North Monroe Safety Implementation Plan

General Improvements

There are a series of potential improvements that could be implemented in multiple areas or across the corridor as a whole. These potential improvements include:

- Pedestrian and Bicycle Improvements
  - Leading Pedestrian Interval (LPI)
  - Pedestrian crossing time increases
  - Reduction of pedestrian and bicycle facility gap areas, with a focus on continuity of the network
  - High pedestrian area signage
  - Removal of utilities from within sidewalk space
  - Pedestrian Hybrid Beacons (PHBs)
  - Rectangular Rapid Flashing Beacons (RRFBs)
  - Green-colored pavement markings for bicycle lanes
- Motor Vehicle and Access management considerations
  - Channelization of median openings to reduce crash prevalence
    - Consider demonstration/pilot projects using temporary methods such as Qwick Kurb
  - Speed reduction considerations
    - Reduced speed limit (likely in area closest to I-10 interchange)
    - Speed feedback signs

Potential Improvements By Intersection and Segment

Each intersection and roadway segment was given an identifier of 1-15 starting from the southernmost study intersection of Tharpe Street and heading north to Capital Circle NW/Old Bainbridge Road. Intersections were identified with the whole numbers and segments were identified using ".5" to distinguish their location on the corridor.

Table 1 Describes potential improvements at the intersections while **Table 2** describes the potential improvements along the corridor.

Table 3 Describes the potential improvements in a glossary format.

Table 1: Potential Improvements at Intersections

Intersections	#	Hotspot(s) (2017-2023)	Potential Improvement(s)	Bike Gap Area	Ped Gap Area
Tharpe Street	1	Bike/Ped	Crosswalk improvements / LPI / Lighting	No	No
Northwood Boulevard	2	-	LPI / Lighting	No	No
N MLK Jr. Boulevard/E Bradford Road	3	wet weather	HFST / LPI / Right Turn Modification / Shift Traffic Control Box / Remove Transit Stop	No	No
John Knox Road/Monticello Drive	4	-	Crosswalk improvements / LPI / Replace Truncated Domes	No	Yes; West Side (FDOT Project)
Allen Road	5	-	Crosswalk improvements / LPI / Median Pedestrian Refuge / Right Turn Modification / Ped Fencing	No	Yes; West Side (FDOT Project)
Sharer Road	6	Severe, Bike/Ped	Crosswalk improvements / LPI / Add Crosswalk / Ped Fencing / Lighting	No	Yes; West Side (FDOT Project)
Lakeshore Drive	7	Severe, Bike/Ped	Crosswalk improvements / LPI / Ped Fencing / Right Turn Modification	No	Yes; West Side (FDOT Project)
Callaway Road/Meginn's Arm Road	8	wet weather	HFST / Crosswalk improvements / LPI / Ped Fencing / Right Turn Modification	No	Yes; West Side (FDOT Project)
I-10 Eastbound Off-Ramp	9	wet weather	HFST / RRFB / No U turn / Ped Fencing / Ped Signage / Crosswalk improvements	No	No
I-10 Westbound Off-Ramp	10	wet weather	HFST / RRFB / Ped Fencing / Ped Signage / Crosswalk improvements	No	No
Sessions Road	11	wet weather	LPI/HFST / Realign to Perpendicular / Median Refuge / Replace Truncated Domes / Sidewalk Location Sign / Crosswalk Improvements / Ped Fencing	Yes	No
Talpeco Road	12	-	Add Crosswalk	Yes	Yes
Crowder Road/Fred George Road	13	-	LPI / Median Refuge / Ped Railing Replacement / Modification of Railing for ADA / Ped Signal in Island	No	Partial; NE Corner
Faulk Drive/Perkins Road	14	-	-	Yes; West/South Side	Partial; NW Side
Old Bainbridge Road/Capital Circle NW	15	Severe, Dark - Unlit left-turn crashes	Offset NB & SB left-turn lanes for better visibility / Realign to Perpendicular / Blank Out Sign	Partial; NB Side	Partial; East/West Side

