

**N Lois Ave. Concept
Feasibility Memorandum**

Prepared For

City of Tampa



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1.0 Executive Summary

This technical memorandum prepared for the City of Tampa will serve to formalize a recommendation for bicycle and pedestrian improvements along N Lois Ave. from Kennedy Blvd. to Boy Scout Blvd. This study investigates the feasibility of several design alternatives and develops preliminary costs for each. The technical memorandum discusses the existing conditions, constraints, existing available mobility studies, describes the study methodology, gives a brief discussion on other factors affecting the decision-making process and makes a final recommendation on the preferred design alternative. The final recommendation considers compatibility with adjoining corridors, compliance with existing studies, constructability, cost, ADA compliance, and safety.

1.1 Recommendation Summary

The recommended design alternative is to mill and resurface N Lois Ave. from Kennedy Blvd. to the pavement joint just south of Boy Scout Blvd. and re-apportion the existing lanes and striped median to accommodate four foot on street bicycle lanes. In addition, we recommend constructing an eight-foot-wide multi-use recreational trail (MURT) from the I-275 interchange to W Spruce St. along the east side of N Lois Ave.

ADA Title II requirements state ADA upgrades at curb ramps must be constructed when roadways are milled and resurfaced. Therefore, the proposed design alternative also addresses the ADA deficiencies along the corridor. Other selective improvements including driveway reconstructions, and targeted driveway closures will improve accessibility concerns along the corridor. These upgrades will require minor drainage modifications and will be most cost effective if constructed concurrent to milling and resurfacing operations.

The limits of the proposed MURT extends from the I-275 interchange to W Spruce St. This trail will further increase mobility for varied user types and provide connectivity to the planned pedestrian and safety improvements along W Spruce St. The existing six-foot-wide sidewalk north of the W Spruce St. intersection will provide connectivity to bicycle and pedestrian facilities along Boy Scout Blvd. Existing lane widths on the approach to the Boy Scout Blvd. intersection are ten feet wide. These minimum standard lane widths cannot be re-apportioned to provide on street bicycle facilities along this portion of the roadway. Consequently, reconstruction of the curb line and drainage systems would be needed adding significant costs.

The total estimated cost of the recommended alternative is \$1.36 million. No right of way acquisition is planned for this project as all the proposed improvements are located within the existing right of way.

2.0 Description and Need for Study

This technical memorandum is not an all-encompassing study or preliminary engineering report but rather is meant to assess the feasibility of potential design alternatives based on field conditions and available information. The City of Tampa has requested a walk-bike concept be developed along the N Lois Ave. corridor from Kennedy Blvd. to Boy Scout Blvd. The concept shows the connectivity of the proposed design alternative to existing trails, bike lanes and sidewalks while identifying specific ADA and drainage improvements necessary to complete the project. Proposed lane widths are shown to establish the feasibility of the proposed typical section to fit within the existing curb lines.

The information presented herein will assist the City of Tampa staff in the selection of a bicycle and pedestrian friendly design alternative for the N Lois Ave. corridor. An alternative assessment matrix is

included in this technical memorandum. This helps identify the recommended alternative and assesses various impacts to critical elements based on each alternative. The primary goal is to improve bicycle and pedestrian connectivity and safety along N Lois Ave. The assessed design alternatives will not account for significant right-of-way acquisition as a right-of-way acquisition phase is not planned or funded, nor is it part of future capital planned projects. At the kickoff meeting, the City staff indicated extensive right-of-way acquisition is not budgeted for this project and alternatives should strive to keep improvements within the existing right-of-way.

3.0 Description of Existing Facilities

N Lois Ave. from Kennedy Blvd. to just north of the I-275 interchange is a north-south urban corridor functionally classified as an arterial. Further to the north of the I-275 interchange the roadway functional classification changes to a collector as the road passes through residential and light commercial zoning.

