



# Memphis Pedestrian and School Safety Action Plan



Prepared for the City of Memphis  
Prepared by Alta Planning + Design  
with Powers Hill Design, LLC, Kimley-Horn and Associates, Inc.,  
The Center for Partnerships in GIS, and The University of Memphis

# Introduction

## Project Background

- The City of Memphis requires resident to maintain sidewalks adjacent to their property
- Citizen's report for sidewalks in poor condition
- City notifies owner of responsibility and proceeds through legal process, when necessary
- In 2012, City shifted to a proactive maintenance plan by completing the comprehensive review of the sidewalk network
- In spring of 2013, the City initiated a planning process to address pedestrian infrastructure needs



# Introduction

## HOW EXTENSIVE IS THE PROBLEM?



OVER **250 MILES** OF ROADS WITH INCOMPLETE SIDEWALKS & **750 MILES** OF NON-HIGHWAY ROADS WITH NO SIDEWALKS

## WHAT IS THE NEED?

More than **11,000** MEMPHIS RESIDENTS walk directly to work or to reach a bus on their way to work each day

**African Americans** make up **70%** OF MEMPHIS RESIDENTS who walk directly to work or to reach a bus on their way to work each day

Almost **23%** **150,000** Memphis residents are under 16 and non-drivers

**10%** **65,000** Memphis residents are over 65 and typically over 20% of these (13,000) do not drive

**8%** **50,000** Memphis residents have a disability that requires mobility assistance (ie. wheelchair)

**12.5%** **30,000** Memphis households do not have access to a car



# Introduction

## WHAT IS THE COST?

**TOTAL REPLACEMENT COST** for existing sidewalk network in Memphis is

**\$1,100,000,000**

Total replacement cost for most urgent repair in Memphis is \$363,000,000

**LIFE SPAN OF A SIDEWALK** under normal conditions is somewhere between

**50 - 75 YEARS** depending on a number of environmental factors.

In order to properly maintain sidewalks on an annual basis, Memphis would need to budget and spend

**\$19,000,000** EACH YEAR, INDEFINITELY

At a rate of \$19,000,000 each year, it would take more than

**24 YEARS**

to fix only those sidewalks in need of urgent repair or substandard width. Before those repairs were completed, another 33% of sidewalks would age into disrepair

Since 2004, Memphis has only cumulatively budgeted

**\$334,000**

on sidewalk repair



# Project Team

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## Consultant Team

- Alta Planning + Design
- Powers Hill Design, LLC
- Kimley-Horn and Associates
- University of Memphis
  - The Center for Partnerships in GIS (now CEASAR)
  - Intermodal Freight Transportation Institute
  - Department of Civil Engineering

## Technical Advisory Committee

- City of Memphis Engineering Division
- Shelby County Schools
- Mayor's Advisory Council for Citizen's with Disabilities
- Aging Commission of the Mid-South
- Livable Memphis
- Sierra Club
- Memphis Area Transit Authority
- Mayor's Office



# Project Objectives

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- To assess existing conditions and **develop a transparent, data-driven prioritization methodology** that identifies needed sidewalk and pedestrian crossing projects serving public schools
- To craft **an implementation strategy capable of delivering high-priority projects in the short-term** that improve pedestrian connectivity and safety



# Project Scope

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- Task 1. Project Management
- Task 2. Existing Conditions Analysis
- Task 3. Pedestrian Project List
- Task 4. Pedestrian Facility Toolbox
- Task 5. Analyze Cost of Proposed Projects
- Task 6. Project Prioritization
- Task 7. Implementation Plan
- Task 8. Draft and Final Pedestrian Route Plan



# Existing Conditions

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## Key Opportunities

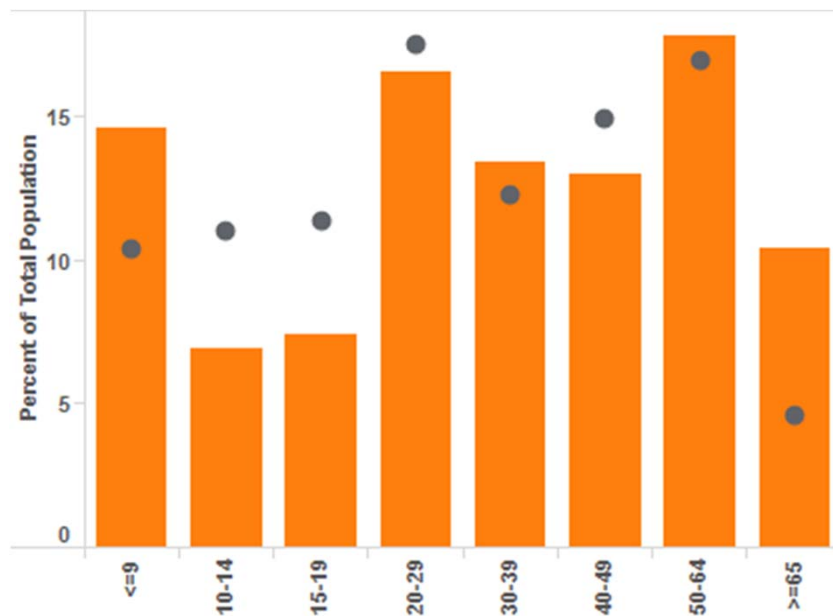
- Sidewalk Maintenance & **Closing Gaps**
- **Major Roads:** Provide buffers (& shade), widen sidewalks, reduce lanes
- Increase the **frequency of formal pedestrian crossings**
- Enhance existing **midblock/unsignalized crossings**
- Ensure pedestrian-friendly design at **major intersections**
- **Behavior Change Programs**





