



Hillsborough County Bicycle Network Plan

May/June 2023



Hillsborough
County Florida

Hillsborough County Bicycle Network Plan Overview

- Collaboration between the TPO and County
- Objectives:
 - Evaluate the existing bicycle network
 - Establish a data-driven approach to prioritize segments
 - Demonstrate project development through concept plans



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Demonstration Project

- Show how a data-driven process can be used to prioritize needs, identify segments, and develop concepts to improve bicycling conditions.
 - **Goal** – *create a repeatable process to identify candidate locations for improvements to existing bicycle facilities and locations for new bicycle facilities*

Phase 1 – Data Analysis and Prioritization Methodology

- Data Input Factors:

Risk Factors

- Crash History
- Posted Speed Limit
- Average Annual Daily Traffic
- Total Lanes
- Lighting

Exposure Factors

- Activity Generators
- Residential Density
- Proximity to Bus Stops
- Equity and Social Justice

Network Factors

- Existing Bike Facility
- Existing Sidewalks
- Connectivity
- Context Classification



Data Input Factor Scoring:

Risk Factors

R Factors	Description	Measure	Score
Crash History (R_{Crash})	Bicycle and pedestrian involved crashes along the segment during the analysis period.	0 Crashes	1
		1 Crashes	2
		2 – 3 Crashes	3
		4 – 5 Crashes	4
		>5 Crashes	5
Posted Speed Limit (R_{Speed})	Posted speed limit along the segment.	≤25 MPH	1
		30 MPH	2
		35 MPH	3
		40 MPH	4
		≥45 MPH	5
Average Annual Daily Traffic (AADT) (R_{AADT})	Average annual daily traffic along the segment.	≤5,000	1
		5,001 to 10,000	2
		10,001 to 20,000	3
		20,001 to 30,000	4
		>30,000	5
Total Lanes (R_{Lanes})	Number of travel lanes along the segment.	2 – 3	1
		4 – 5	3
		≥6	5
Lighting ($R_{Lighting}$)	The density (lighting poles per mile) of roadway lighting along the segment.	>35	1
		21 – 35	2
		10 – 20	3
		<10	4
		No Lighting	5
Max Potential Risk Score			25

Exposure Factors

Factor	Description	Measure	Score
Activity Generators ($E_{Generators}$)	Segment's proximity, in miles, to an activity generator such as a park, school, government services, cultural facility, identified activity center, or zoning category of commercial general or intensive.	>0.75	1
		0.75 – 0.51	2
		0.50 – 0.26	3
		0.25 – 0.10	4
		<0.10	5
Residential Density ($E_{ResidentialDensity}$)	The existing residential density (population per acre) of the traffic analysis zones (TAZ) adjacent to the segment.	0 – 2	1
		2 – 4	2
		4 – 8	3
		8 – 12	4
		>12	5
Proximity to Bus Stops ($E_{Transit}$)	Segment's proximity, in miles, to a public transit stop.	<0.10	5
		0.10 - 0.25	4
		0.26 – 0.75	3
		0.76 – 1.50	2
		>1.50	1
Equity & Social Justice (E_{Equity})	Segment is within or directly adjacent to an Underserved Community. Scoring based on the equity factor scoring for each Census block group.	<4	1
		4 – 5	2
		6	3
		7	4
		8 – 9	5
Max Potential Exposure Score			20

Network Factors

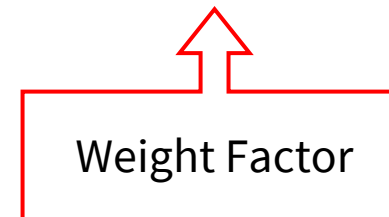
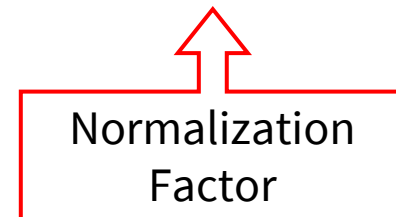
Factor	Description	Measure	Score
Existing Bicycle Facility (N_{Bike})	Existing bicycle facility that accommodates bicyclists along the segment.	Separated Facility	1
		Buffered Lane	2
		Standard Lane	3
		Paved Shoulder	4
		None	5
Existing Sidewalk ($N_{Sidewalk}$)	Existing sidewalk along the segment.	Sidewalk (Both Sides)	1
		Sidewalk with Gaps	3
		No Sidewalk	5
Connectivity ($N_{Connectivity}$)	Segment's distance (miles) from an existing or planned bicycle facility.	>0.75	1
		0.75 – 0.51	2
		0.50 – 0.26	3
		0.25 – 0.10	4
		<0.10	5
Context Classification ($N_{Context}$)	Context classification along the segment.	C1 & C2	1
		C3T	2
		C4	3
		C3R	4
		C3C	5
Max Potential Network Score			20