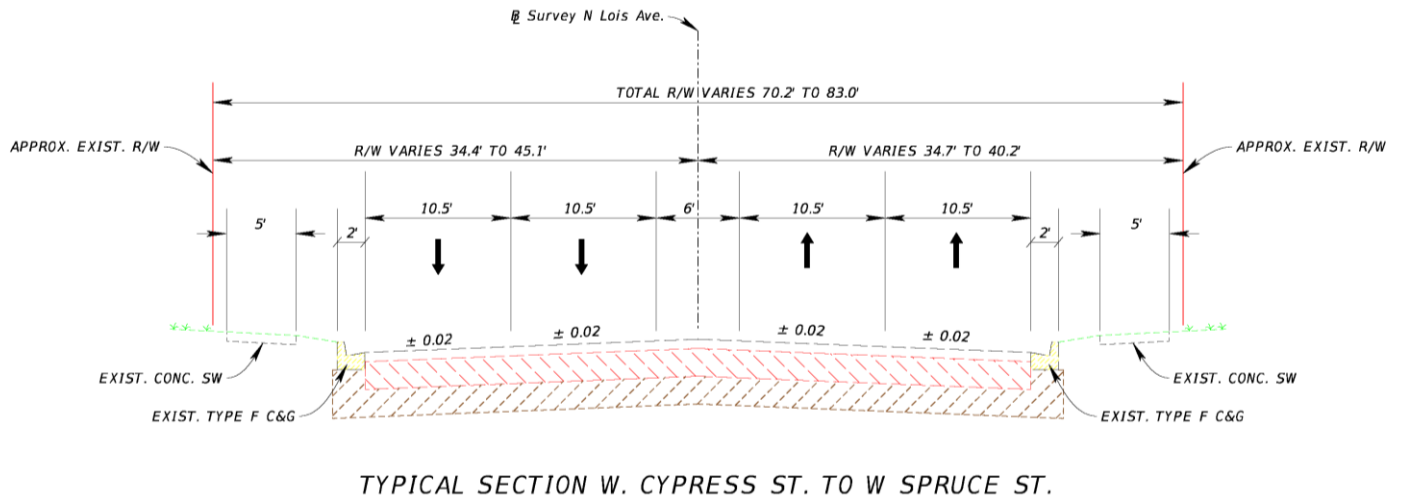
Figure 1 Project location map



N Lois Ave. from W Kennedy Blvd. to W Boy Scout Blvd. is a four-lane facility with varying median widths and treatments. Near the N Lois Ave. at I-275 interchange there is a raised median with landscaping treatments. The existing posted speed along the corridor is 40 mph from Kennedy Blvd. to I-275 and 35 mph north of the I-275 interchange to Boy Scout Blvd. North of W Spruce St. there is also a raised

median which varies in width from four feet to 20 feet. However, for most of the corridor north of I-275 there is a striped median approximately six feet in width, south of I-275 there are four 12 foot lanes. There are currently five-foot-wide sidewalks on both sides of the road with numerous ADA compliancy issues and no bicycle facilities present.

Figure 2 Existing Typical Section North of I-275

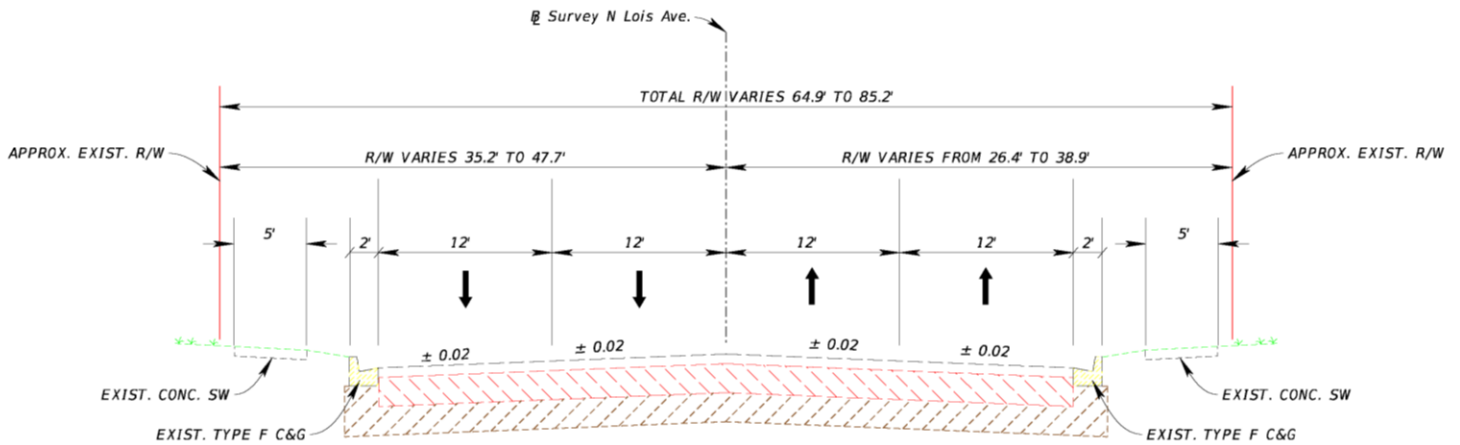


Adjacent land uses vary along the corridor with active development underway. Currently office professional land use exists at the north limits of the project near Boy Scout Blvd. These developments consist of restaurants and hotels. These developments then give way to residential multi-family and single family land use. Near I-275 a block of commercial general parcels exists with developments ranging from office buildings to gas stations. South of I-275 additional single family is mixed with residential multi-family and commercial general use.

Existing right-of-way varies along the corridor within the limits of the project from 68 feet to over 90 feet in width. Right-of-way acquisition has been completed over the years on a project by project basis to accommodate safety improvements and signalization upgrades and modifications. Right-of-way information obtained for this report is based on the best available information. No survey has been performed as a part of this study. GIS line work, confirmed with City of Tampa right-of-way maps form the basis of the right-of-way line work. Aerial photography coordinated with the GIS line work suggests the existing sidewalk is within the right-of-way for most of the N Lois Ave. corridor.

Drainage is accomplished through an existing urban closed drainage system. The corridor cuts through several drainage basins. The northernmost drainage basin outfalls into Fish Creek which ultimately drains into Tampa Bay. A second outfall is located just north of I-275 which also outfalls into Tampa Bay near Cypress Point Park. Utilities present along the corridor include Frontier Communications, MCI, Tampa Electric Company, and the City of Tampa water and sewer.

Figure 3: Existing Typical Section South of I-275



TYPICAL SECTION W. KENNEDY BLVD. TO W CARMEN ST.

Currently the N Lois Ave. corridor sees significantly more pedestrian traffic than bicycle traffic. This is likely a combination of the lack of bicycle facilities and the adjacent residential single and multi-family land use. Several drivers of pedestrian traffic exist in the area, including Roland Park Elementary and Middle School as well as Jefferson High School. Field observed pedestrian travel patterns include crossing N Lois Ave. near cypress St. and Laurel St. to travel to these two schools. There is currently a mid-block crossing present just south of W Laurel St. which has outdated flashing beacon assemblies. In addition, many pedestrians in the area seek out the transit stops along the corridor, two of which are near the midblock crossing. Pedestrian traffic in the area is notable but exists primarily near transit stops, or foot traffic drivers such as restaurants and gas stations. Field observation confirms this corridor is not currently being used as a thoroughfare for bikes and pedestrians.