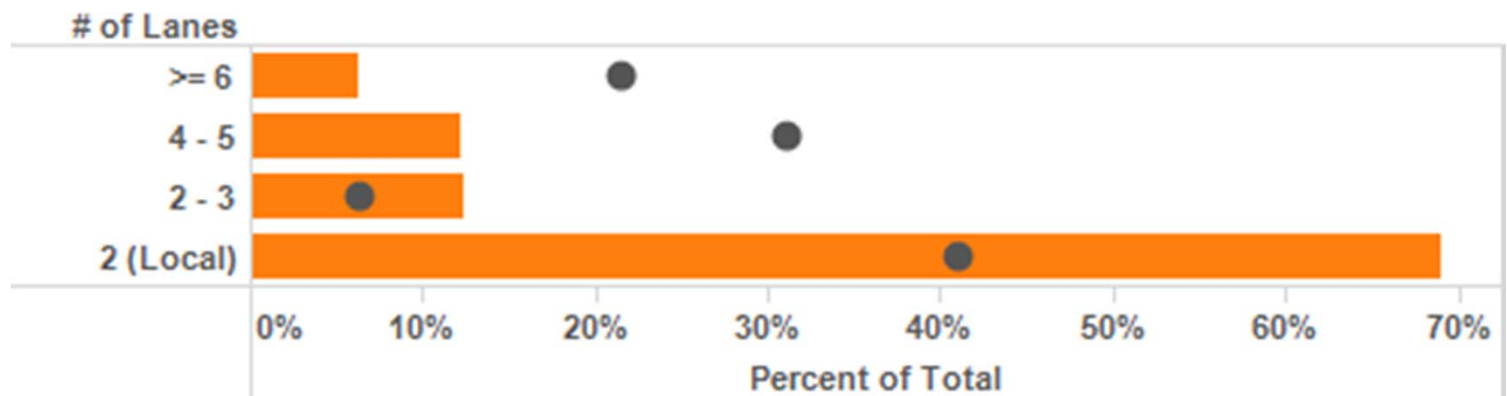
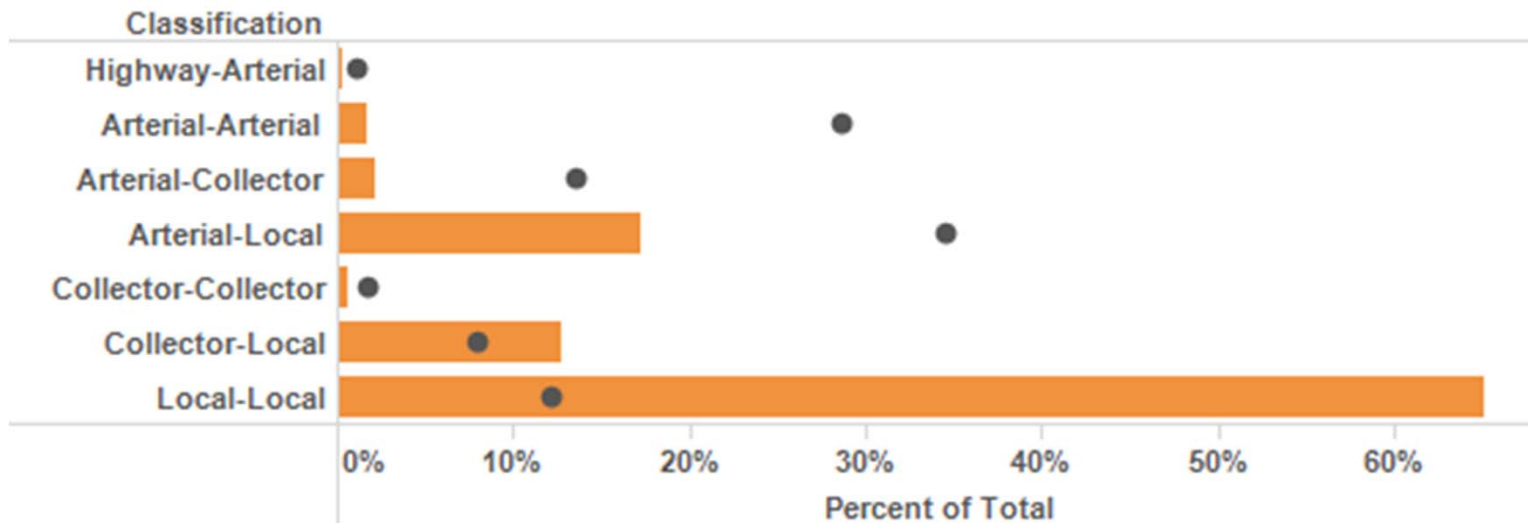
# Existing Conditions: Crash Analysis