Scoring and Prioritization

- Normalized the Factor scores
- Applied a weighting to the Network Factors

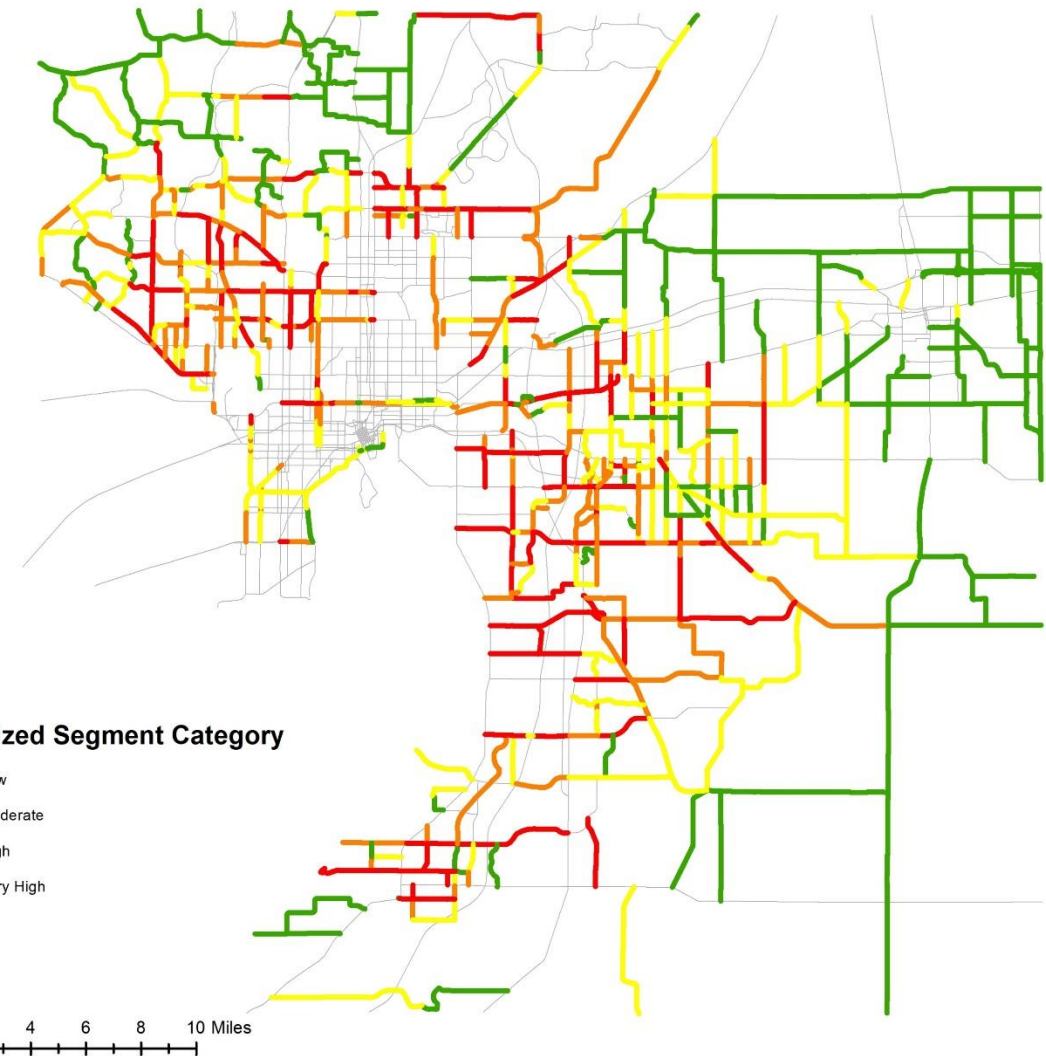
$$\text{Segment Prioritization} = (\sum \text{Risk} \times 0.4 \times 0.9) + (\sum \text{Exposure} \times 0.5 \times 0.9) + (\sum \text{Network} \times 0.5 \times 1.2)$$





Phase 2 – Prioritization and Corridor Selection

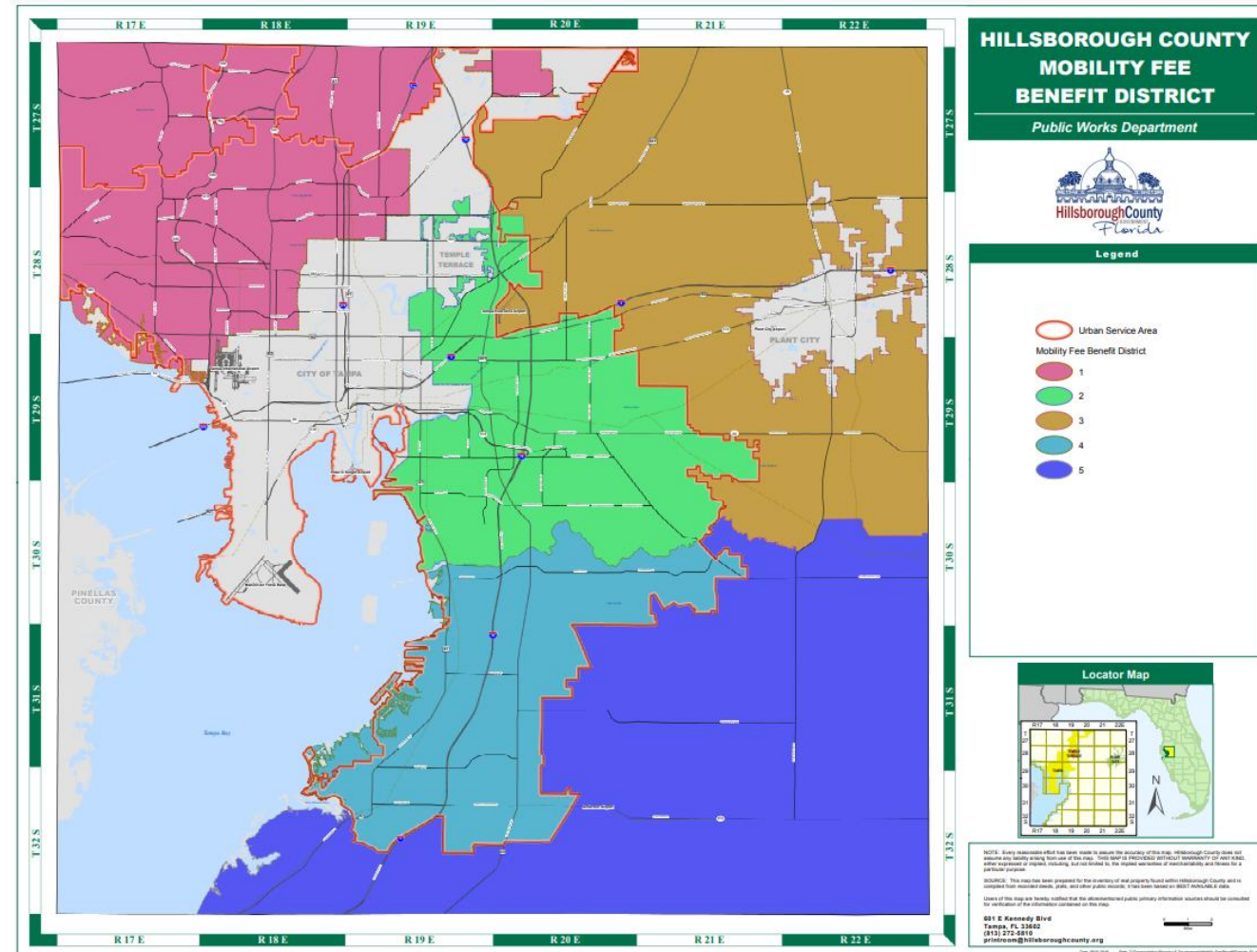
Prioritization Score Value	Prioritization Score Category
9.9600 – 17.1600	Low
17.1601 – 19.2600	Moderate
19.2601 – 21.2700	High
> 21.2700 (max. 27.0000)	Very High





