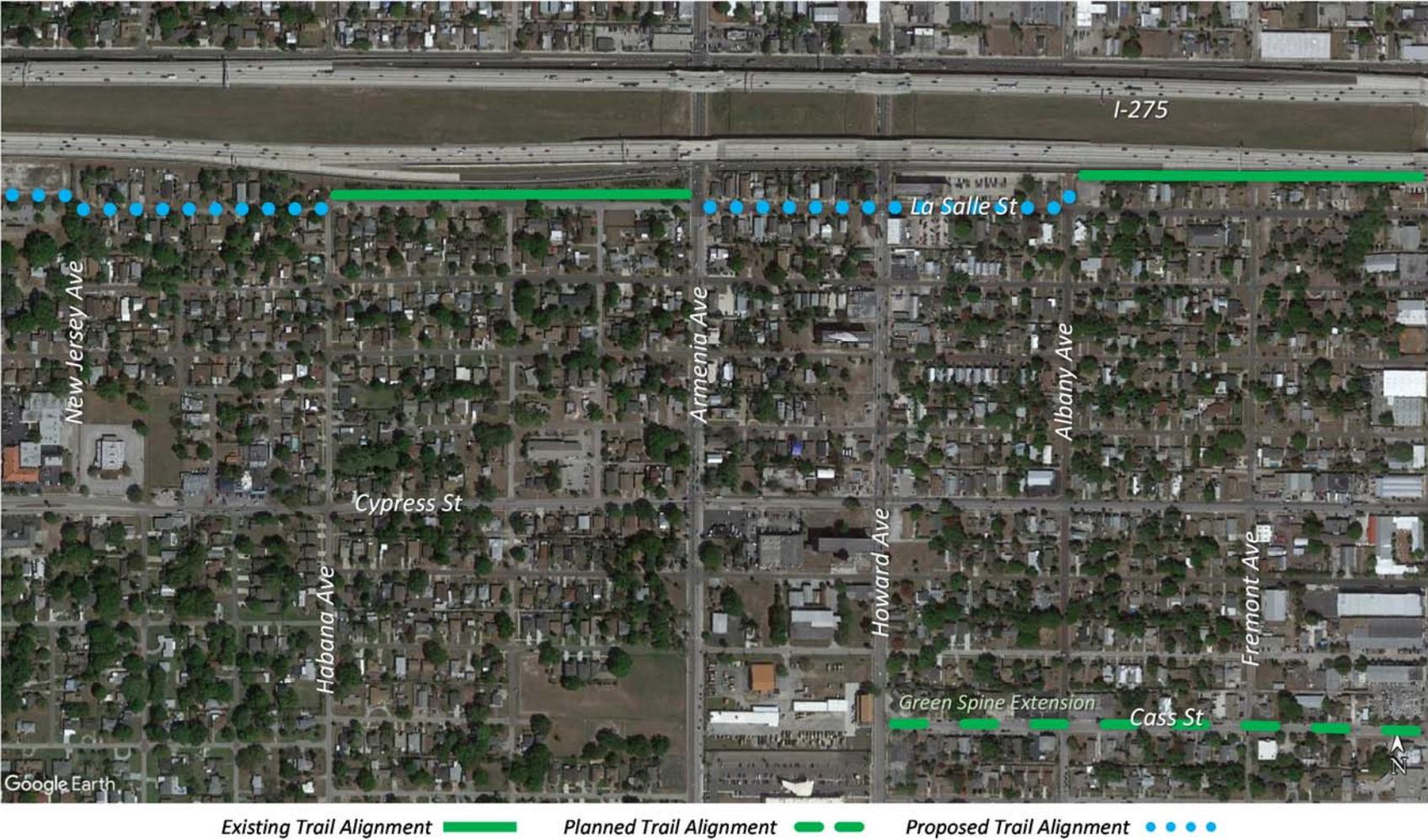


Figure 30: Alternative 1 Alignment, New Jersey Avenue to Fremont Avenue



Figure 31: Alternative 1 Alignment, Fremont Avenue to N Boulevard



Figure 32: Alternative 2 Alignment, Dale Mabry Highway to New Jersey Avenue

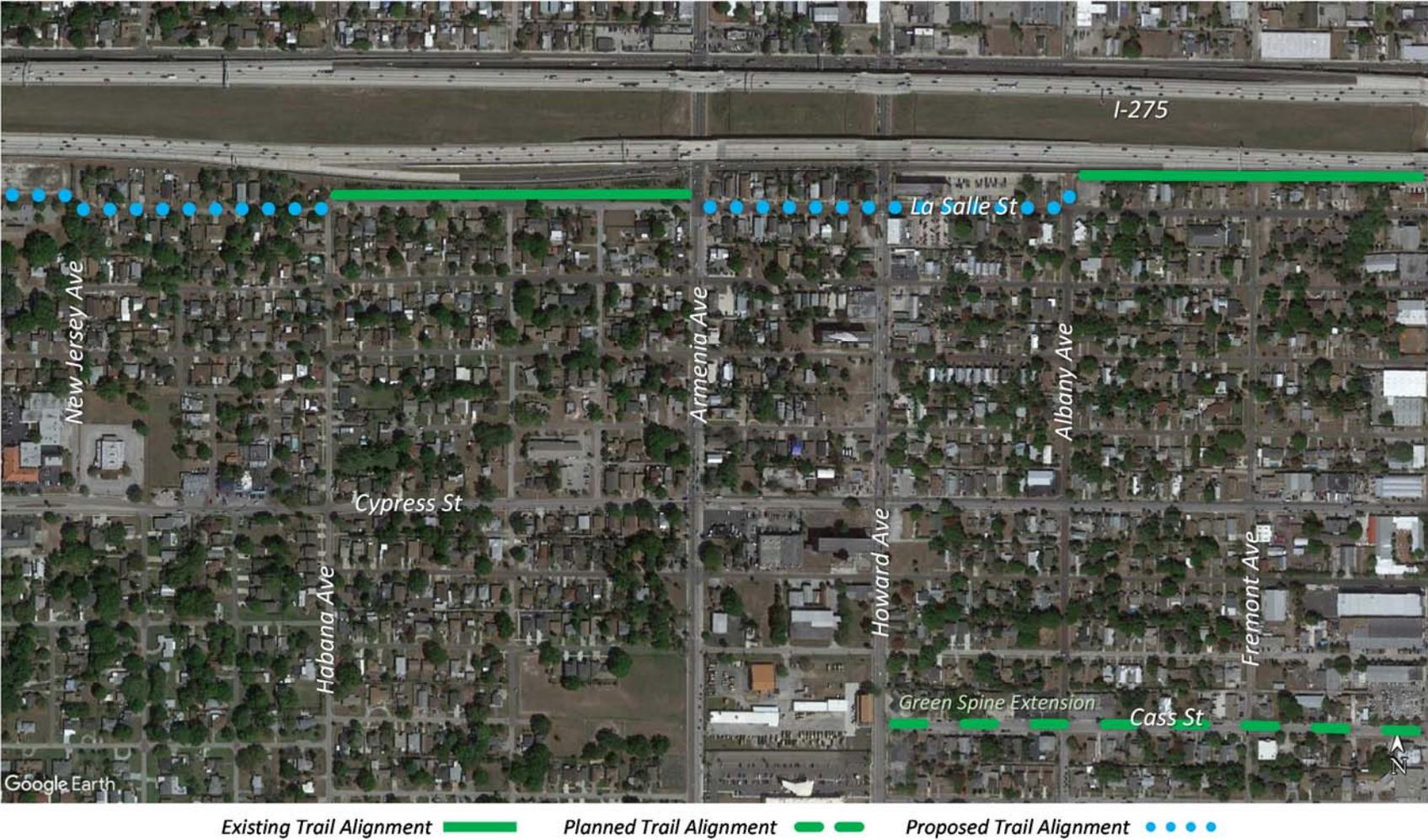


Figure 33: Alternative 2 Alignment, New Jersey Avenue to Fremont Avenue



Figure 34: Alternative 2 Alignment, Fremont Avenue to N Boulevard

Alternative 3 – Alternative 3 explores options to connect the I-275 Greenway to the Green Spine via Armenia Avenue. Figures 35, 36, and 37 illustrate the potential Alternative 3 alignment between Himes Avenue and Armenia Avenue. This alignment is the same as Alternatives 1 and 2. The following provides information on how the Alternative 3 alignment could be accomplished. Note that part of this alternative assumes that Cass Street could be extended from Howard Avenue to Armenia Avenue through where the current armory is located.

- If the armory is relocated, the City could extend Cass Street and the Green Spine from Howard Avenue to Armenia Avenue. Extending Cass Street could provide an opportunity to extend the Green Spine to Armenia Avenue.
- To accommodate the bicycle facility, approximately 30 on-street parking spaces would need to be removed from the east side of Armenia Avenue.
- To create a separated bicycle facility along Armenia Avenue, consider constructing a 12' two-way bicycle facility with a raised 4' median along the east side of Armenia Avenue. This facility could connect the existing I-275 Greenway to where Cass Street could potential intersect Armenia Avenue. A potential typical section along Armenia Avenue is shown below.



Armenia Avenue Typical Section with Potential Separated Bicycle Facility



Armenia Avenue at La Salle Street, Looking South

Alternative 4 – As with the other alternatives, this alternative begins at Himes Avenue and La Salle Street, but deviates north from the I-275 right-of-way at MacDill Avenue and continues down Main Street to N Boulevard. Figures 38, 39, and 40 show the Alternative 4 alignment, and the following provides a description of the connection from MacDill Avenue to Main Street and how the trail could be accommodated along Main Street.

- Consider providing a shared-use path along the east side of MacDill Avenue from north of La Salle Street to Green Street.
- Between Green Street and Main Street is an existing 5' sidewalk and 5' utility strip, and MacDill Avenue has approximately 50' of pavement comprising four travel lanes and bicycle lanes. Consider eliminating the bicycle lanes through this section and extending the curb along the east side of the street to accommodate a minimum 10' path along the east side of MacDill Avenue between Green Street and Main Street.

- There are several driveways along both sides of Main Street that are not conducive to a trail facility along the side of the street. Main Street has approximately 40' of pavement comprising two travel lanes and on-street parking along both sides of the street. To accommodate a trail along Main Street, consider eliminating the on-street parking and running the trail down the center of Main Street with 3' separators between the travel lanes and the trail. A local example of a trail running down the middle of the street is the Pinellas Trail along Safford Avenue in downtown Tarpon Springs.



Source: tarponsspringsfla.blogspot.com

Pinellas Trail along Safford Avenue in Tarpon Springs

- Continue the trail along Main Street into the West River redevelopment area and depending upon the design of the reconstructed downtown interchange consider connecting the trail in the vicinity of North Boulevard and Green Street

to the West Riverwalk and across the Fortune (Laurel Street) Bridge.



Trail Concept along Main Street

Figure 41 illustrates the alignment of the four proposed trail alternatives.