Transit services are currently operating along portions of N Lois Ave. Route 45 travels along N Lois Ave. from W Spruce St. to Cypress St. Other routes extend south on Lois Ave. but are outside the limits of this project.

4.0 Description of Existing Studies

There are several available existing studies for the Westshore District or larger regions encompassing the Westshore area which outline proposed mobility, bicycle and pedestrian strategies, and connectivity. The Hillsborough MPO-2016 Greenways and Trails Master Plan Update outlines existing, proposed trail, and bicycle and pedestrian facilities within the entirety of Hillsborough County, and identifies regional connectivity beyond the County limits.

The City updated its comprehensive plan in 2009. This document outlined growth strategies for the City's three core business centers including the Westshore District. The City of Tampa 2025 Comprehensive Plan identifies goals and objectives showing mobility to play a significant role in the City's plan. The comprehensive plan outlines and identifies "Mobility Goals, Objectives and Policies" specific to planned growth and development. Goal 42 states, "provide a safe, convenient, and efficient bicycle and pedestrian network to facilitate walking trips within neighborhoods and activity centers and bicycle trips both within and between neighborhoods and activity centers." Objective 42.1 is to increase the mileage of on-street bicycle lanes, off-street trails and side paths and designated shared lane bikeways. N Lois Ave was identified within this plan for pedestrian and bicycle enhancements.

The City's Walk-Bike Plan consists of five phases, with the most recent being completed in 2016. In 2011, the first phase of this study identified N Lois Ave as a high priority Walk-Bike Project. Specific improvements identified include the inclusion of bike lane markings or shared lane arrows as well as a side path from Spruce St. to Boy Scout Blvd. This document establishes N Lois Ave. as one of four primary North-South bicycle and pedestrian corridors establishing a grid network within the Westshore District.

Hillsborough County MPO completed a Westshore Mobility Strategy Action plan in 2007 which identified short-term and longer term action plan strategies for development of multi-modal facilities within the Westshore District. This document was based on many previous studies and transportation plans and included a survey of employees and residents of the Westshore area. The results of the survey were used to develop the final Westshore Mobility Strategy Action plan.

In addition to the Mobility Action Plan, there is also a Westshore Area Pedestrian system plan which outlines goals to achieve a more walkable Westshore District. Certain recommendations identified in this report have already been implemented. Other improvements identified have not yet been constructed.

In 2013 the University of South Florida completed the Westshore District Public Realm Master Plan in conjunction with the Westshore Alliance Board of Directors, the Westshore Alliance Master Plan Committee, The City of Tampa and the Tampa Bay Regional Planning Council. N Lois Ave was one of six corridors of need identified to transform into a livable boulevard. The proposed public realm enhancements identified included some "complete streets" concepts including widened 10 foot sidewalks, painted bike lanes, living wall privacy screens and shade trees. Other improvements identified included shade structures for transit stops and lowered speed limits.

5.0 Methodology

The decision-making process for this corridor considers several factors. Existing standards, previous studies, right-of-way, drainage, ADA, safety and engineering judgement all weigh into the decision-making process along with construction cost and available budgets. N Lois Ave. has been identified in several studies as a north-south corridor within the Westshore District that could include upgraded pedestrian features and on-street bike lanes. This corridor is an especially good candidate because there is an existing striped median north of I-275 that can be used to accommodate the additional bike lanes without the need for reconstruction or right-of-way acquisition.

To better organize the factors that influence the decision-making process, we have created an alternative assessment matrix that compares four different options, establishes specific criteria for each, and helps to identify a recommended alternative to accomplish the City's goals.

The right-of-way acquisition assessment was based on GIS line work and existing right-of-way maps provided by the City of Tampa staff. These lines are a "best available information" assessment and do not reflect a certified right-of-way assessment. While we do not anticipate improvements to require right-of-way acquisition, in some cases a license agreement or sidewalk easements may be required to complete the work and tie into existing grades or resolve issues with existing sidewalk outside of the right-of-way.

Utility relocation is not anticipated to be a significant part of the proposed work. There are gravity sewer laterals that cross N. Lois Ave. along much of the corridor but only two small 8-inch trunk lines are present along N Lois Ave. but only for a small segment of the corridor. As modifications to the drainage system are anticipated to be minor, sanitary facilities should not be impacted. We anticipate only valve cover adjustments for the City's water and sanitary facilities.

The existing adjacent portions of Lois Ave. South of Kennedy Blvd. and the recently constructed portion associated with the I-275 interchange improvements do not have on street bicycle facilities. However, the interchange has a separate multi-use recreational trail. Adding bicycle lanes to the roadway will not be consistent with the adjoining segments of N Lois Ave. However, to meet the City's outlined and stated

goals, bicycle lanes on the corridor are still recommended. The proposed N Lois Ave. improvements will accomplish the City's stated goals by further expanding bicycle and pedestrian mobility within the Westshore District.

Environmental impacts along this corridor will be minimal. There are several considerable trees along the corridor within the right-of-way. While we do not anticipate significant impacts to trees, root trimming may be required near new segments of sidewalks to avoid damage to the newly placed sidewalk.

Crash data from 2011-2016 was reviewed for the N Lois Ave. corridor from Kennedy Blvd. to Boy Scout Blvd. The crash data was reviewed for consistent crash types and potential problem areas. It is typical for a higher crash rate to be present at intersections with higher numbers of conflict points and larger volumes of traffic. The N Lois Ave. corridor experiences higher crash rates at intersection locations, as expected, with higher crash rates present at Kennedy Blvd., the I-275 interchange, W Spruce St., W Cypress St. and Boy Scout Blvd. Review of the crash data also revealed a potential intersection sight distance issue at the Gray St. intersection. It should be noted that reconfiguring the lanes on N Lois Ave. to accommodate bicycle lanes will help to mitigate intersection sight distance deficiencies. This improvement is a result of moving the edge of the traveled way closer toward the center of the roadway and will allow motorists to stop at locations with increased visibility. There were seven crashes involving bicyclists or pedestrians over the crash review period. None of these crashes were fatal, however several of them involved injuries. Two of these crashes were located at the Spruce Street intersection and two were located at Boy Scout Blvd.