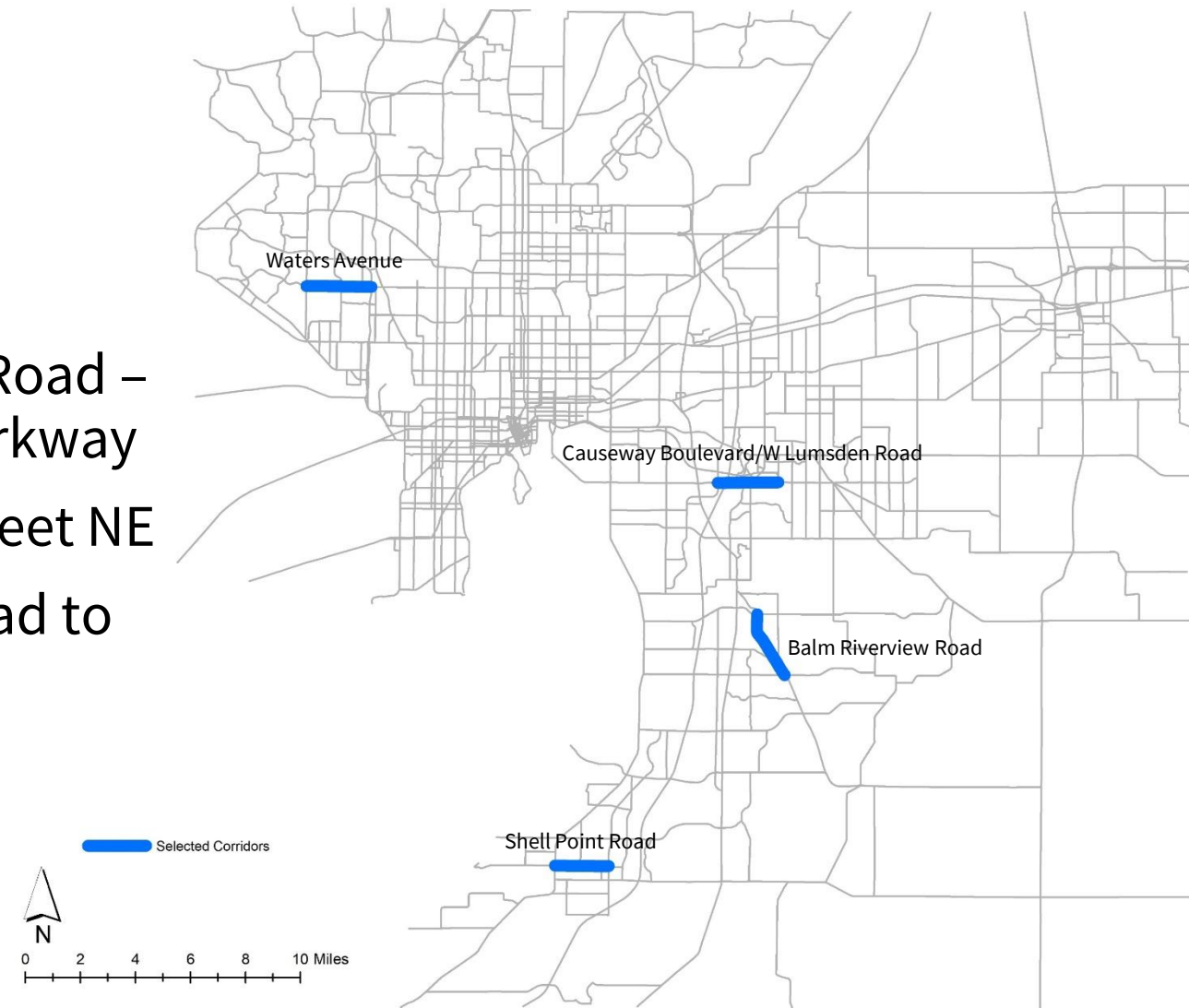
Corridor Selection

- Identify 4 Demonstration Corridors
- Geographic Diversity (Mobility Fee Benefit Districts)
- Priority Corridor Screening and Selection