Figure 35: Alternative 3 Alignment, Dale Mabry Highway to New Jersey Avenue

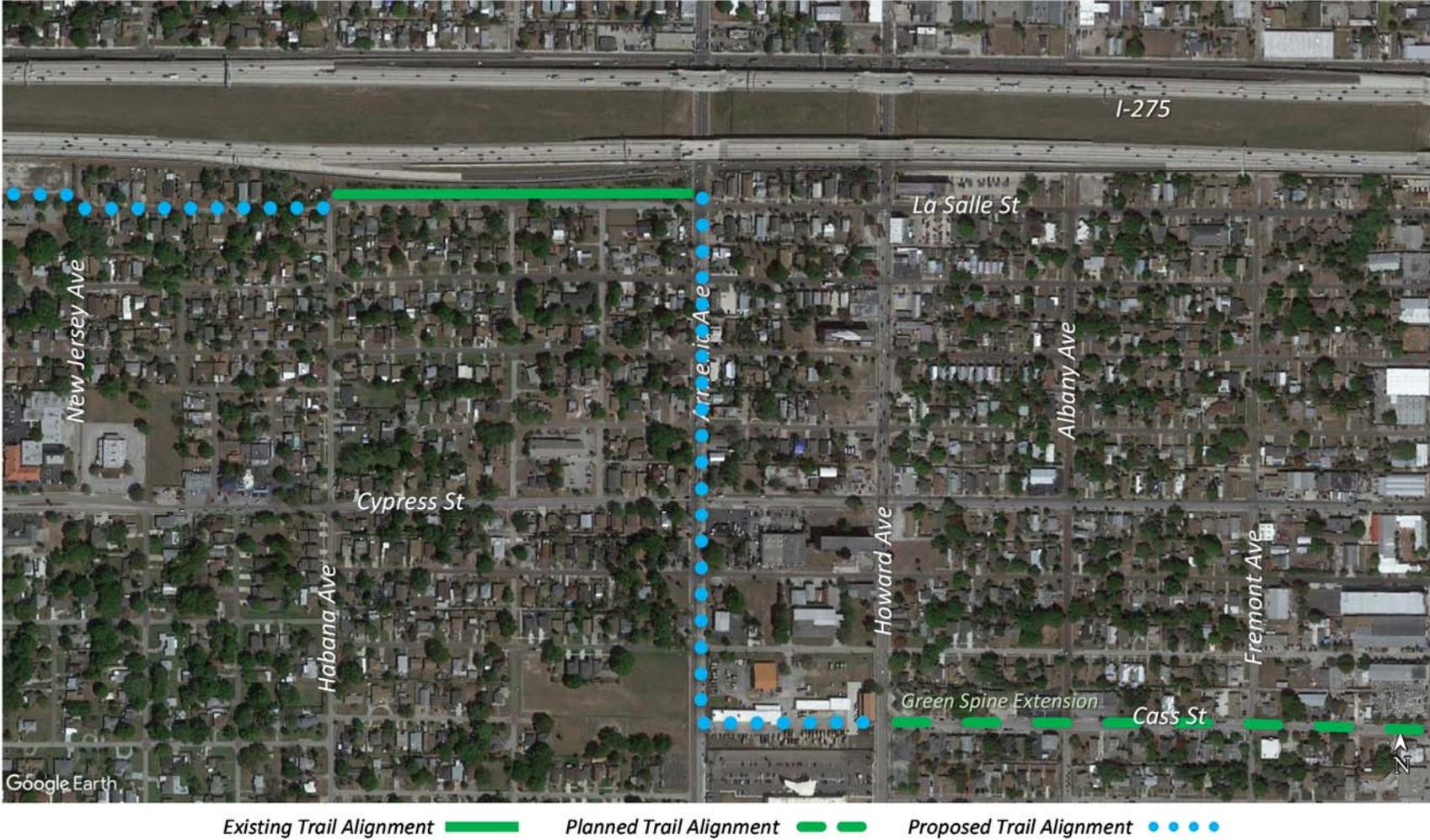


Figure 36: Alternative 3 Alignment, New Jersey Avenue to Fremont Avenue



Figure 37: Alternative 3 Alignment, Fremont Avenue to N Boulevard

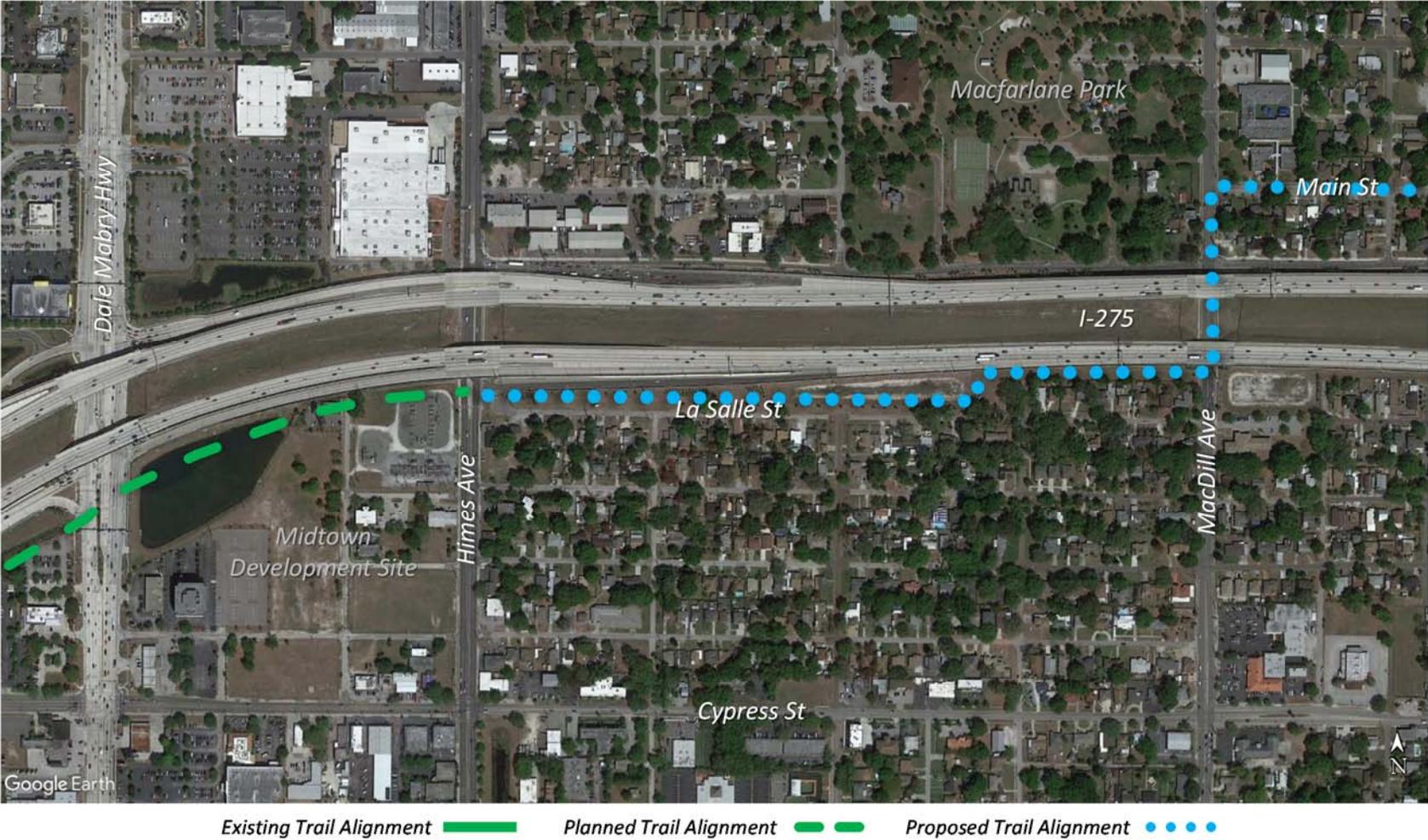
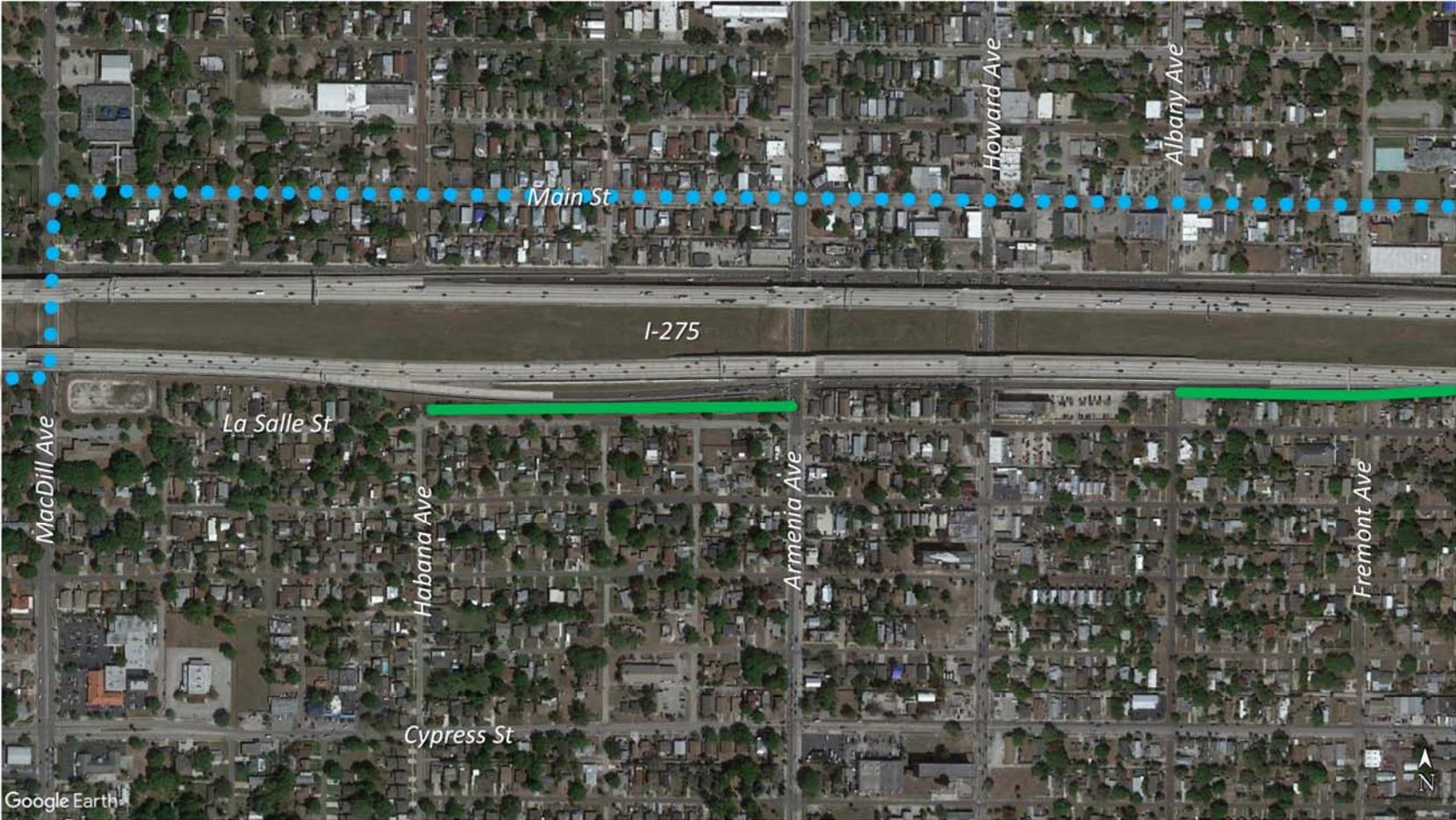


Figure 38: Alternative 4 Alignment, Dale Mabry Highway to MacDill Avenue



Existing Trail Alignment ——— Planned Trail Alignment - - - Proposed Trail Alignment

Figure 39: Alternative 4 Alignment, MacDill Avenue to Fremont Avenue



Figure 40: Alternative 4 Alignment, Fremont Avenue to N Boulevard

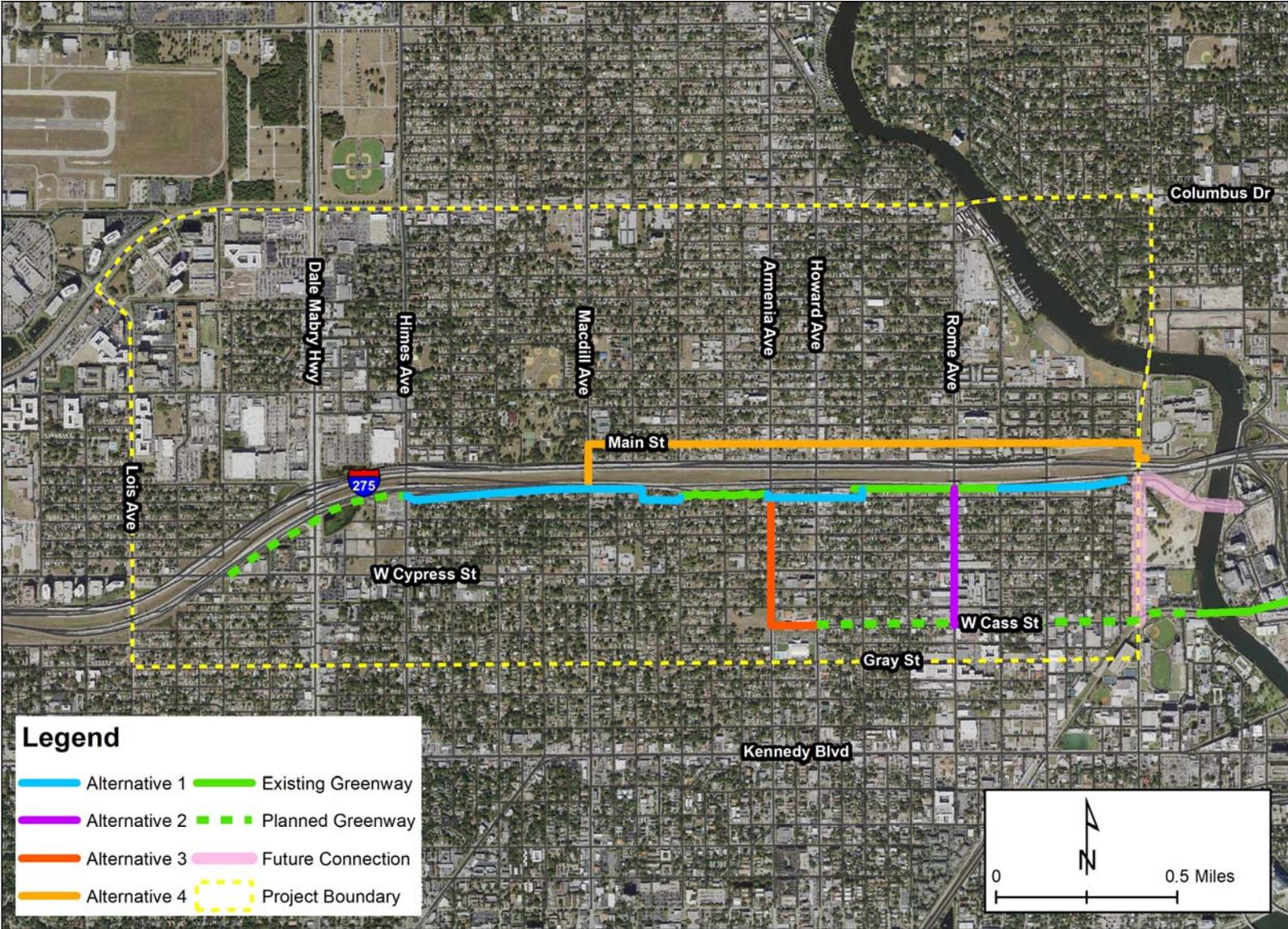


Figure 41: Combined Trail Alternative Alignments

Connecting Existing and Planned Facilities

Providing a connected pedestrian and bicycle network will improve people's ability to travel throughout the West Tampa area without a motor vehicle. As documented in this report, there are currently multiple efforts underway and various opportunities to further improve safety and mobility in West Tampa. This section examines additional connections and enhancements that could be considered throughout the West Tampa area, including the following:

- **Lincoln Avenue** – Although it does not continue through I-275, Lincoln Avenue is a significant north-south street in the West Tampa area. Consider providing shared-lane markings along Lincoln Avenue from Kennedy Boulevard to Cypress Street and from Green Street to Columbus Drive. Additionally, consider filling in sidewalk gaps and providing a complete sidewalk along both sides of Lincoln Avenue.
- **Habana Avenue** – Habana Avenue is an important north-south corridor within the West Tampa area, even though it does not cross I-275. Consider installing shared-lane markings and providing complete sidewalks along both sides of Habana Avenue.
- **Albany Avenue** – Albany Avenue does not cross I-275, but like Lincoln Avenue and Habana Avenue, it is an important north-south connector, though it not continuous. There are sidewalks along Albany Avenue, but consider providing complete sidewalks along both sides of Albany Avenue and providing shared-lane markings, especially between Kennedy Boulevard and Cass Street and Main Street and Beach Street.
- **Kathleen Street** – Kathleen Street is located one block north of Columbus Drive. Columbus Drive does not have bicycle lanes and, due to right-of-way constraints and traffic demand, is not likely to be able to accommodate a bicycle facility. Consider transforming Kathleen Street into a neighborhood greenway between Himes Avenue and Rome Avenue, which would provide a parallel bicycle facility to Columbus Drive and provide bicyclists with a new east-west option.

Feasibility Review

For the Site-Specific Enhancements, a review of project feasibility was conducted with a goal of identifying potential fatal flaws or challenges that would make the suggested enhancements unfeasible (physically or fiscally) or significantly increase the complexity and/or cost to complete the enhancement. Appendix A contains a detailed summary of the feasibility review.

It is recommended that necessary engineering, survey, and/or design work be completed prior to commencing construction on any of the identified enhancements. Unless otherwise noted, most of the enhancements identified as part of this plan were developed to avoid major right-of-way impacts and avoid/minimize major reconstruction of the roadway, curb, and drainage structures

Cost Estimates

Planning-level cost estimates for the identified enhancements were developed to provide general guidance on the expected financial investment for implementing the identified enhancements. Using a

mix of generic cost estimates and pay-item unit costs from FDOT’s historic cost estimates, a list of cost estimate assumptions for the identified enhancements was developed. For the most part, these cost assumptions include the costs associated with materials and base construction costs along with an assumed cost percentage to cover maintenance of traffic (MOT), mobilization, and project unknowns.

Additional detailed engineering and design work will be required to determine actual implementation costs, but using the developed cost assumptions provides a general planning-level estimate for the implementation of the identified enhancements.

Of note is that the cost estimates do not include any costs associated with the attainment of right-of-way; if right-of-way is needed, there could be significant cost increases associated with implementing the enhancements. Appendix B provides a more detailed breakdown of the cost estimates, but if all of the identified enhancements in this plan were implemented, the potential associated costs are estimated to be as follows:

- Main Street Complete Street Enhancements \$1,669,000
- Columbus Drive Complete Street Enhancements \$1,192,000
- Howard Avenue Complete Street Enhancements \$904,000
- Armenia Avenue Complete Street Enhancements \$2,559,000
- Gray Street Neighborhood Greenway Enhancements \$2,084,000

- Beach Street Neighborhood Greenway Enhancements \$1,405,000
- I-275 Greenway Trail Connections, Alternative 1 \$1,425,000
- I-275 Greenway Trail Connections, Alternative 2 \$1,241,000
- I-275 Greenway Trail Connections, Alternative 3 \$1,147,000
- I-275 Greenway Trail Connections, Alternative 4 \$2,596,000

Next Steps

The key to implementing the enhancements identified in this plan is continued coordination among the various involved agencies, including the Hillsborough MPO, the City of Tampa, Hillsborough County, FDOT, and the West Tampa CRA. This coordination will help to ensure that the identified improvements are realized.

Additionally, whereas a feasibility review for this plan was conducted and cost estimates were developed, they were done at the planning level and focused primarily on identifying fatal flaws and high-level challenges. Funding for additional project evaluation and engineering design should be allocated prior to implementing the identified improvements. The design effort will identify any additional challenges, further review the feasibility of the improvements, develop more accurate cost estimates that could be used in programming funding, and may result in some changes to the improvements identified in this plan.