Youth aged 10 to 19 are overrepresented in pedestrian crashes



# Existing Conditions: Crash Analysis

More than 40% of pedestrian crashes occur at intersections

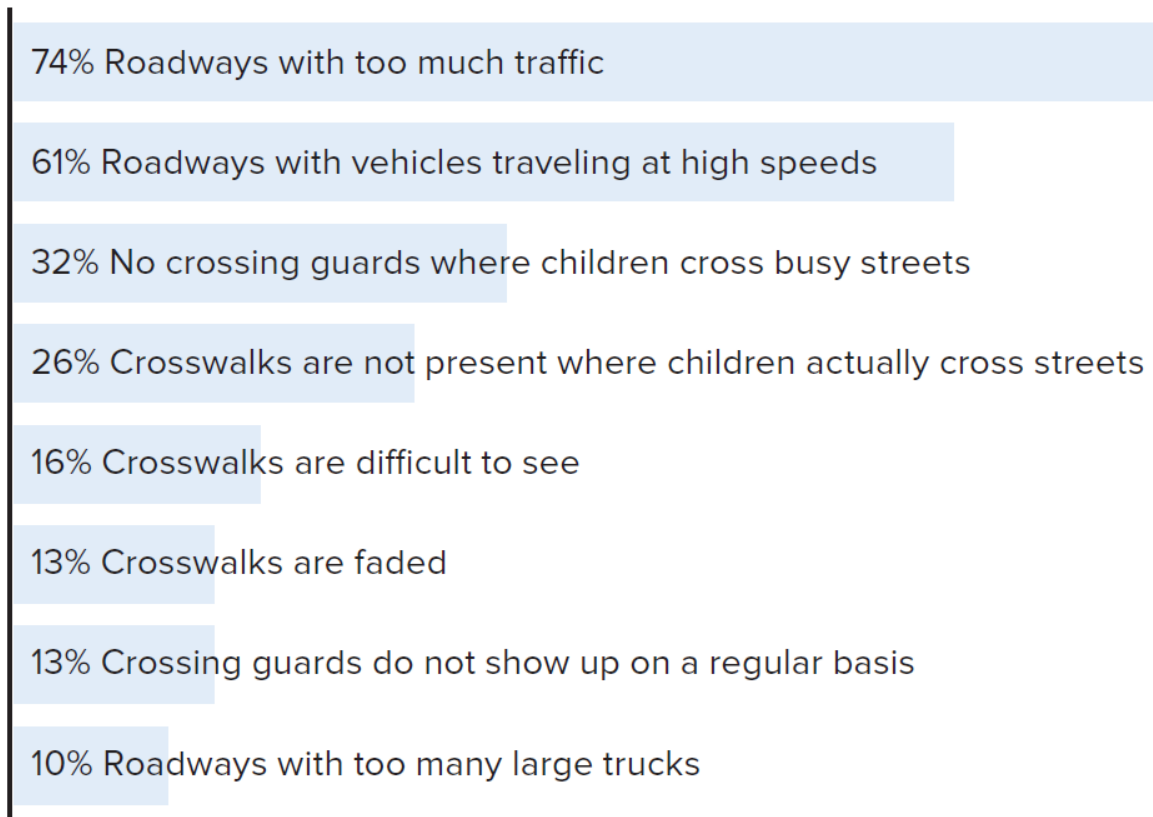


# Existing Conditions: School Survey

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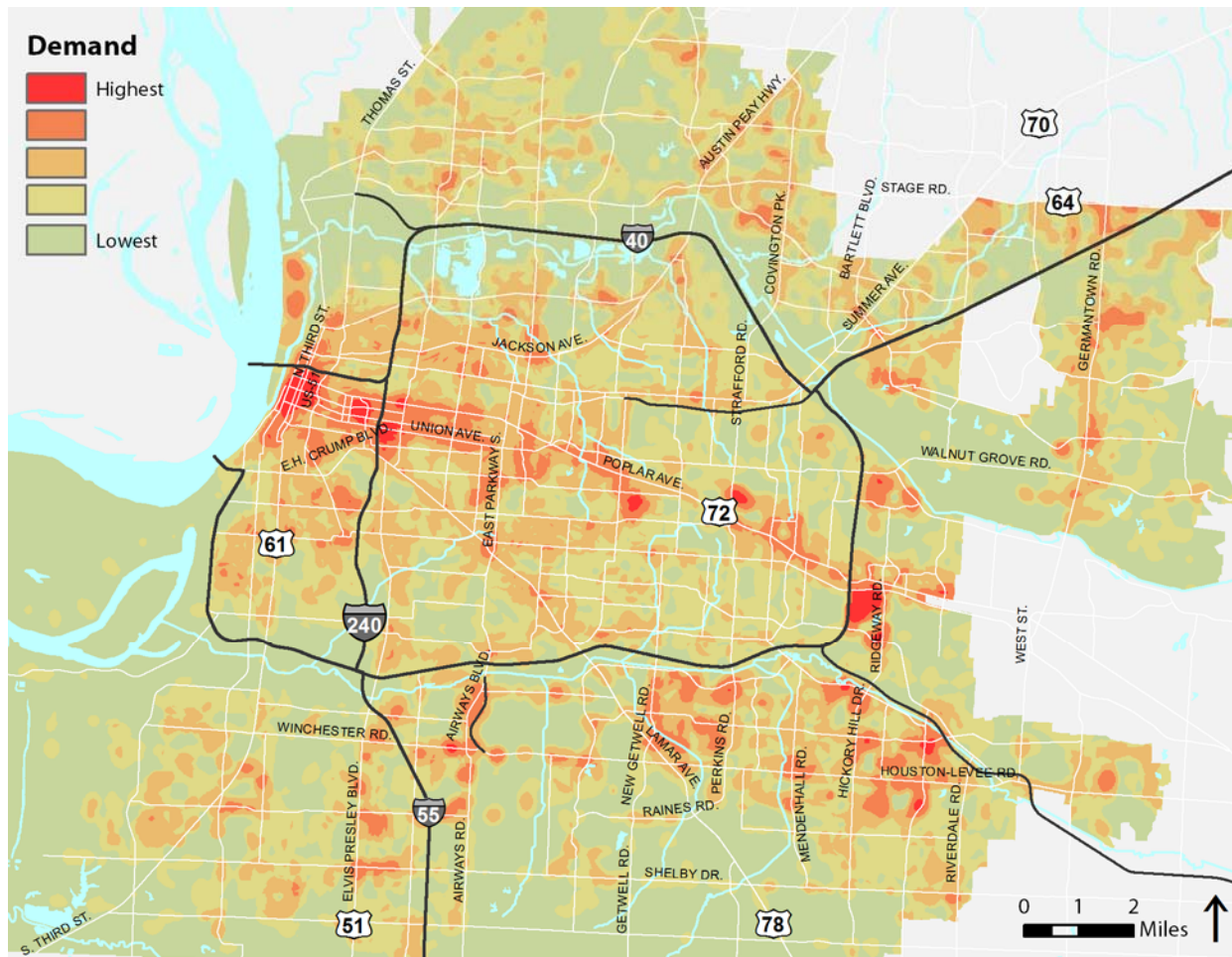
## Major roadways are the top barrier for students travelling to school

Figure 2.5 Obstacles to Crossing Streets in the Vicinity of Schools



# Network Analysis: Demand

Orange and red indicate higher relative demand for walking trips

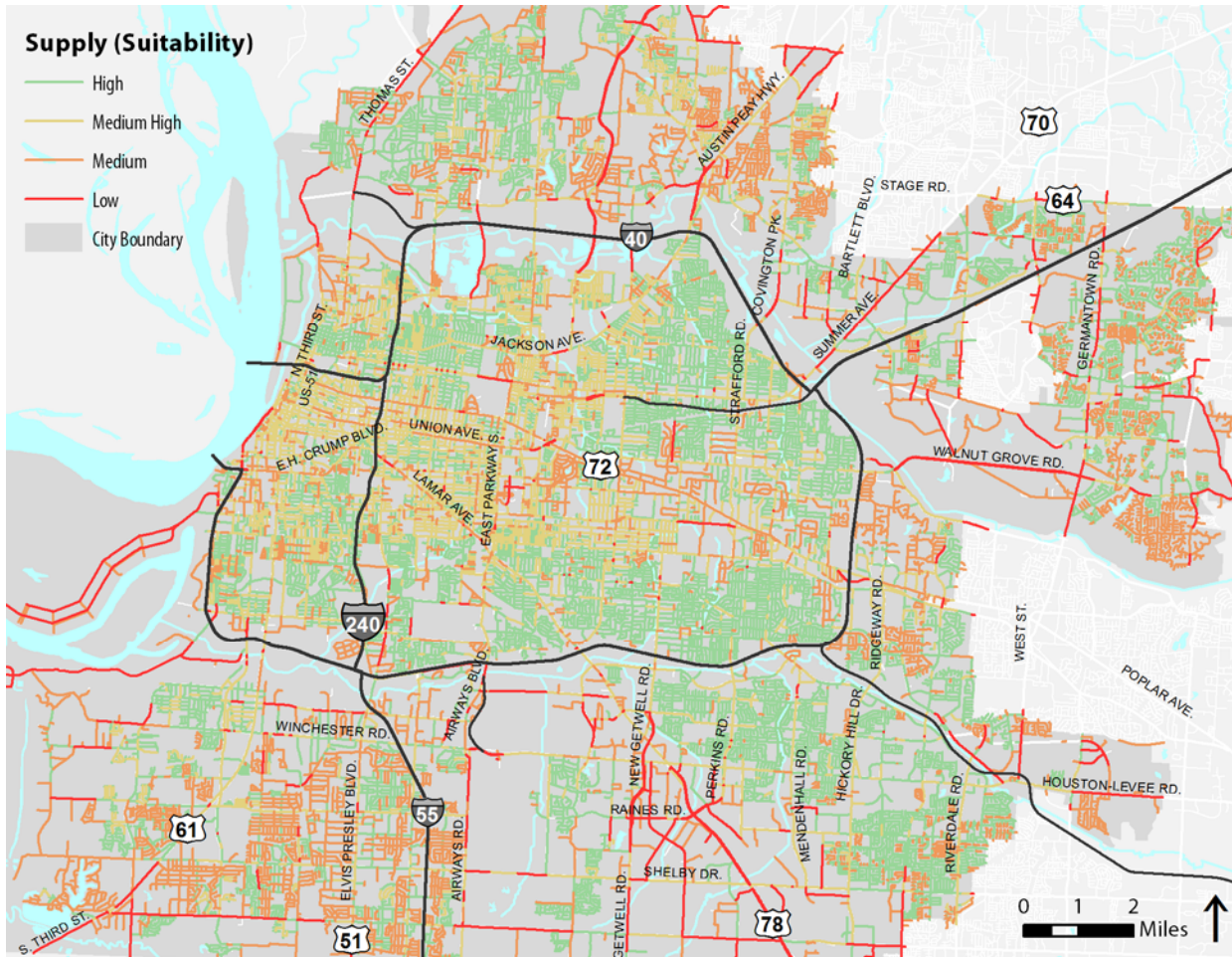


- Where People Live Population Density
- Where People Work Employment Density
- Where People Play + Shop Parks  
Retail and Services  
Grocers  
Farmers Markets  
Community Gardens  
Medical Facilities  
Cultural Destinations
- Where People Learn Elementary Schools  
Middle Schools  
High Schools  
Colleges and Universities
- Where People Access Transit Bus Stops  
Trolley Stops