The City of Tampa's Walk-Bike plan Phase I technical memo outlined Gray St. as a potential bicycle sleeve with installed shared lane arrows as an improvement. In addition, this document recommended a mid-block pedestrian crossing location at Gray St. We recommend including this improvement along with the bicycle lane markings. This will further increase pedestrian safety at this intersection and will work in concert with the lane marking adjustments to facilitate better bicycle and pedestrian movements across Lois Ave.

The alternatives analysis considered the corridor's consistency with already completed planning elements for the Westshore area including The Westshore Mobility Action Plan, City of Tampa 2025 Comprehensive Plan, Westshore District Public Realm Plan, the City of Tampa Walk-Bike Plan, Tampa Greenways Plan, and the Westshore Pedestrian System Plan. Design alternative consistency with these studies is outlined in the Alternatives Assessment Matrix (See Appendix A).

Permitting is not anticipated with this project. The milling and resurfacing component of re-apportioning lanes and the widening of the sidewalk to an eight-foot multi-use trail both are typical of exempt activities through the Southwest Florida Water Management District. While right-of-way use permits or other minor permits may be required at the time of construction they did not affect the decision-making process.

A Pro's and Con's List for each of the alternatives can be found in Appendix A along with the Alternative assessment matrix.

6.0 Other Considerations

The improvements identified along W Spruce St. will intersect this project and were discussed at the kickoff meeting. The primary goal of the off-street MURT would be to provide connectivity between the recently constructed MURT near the I-275 interchange, and the improvements along W Spruce St. The existing width of the travel lanes along the segment of N Lois Ave. to the north of W Spruce St. is not sufficiently wide to accommodate on street bike lanes without significant roadway widening and drainage reconstruction. While a full width MURT could be accommodated to the east of N Lois Ave. within the existing right of way from W Spruce St. to Boy Scout Blvd. we did not extend the MURT through that location because the existing sidewalk is approximately six feet wide and ADA compliant. An eight-foot-wide trail at this location would not provide significant additional benefits for the associated cost. This

existing widened sidewalk provides connectivity to Boy Scout Blvd. from the W Spruce St. intersection. Therefore, no further modifications were proposed.

It is not practical to suggest that all streets at all locations within the City of Tampa should have bicycle facilities. However, identifying specific corridors within an area and retrofitting them with pedestrian and bicycle facilities can be an effective way to encourage multi-modal travel and increase safety for all users. Cyclists can come in a range of skill levels. Advanced riders will often travel a corridor at higher speeds and often prefer on street bike lanes as they present less obstacles and allow for higher speeds. Other less skilled users also need to be considered. Families with young riders or other slower users of bike facilities may prefer the safety and separation of a multi-use recreational trail. Ideally a facility that can accommodate all levels of users is preferred. However, the City must construct and prioritize improvements within set budgets.

Several of the identified studies that looked alternative and long range planning for the area identified significant modifications to the corridor that would require additional right of way and an expansion of the roadway typical. The cost of these improvements would be significant and would require one of two scenarios. First, the roadway typical could be expanded to 10 foot sidewalks with street trees and green space if right of way was acquired throughout the corridor. The existing five foot sidewalks are generally three feet away from the back of curb with the right of way immediately at the back of sidewalk which, would not leave room for these modifications while still providing the existing capacity. The second alternative would be to reduce the roadway to a two-lane typical and include the on-street bike facilities along with widened sidewalks and street trees within the existing right of way. This would require re-building the drainage system and curb lines and would also result in significant cost. Initial conversations with City staff indicated the scope of this project was aimed more at providing on-street bicycle lanes and improved pedestrian facilities while keeping improvements within the existing right of way.

This project presents an opportunity to update and revitalize the corridor. As the typical section for this corridor changes it will likely encourage a higher level of use from bicycle and pedestrian users. If no other upgrades are introduced there is a possibility that crash rates for bicyclists and pedestrian users could increase. Consequently, intersection lighting, signing and marking upgrades are recommended as a part of this project. While a cost benefit analysis was not within the scope of this work, typical costs for these types of improvements are low and often are associated with a tangible reduction in crash rates. Similarly, landscaping improvements can be used to revitalize and change the look of a corridor. While there are limited opportunities to complete landscaping, it is possible at selective locations along the corridor. We recommend including limited landscaping where feasible with this project.

7.0 Alternative Assessment Matrix

An alternative assessment matrix has been prepared to analyze impacts, needs, and consistency with Westshore area planning elements. This matrix can be found in Appendix A. The options analyzed include: Option 1, No Build; Option 2, Four Foot Bike Lanes Only; Option 3, Four Foot Bike Lanes and an Eight Foot Multi-Use Recreational Trail on the East Side; Option 4, Eight Foot Multi-Use Recreational Trail Only on East Side.