Appendix A – Feasibility Review

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|--|---|
| Main Street Complete Street Enhancements | | |
| Main St, MacDill Ave to Armenia Ave | Delineate on-street parking areas and provide shared lane markings to better define the roadway surface and create a narrower feeling street that is more conducive to non-motorized users. | Maintain appropriate sight lines by adhering to on-street parking setbacks from intersections and driveways. |
| | A considerable amount of westbound to southbound turning movements were observed during field visits, consider conducting a turning movement count at this locations to determine if a westbound left turn lane on Main Street would be warranted. Additionally, based on the turning movement count consider determining if a traffic signal would be warranted at this location. | Conduct turning movement count to determine need for a westbound to southbound left turn lane and to determine if the overall turning movements at this intersection would warrant a traffic signal. |
| | The north side of Main Street, east of MacDill Avenue, is utilized by Macfarlane Park IB Elementary School as a student pick-up/drop-off area. Consider providing pavement markings/stripping in front of the school to help designate this area as a drop-off/pick-up area and consider including signage stating no parking during the designated drop-off and pick-up times. | Coordinate with the school to establish potential designated drop-off and pick-up times. |
| | The sidewalk along the north side of Main Street between MacDill Avenue and Gomez Avenue is severely cracked in multiple locations and pose as potential trip hazards, especially given the proximity to Macfarlane Park and Macfarlane Elementary. Consider repairing/replacing the broken sidewalk sections. | There appears to be 10-15 sidewalk sections that are in need of repair. |
| | Evaluate the intersections of Habana Avenue and Tampania Avenue for neighborhood traffic circles and conversion from 2-way stop control to an all-yield intersection. Additionally, consider providing marked crosswalks on all legs of these intersections. As an alternative to the neighborhood traffic circles, consider installing bulb-outs at the intersections. | There appears to be sufficient pavement width to provide a min. 12' diameter traffic circle at both of these intersections without having to modify the intersection corners. For the bulb-out alternative, there appear to be no drainage inlets in proximity to the intersection that would be impacted by the construction of bulb-outs, however drainage should be evaluated as part of this consideration. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|------------------------------------|---|--|
| Main St at Armenia Ave | Consider enhancing the existing decorative crosswalk markings to include high visibility ladder style markings integrated into the decorative markings | Could be considered as part of a resurfacing project along Armenia Ave. |
| | Evaluate constructing a raised (landscaped) median along Main Street on both sides of Armenia Avenue. | Alternative or interim options to providing a raised median could be to provide a painted/hashed median or to explore an alternative similar to what is used on portions of Nebraska Ave that use decorative stamped asphalt to delineate the median area. |
| Main St, Armenia Ave to Howard Ave | Consider providing a raised (landscaped) median along Main Street between the left turn lanes. The median would help physically narrow the street and could provide opportunities for streetscape and gateway feature enhancements. | A raised median may impact access to some sites within this block and may require some drivers to utilize the adjacent street network to access sites. Coordinate with local land owners and business on access concerns. Additionally, alternatives to a raised median could include a painted/hashed median or the use of decorative stamped asphalt to delineate the median area. |
| Main St, Howard Ave to Albany Ave | Delineate on-street parking areas and provide shared lane markings to better define the roadway surface and create a narrower feeling street that is more conducive to non-motorized users. | Maintain appropriate sight lines by adhering to on-street parking setbacks from intersections and driveways. |
| | At Howard Avenue, consider constructing bulb-outs in the northwest and northeast quadrants. In the northeast quadrant consider continuing the curb extension along the north side of Main Street (adjacent to Salcines Park) to Ysolino Street. Also, consider enhancing the crosswalk markings at the intersection to include high visibility ladder style markings. | While there are no drainage inlets near the proposed bulb-outs, a drainage evaluation should be conducted to identify any potential drainage impacts near the intersection. |
| | There are existing alleyways behind the commercial properties north and south of Main Street; consider better utilizing the alleyways to circulate traffic and for parking access within this segment. Encouraging parking access from the alleys could provide additional opportunity to improve the pedestrian realm along Main Street. | Further evaluation would be needed to establish a formal parking/circulation plan within this block. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|--|---|
| Main St, Howard Ave to Albany Ave | At Albany Avenue consider extending the curb along the north side of Main Street from the northwest corner at Albany Avenue to the existing driveway located west of the park. Additionally, consider constructing a bulb-out in the southwest quadrant and along Main Street in the northeast and southeast quadrants. | While there are no drainage inlets near the proposed bulb-outs, a drainage evaluation should be conducted to identify any potential drainage impacts near the intersection. |
| | Consider enhancing the existing crosswalk markings to high visibility ladder style markings. | NA |
| Main Street, Albany Avenue to Rome Avenue | Delineate on-street parking areas and provide shared lane markings to better define the roadway surface and create a narrower feeling street that is more conducive to non-motorized users. | Maintain appropriate sight lines by adhering to on-street parking setbacks from intersections and driveways. |
| | Consider providing crosswalk markings across the side street intersection at Fremont Avenue and extending the curb along Main Street to define the on-street parking areas and improve the visibility of pedestrians at this intersection. | While there are no drainage inlets near the proposed bulb-outs, a drainage evaluation should be conducted to identify any potential drainage impacts near the intersection. |
| | Consider providing enhanced intersection lighting at Rome Avenue, there is currently one overhead LED light in the northwest corner of the intersection. Evaluate the existing intersection and crosswalk lighting levels and enhance if necessary. | Evaluate the existing wooden utility pole in the northeast quadrant to determine if an overhead luminaire could be affixed to the pole or if a new pole would need to be installed. |
| | The existing crosswalk markings at Rome Avenue are faded and in need of rehabilitation. Consider enhancing the crosswalk markings to high visibility ladder style markings. In addition to rehabilitating and enhancing the crosswalk markings evaluate the existing pedestrian curb ramps to ensure that they meet ADA requirements and provide ADA detectable truncated dome pads within the curb ramps. | NA |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|---|--|
| Main Street, Albany Avenue to Rome Avenue | Consider constructing bulb-outs along Rome Avenue in the northeast and southwest intersection quadrants, additionally consider evaluating the current need for the northbound and southbound right-turn lanes on Rome Avenue, if the turn lanes are not needed consider constructing bulb-outs within these intersection quadrants as well. | While there are no drainage inlets near the proposed bulb-outs, a drainage evaluation should be conducted to identify any potential drainage impacts near the intersection. |
| Main Street, Rome Avenue to North Boulevard | The West River Plan recognizes the historical and future importance of Main Street to the West Tampa area and has identified Main Street for land use, streetscape, and infrastructure enhancements that will promote pedestrian activity and incorporate complete street principles. | NA |
| <i>Columbus Drive Complete Street Enhancements</i> | | |
| Columbus Drive, Lois Avenue to Grady Avenue | Widening or reconstruction of the existing 6' sidewalks to 8' minimum, or preferred 12' shared use paths. | May require modifications to the existing swale and drainage ditch. |
| | Consider improvements to the sidewalk geometry at the signalized and un-signalized intersections to better align the pedestrian paths with the intersection crosswalks. | May require modifications to the existing swale and drainage ditch. |
| | Consider providing pedestrian scale lighting at roadway crossing to better enhance safety of the sidewalk/pathway users. | NA |
| Columbus Drive, Grady Avenue to Dale Mabry Highway | Widen or reconstruct the existing 6' sidewalks to either a minimum 8' sidewalk or preferred 12' shared use path. | May require modifications to the existing swale and drainage ditch. Need to evaluate existing right-of-way along the south side of Columbus Dr to determine if a 12' path could be accommodated or if a narrower 8' to 10' path is needed. |
| | Consider improving the sidewalk geometry to better align the pedestrian path with intersection crosswalks. | May require modifications to the existing swale and drainage ditch. |
| | Consider providing pedestrian scale lighting at roadway crossings to enhance the safety of sidewalk/pathway users. | NA |
| Columbus Drive at Dale Mabry Highway | Reduce the curb radius in the southwest corner of the intersection to allow larger vehicles to turn into the center of inside travel lanes of southbound Dale Mabry Highway. Realign the crosswalk accordingly. | Evaluate drainage impacts. There is an existing drainage inlet on the south side of Columbus Dr, west of the intersection, but it should be set-back enough from the intersection to avoid the need for modification. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|--|--|--|
| Columbus Drive at Dale Mabry Highway | <p>The channelized westbound and southbound right turn movements operate under free-flow conditions. To address pedestrian and operation issues at these locations and to improve safety at the northbound (non-free-flow) right turn channel, consider the following:</p> <ul style="list-style-type: none"> • Consider converting the free-flow lanes into conventional right turn lanes without receiving lanes. • Consider providing raised crosswalks between the curb and the right turn islands to reduce right turning traffic speeds. • Provide R10-15 (Turning Traffic Yield to Pedestrians) signage. • Consider providing push-button activated RRFBs to facilitate crossing from curb to right turn channels • Evaluate existing intersection and crosswalk lighting conditions and enhance as necessary; see FDM Chapter 231 for guidance. | <p>Perform an intersection operational analysis to determine whether the free-flow condition is necessary to maintain acceptable level of service at the intersection.</p> |
| Columbus Drive, Dale Mabry Highway to Himes Avenue | <p>Monitor development and identify opportunities to complete the 10' wide sidewalk along the south side of Columbus Drive.</p> | NA |
| Columbus Drive, Himes Avenue to East of Lincoln Avenue | <p>The City of Tampa's Himes Avenue enhancement project includes the following enhancements along Columbus Drive:</p> <ul style="list-style-type: none"> • Replacing the existing painted median between Himes Avenue and Glen Avenue with a raised median. • Extending the existing raised median between Glen Avenue and Lincoln Avenue into the existing painted median areas east and west of the median. | NA |
| | <p>Consider evaluating the need for a mid-block crossing at Glen Avenue by conducting a pedestrian count near this intersection.</p> | <p>Determine existing pedestrian crossing demand by conducting a three-day pedestrian volume count near this intersection.</p> |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|---|---|
| Columbus Drive, Himes Avenue to East of Lincoln Avenue | <p>At Lincoln Avenue consider the following:</p> <ul style="list-style-type: none"> • Enhance the existing crosswalks to high visibility ladder style markings. • There are LED overhead lights in the northeast and southwest quadrants of the intersection, lighting may be sufficient, but consider evaluating existing lighting levels and enhance if necessary. • Evaluate the existing pedestrian curb ramps to ensure that they meet ADA requirements and install ADA detectable truncated dome pads within the curb ramps. • The left turns from Columbus Drive onto Lincoln Avenue are permissive controlled movements. Consider conducting an operational analysis to determine the feasibility of implementing a protected-permissive left turn signal phase. Additionally, evaluate the existing span-wire signal structure to determine if it would support additional four-section flashing yellow arrow traffic signal assemblies. | <p>Evaluate intersection and crosswalk lighting levels. Perform an intersection operational analysis to determine feasibility of introducing a protected-permissive left turn signal phase for the eastbound and westbound left turn movements from Columbus Drive.</p> <p>Evaluate the existing signal span-wire structure to determine if it could support additional signal head assemblies – if it will not evaluate signal structure upgrades.</p> |
| | <p>Consider extending the existing raised median into the painted median areas, similar to the planned improvements between Glen Avenue and Lincoln Avenue.</p> | NA |
| Columbus Drive, East of Lincoln Avenue to East of Habana Avenue | <p>Consider reducing the travel lane widths to 10' and provide a narrow 8' painted/textured median buffer with intermittent 6' wide landscaped median islands to help calm traffic.</p> | Evaluate access impacts. |
| | <p>Consider widening the existing 5' sidewalks into the adjacent grass utility strip to provide a minimum 8' pathway that could be shared by pedestrians and bicyclists.</p> | May require the relocation of some utilities. |
| | <p>Between St Vincent Street and MacDill Avenue there appears to be adequate pavement width, consider reducing the travel lanes to 10' and extend the curb along the south side in order to accommodate a wide (8') sidewalk.</p> | NA |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|---|--|
| Columbus Drive, East of Lincoln Avenue to East of Habana Avenue | At MacDill Avenue consider enhancing the existing crosswalk markings to high visibility ladder style markings and evaluating the existing intersection lighting levels and enhance if necessary. | Evaluate intersection and crosswalk lighting levels. |
| | The existing eastbound and southbound left turn movements are controlled by a permissive only phase, consider implementing a protected-permissive left turn phase for these movements. | Perform an intersection operational analysis to determine the feasibility of implementing protected-permissive left turn phases for the eastbound and southbound movements. Additionally, evaluate the existing signal span-wire structure to determine if it would support additional four-section flashing yellow arrow traffic signal assemblies for the eastbound and southbound movements along with replacing the westbound and northbound five-section signal assemblies with four-section assemblies. |
| | Along MacDill Avenue, south of Columbus Drive, consider providing green skip pavement markings through the northbound bike lane transition to the keyhole across the right-turn lane. | NA |
| | Along MacDill Avenue, north of Columbus Drive, consider extending the curb in the northeast quadrant into the existing painted gore area north of the intersection. | Evaluate potential drainage impacts. |
| | At Habana Avenue, consider enhancing the existing crosswalk markings, evaluate intersection lighting conditions, and evaluate the existing pedestrian curb ramps to ensure that they meet ADA requirements. Additionally, consider installing ADA detectable truncated dome pads within the curb ramps. | Evaluate existing intersection and crosswalk lighting levels. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|--|--|
| Columbus Drive, East of Lincoln Avenue to East of Habana Avenue | The left turns from Columbus Drive onto Habana Avenue are permissive controlled movements, consider implementing a protected-permissive left turn signal phase for these movements. | <p>Perform an intersection operational analysis to determine the feasibility of implementing a protected-permissive left turn phase for the left turns from Columbus Drive to Habana Avenue.</p> <p>Additionally, evaluate the existing signal span-wire structure to determine if it would support the additional four-section signal assemblies.</p> |
| Columbus Drive, East of Habana Avenue to West of Rome Avenue | At Armenia Avenue, consider evaluating the existing pedestrian curb ramps to ensure that they meet ADA requirements and consider installing ADA detectable truncated dome pads within the curb ramps. | NA |
| | At Howard Avenue, consider evaluating the existing pedestrian curb ramps to ensure that they meet ADA requirements and consider installing ADA detectable truncated dome pads within the curb ramps. | NA |
| | Albany Avenue splits into two two-way streets north of Columbus Drive, one continues straight north through the intersection, the other continues in a northeast diagonal towards Kathleen Street. Consider either constructing a cul-de-sac to close off access to this portion of Albany Avenue from Columbus Drive, or completely eliminate the diagonal segment of Albany Avenue between Columbus Drive and Kathleen Street. | Evaluate impacts to access and circulation. |
| Columbus Drive, West of Rome Avenue to North Boulevard | Based on existing AADTs it appears reasonable to consider a road diet along the portion of Columbus Drive between Rome Avenue and North Boulevard. | Perform an operational analysis to determine the feasibility of a road diet along this section of Columbus Drive. |
| | Across the Hillsborough River bridge there is approximately 38' of pavement, if a road diet is feasible, consider a two lane section with 10' travel lanes, a 4' median buffer, and buffered bike lanes (bicyclists are currently asked to walk their bikes across the bridge due to the lack of available space). | Dependent on the feasibility of a road diet along Columbus Drive. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|--|--|--|
| Columbus Drive, West of Rome Avenue to North Boulevard | From the river to North Boulevard there is approximately 40' of pavement, consider a two lane section with 10' travel lanes, a center turn lane with intermittent landscaped median islands, and 5' bike lanes on both sides. | Dependent on the feasibility of a road diet along Columbus Drive. |
| Columbus Drive at Rome Avenue | Conventional Intersection Alternative – Consider modifying the existing non-signalized intersection to include a westbound through lane and left turn lane, northbound through/left land and right-turn lane, and a single eastbound through lane with an eastbound right-turn drop lane onto Rome Avenue. | Dependent on the feasibility of a road diet along Columbus Drive – perform an intersection operational analysis. See Appendix C for more detail on the feasibility of this alternative. |
| | Roundabout Intersection Alternative – Consider converting the existing non-signalized intersection to a roundabout with single northbound and southbound entry lanes, a single eastbound entry lane with an eastbound right-turn bypass onto Rome Avenue, and dual westbound entry and through lanes. | Dependent on the feasibility of a road diet along Columbus Drive – perform an intersection operational analysis and determine potential right-of-way impacts of the proposed roundabout alternative. See Appendix C for more detail on the feasibility of this alternative. |
| Howard and Armenia Complete Street Enhancements | | |
| Howard Avenue, Gray Street to Cypress Street | Consider constructing bulb-outs along the west side of Howard Avenue at Gray Street and providing a marked crossing supplemented by RRFBs in coordination with the development of the Gray Street neighborhood greenway. | There is a drainage inlet in the southwest corner of the intersection that will need to be modified to accommodate a curb extension. While there shouldn't be impacts to the inlet in the northwest corner along Gray Street, evaluate potential drainage impacts from a bulb-out along Howard Avenue. |
| | Evaluate strategies to reduce the posted speed limit on this segment of Howard Avenue from 40 MPH to 35 MPH or less. If the posted speed can be lowered to or below 35 MPH consider providing shared lane markings along this segment. | Perform a speed analysis study to determine if the existing speeds along this segment of Howard Avenue warrant the existing posted speed limit. |
| | Consider widening the sidewalk along the east side of Howard Avenue utilizing the existing utility strip. This wide sidewalk could accommodate both pedestrians and bicyclists, especially if speeds cannot be reduced along Howard Avenue. | Would require either relocating the existing utility poles or routing the sidewalk around the existing utilities. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|--|--|---|
| Howard Avenue, Gray Street to Cypress Street | Consider conducting an operational analysis to determine if the northbound left turn lane onto Cypress Street is needed. If it is not needed, consider shifting the through travel lanes to the west (between State Street and Cypress Street) and construct a bulb-out in the southeast corner along Howard Avenue. | Perform intersection operational analysis. The southeast corner of the intersection is the only corner of the intersection that does not have a drainage inlet, constructing a bulb-out in this corner should have minimal impacts on drainage. |
| Armenia Avenue, Gray Street to Cypress Street | Evaluate strategies to reduce the posted speed limit on this segment of Armenia Avenue to 35 MPH or less. | Perform a speed analysis study to determine if the existing speeds along this segment of Armenia Avenue warrant the existing posted speed limit. |
| | Consider providing a buffered bicycle lane, 48' feet of pavement for two travel lanes and two on-street parking lanes should provide more than enough space to accommodate a buffered (7') bicycle lane with a 8' 7' 12.5' 12.5' 8' lane configuration. | Consider as part of planned resurfacing project. |
| | Consider constructing bulb-outs at Gray Street and providing a marked crossing with RRFBs to accommodate the proposed Gray Street neighborhood greenway. | There are drainage inlets in all four intersection quadrants, further evaluation is needed to determine drainage impacts. |
| | Consider constructing bulb-outs along Armenia Avenue at all intersections between Gray Street and Cypress Street. | Most of the intersections have drainage inlets located at or near the intersection; evaluate drainage impacts. |
| | Consider conducting an operational analysis for the Armenia Avenue and Cypress Street intersection to determine if the southbound left and right-turn lanes are needed. If they are not needed, consider repurposing the pavement width to better accommodate pedestrians at the intersection. If they are justified, consider constructing bulb-outs along Armenia Avenue in the southeast and southwest quadrants. | Perform an intersection operational analysis to determine if the southbound left and right turn lanes on Armenia Avenue are needed to maintain an acceptable level of service. Evaluate drainage impacts, there are drainage inlets within each corner of the intersection with the exception of the southeast corner. |
| Howard Avenue, Cypress Street to Spruce Street | Evaluate strategies to reduce the posted speed limit on the segment of Howard Avenue south of Main Street from 40 MPH to 35 MPH or less. | Perform a speed analysis study to determine if the existing speeds along this segment of Howard Avenue warrant the existing posted speed limit. |
| | Consider widening the existing sidewalk utilizing the utility strip and FDOT right-of-way to accommodate a minimum 8' sidewalk that could accommodate both pedestrians and bicyclists through the interchange. | Would require either relocating the existing utility poles or routing the sidewalk around the existing utilities. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|---|--|
| Howard Avenue, Cypress Street to Spruce Street | On-street parking returns along Howard Avenue north of Green Street. The posted speed limit is reduced to 30 MPH north of Main Street. Consider providing shared lane markings along Howard Avenue between Main Street and Spruce Street. | Dependent on reduction in posted speed to 35 MPH or less. |
| | At Main Street consider the enhancements identified in the Main Street section. | See Main Street review comments. |
| | At Spruce Street consider the enhancements identified in the MPO's Spruce Street Pedestrian and Bicycle Improvement Report and consider reconstructing the existing bulb-outs and providing enhanced crosswalk markings supplemented with RRFBs. | Impacts to drainage will need to be evaluated. |
| | Consider constructing bulb-outs along Howard Avenue at all intersection between Main Street and Spruce Street. | Evaluate drainage impacts, there are drainage inlets at or near most of the intersection corners through this segment of Howard Avenue. |
| | Consider enhancing the existing crosswalk at Union Street. | NA |
| Armenia Avenue, Cypress Street to Spruce Street | Evaluate strategies to reduce the posted speed limit on this segment of Armenia Avenue to 35 MPH or less. | Perform a speed analysis study to determine if the existing speeds along this segment of Armenia Avenue warrant the existing posted speed limit. |
| | Consider providing a buffered bicycle lane, 48' feet of pavement for two travel lanes and two on-street parking lanes should provide more than enough space to accommodate a buffered (7') bicycle lane with a 8' 7' 12.5' 12.5' 8' lane configuration. | Consider as part of planned resurfacing project. |
| | Consider constructing bulb-outs along Armenia Avenue at all intersections between Cypress Street and Spruce Street. | Evaluate drainage impacts, there are drainage inlets at or near most of the intersection corners through this segment of Armenia Avenue. |
| | Consider providing a marked crossing across the south leg of the Armenia Avenue and Laurel Street/I-275 Ramp intersection. | In addition to crosswalk markings include R10-15 signage to remind right turning drivers to yield to pedestrians in the crosswalk. |
| | Consider implementing the enhancements identified in the Main Street section of this report. | See Main Street review comments. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|--|--|
| Armenia Avenue, Cypress Street to Spruce Street | At Spruce Street, consider the enhancements identified in the MPO’s Spruce Street Pedestrian and Bicycle Improvement Report and consider reconstructing the existing bulb-outs and providing enhance crosswalk markings supplemented with RRFBs. | Evaluate drainage impacts. |
| | Consider providing shared lane markings between Spruce Street and Beach Street. | NA |
| Howard Avenue, Spruce Street to Columbus Drive | North of Beach Street there is no marked on-street parking, consider reducing the travel lane widths, delineate on-street parking on the west side, and provide a buffered bicycle lane to connect to the existing lane at St Louis Street, the lane configuration could be 9’ 12’ 12’ 7’. | Consider as part of planned resurfacing project. |
| | Consider constructing bulb-outs along Howard Avenue at all intersections between Main Street and Beach Street. | Evaluate drainage impacts. |
| | At Cherry Street, consider enhancing the existing crosswalks with high visibility markings supplemented with RRFBs. | NA |
| | At Palmetto Street, consider replacing the existing flashing beacon with a push-button activated RRFB. | NA |
| | At Beach Street, consider constructing bulb-outs and providing a marked crossing to accommodate the proposed Beach Street neighborhood greenway. | Evaluate drainage impacts. In the southeast corner an elongated curb extension could also serve as a bus bulb. |
| Armenia Avenue, Spruce Street to Columbus Drive | Evaluate strategies to reduce the posted speed limit on this segment of Armenia Avenue. | Perform a speed analysis study to determine if the existing speeds along this segment of Armenia Avenue warrant the existing posted speed limit. |
| | Consider providing a buffered bicycle lane, 48’ feet of pavement for two travel lanes and two on-street parking lanes should provide more than enough space to accommodate a buffered (7’) bicycle lane with a 8’ 7’ 12.5’ 12.5’ 8’ lane configuration. | Consider as part of planned resurfacing project. |
| | Consider constructing bulb-outs along Armenia Avenue at all intersections between Spruce Street and Columbus Drive. | Evaluate drainage impacts. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|---|--|
| Armenia Avenue, Spruce Street to Columbus Drive | Consider relocating the existing signalized pedestrian crossing between Walnut Street and Pine Street to Pine Street. | Identified as a Walk-Bike II enhancement. If not relocated construct bulb-outs at the existing location to improve visibility of crossing pedestrians. |
| | Enhance the existing crosswalks at Pine Street to include high visibility ladder style markings. | NA |
| | Consider constructing bulb-outs and providing a marked crosswalk with RRFBs at Beach Street to accommodate the proposed Beach Street neighborhood greenway. | Evaluate drainage impacts. |
| Gray Street Neighborhood Greenway Enhancements | | |
| Gray Street, Westshore Boulevard to Lois Avenue | Consider constructing neighborhood traffic circles and conversion to all-yield control at Hesperides Street, Manhattan Avenue, and Hubert Avenue. | There appears to be adequate pavement width at these intersections to accommodate neighborhood traffic circles. |
| | Consider providing wayfinding signage at Hesperides Street directing bicyclists to the trail that begins on Hesperides Street south of Carmen Street. | NA |
| | <p>Consider conducting a traffic signal warrant analysis at the intersection of Gray Street and Lois Avenue. The closest signalized intersections are at I-275 approximately 600' to the north and Kennedy Boulevard approximately a quarter-mile to the south.</p> <ul style="list-style-type: none"> An alternative to a signalized intersection would be to provide a raised median traffic diverter island along Lois Avenue that would allow bicyclists to continue through the intersection, but would prohibit through and left turn motor vehicle movements. The median island could be accommodated by narrowing the travel lanes on Lois Avenue. | Conduct a traffic signal warrant analysis, consider using the trail crossing requirements for this location. |
| Gray Street, Lois Avenue to Dale Mabry Highway | Consider constructing a neighborhood traffic circle at Grady Avenue and converting the intersection from a four-way stop to an all-yield intersection. | There appears to be adequate pavement width to accommodate a neighborhood traffic circle. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|--|--|---|
| Gray Street, Lois Avenue to Dale Mabry Highway | The intersection of Gray Street and Dale Mabry Highway is signalized. Consider installing bike boxes on the eastbound and westbound approaches and evaluating the feasibility of installing bicycle detection at the intersection to help reduce bicycle delay and improve compliance with the traffic signal. | The east and west stop bars along Gray Street may need to be set-back to accommodate the bike boxes. |
| Gray Street, Dale Mabry Highway to Matanzas Avenue | Consider constructing neighborhood traffic circles at Glenn Avenue, Lincoln Avenue, and Matanzas Avenue. Also, consider converting these intersections from stop controlled to all-yield. | There appears to be adequate pavement width at these intersections to accommodate neighborhood traffic circles. |
| | At Himes Avenue consider conducting a traffic signal warrant analysis, the closest signalized intersections are at Cypress Street to the north and Kennedy Boulevard to the south, both approximately a quarter-mile from this intersection. | Conduct a traffic signal warrant analysis, consider using the trail crossing requirements for this location. |
| Gray Street, Matanzas Avenue to Armenia Avenue | Consider conducting a traffic signal warrant analysis at MacDill Avenue. The closest signalized intersections are at Cypress Street to the north and Kennedy Boulevard to the south, both approximately a quarter-mile from this intersection. | Conduct a traffic signal warrant analysis, consider using the trail crossing requirements for this location. |
| | Consider neighborhood traffic circles and conversion to all-yield control at Gomez Avenue and Habana Avenue. | There appears to be adequate pavement width at these intersections to accommodate neighborhood traffic circles. |
| | At Armenia Avenue consider constructing bulb-outs along Armenia Avenue in each quadrant and providing a marked crosswalk with RRFBs to accommodate the neighborhood greenway crossings. | Evaluate drainage impacts. |
| Gray Street, Armenia Avenue to Rome Avenue | At Howard Avenue consider constructing bulb-outs along the west side of Howard Avenue and providing a marked crossing supplemented with RRFBs. | Evaluate drainage impacts. |
| | Consider constructing neighborhood traffic circles at Albany Avenue and Fremont Avenue. If neighborhood traffic circles are installed consider converting the intersection from stop controlled to all-yield. | There appears to be adequate pavement width at these intersections to accommodate neighborhood traffic circles. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---|--|---|
| Gray Street, Armenia Avenue to Rome Avenue | At Rome Avenue consider providing a marked crossing supplemented with RRFBs along the south leg of the intersection. | Coordinate with planned improvement project along Rome Avenue. |
| <i>Beach Street Neighborhood Greenway Enhancements</i> | | |
| Beach Street, Himes Avenue to MacDill Avenue | Consider conducting a traffic signal warrant analysis at the intersection of Beach Street and Himes Avenue. The ongoing improvements to Himes Avenue will provide a marked mid-block crossing north of Beach Street, but it is unlikely that users of the neighborhood greenway will travel the distance out-of-direction to utilize the crossing. The closest signalized intersections are Columbus Drive to the north and Spruce Street to the south, both approximately a quarter-mile from the intersection. | Conduct a traffic signal warrant analysis, consider using the trail crossing requirements for this location. |
| | Consider installing neighborhood traffic circles at Glenn Avenue and Lincoln Avenue. In conjunction with the neighborhood traffic circles, consider converting the intersections from two-way stop control to all-yield intersections. | There appears to be adequate pavement width at these intersections to accommodate neighborhood traffic circles. |
| | Consider conducting a traffic signal warrant analysis at the intersection of Beach Street and MacDill Avenue. The closest signalized intersections to this intersection are Columbus Drive to the north and Spruce Street to the south, both approximately a quarter-mile from the intersection. | Conduct a traffic signal warrant analysis, consider using the trail crossing requirements for this location. |
| Beach Street, MacDill Avenue to Armenia Avenue | Consider installing a neighborhood traffic circle at Habana Avenue and converting the intersection to an all-yield intersection. | There appears to be adequate pavement width at this intersection to accommodate a neighborhood traffic circle. |
| | At Armenia Avenue consider constructing bulb-outs within all four quadrants, enhancing the existing crosswalk markings, and supplementing the crossing with RRFBs. | Evaluate impacts to drainage. Coordinate with enhancements along Armenia Avenue. |
| Beach Street, Armenia Avenue to Rome Avenue | Consider constructing bulb-outs within all four quadrants at Howard Avenue, enhance the existing crosswalk markings, and consider supplementing the crossing with RRFBs. | Evaluate impacts to drainage. Coordinate with enhancements along Howard Avenue. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|--|---|---|
| Beach Street, Armenia Avenue to Rome Avenue | At Rome Avenue consider installing a marked crosswalk with RRFBs to help facilitate movements to/from the neighborhood greenway. | Coordinate with improvements along Rome Avenue. |
| <i>I-275 Greenway and Green Spine Trail Connections</i> | | |
| Alternative 1 | From Himes Avenue continue the trail within the FDOT right-of-way adjacent to La Salle Street to east of MacDill Avenue at New Jersey Avenue. A crossing a MacDill Avenue would need to be provided and note that the pond site between MacDill Avenue and New Jersey Avenue may need to be modified to accommodate a trail and still provide maintenance access to the pond. | Coordinate with FDOT on use of right-of-way and conduct necessary engineering work to determine if the pond site between MacDill Avenue and New Jersey Avenue would need to be modified to accommodate a trail adjacent to it. Additionally, there is a retaining wall and a slight elevation change along the east side of MacDill Avenue that would need to be mitigated for. |
| | An on-street section of the trail would continue along New Jersey Avenue approximately 50' to La Salle Street and then continue along La Salle Street approximately 900' to connect to the existing I-275 Greenway at Habana Avenue and then continue along the existing trail to Armenia Avenue. | NA |
| | A crossing would need to be provided at Armenia Avenue, from there the trail would continue on-street along La Salle Street for about a quarter-mile to Habana Avenue where it would connect into the existing trail/maintenance road north of the residences that front La Salle Street. | Could utilized proposed south leg crossing of Armenia Avenue and Laurel Street/I-275 Ramp intersection. Evaluate crossing opportunities at Howard Avenue. |
| | The trail would then continue along the existing trail/maintenance road to Oregon Avenue. At Oregon Avenue consider continuing the trail with the FDOT right-of-way south of I-275 to North Boulevard. | NA |
| Alternative 2 | Utilize the Alternative 1 alignment within the I-275 right-of-way and La Salle Street to provide a connection between Himes Avenue and Rome Avenue. | See Alternative 1 review comments. |
| | At Rome Avenue utilize the planned bicycle lanes or consider exploring opportunities for a separated facility, to connect to the planned Green Spine extension along Cass Street. | Alternatively evaluate opportunities to construct a pathway along Rome Avenue to Cass Street, potentially along the west side of Rome Avenue. |
| | The trail would then utilize the Green Spine to connect to and through downtown Tampa. | NA |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---------------|---|--|
| Alternative 3 | Utilize the Alternative 1 alignment within the I-275 right-of-way and La Salle Street to Armenia Avenue. | See Alternative 1 review comments. |
| | If the armory is relocated, the City of Tampa could potentially extend Cass Street and the Green Spine from Howard Avenue to Armenia Avenue. Extending Cass Street could provide an opportunity to extend the Green Spine to Armenia Avenue. | Depends on the relocation of the armory and the City’s ability to obtain the right-of-way to connect Cass Street and the Green Spine from Howard Avenue to Armenia Avenue. |
| | To create a separated bicycle facility along Armenia Avenue consider constructing a 12’ two-way bicycle facility with a raised 4’ median along the east side of Armenia Avenue. This facility could connect the existing I-275 Greenway to where Cass Street could potentially intersect Armenia Avenue. | To accommodate the two-way bicycle facility approximately 30 on-street parking spaces would need to be removed from the east side of Armenia Avenue. Consider conducting a parking utilization study along this segment of Armenia Avenue. |
| Alternative 4 | Utilize the Alternative 1 alignment within the I-275 right-of-way to MacDill Avenue. | See Alternative 1 review comments. |
| | Consider providing a shared use path along the east side of MacDill Avenue from north of La Salle Street to Green Street. | NA |
| | Between Green Street and Main Street there is an existing 5’ sidewalk and 5’ utility strip, MacDill Avenue has approximately 50’ of pavement comprised of four travel lanes and bicycle lanes. Consider eliminating the bicycle lanes through this section and extending the curb along the east side of the street to accommodate a minimum 10’ path along the east side of MacDill Avenue between Green Street and Main Street. | May require relocation of some utilities. |
| | There are several driveways along both sides of Main Street that are not conducive to a trail facility along the side of the street. Main Street has approximately 40’ of pavement that is comprised of two travel lanes and on-street parking along both sides of the street. In order to accommodate a trail along Main Street consider eliminating the on-street parking and running the trail down the center of Main Street with 3’ separators between the travel lanes and the trail. | Would require eliminating on-street parking along Main Street as well as eliminating the left turn lanes along Main Street at both Armenia Avenue and Howard Avenue. |