# Network Analysis: Supply

Orange and red indicate lower relative comfort and safety for pedestrians



Roadway  
Characteristics

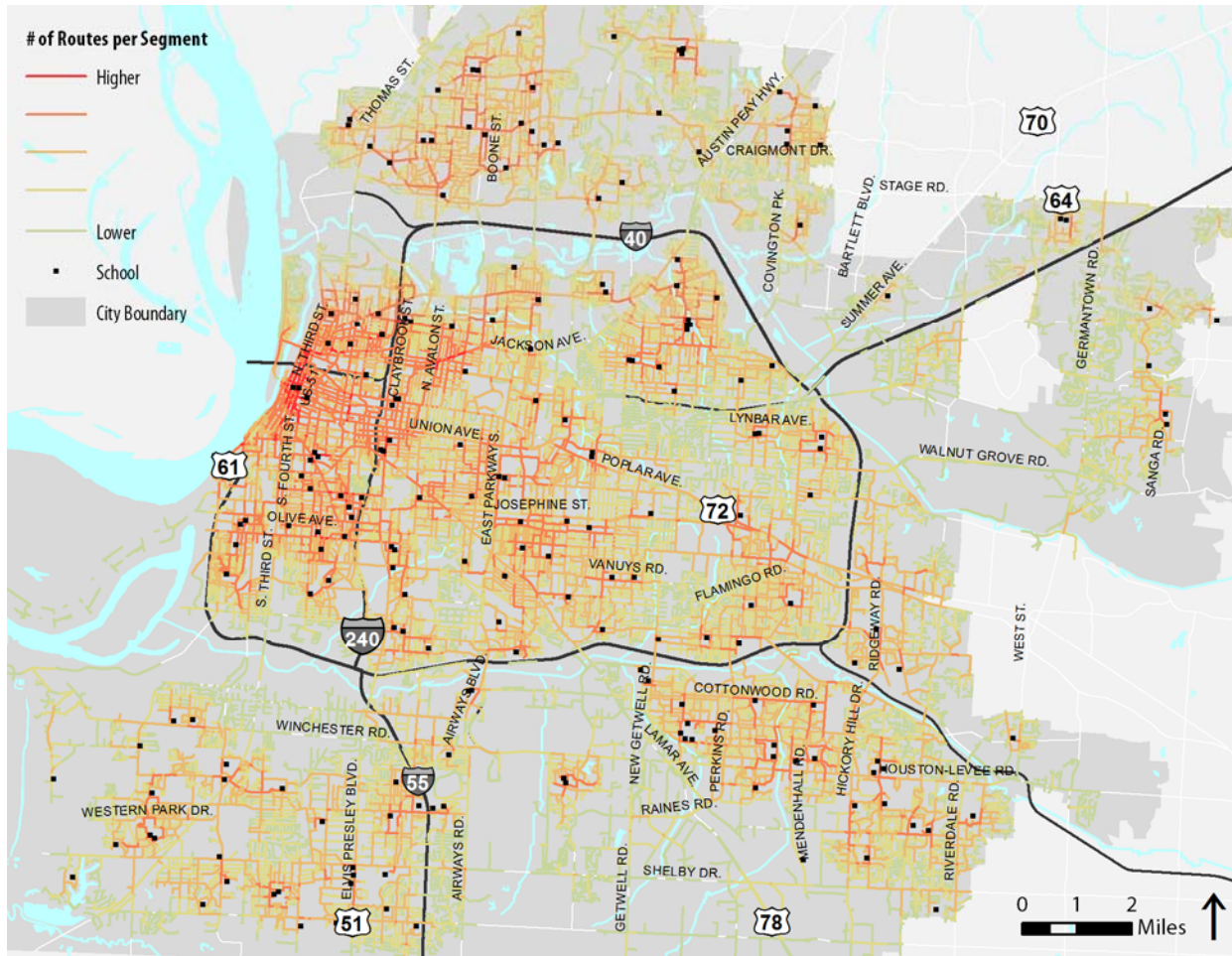
Pedestrian Space

Sidewalk Quality



# Network Analysis: Shortest Path

Orange and red indicate routes most likely to serve walking trips



Elementary Schools

Middle Schools

High Schools

Parks

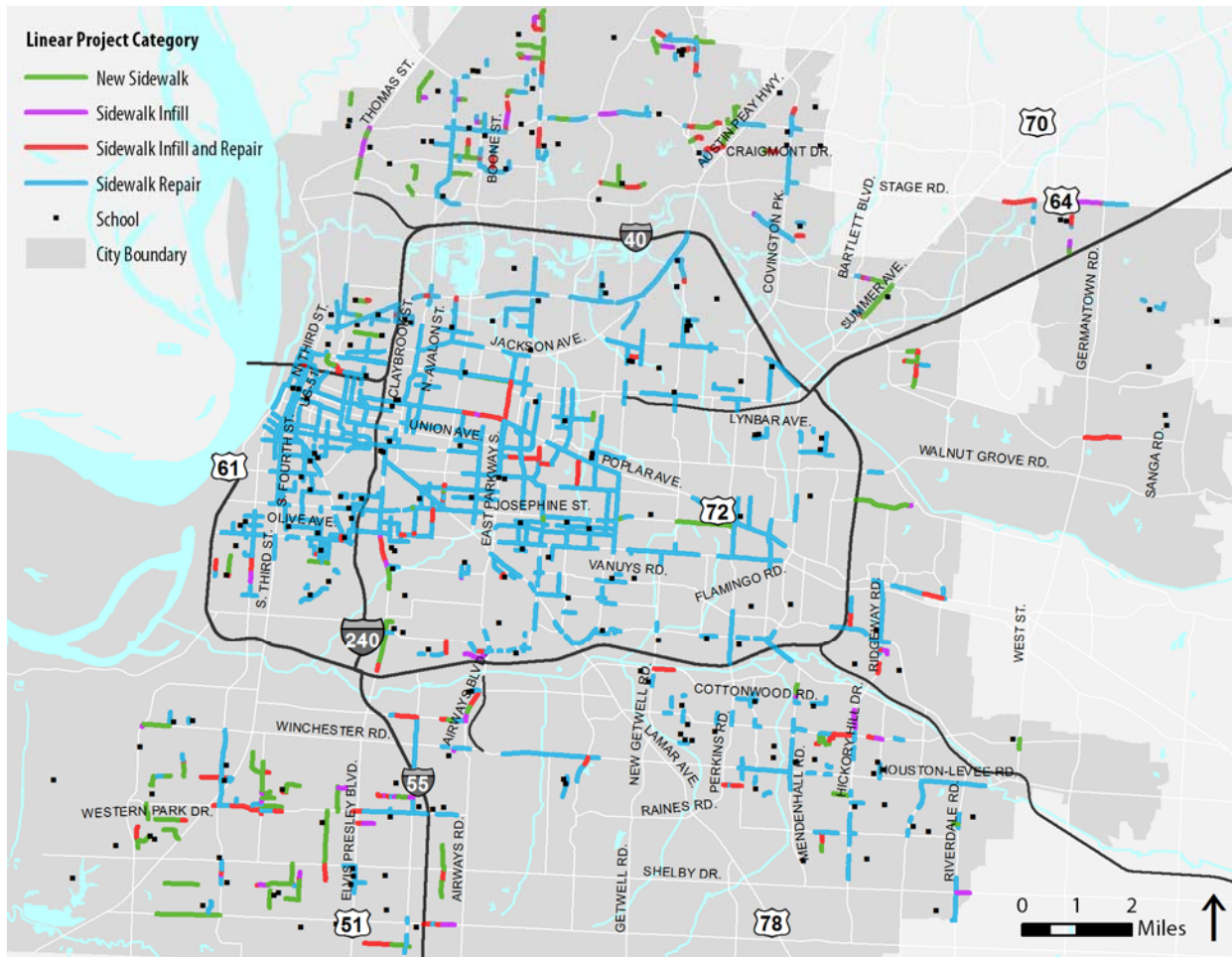
Employment Centers

Transit Stops



# Proposed Network: Sidewalks + Crossings

The full project list includes new sidewalks, infill, repair, and crossings



# Proposed Network: Prioritization

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Criteria and weights were established with project stakeholders