Table 2: Potential Improvements within Corridor Segments

Segments	#	Crash Hotspot(s) (2017-2023)	Potential Improvement(s)	Bike Gap Area	Ped Gap Area
From Tharpe Street to Northwood Boulevard	1.5	-	PHB	No	No
From Northwood Boulevard to N MLK Jr. Boulevard/E Bradford Road	2.5	-	-	No	No
From N MLK Jr. Boulevard/E Bradford Road to John Knox Road/Monticello Drive	3.5	Severe, bike/ped	PHB / Ped Signage / Reconfigure Silver Slipper Access	No	No
From John Knox Road/Monticello Drive to Allen Road	4.5	Severe, bike/ped	PHB / Raised Median / Directional Median Opening / Turn Lane Modification	No	Yes; West Side (FDOT Project)
From Allen Road to Sharer Road	5.5	Severe, bike/ped	PHB / Ped Fencing / Directional Median Opening	No	Yes; West Side (FDOT Project)
From Sharer Road to Lakeshore Drive	6.5	Severe, bike/ped, wet weather	PHB / Ped Fencing / Directional Median Opening	No	Yes; West Side (FDOT Project)
From Lakeshore Drive to Callaway Road/Meginn's Arm Road	7.5	-	Ped Fencing	No	Yes; West Side (FDOT Project)
From Callaway Road/Meginn's Arm Road to I-10 Eastbound Off-Ramp	8.5	wet weather	HFST/Ped Fencing	No	No
From I-10 Eastbound Off-Ramp to I-10 Westbound Off-Ramp	9.5	wet weather	HFST / Ped Barrier on Bridge	No	No
From I-10 Westbound Off-Ramp to Sessions Road	10.5	Bike/ped	PHB / Ped Fencing / Directional Median Opening	No	Yes
From Sessions Road to Talpeco Road	11.5	Dark - Unlit	Lighting at median openings / Ped Fencing / Remove Truncated Dome From Transit Stop / PHB / Directional Median Opening	Yes	Yes
From Talpeco Road to Crowder Road/Fred George Road	12.5	Dark - Unlit	Lighting at median openings / PHB / Directional Median Opening	Yes	Yes
From Crowder Road/Fred George Road to Faulk Drive/Perkins Road	13.5	Dark - Unlit	Lighting at median openings / Directional Median Opening	Yes	Yes
From Faulk Drive/Perkins Road to Old Bainbridge Road/Capital Circle NW	14.5	Dark - Unlit	Lighting at median openings / Directional Median Opening	Yes	Yes

Acronym Key

LPI – Leading Pedestrian Interval

HFST – High Friction Surface Treatment

PHB – Pedestrian Hybrid Beacon

RRFB – Rectangular Rapid Flashing Beacon

Table 3: Glossary of Potential Improvements

Potential Improvement	Description	Benefit	Sources, References, and Examples
Leading Pedestrian Interval (LPI)	Gives pedestrians the opportunity to enter the crosswalk at an intersection 3-7 seconds before vehicles are given a green indication. Pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn right or left.	Pedestrian safety	FHWA
Pedestrian Hybrid Beacon (PHB)	The pedestrian hybrid beacon (PHB) is a traffic control device designed to help pedestrians safely cross higher-speed roadways at midblock crossings and uncontrolled intersections. The beacon head consists of two red lenses above a single yellow lens. The lenses remain "dark" until a pedestrian desiring to cross the street pushes the call button to activate the beacon, which then initiates a yellow to red lighting sequence consisting of flashing and steady lights that directs motorists to slow and come to a stop, and provides the right-of-way to the pedestrian to safely cross the roadway before going dark again. Most pedestrian fatalities occur at mid-block crossings or on multi-lane roadways at non-signalized locations. For pedestrians, walking just a half block out of the way to get to a signal can increase their delay by up to 3 minutes or more (note: assumes a 660-foot block, and walking speed of 3.5 to 4 feet per second)—a delay which would not be tolerated by motorists at a traffic signal.	Pedestrian safety	FHWA FDOT Traffic Engineering Manual MUTCD Chapter 4F FHWA PHB Guide Recommendations
Rectangular Rapid Flashing Beacon (RRFB)	To enhance pedestrian conspicuity and increase driver awareness at uncontrolled, marked crosswalks, transportation agencies can install a pedestrian actuated Rectangular Rapid Flashing Beacon (RRFB) to accompany a pedestrian warning sign. RRFBs consist of two, rectangular- shaped yellow indications, each with a light-emitting diode (LED)-array-based light source. RRFBs flash with an alternating high frequency when activated to enhance conspicuity of pedestrians at the crossing to drivers.	Pedestrian safety	FHWA FDOT Traffic Engineering Manual MUTCD
Near Perpendicular Right Turn	Channelized right turn lanes can be designed with a flat or near perpendicular angle of entry to the cross street. The flat angle of entry is most appropriate for higher speed turning movements with no pedestrian accommodations. Large turning radii and angles of entry into the cross street allow higher turning speeds, reduced traffic delays, and the turning movement of large trucks. The higher speeds, angle of entry and large radii adversely impact pedestrian safety at the crosswalk. The near perpendicular angle of entry is preferred where pedestrian facilities are provided. Tight turning radii and angles of entry into the cross street accommodate the following: • Slower turning speeds, • Reduced cross walk length, • Improved pedestrian visibility, • Improved sight distance • Decreased angle of driver head turning • Reduced right-of-way impacts.	Safety (all modes)	FDOT Design Manual 212 Fowler Avenue at Bruce B Downs Boulevard (Tampa, FL)
Posted speed limit reduction	The goal of reducing motorist travel speeds is to increase reaction time for both drivers and pedestrians to avoid crashes, as well as reduce the severity of pedestrian injuries when these crashes occur. It is important to keep in mind that actual travel speeds often exceed posted or statutory speed limits and that posted speed limits often exceed safe travel speeds. Evidence shows that actual speeds are reduced by only a fraction of the reduction in speed limits—typically 1- to 2 mph speed reduction for every 5-mph speed limit reduction (Elvik et al., 2004). However, even 1- to 2 mph reductions in average speed are estimated to yield substantial fatal and injury crash reductions.	Safety (all modes)	FHWA (1) FHWA (2)
Dynamic speed feedback sign	A dynamic message sign that uses radar or laser technology to determine the speed of an approaching vehicle and then displays the speed to the driver.		ITE