WEST TAMPA MULTIMODAL PLAN

| Location | Suggestion for Consideration | Review Comments |
|---------------|--|---|
| Alternative 4 | Continue the trail along Main Street into the West River redevelopment area and depending upon the design of the reconstructed downtown interchange consider connecting the trail in the vicinity of North Boulevard and Green Street to the West Riverwalk and across the Fortune (Laurel Street) Bridge. | Coordinate with the West River development. |

Appendix B – Cost Estimates

WEST TAMPA MULTIMODAL PLAN

| Location | Summary of Suggestions for Consideration | Planning Level Cost Estimate |
|---|--|------------------------------|
| <i>Main Street Complete Street Enhancements</i> | | |
| Main Street, MacDill Avenue to Armenia Avenue | <ul style="list-style-type: none"> • Intersection enhancements at Main Street and MacDill Avenue including a potential westbound left turn lane on Main Street and potentially signaling the intersection. • Repair/replace broken sidewalk segments • Provide shared lane markings • Delineate on-street parking areas • Neighborhood traffic circles at Habana Avenue and Tampania Avenue | \$718,000 |
| Main Street at Armenia Avenue and Howard Avenue | <ul style="list-style-type: none"> • Intersection enhancements including possible bulb-outs • Enhanced crosswalk markings • Raised landscaped median west of Armenia Avenue and between Armenia Avenue and Howard Avenue | \$139,000 |
| Main Street, Howard Avenue to Albany Avenue | <ul style="list-style-type: none"> • Delineate on-street parking areas • Provide shared Lane markings • Improving lighting conditions, including pedestrian scale lighting between Howard Avenue and Albany Avenue • Intersection Enhancements at Albany and Main Street including bulb-outs | \$ 445,000 |
| Main Street, Albany Avenue to Rome Avenue | <ul style="list-style-type: none"> • Delineate on-street parking areas • Provide shared lane markings • Installing intersection lighting • Intersection enhancements including bulb-outs, enhanced crosswalks, and ADA compliant infrastructure | \$ 155,000 |
| Main Street, Rome Avenue to North Boulevard | <ul style="list-style-type: none"> • Intersection enhancements including improved crosswalk markings • Improved intersection lighting | \$ 212,000 |
| <i>Columbus Drive Complete Street Enhancements</i> | | |
| Columbus Drive, Lois Avenue to Grady Avenue | <ul style="list-style-type: none"> • Widen sidewalks • Sidewalk reconstruction and geometry improvements at intersections • Pedestrian scale lighting | \$ 249,000 |