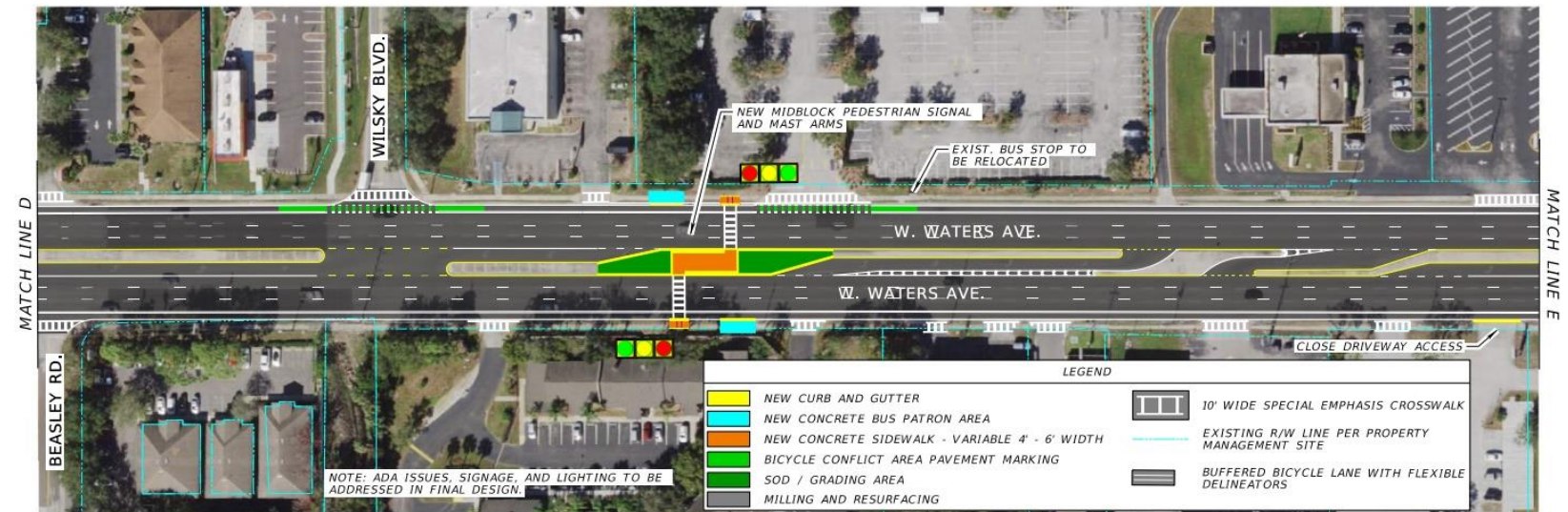
Selected Corridors

1. Waters Avenue – Sheldon Road to Veterans Expressway
2. Causeway Boulevard/W Lumsden Road – S. Falkenburg Road to Brandon Parkway
3. Shell Point Road – US 41 to 24th Street NE
4. Balm Riverview Road – Boyette Road to McMullen Road



Phase 3 – Concept Development

- For each selected corridor:
 - Review existing conditions
 - Identify potential improvements
 - Develop concepts



Waters Avenue – Sheldon Road to Veterans Expressway



Feature	
Length	2.35 miles
Speed Limit	45 MPH, 35 MPH “Senior Zone” between Riverwood Road and Aiken Road
Total Lanes	6 to 7
Median	Yes, treatment varies
AADT (2019)	55,000
Transit Service	Yes, Routes 16 and 30
Midblock Crossings	None
Bicycle Facilities	Yes, between Pinehurst Drive and Veterans Expressway; Sharrows west of Pinehurst Drive. Pocket bike lanes present at major intersections.
Sidewalks	Yes, 4’ minimum, intermittent minor buffer provided
Remarks	Numerous commercial driveways. Concrete barriers on bridge reduces effective shoulder width.



Degree of Difficulty

Lower ← ————— → Higher

Tier 1	Tier 2	Tier 3
<ul style="list-style-type: none"> • Pavement Markings Narrow travel lanes west of Pinehurst Drive to replace existing sharrow markings with bike lanes. \$1,579,500 • Pavement Markings Install bike lane markings throughout, including green markings through all conflict areas, including intersections and driveways. \$627,000 • Pavement Markings Install high-visibility pedestrian crosswalks at all applicable intersections, crossings, and driveways. \$424,000 • Median Adjustments Modify the median east of Stone Run Court to maintain minimum lane widths. \$73,400 • Separation Narrow travel lanes east of Pinehurst Drive to accommodate a buffered bike lane. \$4,245,000 • Separation Where feasible, include flexible delineators between bike and travel lanes. \$172,400 • Sidewalks Identify and repair areas of sidewalks that are damaged, do not achieve ADA compliance, or have poor drainage. \$112,400 • Signage Install MUTCD Bicycle Facility signs. \$147,700 • Signage Throughout the corridor, install wayfinding signage leading to the Upper Tampa Bay Trail, the Town 'N Country Trail, the YMCA, parks, schools, and transit hubs. \$98,500 • Signalization Modify signal timing to include Lead Pedestrian Intervals (LPIs) at all signalized intersections. \$70,000 	<ul style="list-style-type: none"> • Landscaping Install landscaping, complete with trees, in medians to create a sense of enclosure where feasible. \$170,500 • Pedestrian Enhancements Modify the intersection of Waters Avenue and Northbridge Boulevard to provide a crosswalk on the west side of the intersection. \$1,130,200 • Midblock Crossings Install a midblock crossing at the following locations: <ul style="list-style-type: none"> • Riverwood Boulevard. \$1,130,200 • Royal Sand Circle. \$1,130,200 • East of JR Manor Drive. \$1,130,200 • Between Waters Avenue Car Wash and Baycare Urgent Care. \$1,130,200 • Separation Install concrete separators between bike lanes and travel lanes, where feasible. \$114,700 • Signalization Install a full traffic signal at Rustic Drive. \$1,381,400 • Signalization Install bicycle detection at all signal-controlled intersections. \$333,200 • Speed Study Conduct a speed study to explore reducing the posted speed limit. \$76,000 • Transit Improvements Upgrade transit stops throughout the corridor by installing bus stop pads and shelters. \$1,398,100 • Transit Improvements Install raised bike lanes through bus stops, where feasible. \$242,600 	<ul style="list-style-type: none"> • Access Management Remove and reconstruct duplicated driveways. \$75,300 • Lighting Install lighting at all signalized intersections and crossings. \$2,109,700 • Lighting Install pedestrian-scale lighting throughout the entire corridor. \$3,466,000 • Safe Crossings Provide pedestrian refuge areas by extending existing median noses to the edge of roadway. \$90,000
\$7,549,900	\$9,367,500	\$5,741,000
\$22,658,400		