8.0 Preliminary Cost Estimates

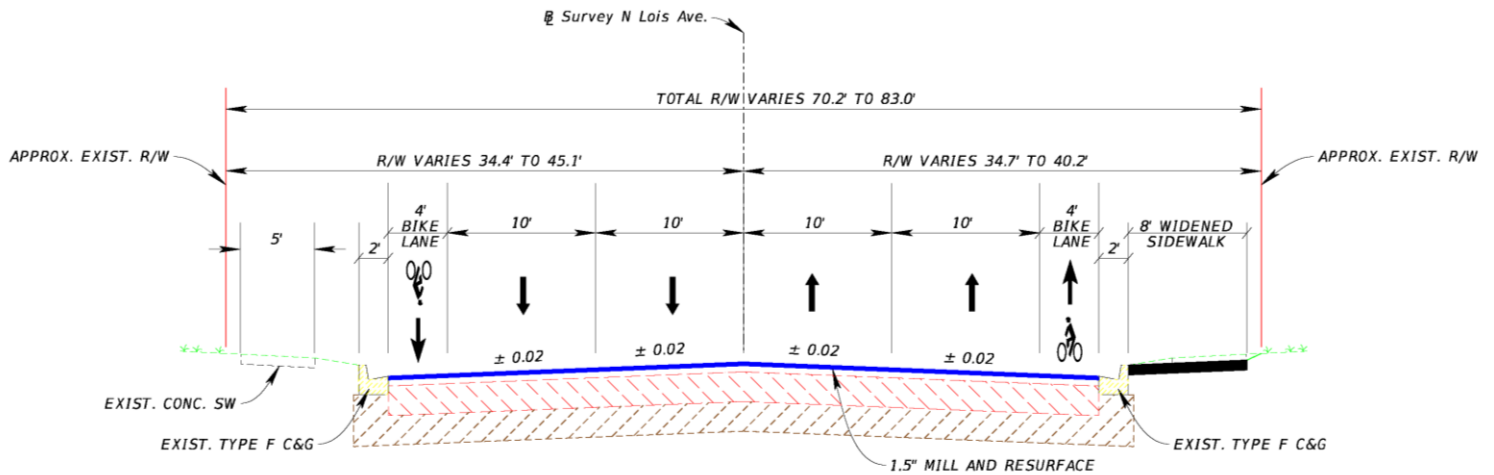
Preliminary cost estimates have been prepared for each option and can be found in Appendix B.

9.0 Recommendations

It is recommended to implement the option to reapportion the existing lanes and striped median to provide four-foot bike lanes along with an eight-foot multi-use trail from the I-275 interchange to W Spruce St. along the east side of N Lois Ave. This option provides the most accessibility for pedestrians and cyclists and accommodates all skill levels of riders. The existing pavement condition along the corridor is fair. Consequently, due to the City's planning efforts and early identification, the implementation of this

project could be delayed until resurfacing is needed or implemented now at a low cost utilizing shallow milling and resurfacing. Title II of the ADA regulations requires non-compliant curb ramps to be reconstructed to meet ADA requirements when roads are altered through resurfacing. We recommend the bike lanes and MURT improvements be constructed concurrently as this will result in significant cost savings over mobilizing separately to build one portion then the other.

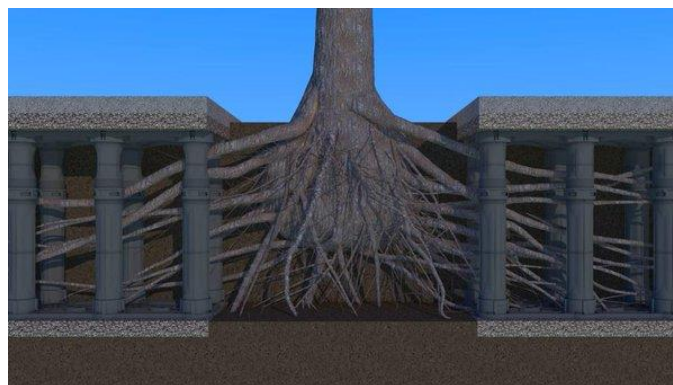
Figure 4 Proposed Typical Section N of I-275



TYPICAL SECTION W. CYPRESS ST. TO W SPRUCE ST.

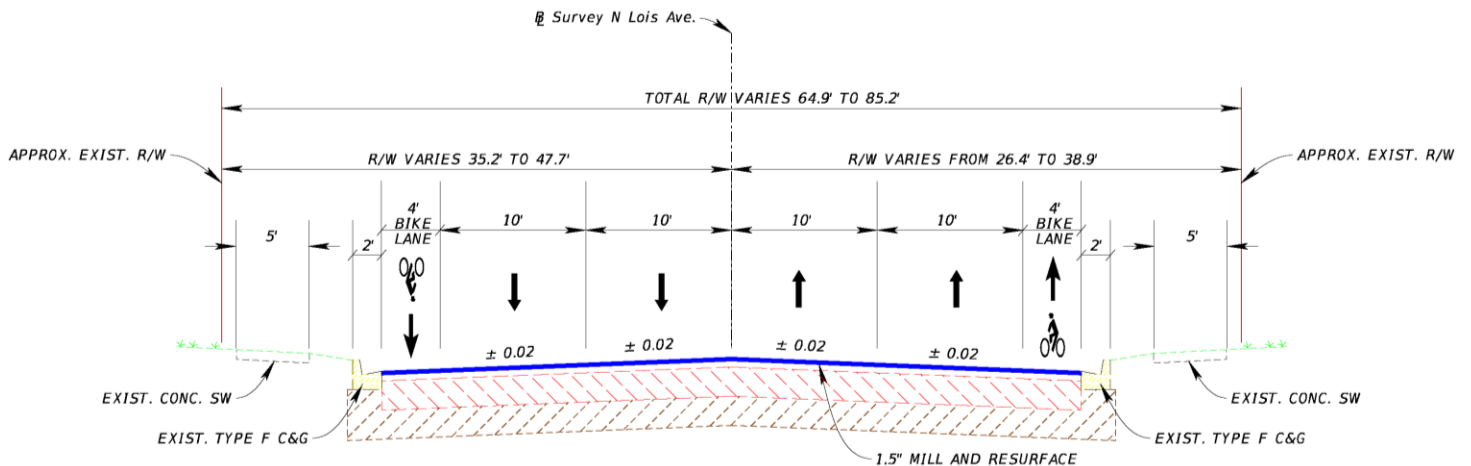
In addition, to maintain consistency with visioning documents in the area we recommend a limited application of street trees and selective landscaping to beautify the corridor. Gateway landscape areas exist within the existing median just south of Boy Scout Blvd. and near I-275. If coupled with selective tree placement and sidewalk improvements this could drastically improve the look and feel of the corridor. However, challenges will exist for street tree placement due to the limited space between the sidewalk and back of curb. Along most of the corridor this space varies between 2 and 3 feet. Typical placement of street trees would require at least 4 feet in this application. We recommend further investigation of the use of Silva cells for the street trees. These modular systems support tree growth while supporting the sidewalk above and help to capture rainwater runoff thereby allowing the trees to grow in constricted spaces.