Potential Improvement	Description	Benefit	Sources, References, and Examples
Directional Median Opening (semi-permanent or permanent)	Directional (channelized) median openings are designed to accommodate left-turn movements from the through roadway and prevent or discourage left-turn and crossing movements by traffic from a side road or driveway.	Motorist safety	FDOT Multimodal Access Management Guidebook Himes Avenue south of I-275 (Tampa, FL)
High Friction Surface Treatment	High friction surface treatments (HFST) are pavement treatments that dramatically and immediately reduce crashes, injuries, and fatalities associated with friction demand issues, such as: • A reduction in pavement friction during wet conditions, and/or • A high friction demand due to vehicle speed and/or roadway geometrics.	Safety (all modes)	FHWA FDOT Pilot Project & Award (1) FDOT Pilot Project & Award (2) FDOT HFST Guidelines
Pedestrian Fencing	Pedestrian Channelization Barriers are used along medians and roadsides to help guide pedestrians to marked crosswalk locations.	Pedestrian safety	
Blank Out Sign	A blank out sign, also known as a changeable message sign (CMS), appears dark unless activated. One application includes for right-turns: • "No right turn" symbol appears during pedestrian crossing activation • "Yield to peds" text can also be used	Pedestrian safety	https://mutcd.fhwa.dot.gov/htm/2009/part2/part2l.htm
Truncated Domes/Detectable Warning	Truncated domes (AKA detectable warnings, tactile paving, detectable warning surfaces) are ground surface indicators designed to assist and warn pedestrians who are blind or visually impaired. Truncated domes feature a unique pattern of cones that are easily detected by a cane or foot, alerting the visually impaired to the presence of a street or sudden drop-off.	Pedestrian safety	https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/22.htm https://www.fdot.gov/docs/default-source/roadway/ds/14/idx/00304.pdf
No U-turn	No U-turn signs alert drivers that the U-turn movement is prohibited at that specific location.	Motorist safety	
Heavy Pedestrian Signage	Signs highlighting heavy pedestrian activity can alert drivers to be more aware of pedestrians and drive more cautiously.	Pedestrian safety	www.fdot.gov/docs/default-source/traffic/trafficservices/Studies/TEM/TEM2017/TEM-Chapter-4-June-2018.pdf https://mutcd.fhwa.dot.gov/htm/2009/part2/part2c.htm#section2C50
Pedestrian / Median Refuge	All State and local agencies are encouraged to consider raised medians in curbed sections of multi-lane roadways in urban and suburban areas, particularly in areas where there are mixtures of a significant number of pedestrians, high volumes of traffic (more than 12,000 Average Daily Trips (ADT)) and intermediate or high travel speeds.	Pedestrian safety	FHWA
Temporary Curb	Temporary curb/traffic lane separators can facilitate a "test" or "pilot" condition; in this case, changes to median openings (see Directional Median Opening).	Motorist safety	https://qwickkurb.com/
Green-Colored Pavement Markings	Green-colored pavement markings may be used when the need to enhance the conspicuity of bicycle-vehicular conflict areas is demonstrated. The Federal Highway Administration (FHWA) has issued an Interim Approval (IA.14) for the use of green-colored pavement in marked bicycle lanes, extensions of bicycle lanes through intersections, and other bicycle-vehicular conflict areas. FDOT has received permission from FHWA for use of green-colored pavement on the SHS. Bicycle-vehicular conflict areas include: 1) Bicycle lane crosses a vehicular right turn lane a) Separate right-turn lane b) Dropped lane transitioning into a right-turn lane c) Free-flow channelized right-turn lane, such as at an interchange: lane addition or merge lane 2) Bicycle lane adjacent to a dedicated bus bay 3) Intersection Bicycle Boxes, see FDM 223.2.1.5 4) Two-Stage Bicycle Turn Boxes, see FDM 223.2.1.5	Bicyclist safety	FDOT FDM 223 Bicycle Facilities MUTCD Interim Approval https://www.fdot.gov/gis/bim/green-pavement NACTO