WEST TAMPA MULTIMODAL PLAN

| Location | Summary of Suggestions for Consideration | Planning Level Cost Estimate |
|--|--|------------------------------|
| Columbus Drive, Grady Avenue to Dale Mabry Highway | <ul style="list-style-type: none"> Widen sidewalks Sidewalk reconstruction and geometry improvements at intersections | \$120,000 |
| Columbus Drive at Dale Mabry Highway | <ul style="list-style-type: none"> Intersection enhancements including reducing curb radii, realigning crosswalks, operational analysis, RRFBs, and lighting conditions | \$ 129,000 |
| Columbus Drive, Dale Mabry Highway to Himes Avenue | <ul style="list-style-type: none"> Monitor redevelopment and identify opportunities to widen sidewalk along the south side | NA |
| Columbus Drive, Himes Avenue to East of Lincoln Avenue | <ul style="list-style-type: none"> Providing marked crosswalks along the side-street crossings Intersection enhancements including high emphasis crosswalks, LED overhead lighting, and pedestrian curb ramps Signalized left turn operational changes and new traffic signal head assemblies | \$ 189,000 |
| Columbus Drive, East of Lincoln Avenue to East of Habana Avenue | <ul style="list-style-type: none"> Evaluating signal timing and phasing, consider new signal head assemblies Intersection enhancements including improved and realigned crosswalks, ADA enhancements, and curb extensions Roadway realignment between St Vincent St and MacDill Ave to accommodate sidewalk along the south side Sidewalk enhancements | \$440,000 |
| Columbus Drive, East of Habana Avenue to West of Rome Avenue | <ul style="list-style-type: none"> Intersection enhancements including improved crosswalks, curb ramps Crosswalk along the side-street crossings | \$124,000 |
| Columbus Drive at Rome Avenue | <ul style="list-style-type: none"> Road diet and intersection signalization Further roundabout feasibility evaluation | \$504,000 |
| Columbus Drive, West of Rome Avenue to North Boulevard | <ul style="list-style-type: none"> Crosswalk enhancements at intersections and along Columbus Drive | \$129,000 |
| Howard Avenue and Armenia Avenue Complete Street Enhancements | | |

WEST TAMPA MULTIMODAL PLAN

| Location | Summary of Suggestions for Consideration | Planning Level Cost Estimate |
|--|--|------------------------------|
| Howard Avenue, Gray Street to Cypress Street | <ul style="list-style-type: none"> • Bulb-outs along Howard Avenue • Crossing enhancements at Gray Street including markings and RRFBs • Operations analysis for Cypress Street intersection • Widening sidewalk along Howard Avenue | \$136,000 |
| Howard Avenue, Cypress Street to Spruce Street | <ul style="list-style-type: none"> • Reconstructing bulb-outs • Shared lane markings • Providing enhanced crossing with RRFBs | \$269,000 |
| Howard Avenue, Spruce Street to Columbus Drive | <ul style="list-style-type: none"> • Crosswalk enhancements including RRFBs • Shared lane markings • Reducing travel lane widths, providing buffered bicycle lane between Beach Street and St Louis Street | \$499,000 |
| Armenia Avenue, Gray Street to Cypress Street | <ul style="list-style-type: none"> • Bulb-outs at all intersections along Armenia Avenue • Accommodating buffered bicycle lane • Intersections enhancements including an RRFB | \$444,000 |
| Armenia Avenue, Cypress Street to Spruce Street | <ul style="list-style-type: none"> • Bulb-outs at all intersections along Armenia • Accommodating buffered bicycle lane • Intersection enhancements including an RRFB | \$ 884,000 |
| Armenia Avenue, Spruce Street to Columbus Drive | <ul style="list-style-type: none"> • Bulb-outs at all intersections along Armenia Ave • Accommodating buffered bicycle lane • Intersection enhancements including RRFBs | \$1,271,000 |
| <i>Gray Street Neighborhood Greenway Enhancements</i> | | |
| Gray Street, Westshore Boulevard to Lois Avenue | <ul style="list-style-type: none"> • Shared lane pavement markings with green background box • “Bikes May Use Full Lane” Signs • Wayfinding signage • Installing neighborhood traffic circles • Installation of traffic signal at Lois Avenue | \$ 592,000 |

WEST TAMPA MULTIMODAL PLAN

| Location | Summary of Suggestions for Consideration | Planning Level Cost Estimate |
|---|---|------------------------------|
| Gray Street, Lois Avenue to Dale Mabry Highway | <ul style="list-style-type: none"> • Shared lane pavement markings with green background box • “Bikes May Use Full Lane” Signs • Wayfinding signage • Installing neighborhood traffic circles • Bike boxes and bicycle detection at Dale Mabry Highway | \$42,000 |
| Gray Street, Dale Mabry Highway to Matanzas Avenue | <ul style="list-style-type: none"> • Shared lane pavement markings with green background box • “Bikes May Use Full Lane” Signs • Wayfinding signage • Installing neighborhood traffic circles • Installing speed cushions | \$550,000 |
| Gray Street, Matanzas Avenue to Armenia Avenue | <ul style="list-style-type: none"> • Shared lane pavement markings with green background box • “Bikes May Use Full Lane” Signs • Wayfinding signage • Installing neighborhood traffic circles • Installing speed cushions • Crossing enhancements at Armenia Avenue including bulb-outs and RRFBs • Potential new traffic signal at MacDill Avenue | \$672,000 |
| Gray Street, Armenia Avenue to Rome Avenue | <ul style="list-style-type: none"> • Shared lane pavement markings with green background box • “Bikes May Use Full Lane” Signs • Wayfinding signage • Installing neighborhood traffic circles • Installing speed cushions • Enhanced crossings at Howard Avenue and Rome Avenue | \$ 228,000 |
| <i>Beach Street Neighborhood Greenway Enhancements</i> | | |
| Beach Street, Himes Avenue to MacDill Avenue | <ul style="list-style-type: none"> • Shared lane pavement markings with green background box • “Bikes May Use Full Lane” Signs • Wayfinding signage • Installing neighborhood traffic circles • Installing speed cushions • Potential new traffic signal at Himes Avenue | \$526,000 |

WEST TAMPA MULTIMODAL PLAN

| Location | Summary of Suggestions for Consideration | Planning Level Cost Estimate |
|--|---|------------------------------|
| Beach Street, MacDill Avenue to Armenia Avenue | <ul style="list-style-type: none"> • Shared lane pavement markings with green background box • “Bikes May Use Full Lane” Signs • Wayfinding signage • Installing neighborhood traffic circles • Installing speed cushions • Enhancing existing or installing new crosswalk markings and installing an RRFB • Installing traffic signal at MacDill Avenue | \$642,000 |
| Beach Street, Armenia Avenue to Rome Avenue | <ul style="list-style-type: none"> • Shared lane pavement markings with green background box • “Bikes May Use Full Lane” Signs • Wayfinding signage • Installing neighborhood traffic circles • Installing speed cushions • Enhancing existing crossings with improved crosswalk markings and RRFBs | \$238,000 |
| <i>I-275 Greenway and Green Spine Trail Connections</i> | | |
| Alternative 1 | | |
| Alternative 1, Himes Avenue to MacDill Avenue | <ul style="list-style-type: none"> • Constructing multi-use path within FDOT right-of-way • Signalized crossing at MacDill Avenue | \$666,000 |
| Alternative 1, MacDill Avenue to Habana Avenue | <ul style="list-style-type: none"> • Constructing multi-use path • Shared lane markings | \$45,000 |
| Alternative 1, Habana Avenue to Albany Avenue | <ul style="list-style-type: none"> • Constructing multi-use path within FDOT right-of-way • Trail crossing • Shared Lane markings | \$510,000 |
| Alternative 1, Albany Avenue to Rome Avenue | <ul style="list-style-type: none"> • Shared lane markings | \$500 |
| Alternative 1, Rome Avenue to North Boulevard | <ul style="list-style-type: none"> • RRFB crossing • Construct multi-use path within FDOT right-of-way | \$204,000 |
| Alternative 2 | | |
| Alternative 2, Himes Avenue to MacDill Avenue | <ul style="list-style-type: none"> • Constructing multi-use path within FDOT right-of-way • Signalized crossing at MacDill Avenue | \$666,000 |

WEST TAMPA MULTIMODAL PLAN

| Location | Summary of Suggestions for Consideration | Planning Level Cost Estimate |
|--|--|------------------------------|
| Alternative 2, MacDill Avenue to Habana Avenue | <ul style="list-style-type: none"> • Construct multi-use path within FDOT right-of-way • Install shared lane markings | \$45,000 |
| Alternative 2, Habana Avenue to Albany Avenue | <ul style="list-style-type: none"> • Construct multi-use path within FDOT right-of-way • Install shared lane markings • Install trail crossings | \$510,00 |
| Alternative 2, Albany Avenue to Rome Avenue | <ul style="list-style-type: none"> • Utilize existing trail/maintenance road alignment | NA |
| Alternative 2, Rome Avenue from I-275 Greenway to Cass Street/Green Spine | <ul style="list-style-type: none"> • Utilize planned bike facilities along Rome Avenue • Enhanced crossing with RRFBs | \$20,000 |
| Alternative 3 | | |
| Alternative 3, Himes Avenue to MacDill Avenue | <ul style="list-style-type: none"> • Constructing multi-use path within FDOT right-of-way • Signalized crossing at MacDill Avenue | \$ 666,000 |
| Alternative 3, MacDill Avenue to Armenia Avenue | <ul style="list-style-type: none"> • Construct multi-use path within FDOT right-of-way • Install shared lane markings • Crossing enhancement at Armenia Avenue | \$66,000 |
| Alternative 3, Armenia Avenue from I-275 Greenway to Cass Street/Green Spine | <ul style="list-style-type: none"> • Construct two-way cycle track along Armenia Ave • Intersection enhancements • Does not include improvements to Cass Street or right-of-way acquisition costs | \$415,000 |
| Alternative 4 | | |
| Alternative 4, Himes Avenue to MacDill Avenue | <ul style="list-style-type: none"> • Construct multi-use path within FDOT right-of-way | \$216,000 |
| Alternative 4, MacDill Avenue from I-275 Greenway to Main Street | <ul style="list-style-type: none"> • Signalized crossing at MacDill Avenue • New multi-use path along MacDill Avenue | \$600,000 |
| Alternative 4, Main Street from MacDill Avenue to North Boulevard | <ul style="list-style-type: none"> • Construct two-way cycle track with physical separation in the middle of Main Street; includes resurfacing and intersection enhancements | \$1,780,000 |

Appendix C – Columbus Drive at Rome Avenue Intersection Review

Columbus Drive at Rome Avenue Alternatives Operational Analysis

For the feasibility analysis of the concepts proposed for Columbus Drive at Rome Avenue, isolated intersection, existing scenario and three alternative concepts were analyzed using Synchro9 and the configuration of network for the scenarios and the results are described as follows:

Figure 1 shows the study area and intersection with network setup in Synchro.



Figure 1: Study Area and Intersection

Four Scenarios under Consideration for Analysis:

1. No Build – Existing scenario
2. Alternative 1 – Road diet with change in lane configurations
3. Alternative 2 – Signalized intersection

4. Alternative 4 – Roundabout

Traffic Data

Turning movement count data collected in 2015 was used for the analysis. The operational analysis was performed for the PM peak hours from 5:00 PM to 6:00 PM.

Intersection Operations Analysis and Results

Study intersections were analyzed using the turning movement volume. Detailed operational analyses were conducted for the year 2015.

Unsignalized Intersection

Existing:

- For the existing scenario and the road diet concept, a curb radius of 50 feet is given at the northbound left to incorporate the storage length at the right turn.
- As shown in Table 1, the Columbus Drive at Rome Avenue intersection currently operates at **LOS D** during the evening peak hour.

Road Diet:

- For the road diet concept with a 2-lane divided lane configuration the suggested lane arrangements are:
 - Southbound – T/R/L
 - Westbound – T/R + L (150 ft)
 - Northbound – T/L + R (100 ft)
 - Eastbound – T/L + R (1,000 ft)
- The intersection in this scenario is anticipated to operate at **LOS F** for the evening peak hour. In this concept the

northbound and southbound approaches experience high levels of delay.

Signalized Intersection:

- The control type adopted for the signal timing is Actuated – coordinated type with a cycle length of 90 seconds.
- The lane configuration is the same as that given for the unsignalized road diet concept.
- The signal cycle length and the split is optimized using Synchro9.
- The results show that the intersection in this scenario operates at **LOS B** during the PM peak hour.

Roundabout:

- For the roundabout concept, the intersection fails with only one circulatory lane.

- The eastbound and westbound approaches (major street) experience high delay with a single circulating roundabout lane.
- The analysis results show that the intersection operates at **LOS F** during the PM peak hour for the roundabout concept.

Summary

Based on the intersection analysis performed with 2015 turning movement count data for the Columbus Drive at Rome Avenue intersection, the intersection currently operates at an acceptable level per FDOT standards (Standard LOS D). Of the analyzed intersection alternatives it the signalized road diet alternative operates the best with a **LOS B** in the PM peak hour.

WEST TAMPA MULTIMODAL PLAN

Table 1: PM Peak Hour Intersection Operations Analysis Summary

| Approach | Movement | HCM 2010 | | | | | | | Synchro | | | | | |
|--|-----------|----------------|--------------------------|--------------|-----------|------------------------------------|----------|--|--------------------------|----------------|--------------|-------------|------------------------------------|----------|
| | | Movement Delay | Approach delay (sec/veh) | Approach LOS | V/C ratio | Queue length 95 th (ft) | LOS | | Movement Delay (sec/veh) | Approach delay | Approach LOS | V/C ratio | Queue length 95 th (ft) | LOS |
| Existing; Unsignalised | | | | | | | | | | | | | | |
| Eastbound | L | 0 | | * | | | | | 0 | | | | | |
| | T | | | | | | | | | | | 0.37 | | |
| | R | | | | | | | | | | | 0.37 | | |
| Westbound | L | 12.34 | | | 0.16 | 15 | B | | 3 | 2.3 | | 0.16 | 14 | |
| | T(shared) | 2.4 | | | | | | | 2.2 | | | 0.34 | 14 | |
| | R | | | | | | | | 0 | | | 0.34 | 0 | |
| Northbound | L | | | | | | | | 350.5 | 350.5 | | 1.6 | 423 | F |
| | T | 413.1 | \$413.10 | F | 1.74 | 450 | F | | 350.5 | | | 1.6 | 423 | F |
| | R | | | | | | | | 350.5 | | | 1.6 | 423 | F |
| Southbound | L | 162.4 | | F | 0.16 | 12.5 | F | | 108.2 | 108.2 | | 0.1 | 8 | F |
| | T | | 162.4 | | | | | | 108.2 | | | 0.1 | 8 | F |
| | R | | | | | | | | 108.2 | | | 0.1 | 8 | F |
| Overall | | 39.6 | | | | | - | | 33.4 | | | 1.6 | | D |
| Alt1: Unsignalised; Road Diet | | | | | | | | | | | | | | |
| Eastbound | L | 0 | 0 | | | | A | | 0 | 0 | | 0 | | |
| | T | | | | | | | | 0 | | | 0 | | |
| | R | | | | | | | | 0 | | | 0.04 | | |
| Westbound | L | 11.73 | 0.9 | | 0.15 | 12.5 | B | | 12.3 | 0.9 | | 0.16 | 14 | B |
| | T(shared) | | | | | | | | 0 | | | 0.68 | | A |
| | R | | | | | | | | 0 | | | 0.68 | | A |
| Northbound | L | \$958.50 | 62.3 | F | 2.11 | 130 | F | | 798 | 798 | | 2.56 | 567 | F |
| | T | 61.9 | | | 0.82 | 160 | F | | 798 | | | 2.56 | 567 | F |
| | R | | | | | | | | 798 | | | 2.56 | 567 | F |
| Southbound | L | \$473.20 | 7.9 | F | 0.4 | 22.5 | F | | 473 | 473 | | 0.37 | 22 | F |
| | T | | | | | | | | 473 | | | 0.37 | 22 | F |
| | R | | | | | | | | 473 | | | 0.37 | 22 | F |
| Overall | | 19.6 | | | | | - | | 74.7 | | | 2.56 | | F |
| Alt2: Road Diet; Signalized; Control type: Actuated - Coordinated; Cycle length:90sec | | | | | | | | | | | | | | |
| Eastbound | L | 0 | 15.2 | B | 0 | - | A | | 0 | 13.7 | B | 0 | | |
| | T | 21.4 | | | 0.84 | - | B | | 14.5 | | | 0.79 | #807 | B |
| | R | 5.4 | | | 0.07 | - | A | | 2.5 | | | 0.07 | 19 | A |
| Westbound | L | 49.6 | 18.7 | B | 0.45 | | C | | 15.2 | 16.6 | B | 0.46 | #81 | B |

WEST TAMPA MULTIMODAL PLAN

| | | | | | | | | | | | | | | |
|-------------------------|-----------|-------------|-------|---|------|-----|----------|--|-------------|------|---|------|------|----------|
| | T(shared) | 0 | | | 0.88 | | A | | 16.8 | | | 0.84 | #884 | B |
| | R | 26.8 | | | 0.88 | | B | | 0 | | | 0 | - | |
| Northbound | L | 30.1 | 47.6 | D | 0.12 | | C | | 0 | 29.8 | C | 0 | - | |
| | T | 0 | | | 0.14 | | A | | 36.2 | | | 0.22 | 45 | D |
| | R | 44.1 | | | 0.83 | | D | | 28.2 | | | 0.7 | 109 | C |
| Southbound | L | 28.9 | 31.7 | C | 0.01 | | C | | 0 | 25.5 | C | 0 | - | |
| | T | 0 | | | 0.01 | | A | | 25.5 | | | 0.02 | 10 | C |
| | R | 0 | | | 0.02 | | A | | 0 | | | 0 | - | |
| Overall | | 19.8 | | | | | B | | 16.6 | | | | | B |
| Alt3: Roundabout | | | | | | | | | | | | | | |
| Eastbound | L | | 104.2 | F | 1.17 | 850 | | | | | | | | |
| | T | | | | | | | | | | | | | |
| | R | | | | | | | | | | | | | |
| Westbound | L | | 105.7 | F | 1.18 | 900 | | | | | | | | |
| | T(shared) | | | | | | | | | | | | | |
| | R | | | | | | | | | | | | | |
| Northbound | L | | 31.9 | D | 0.68 | 125 | | | | | | | | |
| | T | | | | | | | | | | | | | |
| | R | | | | | | | | | | | | | |
| Southbound | L | | 12 | B | 0.01 | 0 | | | | | | | | |
| | T | | | | | | | | | | | | | |
| | R | | | | | | | | | | | | | |

*, - Missing LOS is LOS A.