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Existing



Waters Avenue – Sheldon Road to Veterans Expressway

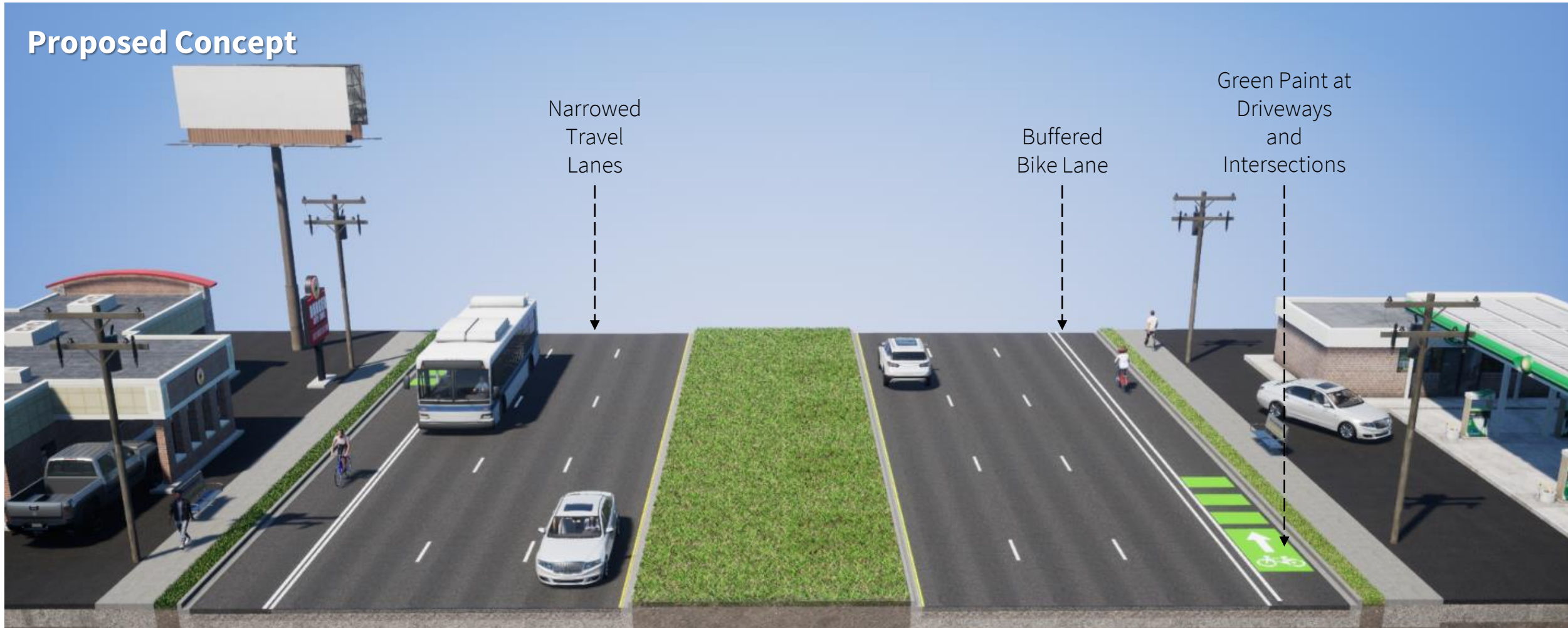


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Proposed Concept



Narrowed
Travel
Lanes

Buffered
Bike Lane

Green Paint at
Driveways
and
Intersections

Waters Avenue – Sheldon Road to Veterans Expressway

Causeway Boulevard/W Lumsden Road – S. Falkenburg Road to Brandon Parkway



Feature	
Length	2.2 miles
Speed Limit	45 MPH
Total Lanes	6 to 10
Median	Raised concrete and grass
AADT (2019)	27,500
Transit Service	Routes 25 LX and 360 LX
Midblock Crossings	None
Bicycle Facilities	None, wide shoulders provided
Sidewalks	Present throughout, except a major gap approximately between S Falkenburg Rd and Brandon Town Center Dr
Remarks	Wide signalized intersections with multiple turn lanes and channelized islands