Figure 5 Silva Cells Example



Safety improvements at specific locations would also provide added safety for pedestrian and motorists alike. While full corridor lighting would be the most beneficial, intersection lighting and targeted lighting at pedestrian crossing locations would provide immediate safety benefit at a relatively low cost.

Figure 6 Proposed Typical Section S of I-275



TYPICAL SECTION W. KENNEDY BLVD. TO W CARMEN ST.

The final buildout of this option is a roadway typical with two ten foot lanes and a four-foot bike lane in each direction, an eight-foot MURT along the east side of the corridor from the I-275 interchange to W Spruce St., and ADA compliant curb ramps and selective driveway closures and drainage upgrades along both sides. Selective landscaping and lighting improvements will provide significant aesthetic and safety upgrades.

Appendix A
Alternatives Assessment Matrix

Pro's and Con's List for N Lois Ave Design Alternatives

Design Option	Pro's	Con's
Option 1: No Build	<ul style="list-style-type: none"> Inexpensive No impact to residents 	<ul style="list-style-type: none"> Does not comply with planning efforts Doesn't improve bike ped. mobility for accessibility. Not consistent with existing study documents Doesn't resolve safety issues
Option 2: Four Foot Bike Lanes Only	<ul style="list-style-type: none"> Creates more bicycle friendly corridor Creates additional buffer for pedestrians Improves some safety issues Could be easily implemented next time road needs to be resurfaced. 	<ul style="list-style-type: none"> More expensive than no-build Doesn't connect Spruce improvements to I-275 trail
Option 3: Four Foot Bike Lanes with 8' MURT	<ul style="list-style-type: none"> Creates more bicycle friendly corridor Creates additional buffer for pedestrians Improves some safety issues Could be easily implemented next time road needs to be resurfaced. Provides full connectivity to Spruce street for recreational trail users 	<ul style="list-style-type: none"> Most costly option Impacts to residents during construction
Option 4: 8' MURT only	<ul style="list-style-type: none"> Creates more bicycle friendly corridor Provides full connectivity to Spruce Street for recreational trail users Lower cost option 	<ul style="list-style-type: none"> Impacts to residents during construction Doesn't resolve all safety issues Limited "transformative" feel for corridor

Alternatives Assessment Matrix

	Option 1	Option 2	Option 3	Option 4
Influence Factors	No Build	4' Bike Lanes Only	4' Bikes Lanes + 8' MURT on East Side	8' MURT Only on East Side
Right of way acquisition	None	None	None	
Potential need for a License Agreement	None	Some - curb ramp replacement may require license agreement	Some- Curb ramps and driveway closure improvements may require	Some- Curb ramps and driveway closure improvements may require
Utility Relocation Costs	None	Low - anticipate minor valve cover adjustments	Low - anticipate minor valve cover adjustments	Low - anticipate minor valve cover adjustments
Adjacent Corridor Typical Consistency	Consistent	Inconsistent	Inconsistent	Consistent
Tree Impacts	None Anticipated	None Anticipated	Minor Tree Impacts	Minor Tree Impacts
Safety Impacts	N/A	Improves Safety for Bicyclists	Improves safety for Peds and Bicyclists	Improves safety for Peds and Bicyclists
Consistency with Westshore Mobility Action Plan	Not Consistent	Partially consistent with Action Plan strategy to provide a series of linked on-road and off-road pedestrian and bicycle facilities	Consistent with Action Plan strategies to provide better sidewalk connectivity and to provide a series of linked on-road and off-road pedestrian and bicycle facilities	Consistent with Action Plan strategies to provide better sidewalk connectivity and partially satisfies Action Plan strategy to provide a series of linked on-road and off-road pedestrian and bicycle facilities
Consistency with City of Tampa 2025 Comp Plan	Not Consistent	Consistent with Bicycle and Pedestrian Network Goals and partially consistent with Connectivity Objectives	Consistent with both Bicycle and Pedestrian Network Goals and Connectivity Objectives	Consistent with Connectivity Objectives and partially consistent with Bicycle and Pedestrian Network Goals