Prioritization Criteria	Weight
• Promotes Safety ( <i>crash analysis</i> )	15%
• School Access	15%
• Inadequate Infrastructure ( <i>supply analysis</i> )	15%
• Equity	10%
• Promotes Connectivity ( <i>shortest path analysis</i> )	10%
• Serves Activity Centers ( <i>demand analysis</i> )	10%
• Transit Access	10%
• Civic Amenity Access ( <i>libraries, comm. centers</i> )	5%
• Previously Proposed Projects	5%
• Stakeholder Input	5%





# Proposed Network: Prioritization

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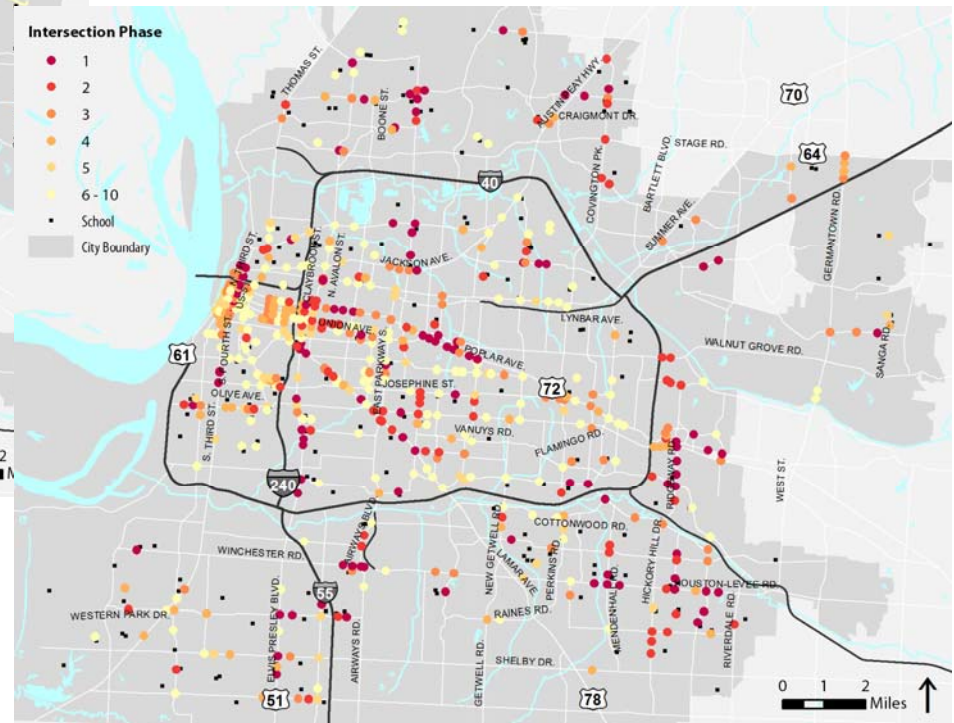
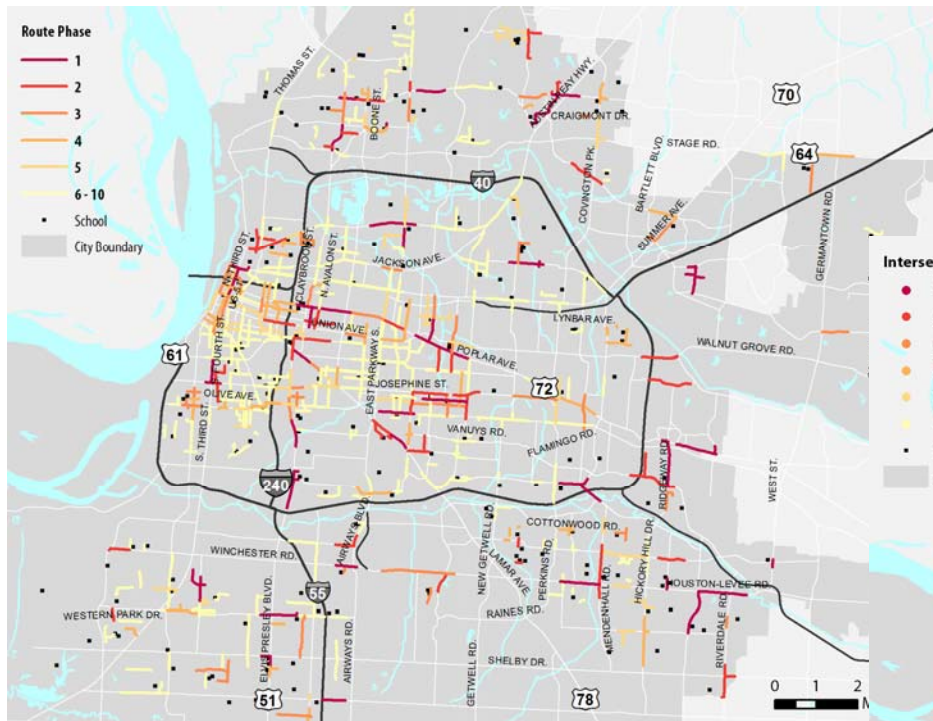
Several criteria directly relate to the stakeholder-identified needs of persons with disabilities

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# Proposed Priority Network: Phasing

Sidewalk and intersection projects were divided into ten phases



# Proposed Priority Network: Tables

Project tables indicate the school served, planning level cost estimates, and more