Degree of Difficulty

Lower ← ————— → Higher

Tier 1	Tier 2	Tier 3
<ul style="list-style-type: none"> • Bicycles Install bicycle counter equipment on the Brandon Parkway Trail. \$25,800 • Pavement Markings Install enhanced sidewalk and path crossings at all unsignalized side streets and driveways. \$314,000 • Pavement Markings Modify the intersection at Brandon Parkway to include marked crosswalks. \$30,600 • Sidewalks Identify and repair sidewalks throughout, with ADA upgrades. \$85,000 • Signage Install wayfinding signage at Brandon Parkway to W Brandon Boulevard, Brandon High School, and the Brandon Town Center Mall. \$24,600 • Signal Timing Modify signal timing to include Lead Pedestrian Intervals (LPIs) at all signalized intersections. \$35,000 	<ul style="list-style-type: none"> • Intersection Improvements Modify the intersection at BTC Dr to include marked crosswalks with curb ramps, realigned sidewalks, and reduce the number of lanes to match the total through-lanes. \$165,800 • Intersection Improvements Modify the intersection at Gomto Lake Rd to include marked crosswalks with curb ramps, realigned sidewalks, and reduce the number of lanes to match the total through-lanes. \$149,200 • Landscaping Install landscaping with trees where feasible. \$170,500 • Pavement Markings Install bike lane markings throughout, including green markings through all conflict areas, including intersections and driveways. \$82,700 • Shared-Use Paths Install a shared use path across I-75. <ul style="list-style-type: none"> • Alternate 1: Install pathway and separate bridge on alignment south of the roadway bridges. \$7,836,200 • Alternate 2: Install new pathway and reconfigure roadway to continue pathways across existing bridges on both sides of the roadway. \$12,959,900 • Signage Install “Stop Here on Red” signs at all signalized intersections. \$25,700 • Signalization Install bicycle detection at all signal-controlled intersections. \$83,300 • Signalization Install a full traffic signal at Heather Lakes Blvd, with small curb radii. \$1,588,600 • Speed Study Conduct a speed study to explore reducing the posted speed limit. \$76,000 • Transit Install bus stop pads, amenities, and connecting sidewalks at Falkenberg Rd, Paddock Club Dr, and Brandon Pkwy. \$317,700 	<ul style="list-style-type: none"> • Lighting Install pedestrian-scale lighting throughout the corridor. \$2,637,200 • Lighting Install lighting at all signalized intersections and crossings. \$3,164,600 • Shared-Use Path Install an asphalt path on both sides of the study corridor to replace the existing sidewalks. \$6,143,000
\$515,000	\$10,495,700	\$11,944,800
\$22,955,500		



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Existing



Causeway Boulevard/W Lumsden Road – S. Falkenburg Road to Brandon Parkway



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Proposed Concept

Shared Use
Path

Mark On-
Street Bike
Lanes

Conduct
Speed Study

Shared Use
Path



Shell Point Road – US 41 to 24th Street SE



Feature	
Length	2.35 miles
Speed Limit	45 MPH, 35 MPH “Senior Zone” between Riverwood Road and Aiken Road
Total Lanes	6 to 7
Median	Yes, treatment varies
AADT (2019)	55,000
Transit Service	Yes, Routes 16 and 30
Midblock Crossings	None
Bicycle Facilities	Yes, between Pinehurst Drive and Veterans Expressway; Sharrows west of Pinehurst Drive. Pocket bike lanes present at major intersections.
Sidewalks	Yes, 4’ minimum, intermittent minor buffer provided
Remarks	Numerous commercial driveways. Concrete barriers on bridge reduces effective shoulder width.



Degree of Difficulty

Lower ← ————— → Higher

Tier 1	Tier 2	Tier 3
<ul style="list-style-type: none"> • Pavement Markings Install high-visibility pedestrian crosswalks at all applicable intersections, crossings, and driveways. \$19,300 • Pavement Markings Install edge stripe, effectively narrowing the travel lane to 10'. \$53,100 • Pavement Markings Install bike lane markings through the intersection at US 41, including green markings through all conflict areas and bike boxes. \$68,900 • School Zone Safety Install school zone beacons, markings, and signage for Thompson Elementary School. \$81,100 • Signage Install wayfinding signage at US 41, Interchange Street, 24th Street NE, and to the South Coast Trail, the Firehouse Cultural Center, and nearby schools. \$98,500 	<ul style="list-style-type: none"> • Crosswalks Install an enhanced crosswalk with Rectangular Rapid Flashing Beacon (RRFB) at the following locations: <ul style="list-style-type: none"> • 2nd Street. \$191,700 • 6th Street. \$50,200 • 15th Street. \$100,500 • 21st Street. \$50,200 • Landscaping Install landscaping with shade trees where feasible. \$170,500 • Railroad Safety Install barriers, signage, and markings at the railroad crossing to meet current design standards. \$131,367 • Shared-Use Path Install a concrete shared use path along the north side of the corridor. \$8,637,600 • Signalization Install bicycle detection at the signal-controlled intersection with US 41. \$41,600 • Speed Study Conduct a speed study to explore reducing the posted speed limit. \$76,000 	<ul style="list-style-type: none"> • Crosswalks Install an enhanced crosswalk with RRFB at Interchange Street. \$50,200 • Lighting Install lighting at all intersections and crossings. \$1,230,700 • Lighting Install pedestrian-scale lighting throughout the corridor. \$2,938,600 • Sidewalks Install a sidewalk on the south side of the corridor between 6th Street and Interchange Street. \$692,300
\$320,900	\$9,449,667	\$4,911,800
\$14,682,367		