	Option 1	Option 2	Option 3	Option 4
Consistency with Hillsborough Greenways and Trails master Plan	Not Consistent	Consistent with Greenway and Trail Facility Toolbox elements: •bikeway •RRFB signed crosswalks	Consistent with Greenway and Trail Facility Toolbox elements: •side path •bikeway •RRFB signed crosswalks	Consistent with Greenway and Trail Facility Toolbox elements: •side path •bikeway •RRFB signed crosswalks
Consistency with Westshore pedestrian System Plan	Not Consistent	Consistent with objectives to include: • on-road bike lanes • ADA curb ramps	Consistent with objectives to include: •adequate sidewalk and side path width •on-road bike lanes •ADA curb ramps and sidewalks	Consistent with objectives to include: • adequate sidewalk and side path width • ADA curb ramps and sidewalks
Consistency with Westshore Public Realm Master Plan	Not Consistent	consistent and lane widths only and street scape improvements	Consistent with lane widths and widened sidewalk widths and street scape	Consistent with sidewalk widths only and street scape
Consistency with City of Tampa Walk-Bike Plan	Not Consistent	Consistent with objectives to include: • on-road bike lanes from Kennedy to I-275 • Pedestrian Upgrades north of I-275	Consistent with objectives to include: • on-road bike lanes from Kennedy to I-275 • Pedestrian Upgrades north of I-275	Not consistent with recommendations for improvements south of I-275
Preliminary Cost Estimate	\$0*	\$1,288,700	\$1,362,800	\$430,700
Permitting Required	None	None Anticipated	None Anticipated	None Anticipated
Accommodation of Multiple User types	Limited	Yes	Yes	Partial

Appendix B

Preliminary Cost Estimates

Lois Ave Walk-Bike Improvements Concept – Bike Lanes Only

Preliminary Option 2 (4' Bike Lane Only) Cost Estimate

December 19, 2016

Since the Engineer has no control over time, labor and material cost furnished by others, or over methods of determining prices, or market conditions, all opinions rendered herein as to cost, represent its best judgment; the Engineer does not guarantee that actual cost will not vary from opinion of cost.

ITEM NO.	ITEM	UNIT	PROJECT QUANTITY	UNIT COST	TOTAL COST
101-1	Mobilization	LS	1	\$ 70,042.14	\$ 70,042
102-1	Maintenance of Traffic	LS	1	\$ 50,030.10	\$ 50,030
107-1	Litter Removal	AC	2.28	\$ 200.00	\$ 456
107-2	Mowing	AC	2.28	\$ 200.00	\$ 456
120-1	Regular Excavation (3-R Projects)	LS	1	\$ 1,350.00	\$ 1,350
327-70-6	Milling Exist Asph Pavt, 1 1/2" Depth	SY	37,600	\$ 3.00	\$ 112,800
337-7-XX	Asphalt Friction Course	TN	3,100	\$ 180.00	\$ 558,000
425-1-XX	Inlet / Junction Box / Endwall	EA	16	\$ 4,000.00	\$ 64,000
430-17X-XXX	Pipe Culvert Optional Material	LF	25	\$ 85.00	\$ 2,125
520-1-10	Concrete Curb & Gutter, Type F	LF	1,065	\$ 20.00	\$ 21,300
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	700	\$ 40.00	\$ 28,000
522-2	Concrete Sidewalk and Driveways, 6" Thick	SY	30	\$ 50.00	\$ 1,500
527-2	Detectable Warnings	SF	545	\$ 30.00	\$ 16,350
570-1-2	Performance Turf, Sod	SY	50	\$ 3.00	\$ 150
654-2-22	Rectangular Rapid Flashing Beacon, F&I	EA	4	\$ 5,500.00	\$ 22,000
700-1-11	Single Post Sign, F&I	EA	8	\$ 350.00	\$ 2,800
700-1-50	Single Post Sign, Relocate	EA	2	\$ 175.00	\$ 350
700-1-60	Single Post Sign, Remove	EA	4	\$ 25.00	\$ 100
710-90	Painted Pavement Markings, Final Surface	LS	1	\$ 10,000.00	\$ 10,000
711-	6" White, Solid Striping	GM	1.912	\$ 3,850.00	\$ 7,361
	6" White, 2-4/6-10 Skip Striping	GM	0.169	\$ 1,300.00	\$ 220
	6" White, 10-30 Skip Striping	GM	1.934	\$ 1,400.00	\$ 2,708

ITEM NO.	ITEM	UNIT	PROJECT QUANTITY	UNIT COST	TOTAL COST
	12" White, Solid Striping for Crosswalks	LF	3,362	\$ 3.00	\$ 10,086
	24" White, Solid Striping for Stop Line and Crosswalk	LF	1,323	\$ 4.00	\$ 5,292
	6" Yellow, Solid Striping	GM	1.923	\$ 3,850.00	\$ 7,404
	18" Yellow, Solid Striping for Diagonals	LF	390	\$ 3.00	\$ 1,170
	Message	EA	30	\$ 240.00	\$ 7,200
	Arrows	EA	45	\$ 165.00	\$ 7,425
	Selective Landscape	LS	1	\$ 30,000.00	\$ 30,000
	Targeted Lighting Improvements	LS	1	\$ 80,000.00	\$ 80,000
	Subtotal (Excludes Mobilization and MOT)				\$ 1,000,602
	Mobilization and MOT				\$ 120,072
	Estimate Subtotal				\$ 1,120,674
	Contingency (15%)				\$ 168,101.12
	Grand Total				\$ 1,288,775

Decorative Asphalt is included in Asphalt Friction Course Pay Item

Lois Ave Walk-Bike Improvements Concept – Bike Lanes + MURT

Preliminary Option 3 (4' Bike Lane and 8' MURT) Cost Estimate

December 19, 2016

Since the Engineer has no control over time, labor and material cost furnished by others, or over methods of determining prices, or market conditions, all opinions rendered herein as to cost, represent its best judgment; the Engineer does not guarantee that actual cost will not vary from opinion of cost."