Roundabout Capacity Analysis

Using the Federal Highway Administration (FHWA) Roundabout Informational Guide and the 2015 turning movement count data a roundabout capacity analysis was conducted for the Columbus Drive at Rome Avenue intersection. According to the FHWA Guide, the maximum traffic flow rate that can be accommodated at a roundabout entry depends on two factors: the circulating flow on the roundabout that conflicts with the entry flow, and the geometric elements of the roundabout.

When circulating flow is low, drivers at the entry are able to enter the roundabout without significant delay. The larger gaps in the circulating flow are more useful to the entering drivers and more than one vehicle may enter each gap. As the circulating flow increases, the size of the gaps in the circulating flow decrease, and the rate at which vehicles can enter also decreased. Note that when computing the capacity of a particular leg, the actual circulating flow to use may be less than demand flows, if the entry capacity of one leg contributing to the circulating flow is less than demand on that leg.

The geometric elements of the roundabout also affect the rate of entry flow. The most important geometric element is the width of the entry and circulatory roadways, or the number of lanes at the entry and on the roundabout. Two entry lanes permit nearly twice the rate of entry flow as one lane. Wider circulatory roadways allow vehicles to travel alongside, or follow, each other in tighter bunches and so provide longer gaps between bunches of vehicles. The lane length also affects the capacity. The inscribed circle diameter and the entry angle have minor effects on capacity.

The following is a summary of the roundabout capacity analysis that was completed for the Columbus Drive at Rome Avenue intersection. For this analysis the AM and PM peak hours were evaluated for both the existing conditions, see Table 2 and Figures X – X, and for a future condition using assumed growth percentages as shown in Table 3 and in Figures 2 – 9.

WEST TAMPA MULTIMODAL PLAN

Table 2: Columbus Drive at Rome Avenue Turning Movement Count (2015)

| Peak Hour | Southbound | | | | Westbound | | | | Northbound | | | | Eastbound | | | |
|-----------|------------|------|------|-------|-----------|-------|------|-------|------------|------|------|-------|-----------|-------|------|-------|
| | Right | Thru | Left | Total | Right | Thru | Left | Total | Right | Thru | Left | Total | Right | Thru | Left | Total |
| AM | 1 | 1 | 1 | 3 | 1 | 1,277 | 82 | 1,360 | 87 | 1 | 27 | 115 | 61 | 410 | 0 | 471 |
| PM | 2 | 1 | 1 | 4 | 6 | 1,056 | 88 | 1,150 | 190 | 2 | 33 | 225 | 69 | 1,008 | 0 | 1,077 |

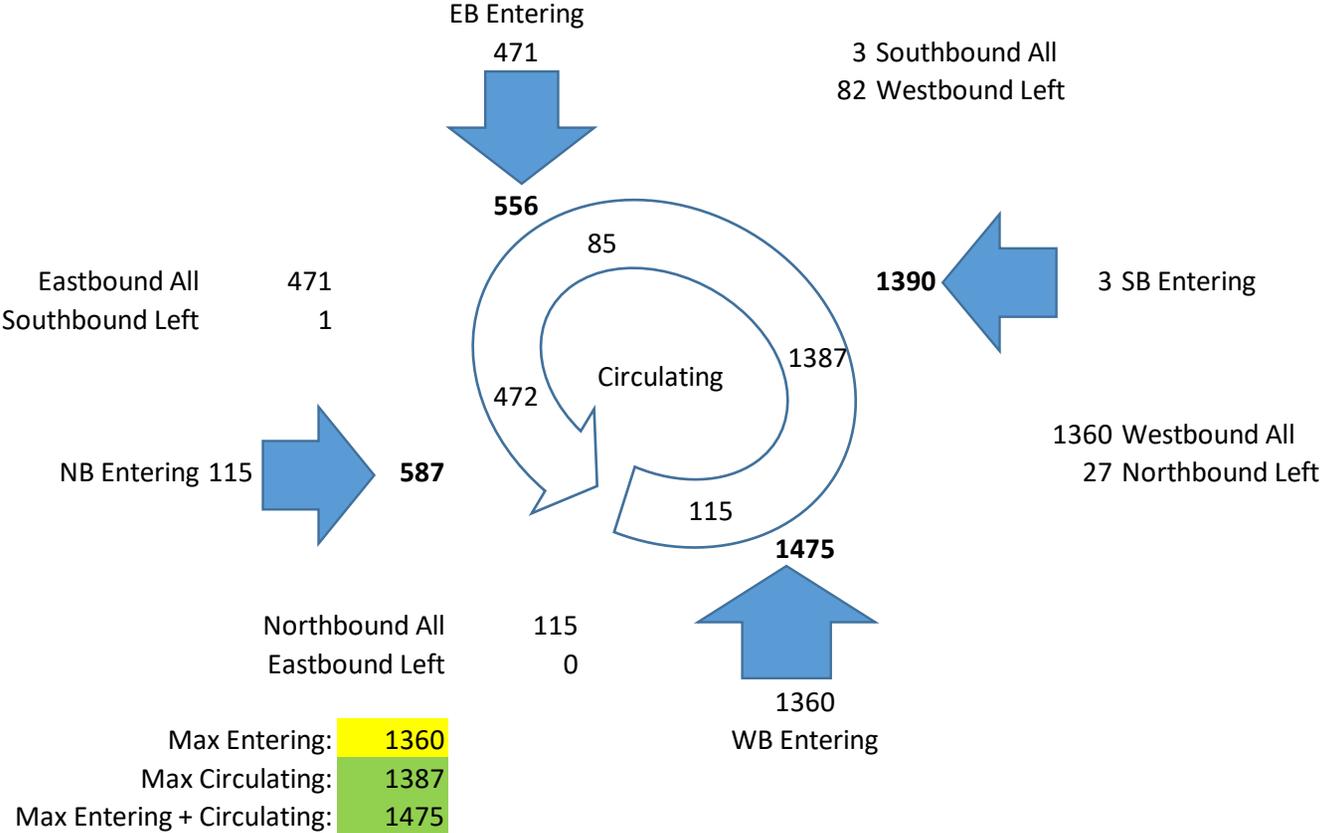


Figure 2: Existing (2015) AM Peak Hour Flow

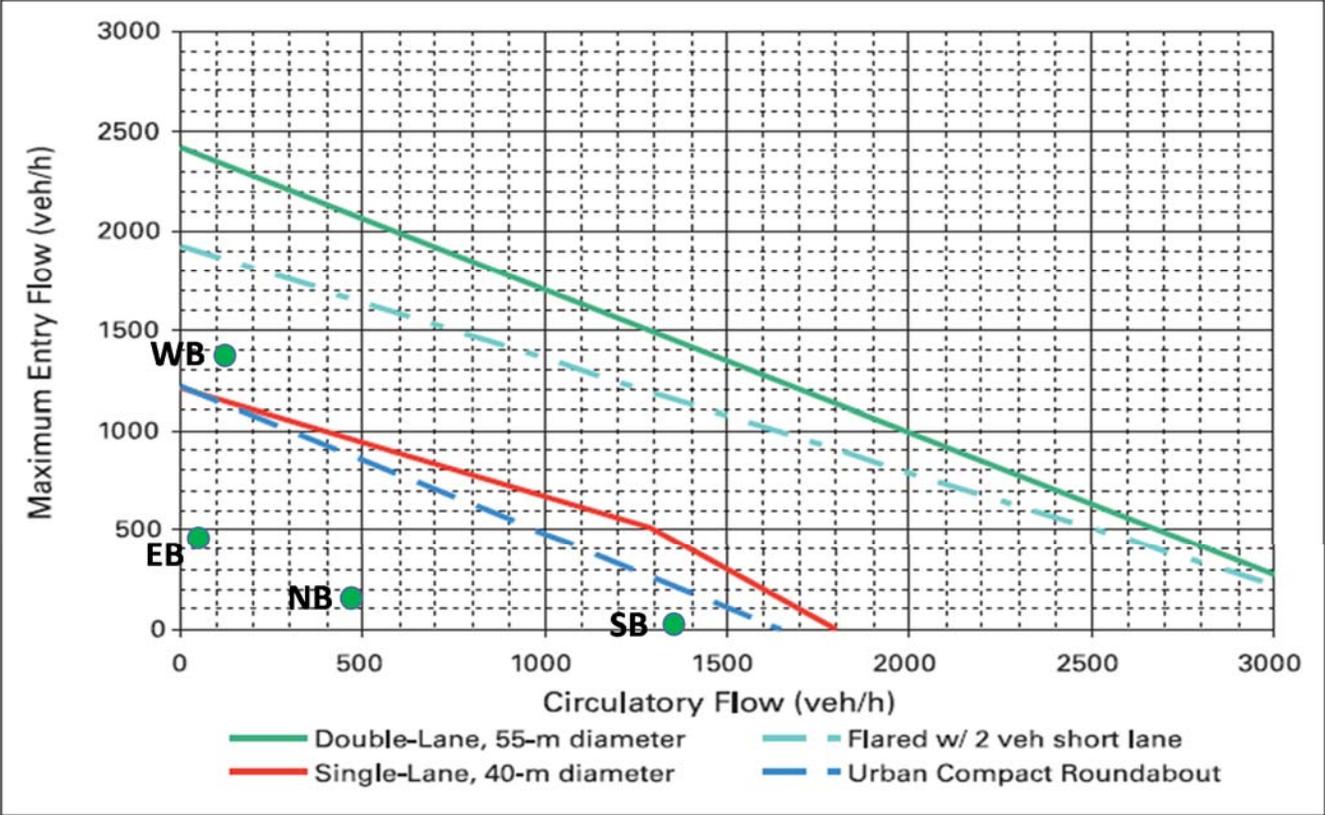


Figure 3: Existing (2015) AM Peak Hour Approach Capacity

WEST TAMPA MULTIMODAL PLAN

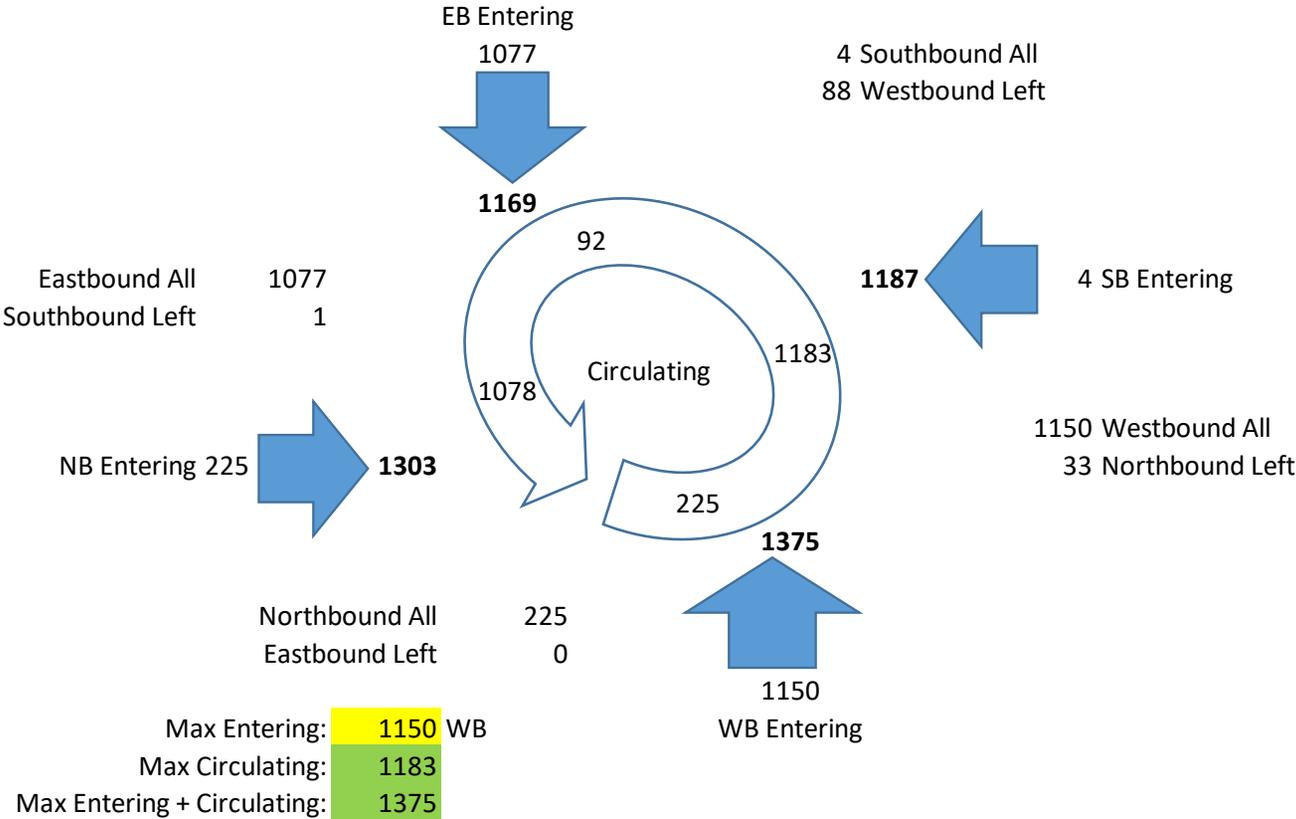


Figure 4: Existing (2015) PM Peak Hour Flow

WEST TAMPA MULTIMODAL PLAN

Table 3: Columbus Drive at Rome Avenue Turning Movement Count with Growth Factors

| Peak Hour | Southbound | | | | Westbound | | | | Northbound | | | | Eastbound | | | |
|-----------|------------|------|------|-------|-----------|-------|------|-------|------------|------|------|-------|-----------|-------|------|-------|
| | Right | Thru | Left | Total | Right | Thru | Left | Total | Right | Thru | Left | Total | Right | Thru | Left | Total |
| Growth % | 20% | 20% | 20% | 20% | 20% | 20% | 50% | 20% | 50% | 50% | 50% | 50% | 50% | 20% | 20% | 20% |
| AM | 1 | 1 | 1 | 4 | 1 | 1,532 | 123 | 1,632 | 131 | 2 | 41 | 173 | 92 | 492 | 0 | 565 |
| PM | 2 | 1 | 1 | 5 | 7 | 1,267 | 132 | 1,380 | 285 | 3 | 50 | 338 | 104 | 1,210 | 0 | 1,292 |