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Existing



Shell Point Road - US 41 to 24th Street SE



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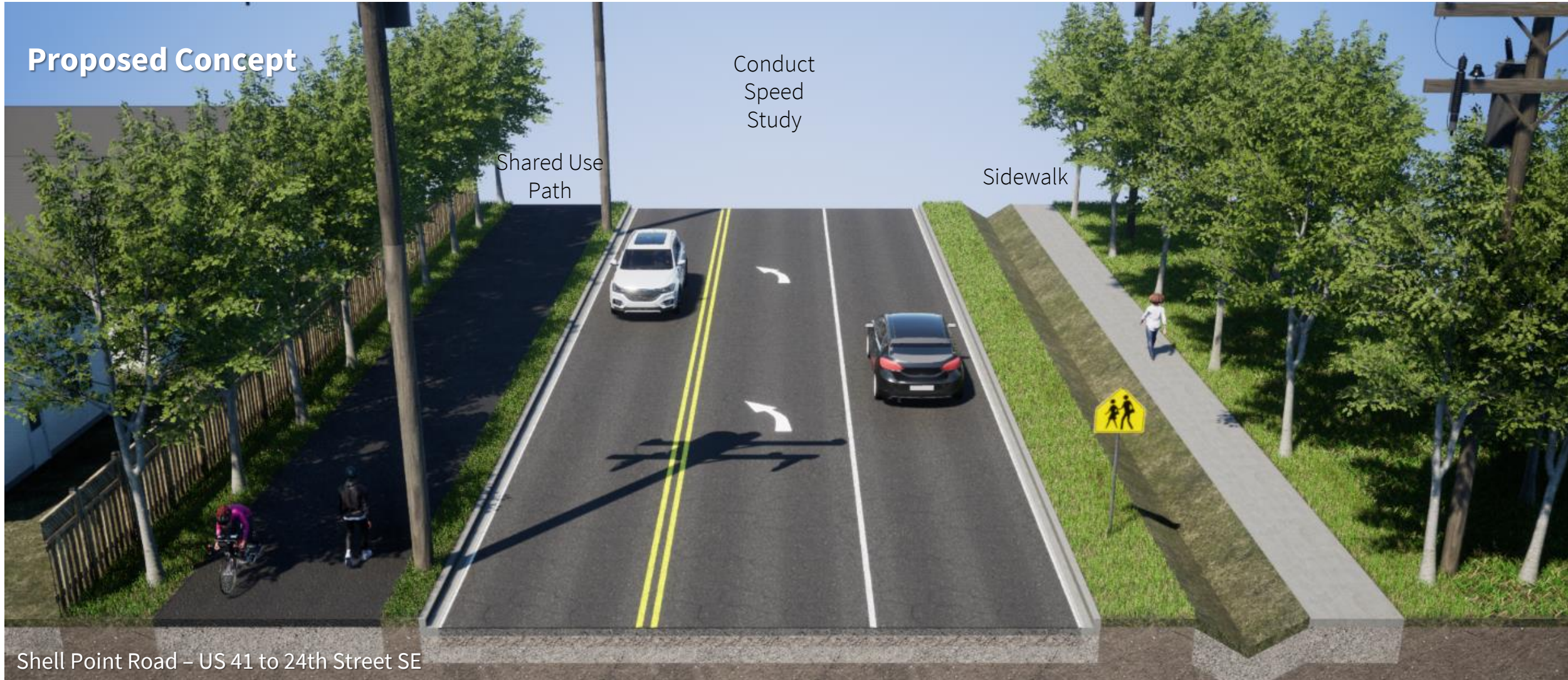
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Proposed Concept

Conduct
Speed
Study

Shared Use
Path

Sidewalk



Shell Point Road – US 41 to 24th Street SE



Balm Riverview Road – Boyette Road to McMullen Road



Feature	
Length	1.87 Miles
Speed Limit	45 MPH; 20 MPH School Zone; 30 MPH Curve Advisory
Total Lanes	2
Median	None
AADT (2019)	16,900
Transit Service	None
Midblock Crossings	None
Bicycle Facilities	None
Sidewalks	Yes, Both Sides
Remarks	Right of way is limited in some areas; predominantly residential, with some natural areas.



Degree of Difficulty

Lower ← → Higher

Tier 1	Tier 2	Tier 3
<ul style="list-style-type: none"> • Intersection Improvements Realign the intersection with Tucker Road to reduce the crossing distance and provide a safer intersection angle. \$25,900 • Pavement Markings Install high-visibility pedestrian crosswalks at all applicable intersections, crossings, and driveways. \$39,900 • School Zone Safety Install school zone beacons, markings, and signage for Riverview High School and Kids Community College. \$81,100 • Sidewalks Identify and repair areas of sidewalks that are damaged or otherwise do not achieve ADA compliance. \$90,000 	<ul style="list-style-type: none"> • Crosswalks Install an enhanced crosswalk with Rectangular Rapid Flashing Beacon (RRFB) at the following locations: <ul style="list-style-type: none"> • Black Forest Trail • Shady Lane • Irish Moss Avenue • Symmes Road • Landscaping Install landscaping with shade trees where feasible. • Pavement Markings Install bike lane markings through the intersection with Boyette Road, including green markings through all conflict areas. • Signalization Install bike detection at the signal-controlled intersection with Boyette Road. • Shared-Use Path Install an asphalt shared-use path along the east side of the corridor. 	<ul style="list-style-type: none"> • Access Management Modify driveways throughout to decrease turning radii and provide pedestrian refuge areas by extending existing median noses to the edge of roadway. \$33,700 • Crosswalks Install a raised crosswalk at Shady Lane. \$62,800 • Lighting Install lighting at all signalized intersections and crossings. \$1,230,700 • Lighting Install pedestrian-scale lighting throughout the corridor. \$2,787,900
\$236,900	\$11,396,000	\$4,115,100
\$15,748,000		