ITEM NO.	ITEM	UNIT	PROJECT QUANTITY	UNIT COST	TOTAL COST
101-1	Mobilization	LS	1	\$75,799.64	\$75,800
102-1	Maintenance of Traffic	LS	1	\$54,142.60	\$54,143
107-1	Litter Removal	AC	2.28	\$200.00	\$456
107-2	Mowing	AC	2.28	\$200.00	\$456
120-1	Regular Excavation (3-R Projects)	LS	1	\$1,350.00	\$1,350
327-70-6	Milling Exist Asph Pavt, 1 1/2" Depth	SY	37,600	\$3.00	\$112,800
337-7-XX	Asphalt Friction Course	TN	3,100	\$180.00	\$558,000
425-1-XX	Inlet / Junction Box / Endwall	EA	16	\$4,000.00	\$64,000
430-17X-XXX	Pipe Culvert Optional Material	LF	25	\$85.00	\$2,125
520-1-10	Concrete Curb & Gutter, Type F	LF	1,590	\$20.00	\$31,800
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	1,530	\$40.00	\$61,200
522-2	Concrete Sidewalk and Driveways, 6" Thick	SY	305	\$50.00	\$15,250
527-2	Detectable Warnings	SF	545	\$30.00	\$16,350
570-1-2	Performance Turf, Sod	SY	50	\$3.00	\$150
654-2-22	Rectangular Rapid Flashing Beacon, F&I	EA	8	\$5,500.00	\$44,000
700-1-11	Single Post Sign, F&I	EA	16	\$350.00	\$5,600
700-1-50	Single Post Sign, Relocate	EA	2	\$175.00	\$350
700-1-60	Single Post Sign, Remove	EA	4	\$25.00	\$100
710-90	Painted Pavement Markings, Final Surface	LS	1	\$10,000.00	\$10,000
711-	6" White, Solid Striping	GM	1.912	\$3,850.00	\$7,361
	6" White, 2-4/6-10 Skip Striping	GM	0.169	\$1,300.00	\$220

ITEM NO.	ITEM	UNIT	PROJECT QUANTITY	UNIT COST	TOTAL COST
	6" White, 10-30 Skip Striping	GM	1,934	\$1,400.00	\$2,708
	12" White, Solid Striping for Crosswalks	LF	3,362	\$3.00	\$10,086
	24" White, Solid Striping for Stop Line and Crosswalk	LF	1,323	\$4.00	\$5,292
	6" Yellow, Solid Striping	GM	1,923	\$3,850.00	\$7,404
	18" Yellow, Solid Striping for Diagonals	LF	390	\$3.00	\$1,170
	Message	EA	30	\$240.00	\$7,200
	Arrows	EA	45	\$165.00	\$7,425
	Selective Landscape	LS	1	\$30,000.00	\$30,000
	Targeted Lighting Improvements	LS	1	\$80,000.00	\$80,000
	Subtotal (Excludes Mobilization and MOT)				\$ 1,082,852
	Mobilization and MOT				\$ 129,943
	Estimate Subtotal				\$ 1,212,795
	Contingency (15%)				\$ 181,919.20
	Grand Total				\$ 1,394,714

Decorative Asphalt is included in Asphalt Friction Course Pay Item

Lois Ave Walk-Bike Improvements Concept – MURT Only

Preliminary Option 4 (8' MURT Only) Cost Estimate

December 19, 2016

Since the Engineer has no control over time, labor and material cost furnished by others, or over methods of determining prices, or market conditions, all opinions rendered herein as to cost, represent its best judgment; the Engineer does not guarantee that actual cost will not vary from opinion of cost."

ITEM NO.	ITEM	UNIT	PROJECT QUANTITY	UNIT COST	TOTAL COST
101-1	Mobilization	LS	1	\$ 23,408.49	\$ 23,408
102-1	Maintenance of Traffic	LS	1	\$ 16,720.35	\$ 16,720
107-1	Litter Removal	AC	2.28	\$ 200.00	\$ 456
107-2	Mowing	AC	2.28	\$ 200.00	\$ 456
120-1	Regular Excavation (3-R Projects)	LS	1	\$ 1,350.00	\$ 1,350
330-XX	Midblock Decorative Pavement and Pavement Restoration	LS	1	\$ 5,000.00	\$ 5,000
425-1-XX	Inlet / Junction Box / Endwall	EA	16	\$ 4,000.00	\$ 64,000
430-17X-XXX	Pipe Culvert Optional Material	LF	25	\$ 85.00	\$ 2,125
520-1-10	Concrete Curb & Gutter, Type F	LF	1,575	\$ 20.00	\$ 31,500
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	1,500	\$ 40.00	\$ 60,000
522-2	Concrete Sidewalk and Driveways, 6" Thick	SY	275	\$ 50.00	\$ 13,750
527-2	Detectable Warnings	SF	545	\$ 30.00	\$ 16,350
570-1-2	Performance Turf, Sod	SY	50	\$ 3.00	\$ 150
654-2-22	Rectangular Rapid Flashing Beacon, F&I	EA	4	\$ 5,500.00	\$ 22,000
700-1-11	Single Post Sign, F&I	EA	2	\$ 350.00	\$ 700
700-1-50	Single Post Sign, Relocate	EA	2	\$ 175.00	\$ 350
700-1-60	Single Post Sign, Remove	EA	4	\$ 25.00	\$ 100
711-	12" White, Solid Striping for Crosswalks	LF	2,040	\$ 3.00	\$ 6,120
	Selective Landscape	LS	1	\$ 30,000.00	\$ 30,000
	Targeted Lighting Improvements	LS	1	\$ 80,000.00	\$ 80,000

ITEM NO.	ITEM	UNIT	PROJECT QUANTITY	UNIT COST	TOTAL COST
	Subtotal (Excludes Mobilization and MOT)				\$ 334,407
	Mobilization and MOT				\$ 40,128
	Estimate Subtotal				\$ 374,535
	Contingency (15%)				\$ 56,180.30
	Grand Total				\$ 430,716