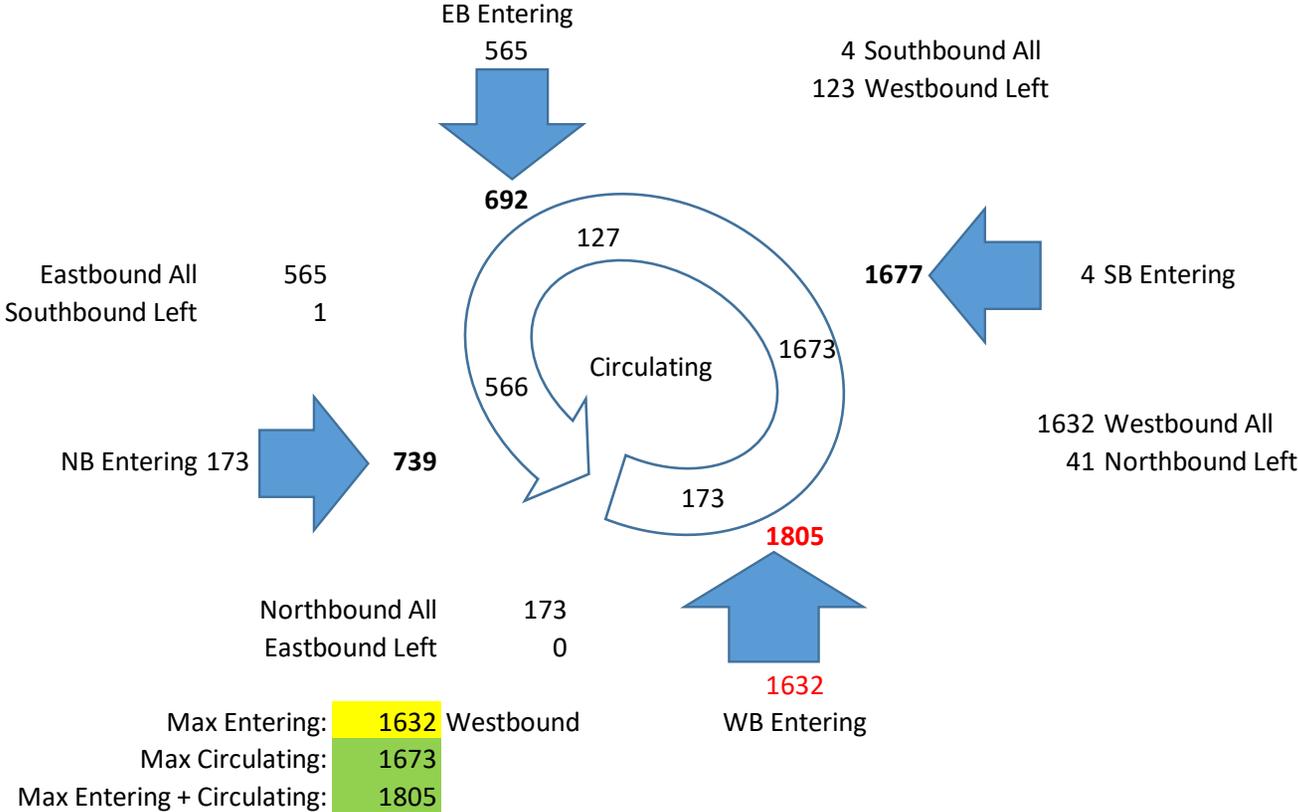


Figure 6: AM Peak Hour with Growth Factors Flow

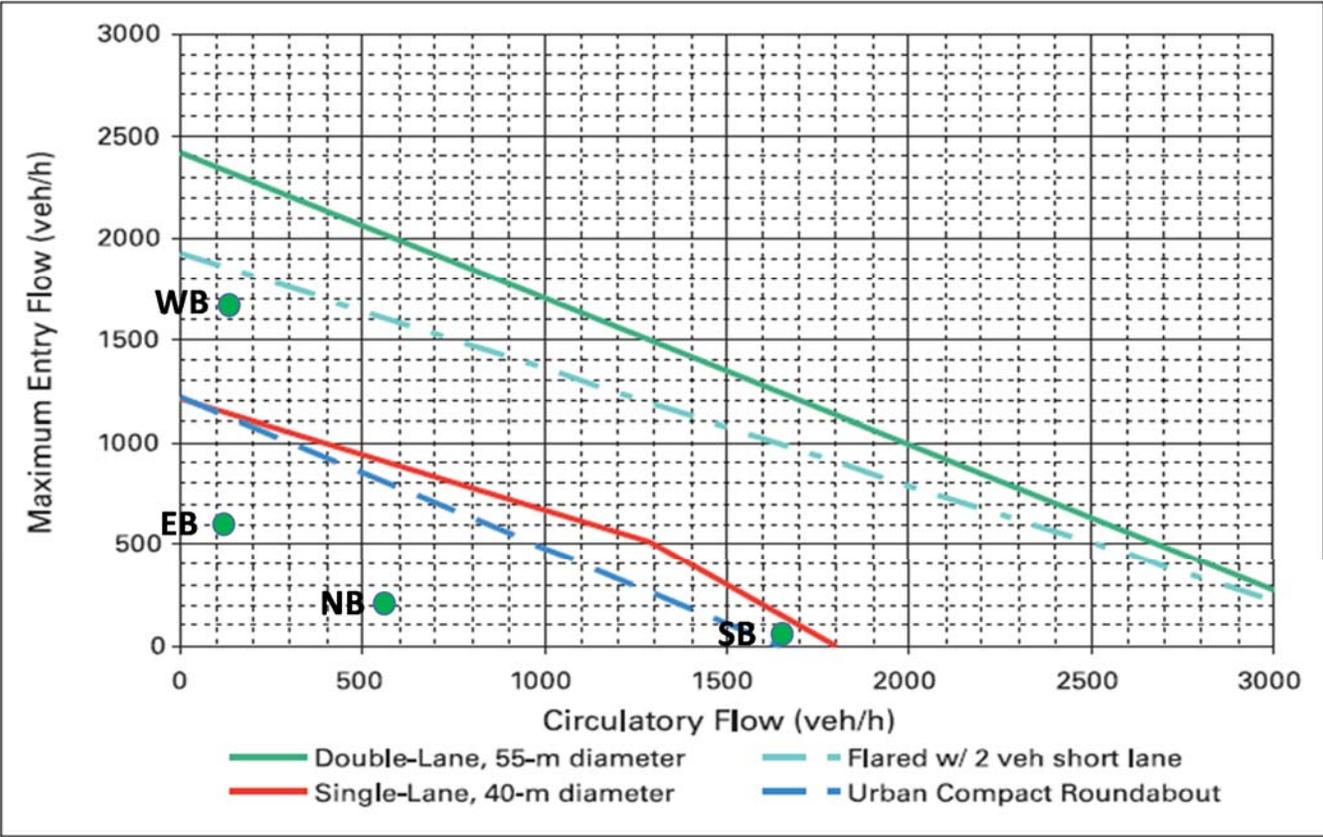


Figure 7: AM Peak Hour with Growth Factors Approach Capacity

WEST TAMPA MULTIMODAL PLAN

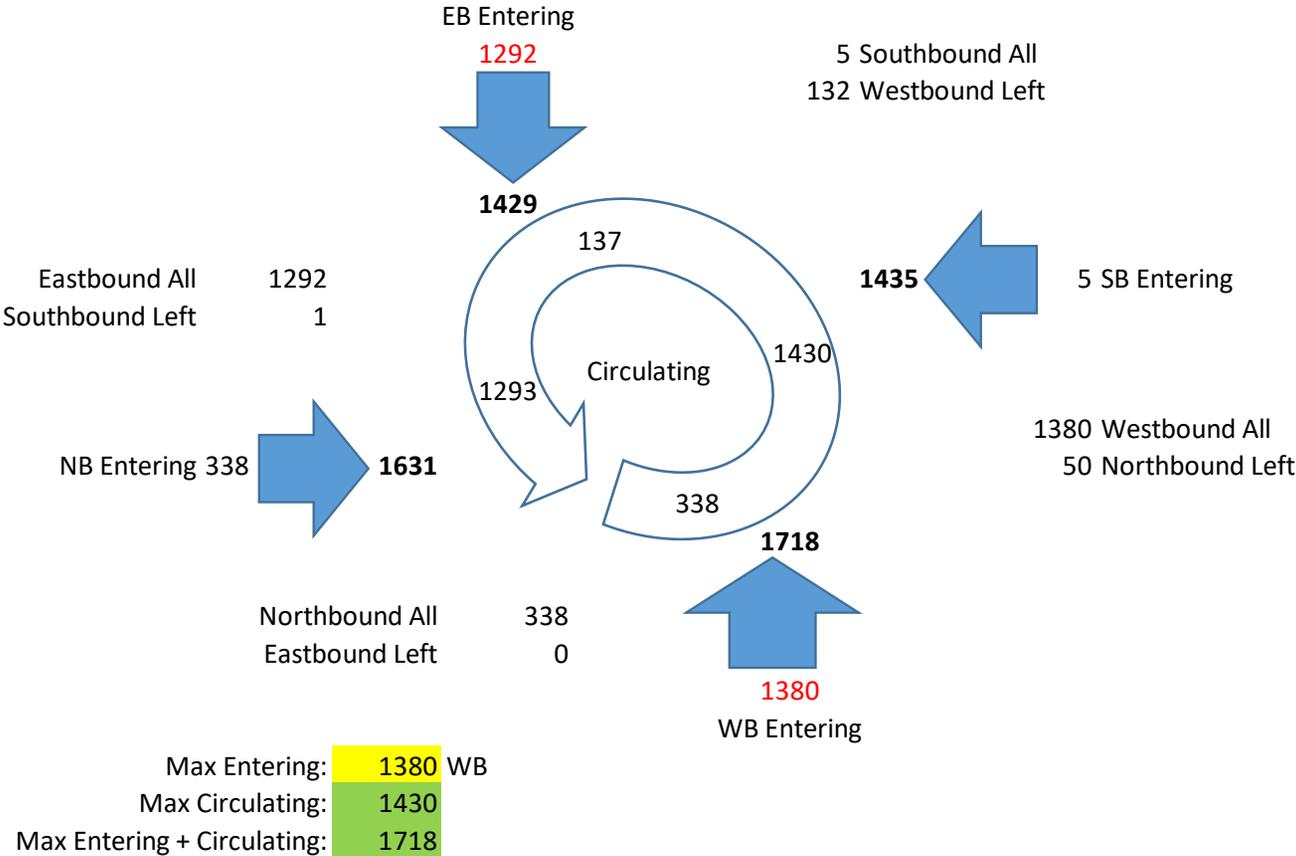


Figure 8: PM Peak Hour with Growth Factors Flow

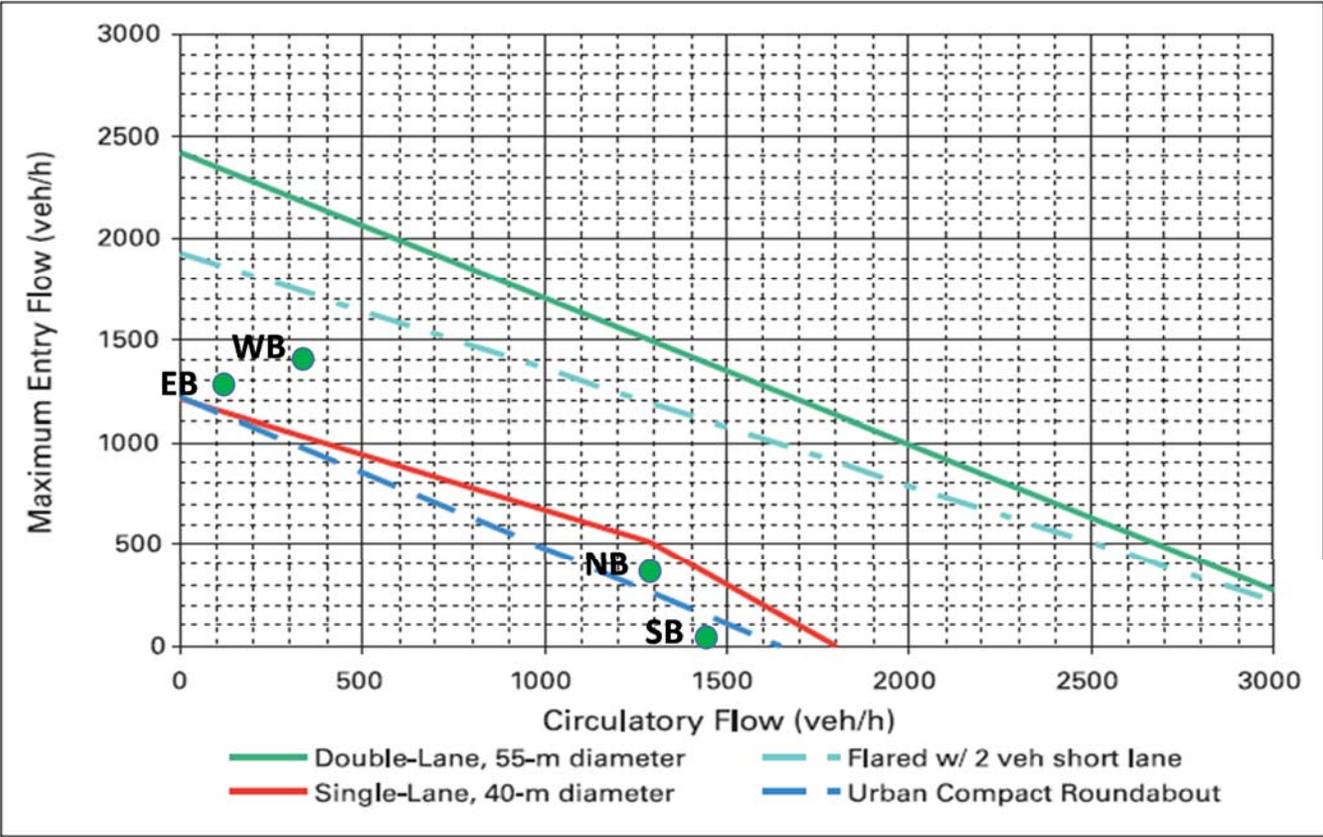
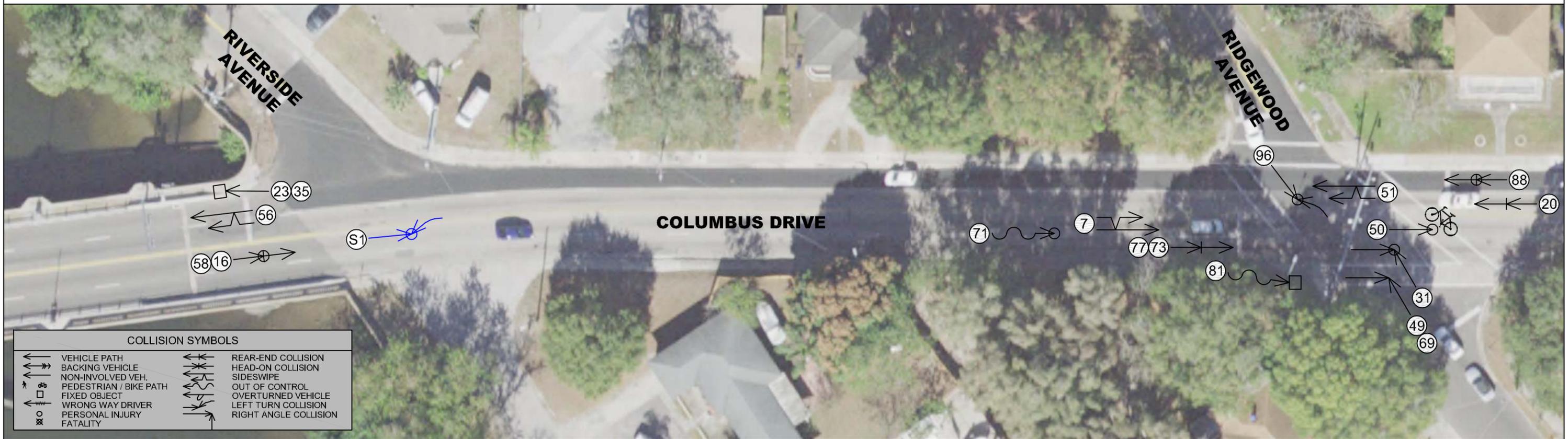
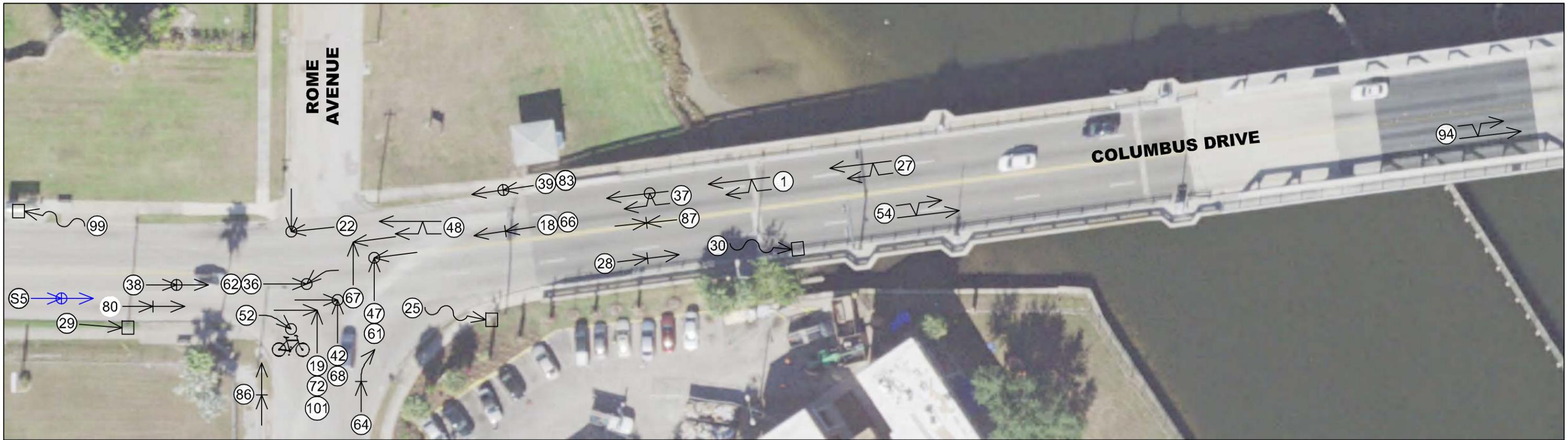