Table 4.3: Phase 1 Linear Projects

PROJECT ID	STREET	FROM	TO	PROJECT TYPE	LENGTH (MILES)	PLANNING LEVEL COST ESTIMATE (ENTIRE PROJECT, INCLUDING INTERSECTIONS)	SCHOOL
17	Mountain Terrace Street	Victoria Park Lane	Whitney Avenue	Sidewalk Repair	0.1	\$48,000	Grandview Heights Elementary School
25	Frayser Boulevard	Ladue Street	West Range Hills Drive	Sidewalk Repair, Sidewalk Infill	0.5	\$371,000	Trezevant High School
25	New Frayser Boulevard	Redcoat Road	Warford Road	Sidewalk Repair	0.2	-	Trezevant High School
38	Jones Road	Powers Road	Raleigh Millington Road	Sidewalk Repair	0.1	\$404,000	Coleman Elementary School
38	Powers Road	Jones Road	Yale Road	Sidewalk Repair, Sidewalk Infill	1.0	-	Coleman Elementary School
41	Yale Road	Arsenal Street	Northmoor Street	Sidewalk Repair, Sidewalk Infill	0.7	\$188,000	Craigmont Middle School
378	Macon Road	Chatwood Street	Weiner Road	Sidewalk Repair	0.8	\$616,000	Kingsbury Middle School
378	Waring Road	Emily Avenue	Macon Road	Sidewalk Repair	0.1	-	Kingsbury Middle School
378	Wells Station Road	Lawrence Road	Macon Road	Sidewalk Repair	0.1	-	Kingsbury Middle School
420	Macon Road	Heathcliff Drive	Mullins Station Road	Sidewalk Infill	0.2	\$1,563,000	Shady Grove Elementary School
420	Merimac Drive	Boyte Cove	Mullins Station Road	Sidewalk Repair, Sidewalk Infill	0.2	-	Shady Grove Elementary School
420	Mullins Station Road	Macon Road	Nixon Drive	Sidewalk Repair, Sidewalk Infill, New Sidewalk	0.7	-	Shady Grove Elementary School



# Proposed Priority Network: Summary

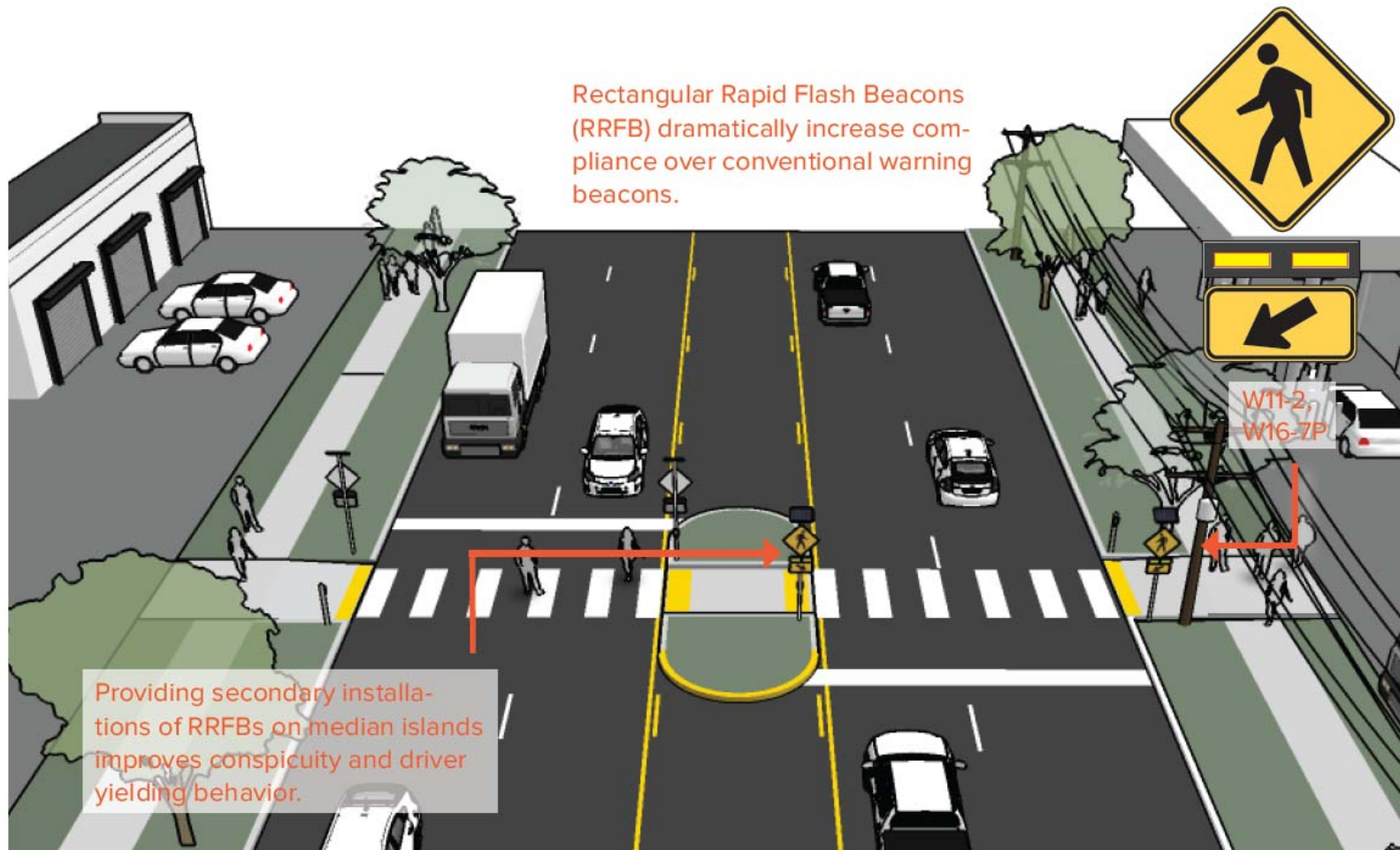
**Table 4.1: Estimated Facility Types for the Full Project List**

Project Type	Type	Unit	Estimated Quantity	Unit Cost (Typical)	Estimated Costs
Sidewalks	Sidewalk on one side (including curb and gutter installation)	Linear Mile	36	\$1,320,000	\$46,911,000
	Sidewalk infill (one side, without curb and gutter installation)	Linear Mile	36	\$343,200	\$12,462,000
	Sidewalk Repair (Obstructions)	Obstruction	4,454	\$7,050	\$31,401,000
	Sidewalk Repair (Obstacles)	Obstacle	98,391	\$600	\$59,035,000
Crossings	High-Visibility Crosswalk	Crossing	669	\$1,300	\$870,000
	Parallel Line Crosswalk	Crossing	3,160	\$500	\$1,580,000
	Crosswalk Marking Maintenance	Crossing	1,622	\$500	\$811,000
	Curb Ramp	Ramp	7,500	\$1,200	\$9,000,000
	Refuge Island	Crossing	78	\$22,000	\$1,716,000
Enhanced Crossings	Hybrid Beacon: HAWK	Crossing	114	\$155,000	\$17,670,000
	Active Warning Beacon: RRFB	Crossing	57	\$15,200	\$866,000
<b>TOTAL</b>					<b>\$182,322,000</b>