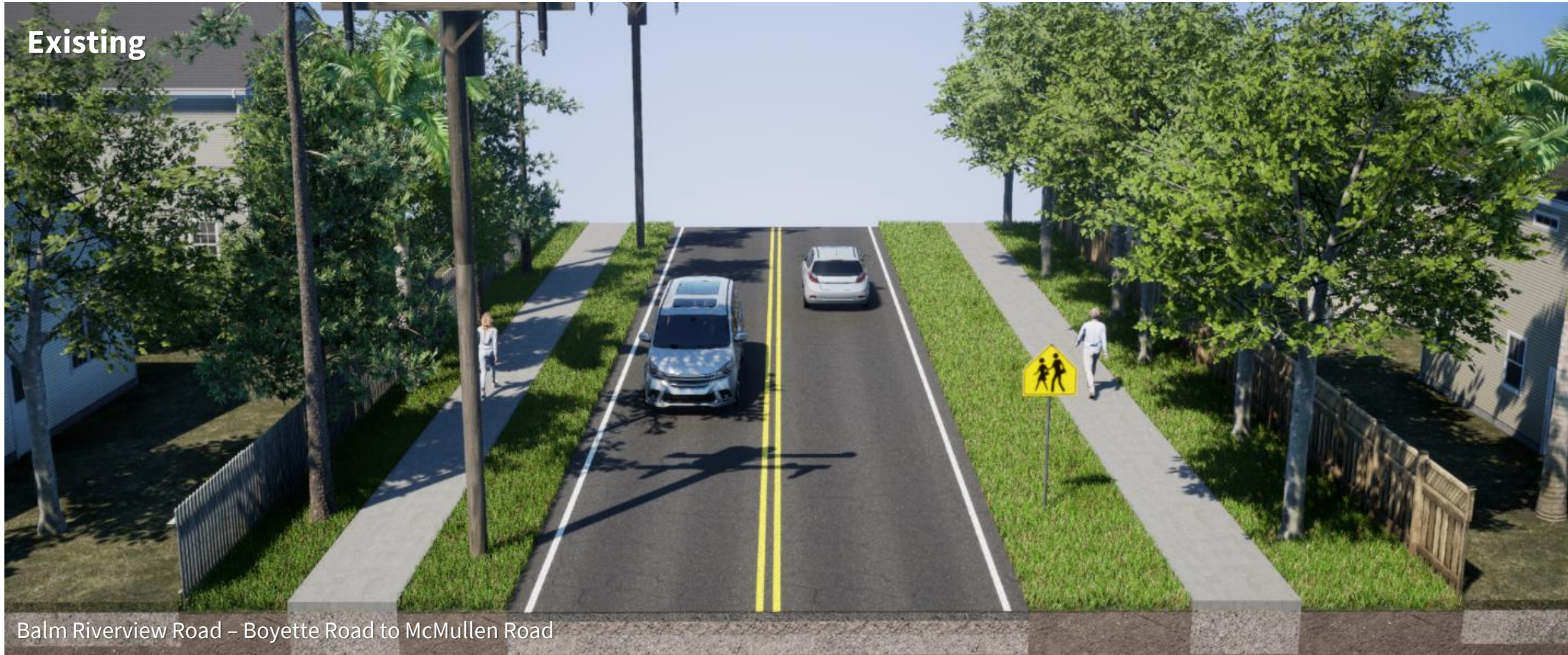


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Existing



Balm Riverview Road – Boyette Road to McMullen Road

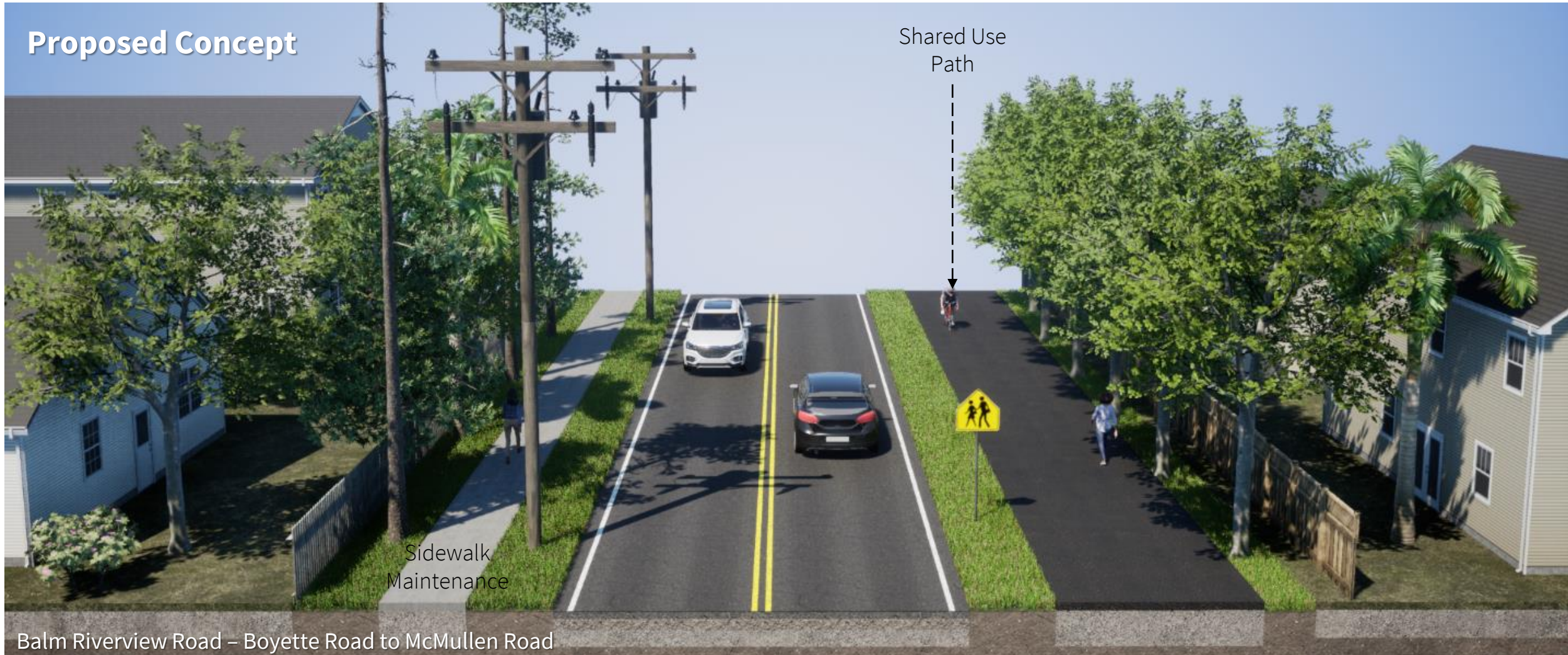


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Proposed Concept



Balm Riverview Road – Boyette Road to McMullen Road



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Next Steps/Implementation

- Conduct necessary engineering/feasibility reviews
- Develop formal cost estimates
- Public engagement
- Identify funding



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Questions?

Comments?