Figure 9: PM Peak Hour with Growth Factors Approach Capacity

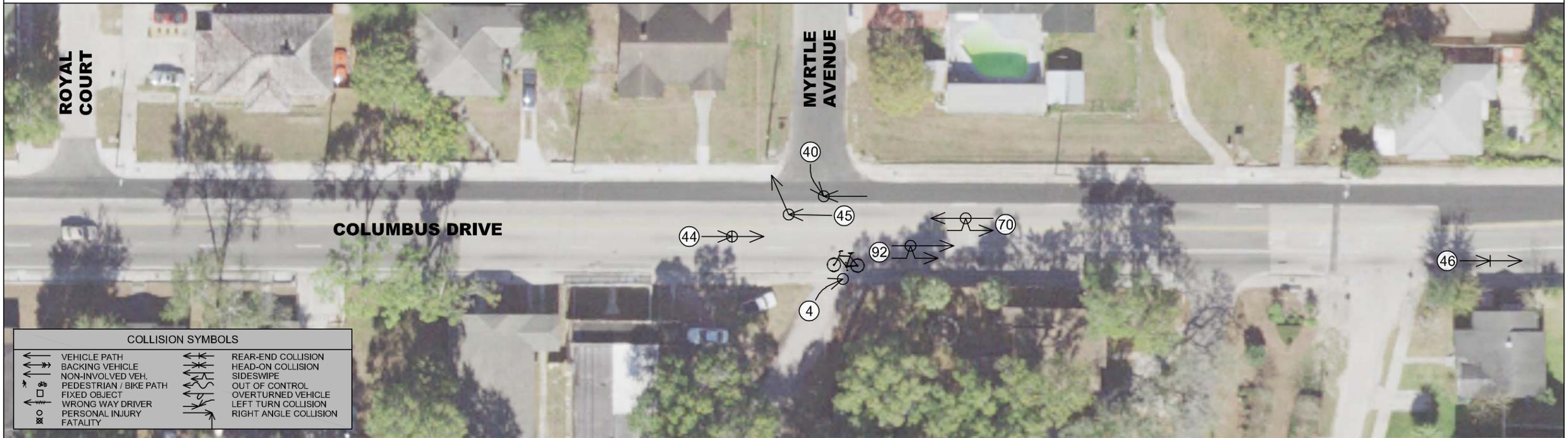
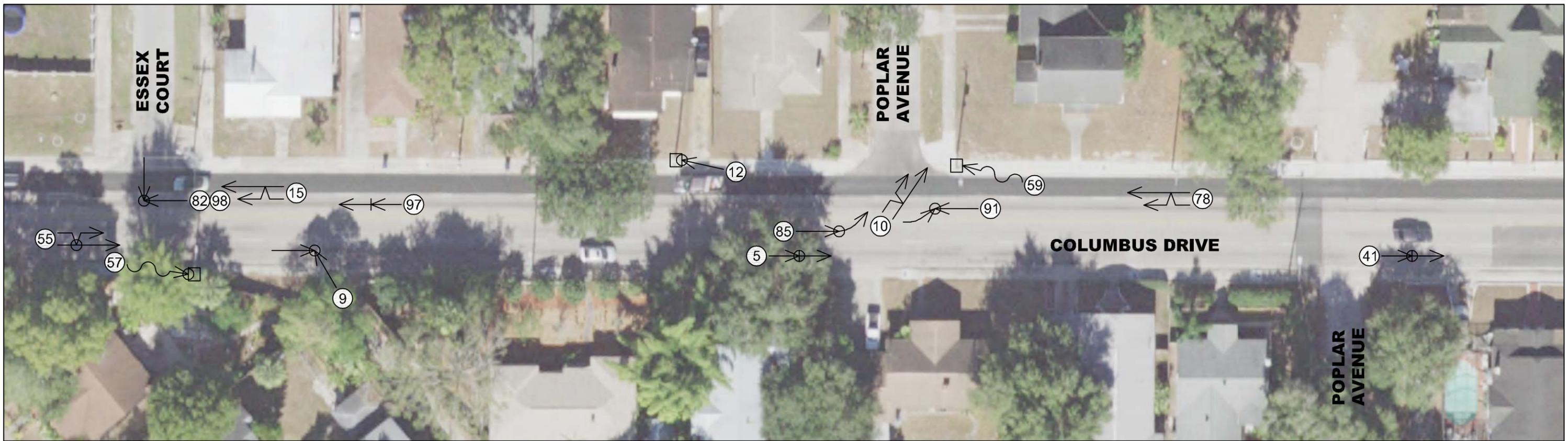
Columbus Drive, Rome Avenue to North Boulevard Crash Diagram



| COLLISION SYMBOLS | |
|-------------------|------------------------|
| ← | VEHICLE PATH |
| ←→ | BACKING VEHICLE |
| ←→ | NON-INVOLVED VEH. |
| ←* | PEDESTRIAN / BIKE PATH |
| ←□ | FIXED OBJECT |
| ←⊕ | WRONG WAY DRIVER |
| ⊕ | PERSONAL INJURY |
| ⊕ | FATALITY |
| ←→ | REAR-END COLLISION |
| ←→ | HEAD-ON COLLISION |
| ←→ | SIDESWIPE |
| ←→ | OUT OF CONTROL |
| ←→ | OVERTURNED VEHICLE |
| ←→ | LEFT TURN COLLISION |
| ←→ | RIGHT ANGLE COLLISION |

Scale: 1" = 40'

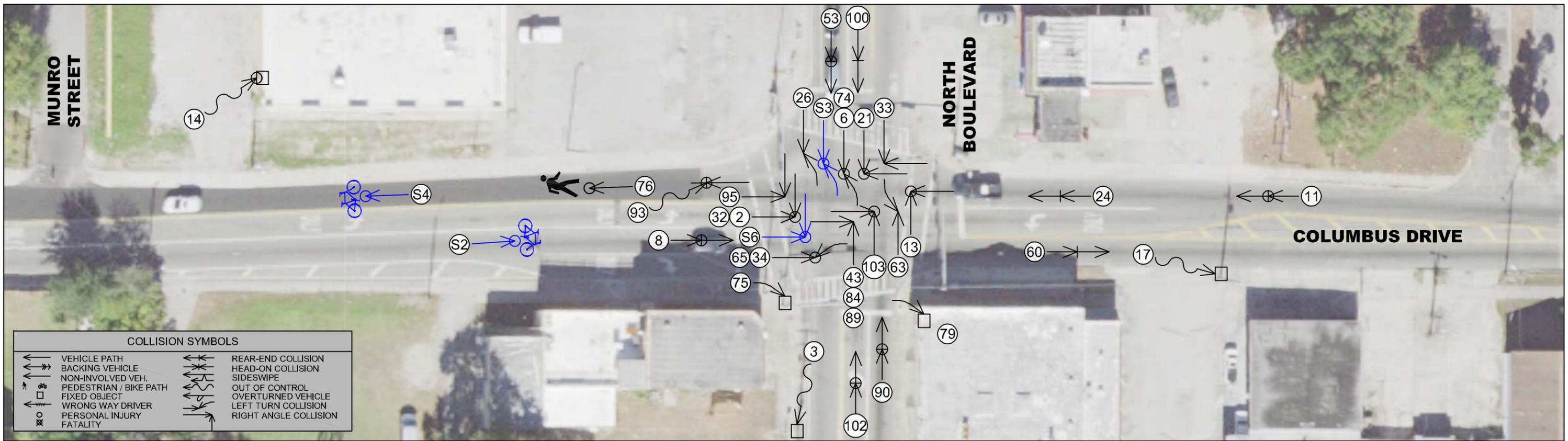
West Columbus Drive between Rome Avenue and North Boulevard Collision Diagram (2011 - 2015)



| COLLISION SYMBOLS | | | |
|-------------------|------------------------|----|-----------------------|
| ← | VEHICLE PATH | ← | REAR-END COLLISION |
| ←→ | BACKING VEHICLE | ←→ | HEAD-ON COLLISION |
| ← | NON-INVOLVED VEH. | ←→ | SIDESWIPE |
| → | PEDESTRIAN / BIKE PATH | ←→ | OUT OF CONTROL |
| → | FIXED OBJECT | ←→ | OVERTURNED VEHICLE |
| → | WRONG WAY DRIVER | ←→ | LEFT TURN COLLISION |
| → | PERSONAL INJURY | ←→ | RIGHT ANGLE COLLISION |
| → | FATALITY | | |

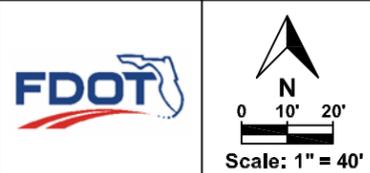
Scale: 1" = 40'

West Columbus Drive between Rome Avenue and North Boulevard Collision Diagram (2011 - 2015)



| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|-----------------|------------|
| S1 | 04/08/11 | 18:16 | DAY, CLEAR, DRY | |
| S2 | 06/20/11 | 15:15 | DAY, CLEAR, DRY | BICYCLE |
| S3 | 11/17/11 | 15:36 | DAY, CLEAR, DRY | MOTORCYCLE |
| S4 | 12/17/12 | 15:34 | DAY, CLEAR, DRY | BICYCLE |
| S5 | 01/17/13 | 13:37 | DAY, RAIN, WET | |
| S6 | 10/30/15 | 11:23 | DAY, CLEAR, DRY | |

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|-----------------|----------|
| 1 | 01/12/11 | 12:55 | DAY, CLEAR, DRY | |
| 2 | 01/16/11 | 07:15 | DAY, CLEAR, DRY | |
| 3 | 01/20/11 | 10:21 | DAY, CLEAR, DRY | |
| 4 | 02/10/11 | 14:20 | DAY, CLEAR, DRY | BICYCLE |
| 5 | 03/01/11 | 08:30 | DAY, CLEAR, WET | |
| 6 | 03/21/11 | 16:23 | DAY, CLEAR, DRY | |
| 7 | 04/06/11 | 08:34 | DAY, CLEAR, DRY | |
| 8 | 04/13/11 | 13:20 | DAY, CLEAR, DRY | |
| 9 | 04/14/11 | 11:40 | DAY, CLEAR, DRY | |
| 10 | 04/14/11 | 23:55 | DAY, CLEAR, DRY | |



West Columbus Drive between Rome Avenue and North Boulevard Collision Diagram (2011 - 2015)

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 11 | 05/18/11 | 08:50 | DAY, CLEAR, DRY | |
| 12 | 05/29/11 | 12:36 | DAY, CLEAR, DRY | |
| 13 | 06/01/11 | 18:35 | DAY, CLEAR, DRY | |
| 14 | 06/29/11 | 12:30 | DAY, CLOUDY, DRY | |
| 15 | 07/07/11 | 18:30 | DAY, RAIN, WET | |
| 16 | 08/01/11 | 12:05 | DAY, CLEAR, DRY | |
| 17 | 08/23/11 | 09:25 | DAY, CLOUDY, DRY | |
| 18 | 09/01/11 | 17:50 | DAY, RAIN, WET | |
| 19 | 09/06/11 | 09:00 | DAY, RAIN, WET | |
| 20 | 09/08/11 | 07:45 | DAY, CLEAR, DRY | |

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 21 | 09/19/11 | 16:50 | DAY, CLEAR, DRY | |
| 22 | 10/25/11 | 08:26 | DAWN, CLEAR, DRY | |
| 23 | 10/28/11 | 01:40 | DARK, CLEAR, DRY | |
| 24 | 10/28/11 | 07:26 | DAWN, RAIN, WET | |
| 25 | 12/17/11 | 16:57 | DUSK, RAIN, WET | |
| 26 | 12/15/11 | 13:30 | DAY, CLEAR, DRY | |
| 27 | 01/10/12 | 15:17 | DAY, CLEAR, DRY | |
| 28 | 01/18/12 | 16:15 | DAY, RAIN, WET | |
| 29 | 02/07/12 | 09:05 | DAY, RAIN, WET | |
| 30 | 07/25/12 | 11:16 | DAY, CLEAR, DRY | |

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 31 | 10/02/12 | 08:59 | DAY, CLEAR, DRY | |
| 32 | 12/24/12 | 09:56 | DAY, CLEAR, DRY | |
| 33 | 01/01/13 | 09:55 | DAY, CLEAR, DRY | |
| 34 | 01/18/13 | 07:25 | DAY, CLEAR, DRY | |
| 35 | 01/27/13 | 03:14 | DARK, CLEAR, DRY | |
| 36 | 02/05/13 | 06:56 | DARK, CLEAR, DRY | |
| 37 | 02/07/13 | 12:00 | DAY, CLEAR, DRY | |
| 38 | 04/17/13 | 14:20 | DAY, CLEAR, DRY | |
| 39 | 04/21/13 | 15:30 | DAY, CLEAR, DRY | |
| 40 | 05/10/13 | 15:44 | DAY, CLEAR, DRY | |

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 41 | 05/14/13 | 17:40 | DAY, CLEAR, DRY | |
| 42 | 05/16/13 | 16:39 | DAY, CLEAR, DRY | |
| 43 | 06/29/13 | 23:16 | DARK, CLEAR, DRY | |
| 44 | 07/03/13 | 16:00 | DAY, CLOUDY, DRY | |
| 45 | 07/03/13 | 15:50 | DARK, RAIN, WET | |
| 46 | 07/18/13 | 17:06 | DAY, CLOUDY, WET | |
| 47 | 07/26/13 | 17:38 | DAY, CLEAR, DRY | |
| 48 | 08/16/13 | 07:56 | DAY, CLEAR, DRY | |
| 49 | 08/22/13 | 07:55 | DAY, CLEAR, DRY | |
| 50 | 09/10/13 | 07:42 | DAY, CLEAR, DRY | BICYCLE |



West Columbus Drive between Rome Avenue and North Boulevard Collision Diagram (2011 - 2015)

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 51 | 09/19/13 | 09:10 | DAY, CLEAR, DRY | |
| 52 | 11/25/13 | 11:38 | DAY, CLOUDY, DRY | BICYCLE |
| 53 | 01/11/14 | 14:35 | DAY, CLEAR, DRY | |
| 54 | 02/15/14 | 14:30 | DAY, CLEAR, DRY | |
| 55 | 02/27/14 | 10:00 | DAY, CLEAR, DRY | |
| 56 | 02/27/14 | 15:43 | DAY, CLEAR, DRY | |
| 57 | 03/03/14 | 19:37 | DAWN, CLEAR, DRY | |
| 58 | 03/17/14 | 13:26 | DAY, RAIN, WET | |
| 59 | 03/20/14 | 02:30 | DARK, CLEAR, DRY | |
| 60 | 03/21/14 | 17:09 | DAY, CLEAR, DRY | |

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 61 | 04/06/14 | 17:25 | DAY, CLEAR, DRY | |
| 62 | 04/17/14 | 21:50 | DARK, RAIN, WET | |
| 63 | 04/18/14 | 16:44 | DAY, RAIN, WET | |
| 64 | 04/25/14 | 12:57 | DAY, CLEAR, DRY | |
| 65 | 05/02/14 | 20:11 | DARK, RAIN, WET | |
| 66 | 05/25/14 | 11:56 | DAY, CLEAR, DRY | |
| 67 | 06/04/14 | 22:10 | DARK, CLEAR, DRY | |
| 68 | 06/24/14 | 17:26 | DAY, CLEAR, DRY | |
| 69 | 09/08/14 | 07:33 | DAY, CLEAR, DRY | |
| 70 | 09/28/14 | 22:05 | DARK, RAIN, WET | |

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 71 | 10/22/14 | 13:41 | DAY, CLEAR, DRY | |
| 72 | 10/22/14 | 20:20 | DARK, CLEAR, DRY | |
| 73 | 12/08/14 | 15:17 | DAY, RAIN, WET | |
| 74 | 01/03/15 | 15:37 | DAY, CLEAR, DRY | |
| 75 | 01/16/15 | 10:40 | DAY, CLOUDY, DRY | |
| 76 | 01/22/15 | 14:40 | DAY, CLEAR, DRY | |
| 77 | 02/09/15 | 16:40 | DAY, RAIN, WET | |
| 78 | 02/19/14 | 16:56 | DAY, CLEAR, DRY | |
| 79 | 03/01/15 | 05:05 | DARK, CLEAR, WET | |
| 80 | 03/07/15 | 14:48 | DAY, CLEAR, DRY | |

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 81 | 03/28/15 | 19:48 | DARK, CLEAR, DRY | |
| 82 | 04/02/15 | 06:40 | DARK, CLEAR, DRY | |
| 83 | 04/02/15 | 18:56 | DAY, CLEAR, DRY | |
| 84 | 04/08/15 | 05:35 | DARK, CLEAR, DRY | |
| 85 | 05/20/15 | 16:35 | DAY, CLEAR, DRY | |
| 86 | 06/25/15 | 17:14 | DAY, CLOUDY, DRY | |
| 87 | 07/15/15 | 16:50 | DAY, RAIN, WET | |
| 88 | 07/18/15 | 04:15 | DARK, CLEAR, DRY | |
| 89 | 07/18/15 | 11:09 | DAY, CLEAR, DRY | |
| 90 | 08/04/15 | 16:46 | DAY, CLEAR, DRY | |



West Columbus Drive between Rome Avenue and North Boulevard Collision Diagram (2011 - 2015)

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|-------------------|------------|
| 91 | 08/28/15 | 18:44 | DAY, RAIN, WET | |
| 92 | 08/28/15 | 16:30 | DAY, RAIN, WET | |
| 93 | 08/28/15 | 18:19 | DAY, CLEAR, WET | |
| 94 | 09/04/15 | 14:15 | DAY, CLEAR, DRY | |
| 95 | 09/04/15 | 19:46 | DARK, RAIN, WET | |
| 96 | 09/14/15 | 08:00 | DAY, CLEAR, DRY | |
| 97 | 09/23/15 | 08:39 | DAY, CLEAR, DRY | MOTORCYCLE |
| 98 | 10/02/15 | 13:08 | DAY, CLEAR, DRY | |
| 99 | 10/10/15 | 13:02 | DAY, CLEAR, DRY | |
| 100 | 10/27/15 | 20:20 | DARK, CLOUDY, WET | |

| CRASH NO. | DATE | TIME | CONDITIONS | COMMENTS |
|-----------|----------|-------|------------------|----------|
| 101 | 10/29/15 | 17:25 | DAY, CLEAR, DRY | |
| 102 | 10/30/15 | 08:11 | DAY, CLEAR, DRY | |
| 103 | 11/29/15 | 23:00 | DARK, CLEAR, DRY | |



**West Columbus Drive between Rome Avenue and North Boulevard
Collision Diagram (2011 - 2015)**