# Design Toolkit (Appendix C)

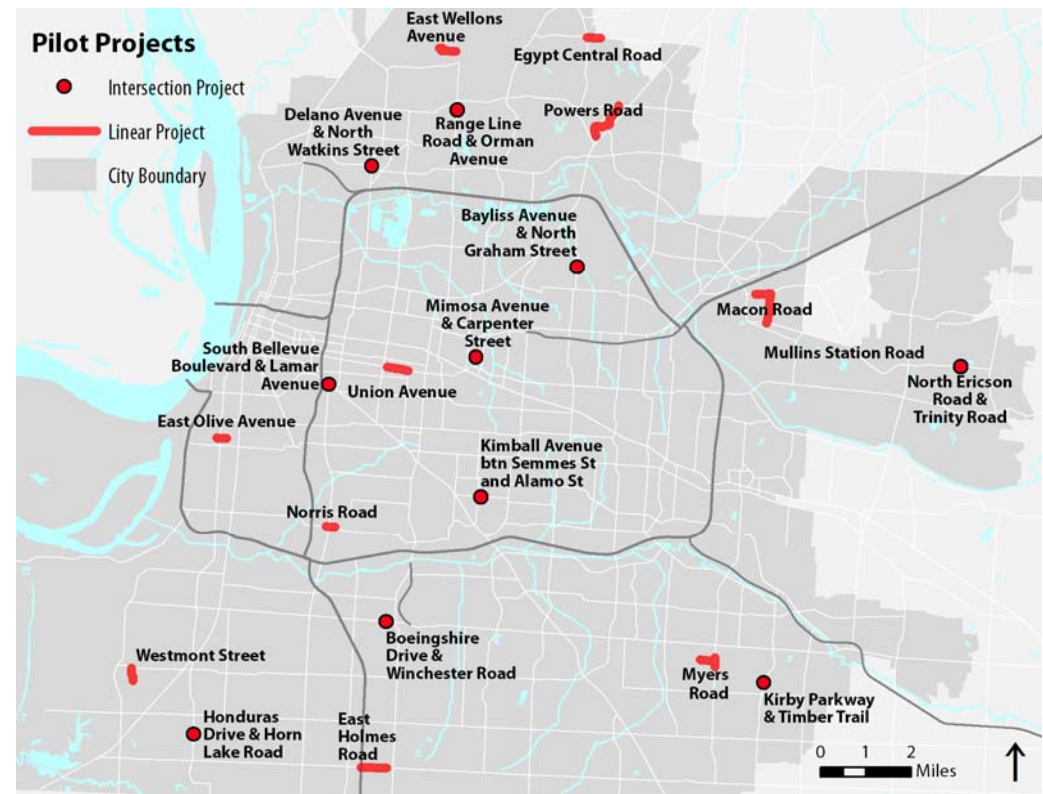
Provides detailed design guidance for all project types



# Pilot Projects

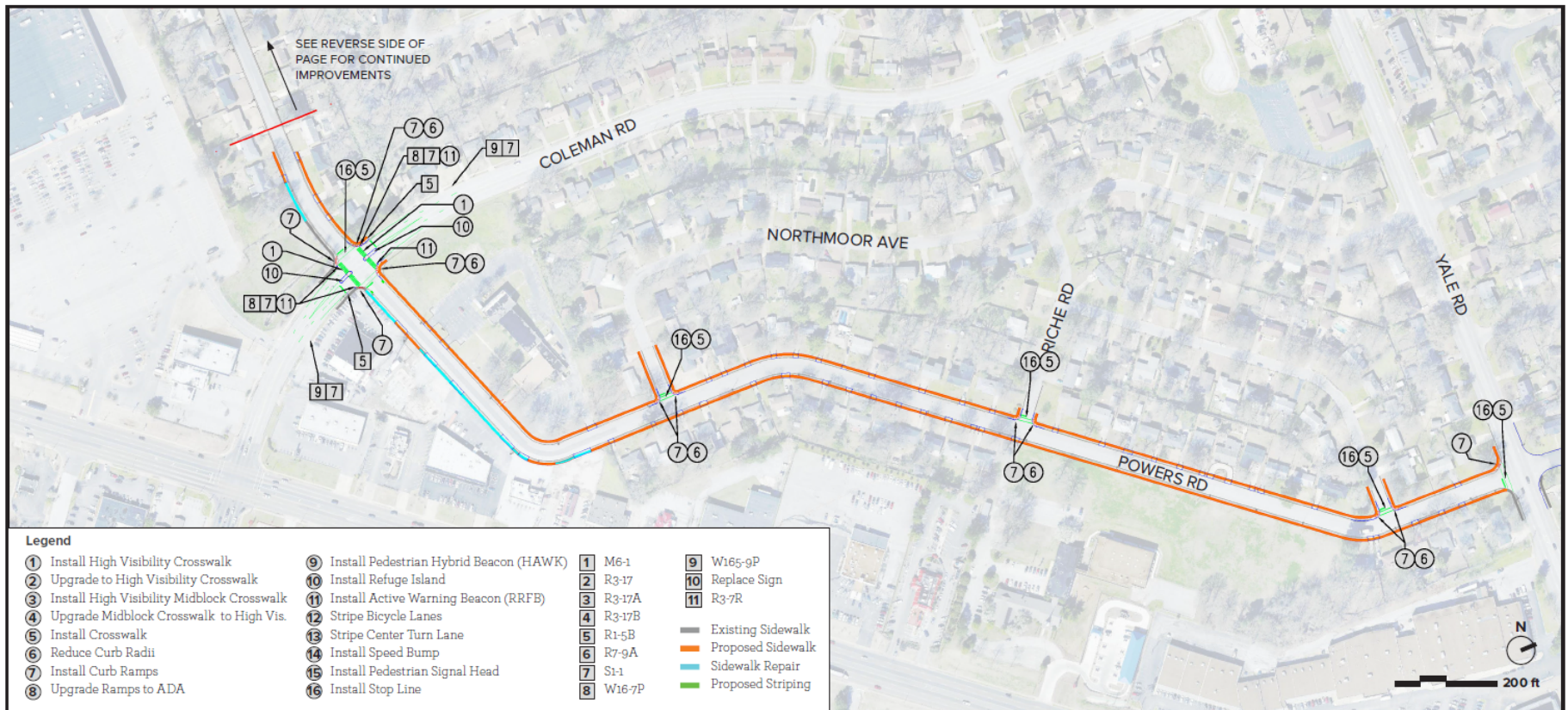
Selected to illustrate the types of improvements in the project list

- **Weighted score** from prioritization,
- **Geographic representation**, and
- **Facility type representation** (ten corridors, ten crossings)



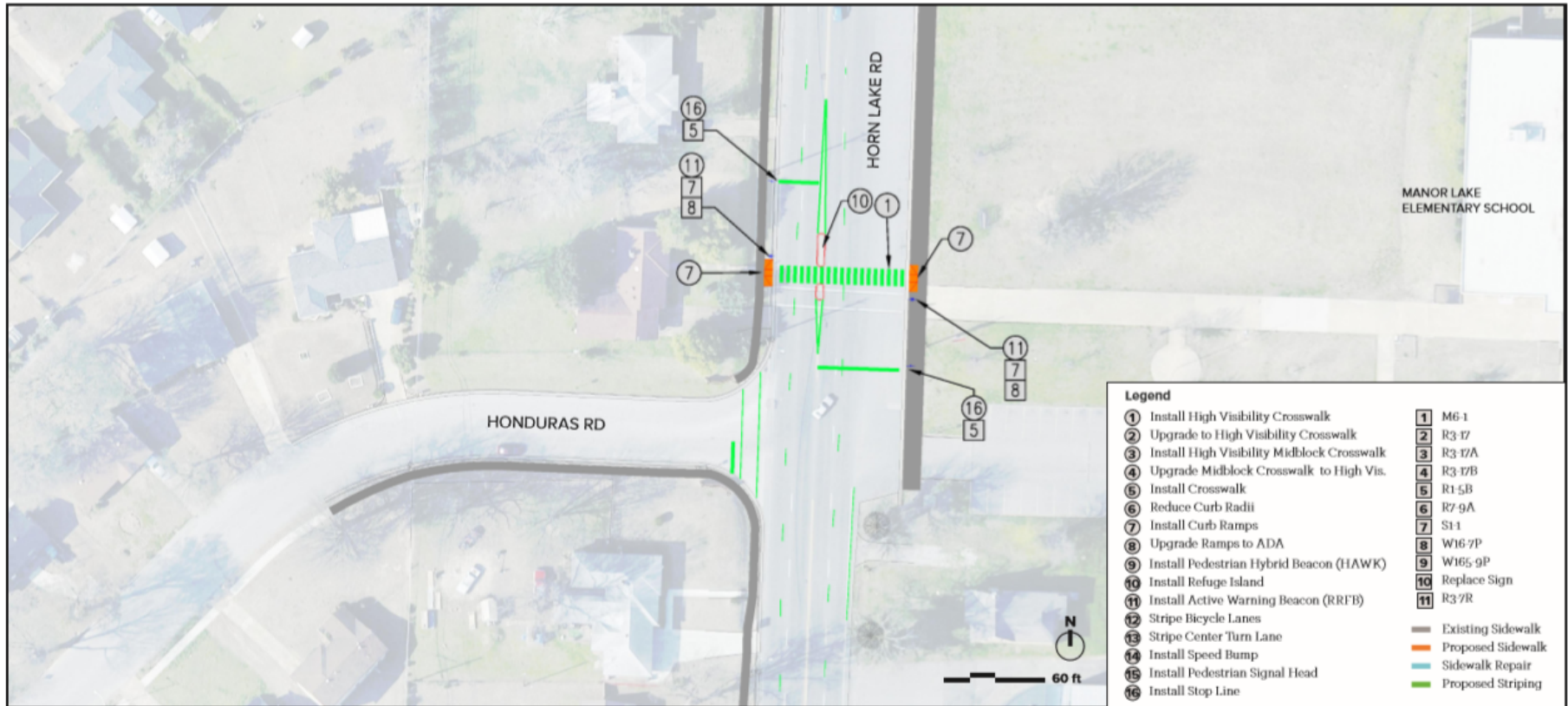
# Pilot Projects: Sidewalk Example

## Powers Road



# Pilot Projects: Intersection Example

## Honduras Road & Horn Lake Road



### Project Components

- Shift existing crossing north to allow installation of accessible curb ramps and to make room for vehicles turning left off of Honduras Road to enter Horn Lake Road in advance of new stop lines
- Install a pedestrian actuated Active Warning Beacon (RRFB) for the crossing of Horn Lake Road
- Reconfigure Horn Lake Road to make room for a median refuge island
- Install high-visibility crosswalk and appropriate signage on Horn Lake Road and stripe the crossing of Honduras Road

### Cost Estimate

Materials: \$34,946  
 Mobilization/Traffic Control: \$2,167  
 Engineering: \$3,711  
 Contingency: \$8,165  
**Total Cost: \$48,989**





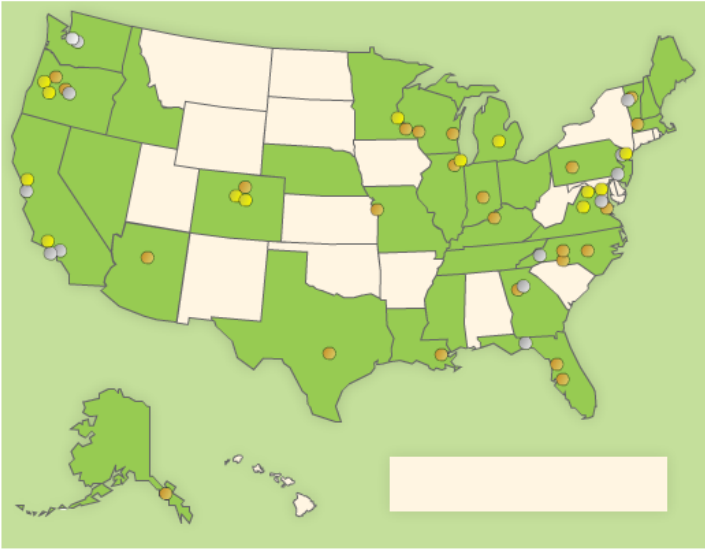
# Implementation Strategy

## Walk Friendly Community Framework: The 6 E's

- Engineering
- Education
- Encouragement
- Enforcement
- Evaluation and Planning
- **Equity**

### Walk Friendly Communities

View our [full list](#) of Walk Friendly Communities or click on a State in the map below to see the designated Walk Friendly Communities in the State:



Or, select a state from the list:

Tennessee ▼

### News and Updates

**Oct. 1, 2014:** PBIC announces 50th Walk Friendly Community.

**April 24, 2014:** PBIC announces new Walk Friendly Communities.

**Nov. 28, 2012:** "Giving Cities Legs: Ideas and Inspirations From Walk Friendly Communities" is now available online.

### Tennessee

The following communities in Tennessee have been designated as a Walk Friendly Community:

- **Franklin — Honorable Mention**



# Implementation Strategy

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## Education

- **Property owner's guide** to sidewalk maintenance
- Courses for **Memphis Police** and **Memphis planners and engineers**

## Encouragement

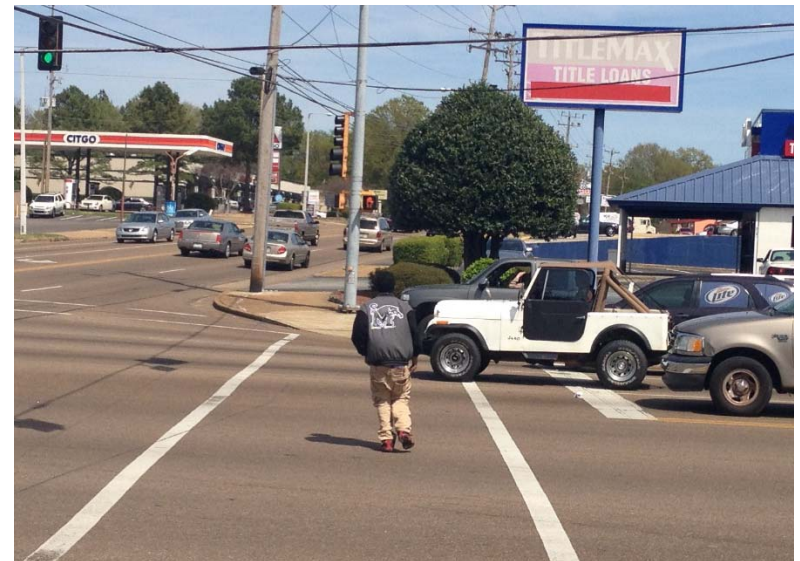
- **Financial Incentives** for sidewalk repair
- **Fast-Fix Sidewalk Repair Program**

## Enforcement

- Implement **Crosswalk Enforcement Actions**

## Equity

- A sidewalk maintenance program for **disadvantaged property owners**



# Implementation Strategy

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## Project List Implementation: All hands on deck

- Send Phase 1 project list along **state-owned roads** to TDOT
- Send Phase 1 project list near **high-use transit stops** to MATA
- Send **property owners** along Phase 1 and Phase 2 projects a guide to sidewalk maintenance
- Establish **City funding set-aside** amount to begin construction on priorities



# Additional Information

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[www.BIKEPEDMEMPHIS.com](http://www.BIKEPEDMEMPHIS.com)





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